Technical and Vocational Education and Training:
Issues, Concerns and Prospects 15

Antje Barabasch
Felix Rauner *Editors*

Work and Education in America

The Art of Integration

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Foreword

Vocational education or career and technical instruction (CTE) in the United States has been subject to a long evolutionary process. This has been driven by economic, educational, and societal factors that have changed the definition of vocational education, and influenced how, when, where, and to whom it has to be provided. In the United States, legal definitions of vocational education are important as they determine how federal money can be used within the education system. However, these strict legal definitions may be disadvantageous, resulting in constraints on vocational education as interpreted by state and local government officials.

Vocational education in the United States began formally with the Old Deluder Act of 1647:

> . . .to teach all such children as shall resort to him to write and read, whose wages shall be paid either by the parents or masters of such children, or by the inhabitants in general. . . . And it is further ordered, that when any town shall increase to the number of one hundred families or householders, they shall set up a grammar school, the master thereof being able to instruct youth so far as they may be fitted for the university. . . .

In the early twentieth century, vocational education was of critical importance as schools tried to adapt to the need to change from an agricultural economic base to one based on industry and manufacturing. By the 1990s legislation such as the School-to-Work Opportunities Act (STWOA) of 1994 provided a model to create a skilled workforce for the nation's economy through partnerships between educators and employers. It stressed preparation of young adults to enter the workforce through school-based and work-based educational elements. Now we have reached the twenty-first century, vocational education is once again evolving, with the acknowledgment that a traditional education based on the target of college attendance needs to change. Greater attention needs to be focused on those transitioning from schools to the workforce or nondegree-level tertiary education, particularly those who do not aspire to degree or masters-level academic education.

There is concern that the United States is not adequately preparing its new workers for a productive, successful, and efficient role in the workforce. Education can change this but just as important, if not more so, perceptions of vocational education must change. The comparison made between Germans and Americans regarding

perceived status of vocational education comes across in this volume and raises interesting questions if the United States is to remain the economic powerhouse that it is.

This book provides many different examples of the nature and delivery of vocational education, and a simple working definition can be framed, as "a practically illustrated and attempted job or career skill instruction." This covers a range of skills that mainly fall under categories of agriculture, business, family and consumer services, health, marketing, technology, and trade and industrial education. The curriculum may be seen as a combination of classroom instruction and work experience, combined with an active student life. Vocational education in the United States needs to be viewed in the context of the needs of society and of the individual, while meeting the demands of the local and national economy. Individual skills need to be developed and used to the fullest, with the highest levels of efficiency. Also the importance of fulfilling job needs of individuals should not be overlooked in a vocational education setting.

This book provides a thought-provoking collection of chapters that discuss the issues relating to the US vocational system, or "non-system" as referred to by Stone. That challenging quotation provides the ideal opportunity to end this foreword so you can move into this interesting volume.

Hong Kong

Rupert Maclean
The Hong Kong Institute of Education

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Jeff King has been an education and knowledge economy researcher and consultant. His interests included integrated school-plus-work-based qualification systems, technology and training consortia, small firm networks, and learning regions. He directed the German Marshall Fund trans-Atlantic grant program in these and related areas, supporting School to Work, Tech Prep, and national skills standards policies by US federal agencies, 25 US states, and key NGOs. His research on academic quality in EU dual-VET curriculum is cited by US federal reports and the National Academy of Education. He has consulted among others for the US Education and Labor Department and the National Skills Standards Board. Dr. King passed away in March 2011.

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Chapter 1
Introduction

Antje Barabasch and Felix Rauner

Vocational education and training (VET) has never taken hold in the United States as it has in Europe and more specifically in the German-speaking countries. Instead, the country has emphasized integration over utilization. Integration refers to a large variety of aspects in education. One of them is the integration of academic and vocational learning, another is the integration of students with different skills and needs in one educational institution, and a third one would be the integration of vocational orientation and guidance into the schools and the school curriculum. By utilization, on the other hand, we mean vocational education and training that is targeted toward specific qualifications and occupations in order to prepare young adults for the labor market. Nevertheless, the first aspect entails the latter in the sense that a foundational and well-grounded theoretical knowledge applied to practical work leads to an expertise that is needed to fulfill skilled workers' job requirements.

If one examines the interrelationship between the development of vocational education systems around the world and the generation of foundational theories of learning and cognitive development, one comes upon a paradox. These theories of learning and development, which were introduced in research on vocational education and training, have not been generated in the European countries as one might think, but in the United States, a country in which vocational education and training have never been established as an independent systemic branch of the educational system. The integration of vocational and general education is a never ending dispute in the United States, not least because the topic is based on a fundamental contradiction in the societal development. Education and the world of work are viewed as strictly separated and their functions should not be mixed: "Schools should educate and the world of labour should train their staff." This slogan represents more than any other the US educational culture.

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Till date schools in the United States are coined as institutions for humanistic education without preparing young adults to function in specific occupations. Therefore, relatively little provision of qualification for skilled work is provided in cooperation with the industry. After World War II the American military introduced the high school system as a "democratic school" in Japan in order to sustainably introduce and support democratic conditions. In Germany this project failed due to the resistance of German educational traditionalists. Step by step, American pragmatism smoothed the way for the development of a system of higher education that included higher vocational education. In Germany, the still heated debates around the introduction of bachelor and master degrees in higher education are an expression of the contrast of two very different traditions of higher education. The practical dissolution of the contradiction between the educational world and the world of work on the one side and the functionalization of large parts of the higher education system for a higher vocational education (Norton Grubb "new vocationalism") on the other side succeeds, because under the roof of American universities, which are placed at the lower ranks, in fact a sort of VET training is offered that might be rather insufficient for highly qualified work at the labor market.

The integration of academic and vocational learning can take place in various ways. We can distinguish between the governance level, the institutional level, the organizational level, the curriculum level, the teachers' qualification, teaching approaches, and the learners' perspective. All levels are described in more detail in the following paragraphs. The governance level comprises all bodies that are involved in the organization, administration, financing, regulation, and control of career and technical education. Although some governmental organizations are located on the federal level, most of these institutions are based on a state or local level. One of the important features that are regulated at the governance level is the funding of career and technical education. According to Zirkle (see Chapter 3) "The current legislation, the Carl D. Perkins Career and Technical Education Improvement Act of 2006, provides 1.3 billion dollars in federal support for vocational/career and technical education programmes in all 50 States. The law will extend this support through 2012." The larger share comes from the states and part of the funding has to be generated by the institutions themselves from local sources, such as taxes. Industry stakeholders are often willing to support training institutions and collaborate in industry-training partnerships.

At the institutional level we can differentiate between a variety of vocational and academics-oriented institutions that combine both ways of learning. The most common one is the community college, at which associate degrees can be acquired and a part of the courses can be recognized toward bachelor degrees at research universities, associate degrees which are professional degrees recognized among corresponding employers, and certificates usable to switch jobs or acquire higher positions. Additionally, there are career academies and career technology centers that operate on the secondary school level and often host high school students, who are parallel enrolled at a regular high school. These institutions not only combine academic and vocational learning in various ways (see Chapter 3), but also have articulation agreements with institutions of higher education and through them enable their students to smoothly transfer from one institution to another with the

additional benefit that part of their studies might already be recognized toward higher educational degrees. This not only supports the efficiency of one's studies, it also motivates young adults to continue with further studies and acquire higher educational degrees.

At the organizational level, we want to refer to the integration of practical and applied learning in workshops or at real workplaces and the transfer of this knowledge into academic subjects as well as vice versa at the senior high school level. In order to achieve this, schools cooperate with local industry and facilitate a variety of programs, such as job shadowing, Tech Prep, dual enrolment, youth apprenticeships, service learning internships, school-based enterprises, cooperative work experience, distributive education, office practice, early job experience, diversified training, or career classes (see Chapters 2 and 3). Which measures are chosen depends on the school's initiative, funding, participation of industry or other state institutions, availability of qualified teaching personnel, interest or inclination of students to participate in such programs, as well as the limits of the school facility.

On the curriculum level we can analyze the various didactical approaches toward teaching and learning in a combined way. This includes the organizational level, the didactical level, the personnel level, the student level, and the guidance level (which can partially be allocated to the didactical level). In the following paragraphs, we explain how various didactical approaches and adult educational theories that were developed in the United States have had a significant impact on VET in various countries.

John Dewey certainly is the most prominent representative of innovative educational theories and his work built a cornerstone in the discussions around vocational pedagogy. Howard Garfinkel (1986), with his "Studies of Work," established a research field that challenged research on vocational education and training with some provocative research questions. Bergmann (1995), a student of Garfinkel, summarized the meaning of "Studies of Work" for research on curricula: "If we succeed to decipher the knowledge acquired in practical work, than this will lead to a revolution in the development of curricula." Garfinkel had to realize that the method of thick description, a well-established method in qualitative empirical research, can at best let us arrive at a symbolic duplication of reality. It cannot comprehend what really happens and it cannot lead us to an apprehensive enlightenment in regard to the knowledge that is incorporated in an ascertained work activity. It honors him and his students to finally arrive at this conclusion and that they reflected critically upon it. Traditional qualitative and quantitative research methods are not sufficient for the research on domain-specific work process knowledge: "No manuals of procedure are available which describe how social scientific concepts can be operationally' applied to naturally occurring occupation conduct [. . .]. The social scientific studies of occupations are not informative about actual events in the straight forward ways that even the most primitive of classificatory sciences are" (Heritage, 1984, p. 301). It took a quarter of a century until researchers in vocational education and training were able to systematically reason with which research methods they could fill the gap (Rauner & Maclean, 2008).

With his concept of multiple intelligences, Howard Gardner bridged the separation between the scientific discussion around competencies in VET and research

on multiple competences: "If we want to capture the complexity of human cognition, in my opinion we need to include a much wider and more comprehensive spectrum of competencies as usual. And we should not close our eyes for the possibilities, that many or possibly most of the competencies are not measurable with standard methods, that mainly target a mix of logical thinking skills and linguistic capabilities" (Gardner, 1991, p. 9). Gardner distances himself clearly from common theories on intelligence and cognition, where researchers like Jean Piaget classified the highest stage of intelligence as the development of formal-operational thinking or the experimental epistemic ability to unlock scientific laws (Piaget, 1972; Gardner, 1991, pp. 28ff, 124ff). Gardner refers to the, until now, rarely considered meaning of "practical intelligence." He considers practical intelligence as essential for successful functioning in society. Nevertheless, this was not, or was rarely, supported and has not been tested systematically. The concept of multiple intelligence offers the possibility of displaying domain-specific skills in a much more precise way than is currently done in widely used concepts that differentiate between technical, social, and personal competence. With the concept of multiple intelligence it is possible to inquire which capabilities an individual really combines and inquire how these play out in the occupational form of work (Rauner & Grollmann, 2007, pp. 122 ff.).

Almost a decade before Gardner, the researcher Donald A. Schön undertook an analysis of problem-solving skills in various occupations and arrived at a similar conclusion to Gardner's about occupational skills and their cognitive prerequisites. While Gardner started with the psychological (cognitive) preconditions for a competent performance, Schön received credit for the verification of practical competence and professional artistry as an independent competence that is not guided by theoretical (declarative) knowledge. His theory that emphasized practical competence corresponds to Gardner's theory of practical intelligence. Schön cited in this context from one of his examinations of medical praxis, "85% of the problems a doctor sees in his office are not in the book." The deeper reason for the failure of the educational system to teach knowledge, that is foundational for the development of occupational competencies, lies according to Schön, in the disciplinary systematic context knowledge: "The systematic knowledge based on a profession is through to have four sensual properties. It is specialized, firmly bounded, scientific and standardized. This last point is particularly important, because it bears on the paradigmatic relationship which holds, according to technical reasonality, between a professions knowledge base and its practice" (Schön, 1983, p. 23). He also critically examined the concept of didactical reduction, which was deployed around the concept of "applied academics" in the United States. The concept of "contextual learning" for example, applied in high schools, is mostly not interpreted as the teaching of practical knowledge and problem-solving skills, but as a form of acquiring "academic knowledge." Schön argued that the praxis of teaching and training in the United States as well as the curricular design stands in stark contrast to the results of his analysis of the ways "professionals" think and act: "The practitioners have built up a repertoire for examples, images, understandings and actions [. . .]. A practitioner repertoire includes the whole of his experience in so far as it is assessable to him for understanding an action" (Schön, 1983, p. 138).

The writings of Jean Lave and Etienne Wenger regarding situated learning have dominated the discussion in vocational education and training since 1990. With the subject of the learner as someone who develops one's skills from the status of a beginner to someone who is competent, procedures of learning beyond the pedagogical-organizational continuum of systematic learning need to be analyzed. The subject is learning in situations, which by virtue of its quality, shapes the learning result. In a more general learn-theoretical combination Lave and Wenger emphasized, that learning is understood as a way from a "newcomer" to an "old-timer" (Lave & Wenger, 1991, p. 29) and as a process of growing into a community of practitioners, which is characterized by expertise: "Thus participation in the culture practice in which any knowledge exists is an epistemological principal of learning. [. . .]. The practice of community creates the potential 'curriculum' in the broadest sense – that which maybe learnt by newcomers. . ." (Lave & Wenger, 1991, pp. 98, 93).

Hubert L. Dreyfus and Stuart E. Dreyfus (1987) have formulated the next paradigm in the study of expertise and VET. They developed a five-step competence development model, which till date has been the most influential model. Patricia Benner created a model for the development of competences among nurses and underlined the paradigmatic meaning of developmental tasks for the tired development of occupational competencies. She orientated her domain-specific qualification research on the field of nursing (at the University of California) and in the following development of curricula at the novice-expert concept by Dreyfus and Dreyfus (Benner, 1997).

For a fundamental change of perspectives in the German field of VET research, Havighurst's theory of "developmental tasks" (Havighurst, 1972) is a very helpful approach for the development of a subject-oriented curriculum theory and practice. Following Havighurst's theory the subject-specific competence and identity development of emerging nursery nurses have been created and evaluated according to the four logical development tasks by Andreas Gruschka (1985) in the context of implementing a high school concept in North Rhine-Westphalia (*Kollegschule*). In the 1990s the concept of developmental tasks was introduced into the development of curricula in the field of trade and technical VET in Germany as well as into the research of occupational competence. Finally, Richard Sennett contributed with his work in sociology about the occupational form of work and the trades essentially to the discussion in the sociology of occupations.

Research has also shown that a high level of qualification has a positive impact on occupational commitment. Research on occupational identity and occupational commitment arrives at a similar conclusion. Herwig Blankertz (1983), who further developed and offered a contextual translation of Havighurst's developmental theory for VET research, established, in reference to Rousseau, the connection between the development of occupational competencies and identity development. The empirical research on identity and commitment has been pursued in Europe, and more specifically in Switzerland, by Carlo Jäger (1990) during the 1980s. He distinguished between commitment that is based on work morals and "occupational commitment" that is based on occupational identity. Research on commitment has its origins

in American management and organizational psychology research, both research branches that work with standardized scales to determine "organizational commitment." The central research question was how occupational commitment can be improved and enhanced through an emotional binding of workers to their employing enterprises.

At the same time, research on curricula was confronted with the paradox finding that the flexibilization of the labor market did not lead to an erosion of "occupational commitment" or the development of occupational identity, but instead to a subjective reassessment of occupational identity and occupational commitment. This is the starting point initiating curiosity in VET research, which tries to find out about the causal roots of the development of occupational identity and occupational commitment/engagement under the condition of structural changes at the labor market (Brown, Kirpal, & Rauner, 2007; Jäger, 1990; Heinemann & Rauner, 2008).

In the German discussion in the field of sociology of work and occupations, it is emphasized that in this context it seems to be less important to reason about prognoses about the future development of the occupational form of work but instead to reason about the shaping of a modern understanding of an occupation (*moderne Beruflichkeit*) – possibly based on the concept of domain-specific occupations. If this is applied to the integration of work and learning, it means that early vocational training integrated into academic learning might lead to a higher satisfaction with the qualification process as well as a higher future workplace commitment.

At the personnel level we can look at the integration of practitioners in career education in order to improve the theory-praxis relation of work-related instruction and in this way support modern vocational curricula. Another aspect to look at is not only the original qualification of teachers, but also the facilitation of further training for them. One of the strengths of the US system could be that it has relatively low barriers for career changers to enter the field of teaching. Therefore, students might have the unique chance to be taught by an individual who has extended experience in the field and is well connected to the industry. These teachers often rely on their former connections in order to build school-industry partnerships and also in order to refer well-performing students to potential employers.

The student level refers to, among other aspects, the integration of students with various skills and needs. The US system is by design a highly integrative system if compared with the German multitiered school and VET system. All students are taught together in one high school, the community colleges offer a large scale of programmes targeting very different needs, and the universities have installed scholarships to attract students from low socioeconomic backgrounds to attend institutions of higher education. Nevertheless, the system found its very own ways to track students from early on, either with an academic emphasis or a vocational emphasis. This strategy is often blamed for supporting the already existing negative image of VET as well as for maintaining the socioeconomic stratification in society. From an outside perspective, supporting VET in providing salary arguments, the argument of shorter periods of time for acquiring a qualification, and that career classes are more fun, cannot build a sustainable consciousness about the meaning of one's work for oneself and society nor build a deeper relationship to the knowledge

and skills acquired. It rather seems to be a vicious circle, because it is not enhancing the prestige of early work-oriented or workplace learning and often attracts students who are short sighted, but not the others. Under these circumstances it is difficult to build a deeper identification with an occupation, often referred to as occupational commitment.

For us, the editors, who have been studying the German as well as other systems of VET, the developments and approaches toward training as well as work-place learning in the United States have been of high interest for a long time. Antje Barabasch, who studied and worked as a visiting professor in the United States, spent part of the last six years to research the differences between German and US approaches in facilitating the school to work transition. She visited a number of career academies, career-technical centers, technical colleges, and community colleges, which enforced her interest in collecting more information about the system and its various aspects. Recently, she has been particularly concerned with the early preparation for occupational or career decisions called career orientation along with career guidance as well as processes of policy transfer and policy learning in VET.

Felix Rauner came to the University of California (Santa Cruz) as a visiting scholar in 1989 to work with Richard Gordon and the VET community in the United States on the foundation of a broader research concept called "industrial culture and production." He was specifically concerned with the upheavals in machine-tool building as well as the crash of the American tool industry as a phenomenon of competing industrial cultures (Corbett, Rasmussen, & Rauner, 1991). Since then he kept in contact with a number of US scholars concerned with issues in VET and followed the US developments with great interest.

Because of these many years of studying career education in the United States, we came to the conclusion that a book was needed that summarized the knowledge in various sectors that determine the field and to bring together facts and figures for all those who are interested in current issues in VET in the United States. The book should be an ideal foundation for classes about career education and secondary education more generally. It will also be of interest to those who are concerned with comparative studies not only because it provides rudimentary comparisons to the German VET system, but also because it offers a broad spectrum of contextual knowledge that should help scholars from outside the United States to understand the system and its issues.

We were fortunate to work with many US colleagues whom we admire for their continuous high engagement in the further development of career and technical education. Their inspiring contributions to this compendium made our work highly enjoyable. It is our hope that this book will provide up-to-date information about the spheres of education and work, and more specifically about various aspects of career education in the United States, to scholars around the world, but that what is said in the various chapters about the difficulties that the field is experiencing with regard to its recognition will be overcome by the many advocates in the academy, as also by the new politicians in the United States who are in power since November 2008.

Besides the US scholars who make up the majority of contributions in this book, some of us have collaborated cross-culturally with German colleagues on a chapter.

The intention of this collaboration was to reflect on the developments in the United States with colleagues, who share some insight and also contribute an outside perspective that serves as a mirror, thus bringing out some of the ambiguities, conflicts, and differences that we face when talking about issues in our field. All German scholars have spent some time in the United States and are highly sympathetic with the struggles our colleagues face when defending the role of vocational education and its right to existence. We are well aware that vocational education as we understand it might only have a chance, under the circumstances that our colleagues describe in this book, when it integrates academic and vocational learning.

Names and expressions for work-related learning and training have shifted and changed over decades. The term "vocational education and training" (VET), which is still common in Europe, has been abolished in North America, because it has been and still is associated with trade schools and often with a "blue-collar" connotation. The new term "career-technical education" is meant to be more inclusive and refers to the goal that every student can take career-oriented classes without being stigmatized while at the same time technically inclined students also have the opportunity to participate in higher level academic classes. In order to improve the image of "Career-tech," as it is often referred to, some schools make it a requirement that students have to perform according to predetermined standards in the academic classes before they are allowed to participate in forms of workplace learning, such as youth apprenticeships. We, as the editors, and many of our authors use the terms vocational education and training and career-technical education interchangeably. In various chapters legislative innovations as well as reformations of the system are described. Nevertheless for many of us, the purpose of work-related learning and training is to prepare individuals adequately for the world of work as well as for further education and training. This implies a modern understanding of what was formerly called vocational education and training and the modernization of the field itself is today contextualized in the term career education.

Our subtitle "The art of integration" reflects primary pathways to learning and refers to these multiple views on integration in the sectors of education and work to the extent to which they are interwoven. The art of integration is a symbolic and visually poetic reminder that vocational or career and technical education cannot successfully be pursued without their interconnectedness to academic learning, to different approaches toward workplace teaching and learning, and without including various people and their diverse ways of approaching work and education. The goal of integration is to foster a greater understanding and appreciation of academic knowledge in general subjects while concurrently acquiring vocational skills that are useful in daily life, aid in the orientation process toward career decisions, and can be the foundation for advanced vocational degrees. With this approach career-technical education differs from vocational education and training in many European countries, but specifically those countries where the dual system has evolved and is still maintained.

The latter entails that young adults would start an apprenticeship after finishing secondary school, which can end after 9 up to 13 years of schooling depending on the type of school one attended. The dual-training approach is based on a

strong and mutual partnership between the industry, vocational schools (governed by local ministries of education), and unions. After successful completion of an apprenticeship young adults enter the labor market and are employed as skilled workers (*Facharbeiter*). The system is based on a high level of transparency due to the governance of the company-based training through the Federal Institute for Vocational Education and Training (BIBB), which ensures that all training programs are registered and standardized according to the training regulations. In this way the system does not emphasize the academic learning and the possibilities of transitioning into institutions of higher education to the extent to which it can be observed in the United States. On the other hand, if qualifications and degree programs at the community college are compared with their counterparts at vocational schools or apprenticeships in Germany, one would discover many similarities. Although the dual system is still frequented by slightly more than 50% of young adults, many alternative forms of education and training have also gained ground in the German-speaking countries.

To view art and integration of work and education as interrelated had been inspired by John Dewey (1938) and his progressive education theory in the late nineteenth century. He believed that humans learn best in real-life activities with other people. Work-related education or work-based education provides such real world relation. Progressivists claimed that children learn like scientists in the way that they first become aware of a problem, define it, propose a hypothesis to solve it, evaluate the consequences of the hypothesis in relating it to one's own past experience, and test the likeliest solution. Progressivist teachers would not just provide reading and drill, but instead focus on real-world experiences and activities and support learning by doing. They put strong emphasis on problem solving and critical thinking.

Leon Winslow (1939) described the interplay between the arts and other subjects (arts integration) in his first publication *The Integrated School Art Program* (1939). Although Dewey and Winslow were more concerned with the integration of arts education into the school curriculum, the idea of using art as a combining inspirational tool or driver between education and its application to other academic studies is also embedded in the foundations of the integration of work and education. Broudy (1994) stated that imagination, as a foundation of creativity, originality, or spontaneity, is an essential component of learning that should be cultivated in schools. Imagination is the driving force behind all reasoning. This claim is also foundational for the advocacy of many US scholars for a stronger integration of learning and work not just for the less academically inclined students, but for all learners. This approach to integration that, if following a holistic approach, would be beneficial for varying types of cognition can also lead to a deeper understanding of the world due to their interactivity that derives from workplace learning.

Another aspect is the integration of disadvantaged students or students at risk. Many scholars write about these groups, especially African Americans, who are not equally included into the educational system (see Chapters 2 and 4). We have to distinguish here between integration and inclusion, which goes beyond integration. Inclusion refers to the process of merging into a community or being a fully accepted

member of a group without any particular distinction in regard to aspects, such as age, disability, gender, religion, sexual preference, or nationality. A less holistic concept of being part of a community is expressed with integration. In education it refers to specialized clusters that are part of the whole school or system, can be transparent and diffuse, but are confined through signifiers like specialized classes in a school or segregated school activities that are outside the mainstream classes. While groups that can be distinguished by gender, religion, nationality, race, or even class can be and should be included and not even be perceived as different, students at risk and students with special needs sometimes need particular attention which requires specially qualified personnel and might require additional attention in separate classes. These students need to be integrated into the system and additional funding is necessary.

The last level is the integration of vocational orientation and guidance into the schools and the school curriculum. In the Unites States this task is strongly interrelated with education and work in general. Career counselors can be found in many educational institutions and career guidance as well as career education is viewed more as a component of a school than as the responsibility of the Department of Labor. Therefore, schools, in general, and teachers become much more involved in this aspect of education than they do in Germany. The foundations for the integration of career orientation or career education as well as the professional support in form of career counselors have been installed. Now, individuals and institutions still have to consciously and critically examine if their programs and activities are targeted toward those who need it the most and if they are achieving their goals. Some of the problems in this sector seem to be that (i) there are not enough career counselors to serve the student population well; (ii) some career counselors support the tracking system and tend to track students easily based on their grade point average; and (iii) there is a lack of background knowledge about students at risk.

This book consists of 12 contributions. Jeff King (Chapter 2) starts off with critically examining the status of VET in the United States. He familiarizes us with current statistics concerning the participation rate. In addition to a number of figures that indicate the general success of integrated vocational and academic learning, Jeff also comes to the conclusion that only a small proportion of the career track students acquire a higher educational degree. Translated into the German context, that means that of all students who start off at high school with vocational classes roughly 50% achieve a vocational degree that compares to the *Facharbeiter* (skilled worker) degree. Although this is generally perceived as an achievement, because any kind of further education beyond high school ensures that workers are better qualified for their jobs, it does not necessarily ensure a high degree of occupational proficiency when entering the labor market and more specifically a qualified position in a company. Besides the value that lies in further qualification for the individual's personal development, King also indicates the financial benefits that are implicit in further training. Overall, King draws a rather pessimistic picture about the state of VET in the country and argues that the problems occurring in this segment are only a component of a bigger educational crisis. Discontinuing programs and general under-coordination and weakness of institutional structures are claimed to be responsible for the failure of well-intentioned governmental initiatives.

In Chapter 3 Chris Zirkle describes the multitiered VET system. Besides contributing to a statistical overview about participation rates, the author provides a comprehensive overview about various institutional arrangements, their target groups, programs, and outcomes. Zirkle informs about the legal foundations for funding VET and the implications this has for the programs that are offered. Additionally, seven broader program areas within VET are introduced. The author further talks about career approaches in VET, especially career clusters and career academies, Tech Prep, High Schools That Work, and Project Lead the Way. He also explains exemplary leadership components of VET, such as student organizations and advisory committees, and provides an evaluation of current achievements in the field of VET.

Chapter 4 focuses on the most prevalent and probably also most important VET institution – the community college – which emerged after the Second World War and is the most affordable solution for those students to whom higher education has thus far been unavailable. Carsten Schmidtke examines the multiple roles that community colleges have to fulfill, such as to provide academically rigorous programs, offer initial vocational education, help underprepared students, provide lifelong learning for all community members, and engage in specified industry training all while serving as a focal point of the community and being open to all students desirous of a college education. The chapter describes community colleges in terms of social roles, students, student services, programs, leadership, finances, and faculty members. It further explains how all these different parts of the college are affected by and deal with the complex college mission and how community colleges can respond to the challenges of the twenty-first century.

David Boesel, in his chapter on governance in VET (Chapter 5), explores how secondary VET is governed in the United States with comparative reference to the German model. He contrasts the decentralization of American VET with the centralization of Germany's dual system. In the United States, states and localities are responsible for the conduct of vocational education, and VET programs vary accordingly. Over the years, the federal government has tried, with some success, to set the overall direction and define the agenda for vocational education. However, progress has been slow, as state and local VET programs have endeavored to adapt federal VET initiatives to their own agendas. The closer one gets to the operational details and actual conduct of VET in schools, the further one gets from the vision and guidance of federal policy. This diffusion of federal education programs has made it difficult for the government to implement reforms. Difficult is not the same as impossible, though. The No Child Left Behind Act has demonstrated that through a combination of political will and sanctions, the federal government can implement large-scale change in local schools. Whether such an approach would be feasible or desirable for VET is open to debate.

In Chapter 6 Norton Grubb and Marvin Lazerson disclose how the Education Gospel, both in the United States and other countries, calls for increasing levels of education and orienting schools and colleges around preparation for occupations. In the United States, this has led to vocationalizing the university as well as other levels of schooling. This trend over more than a century has made the

American university the primary avenue for individual mobility and a crucial source of research for national and regional growth. However, these changes have also created several dilemmas for the professionalized university including the demise of liberal or general education, a number of critiques of professional education, utilitarian and narrow conceptions of education among students, the dangers of over-education, and serious equity effects. The result is that, even though everyone wants access to the American university, almost no one is satisfied with it.

Chapter 7 provides a brief overview of America's evolving model for career and technical (CTE) instruction, characterized by some as "College for All." Steve Klein and Kim Green open with a profile of the traditional model used to deliver vocational instruction and the outcomes associated with its use. Next, they provide a summary of the educational policy and economic pressures that contribute to CTE system redesign, and describe how the adoption of career cluster programs of study is being used to expand opportunity and preserve career and life options for youth and adults concentrating on CTE studies. The chapter closes by considering the benefits that system redesign can offer, the status of national and state implementation efforts, and whether "College for All" is the right goal.

In Chapter 8 Philip L. Smith and Antje Barabasch engage in a conversation about the US understanding of manual or vocational training versus general education. Smith, as the US representative, argues that Americans view educational institutions as reflections of "old world cultures." The emergence of the common school as a fundamental approach toward education is explained. During the process of its establishment two factions, Jacksonians and Whigs, were fighting for determining the schools' direction. Jacksonian democracy was confronted with Whig bourgeois republicanism, which is until now reflected in the ambiguous attitude Americans share toward all of their educational institutions. Americans beliefs, attitudes, and ideas toward power and success in relation to education are outlined and explained. Smith also refers extensively to John Dewey who advocated for vocational learning and learning based on experimental and contextual learning and goes on to explain why the idea of an apprenticeship never took root in the United States.

In Chapter 9 Antje Barabasch and Cass Dykeman explore career counseling and CTE goals, early developments in the field of career education and career development, important legislation, present status and practices, specific K-12 practices, and future prospects and challenges. The spectrum of interventions, approaches, institutions, and assessments of current practices has a long and rich history of contributing to the economic and social well-being of society. However, career education and CTE cannot rest on its laurels. Major obstacles that hinder the achievement of the career interventions goals are discussed. The authors provide a wealth of helpful information about associations and organizations in the field as well as about the various ways in which career guidance can be provided, e.g., the various tests that have emerged in the field and their assessment.

Robert I. Lerman and Felix Rauner commit themselves to the study of apprenticeships in the United States in Chapter 10. They examine how "registered apprenticeship" – as overseen by the US Department of Labor and state apprenticeship agencies – developed in ways entirely separate from other vocational training.

After documenting the failed effort to incorporate apprenticeship models into the preparation of youth of high school age, Lerman and Rauner examine the legal underpinnings, the occupational patterns, and the evolution of the registered apprenticeship system. Notwithstanding recent increases in the number of apprentices, they find US apprenticeship is limited in scope compared to many other countries and dominated by the craft trades. They cite new evidence highlighting the high levels of satisfaction by employers using apprenticeship training, but also highlight the barriers to a major expansion of the role of apprenticeship in the US system of training.

Pradeep Kotamraju, in Chapter 11, discusses various forms of quality management and evaluation in community colleges. He believes that there is generally a lack of information on VET quality, and the evaluation systems that measure VET. Currently, VET evaluation systems are conducted separately and apart from other forms of evaluation generally used on college campuses. This has led to definitional, technical, and policy gaps that make it difficult to connect VET evaluation to quality, the latter being expressed as the level of VET student performance. These issues are some of the reasons why the perception continues to persist that the American VET educational experience is of low value.

The authors Richard L. Lynch and Simone Kirpal examine in their chapter (Chapter 12) the preparation and professional development of teachers of CTE in the United States which closely interlinks with the tremendous number of programs available at both secondary and post-secondary level. The range of education delivery programs sets the scene for the broad variety of work contexts of CTE teachers, which this chapter more closely examines. It further describes the different routes of preparation of teachers for career and technical education and qualification requirements at the level of secondary schooling, post-secondary education, and college level preservice teacher education. Alternative routes into teaching are also discussed as well as current challenges for CTE teachers: high school quality, teacher preparation, and the conditions of teaching in contemporary American society.

James R. Stone, in Chapter 13, offers a reflection on the chapters in this book. He claims that the present non-system of VET, or CTE, in the United States is the culmination of more than 100 years of ad hoc attempts to develop a national system of workforce development. While occasionally flirting with the notion of emulating European VET, the American education system is too decentralized to accommodate such an approach. Instead, America has a disconnected collection of education systems that rarely coordinate and often compete. With no national system of qualifications to guide decision making, the various systems work in relative isolation from each other. This disorganization has resulted in the college degree as a default occupational qualification and suggesting anything less as a trajectory for students is usually met with skepticism by parents, accusations of tracking by critics, and little support from the business community. With an increased emphasis on CTE from the federal government, there is great opportunity to address these issues and create a more coherent, transparent system that will better serve young people and employers.

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Chapter 2
Dilemmas of Design: Education Versus Qualification in the US Vocational System

Jeff King[†]

The prospects for an American qualification system are latent in the potential of its educational political economy to imagine a role for qualification both beyond and as part of "academic" education. If we cannot understand a country's education system apart from grasping its vocational education system component, the converse is surely the case in the United States: we cannot understand the US vocational system except in terms of its larger education system generally. The US vocational education system has long suffered—and has not yet recovered—from a traditional status as stigmatized and marginalized, with the result that the vocational route in upper secondary education is still not well designed to provide a reliable path to qualification, in a European system sense: a marketable adult credential.[1]

Understanding the elements of this situation is central to understanding the US education and skills formation crisis generally: fundamentally a crisis of *system design*. Yet, there are encouraging signs of creative efforts amidst this crisis—work by many who believe in the potential of vocational education—*for qualification*—and who await national leadership. Key elements of this creative insurgency begin to show a path to design recovery. In this chapter I explore some essential cultural, political, and economic factors at work in the current system, in (1) the empirical

[†]Dr. King passed away in March 2011.

[1] American usage of the word "qualification" is broader and generally more casual than the more specific meaning of this word for Europeans, especially in countries with highly integrated and respected national vocational systems. Thus experts in such systems may understand the first sentence in our first paragraph more than many in the United States not familiar with the use of "qualification" in Europe, which is also the sense of its use in this chapter. For a full understanding of that sense, US readers are referred to chapters in this volume by Europeans on their national apprenticeship systems, or to excellent books such as Stephen Hamilton's *Apprenticeship for Adulthood*. For our purposes here, perhaps a serviceable definition might be as follows: a multiple (two to four)-year education and skills credential, instructed to national standards and earning a national skills certification, either school-based or school- plus work-based, at sub-baccalaureate or sub-college degree levels, recognized nationally in adult labor markets (though now, increasingly also for entry to university (BA to MA) studies in some education systems in Europe).

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context of vocational education; (2) recent and current efforts at reform; (3) the larger political and cultural context of institutional structures; (4) the outlook of crisis and potential system redesign.

2.1 The Empirical Context: The Place of Vocational Education in the United States—"Wanted: Qualification"

In historical terms, the United States has had a venerable tradition of vocational education for a long time. An informal tradition of apprenticeship existed in the late eighteenth and throughout the nineteenth century, even into the early twentieth century. A formal system of "registered" (approved) apprenticeship exists today, regulated—and encouraged—by the US Labor Department. Formal US federal government involvement in vocational education can be traced back to the Smith-Hughes Act of 1917. Likewise, the US vocational education system seems quite healthy in terms of *scale.* The most recent (2004) *National Assessment of Vocation Education* (NAVE) report by the US Department of Education (Silverberg, Warner, Fong, & Goodwin, 2004) notes that "nearly half of all high school (upper secondary) and about one third of college (tertiary) students are involved in vocational programs as a major part of their studies"—adding that a further 40 million adults, as many as one in four, may be involved in post upper secondary short-term training courses.

If we look at participation and course *enrolment* (in terms of "credits" or "Carnegie units"—normally year-long courses in a subject area) in data from 2005 (Snyder, Tan, & Hoffman, 2006), US upper secondary education students take more "credits" in vocational areas of study than in mathematics or science; or history and social studies; or arts; or foreign languages; or computer-related courses—in fact more than any other subject except English. Yes, "academic" students[2] (in the "college prep" pre-university track) take slightly more total credits than "vocational" track "concentrators" (26.5 vs. 24.0). But the *most* upper secondary education credits (27.93) are earned by students who complete *both* pathways:—12 or more credits in academic "college prep" courses, *plus* 3 or more credits in a vocational labor market (quasi-*Beruf*) field. Combined-path students get the *most* secondary education, quantitatively.[3]

[2] The word "academic" in Europe traditionally refers—as does the word "student"—to *university* level education, at masters to doctoral level. Here the word "academic" is used in its American sense, referring broadly to core subject areas of *general* education, and the word "student" to secondary as well as tertiary level learners.

[3] Again, clarification of terms is needed. American readers will easily understand the "extra" achievement of this "combined path," while Europeans will find it puzzling. In US official reports and descriptions, "academic" vs. "vocational" "*track*s" within secondary schools are a *linguistic artifact* as well as a *statistical artifact* of how secondary student course loads and enrolments in education are listed in data. But, even if in a special school attended part time, secondary-level "vocational" courses in the United States are "*electives,*" i.e., optional extra courses within comprehensive high schools—not programs for separate educational qualifications with state or

In terms of *academic* achievement, the NAVE report shows a pattern of improvement over the years. At the upper secondary level both vocational concentrators and academic track students have increased their core academic course taking, vocational students faster. In what is now called the "New Basics" curriculum—four years of English and three years each of mathematics, physical sciences, and social studies—the proportion of nonvocational, i.e., mostly academic track, students completing this curriculum increased 14.7% from 1990 to 2000, but the number of vocational track students completing it increased more than twice as fast, 32.6%, in that decade. By 2000, 51.1% of vocational students, and 60.3% of academic students, completed this curriculum. So, by this measure, vocational students are, so to speak, doing 5/6ths as well as academic track students, reducing their gap on academic general subjects studies vis-a-vis academic track students.

The most consistent benefit of vocational studies revealed by NAVE are *labor market advantages—gains in earnings*—where upper secondary vocational students, seven years after high school graduation, earn almost 2% more for each vocational course completed, for the 45% of high school graduates who took at least three vocational courses, including the 25% who concentrate on one vocational area. Post-secondary vocational students fare even better: for post-secondary vocational students who earn a community college Associate degree (AA), males increase their incomes 30%; females 47%.

At the same time, there are serious problems with vocational education in the United States. The NAVE 2004 report reveals how central *academic* anxieties are from the US *secondary education* perspective: "The vocational courses most high school students take improve their later earnings but have no effect on other outcomes that have become central to the mission of secondary education—such as improving academic achievement or college transitions."

In the academically more rigorous "college prep" curriculum—4 credits of English; 3 or more credits in math at Algebra I or higher level; 2 or more credits in biology, chemistry, or physics; 2 or more in social studies with 1 or more in US or World History; 2 or more in a foreign language—vocational students increased 19.1%—from 10.1 to 29.2% from 1990 to 2000, according to the NAVE analysis. This is double the 10.3% increase of academic students, from 35.9 to 46.2%. But academic students still take more "college prep" credits. And here the gap is greater: vocational students are doing, in effect, only 2/3rds as well. As upper secondary education to prepare for tertiary education becomes more academically

national status but different personal choice "mixes" within local high school diploma programs. Neither of these "tracks" are truly distinctive in a European sense: the "college-prep" "track" is typically not as "academic" as *Abiturienten* qualifying for university masters or doctoral studies in Europe. US high school "vocational" courses are often collected without an occupational focus; and even "vocational concentrators" bear no relation to skilled workers qualified through EU vocational training in apprenticeships, with nationally certified technical qualifications, nationally tested adult technician skills, and knowledge commanding national collective bargaining labor union scale wage levels, etc.

rigorous, vocational students, as might be expected, lag farther behind. In transitioning to college, vocational path students also do not do as well, in many senses not well at all. At least half of them seek a formal credential and another one-third want to raise their work skills—thus in effect four-fifths want something approaching what in Germany would be called "qualification." But according to the NAVE evaluation, the higher education "survival" rate of vocational path students is not good: "Most postsecondary vocational students (68.3%) *complete a year or less* of courses within a five-year period, compared to 46.4% of academic students." "*Less than half* of vocational participants complete *a credential of any kind*." And among post-secondary vocational students who enroll in two-year community or technical colleges with the intention of earning an Associate degree, "Only *38.9%* complete *a credential of any kind* (a quarter of which are certificates, less than their original goal)," although within five years of community college enrolment, another 8% do transfer into four-year colleges. Thus, the Education Department NAVE report finds that US VET is not associated with upper secondary "college prep" academic rigor or strong completion rates of tertiary education.

More disturbing and mysterious from the international standpoint of *qualification*, research for NAVE also found that *only 12%* of upper secondary vocational "concentrators" ever complete a post-secondary or tertiary degree with a (*Beruf*) "major" identical to or related to that taken in upper secondary education (Agodini, Deke, Novak, & Uhl, 2004). The bifurcated US model—splitting high school and college—reduces qualification continuity generally, but especially in secondary-to-tertiary transition success for a qualification in the same or related vocational technical-occupational (*Beruf*) domains. The technical skills training component of vocational education is its *raison d'etre*; yet it lacks the national business-education social partnership needed to set and harmonize standards, and coordinate it. The NAVE report admits that it is "difficult to examine" the "progress or contribution of vocational education to its most direct outcome—occupational technical competency—because few good measures of those skills exist"—*in the United States* (Silverberg et al., 2004). And although the US does have (registered) apprenticeship, it is widely accepted that this is a path for a very small minority, perhaps 5% or fewer of males, under half that for females. But in any case this path is *not* linked to upper secondary education. Federal statistics do track work-based learning provided in apprenticeship (and colleges or companies) based on national household surveys of adults over age 16—but National Center for Education Statistics reports on "Labor Force Participation in Formal Work-Related Education" include *only the population aged 24 to 54*, not younger (Hudson, Bhandari, Peter, & Bills, 2005). Upper secondary students are not mentioned. Thus, in the United States, *Beruf* structures to link upper secondary to tertiary, and both to work-based learning, are weak or missing.

Yet, we must say that in the United States there is, in effect, strong "demand" for vocational education—evident in several indicators. First, as we noted above, demand is evident in actions by students themselves, in the strong course enrolments for vocational education, more than in any other subject except English. Second, students "at risk" of dropping out of high school have been found, in a

surprising study, to be motivated by boredom as much as or more than academic difficulty. But, in addition to "more interesting" teachers and lessons, these students say that the strongest factor that would motivate staying in school and completing secondary education would be *more relevance of learning content to the world outside school, particularly to work and adult roles*—"opportunities for real-world learning, internships, (volunteer) service learning, etc., to make the classroom more relevant." Students who dropped out of upper secondary school accepted responsibility for their mistake and wished they had graduated; but "32% left to get a job; 26% became a parent; and 22% had to help their family." They had real economic motivation for school success, but, *alone, they could not combine school and work effectively*. Adult mentoring, as well as well-structured school-plus-work-based learning options, are just not available enough. Students need and strongly want more relevant learning—especially relevant to life beyond school classrooms (Bridgeland, DiIulio, & Morison, 2006). In effect, many US students want vocational education with many of the classic elements found in European dual systems. In addition, statistical analysis shows that strong—occupationally (*Beruf*) specific—vocational education in upper secondary years increases earnings by some 12% one year after, and by 8% seven years after high school graduation—*without incurring "academic" opportunity costs in school attendance, achievement levels, or continuation into tertiary study*. Bishop and Mane's (2004) analysis of these earnings benefits notes that—as European systems show—"offering students a robust career-tech (vocational education) option increases upper-secondary enrollment and completion rates without lowering test scores (on academics, especially math) at age 15 (PISA) or college attendance rates after the age of 20" (Bishop & Mane, 2004). By objective measures, vocational education has value.

Third, the labor market clearly rewards vocational education carried through to a post-secondary qualification. In a study on economic returns to sub-baccalaureate education by the Community College Research Center at Columbia University, it was found that students clearly gain economically from higher education, and not just with bachelor or higher degrees but also with sub-baccalaureate and two-year degrees and certificates. And "among sub-baccalaureate students, those in occupational (i.e., *vocational*) programs do economically at least as well as, and in some cases significantly better than, students in academic programs" in the classic disciplines of the arts and sciences. This is especially so if students complete a community or technical college degree, two-thirds of which are in vocational-occupational areas. "Attaining an associate degree is highly beneficial for both women and men, and this benefit is higher for occupational students than it is for academic students." Men were found to gain a 16% earnings benefit; women completing occupational-vocational associate degrees more than double that: a 39% earnings gain; and among "academically challenged" women, a 44% income gain over women without postsecondary education. "Economically disadvantaged students gain economic benefit" from "sub-baccalaureate occupational" or vocational education— women if they complete two-year associate degrees, men if they complete degrees or just the course work without the final credential. Even with no degree or credential, men in vocational programs earn 8% more than men with no

postsecondary education, and 4% more than men in academic programs (Bailey, Kienzl, & Marcotte, 2004).

Fourth, there has been a recent rediscovery in the United States of the kind of "key qualifications" and "methodological skills" that have long been regarded as central in German and European dual-system education and qualification generally. What are now sometimes called "twenty-first century critical skills" (or similar names) in US education have strongly reemphasized critical thinking and problem-solving skills, applied skills and capacities to use knowledge, across problem areas and across disciplines; social and team work skills, and related kinds of skills sometimes referred to in Europe as "shaping competence"—the "meta-skills" to *manage* how knowledge is applied effectively.[4] In recent American initiatives, twenty-first century skills (Partnership for 21st Century Skills, 2006) include not only the core academic subjects—literacy and linguistic skills, math, science, arts, history and geography, government and economics, foreign languages—but also ICT skills; "life skills" including social responsibility, ethics, personal integrity, leadership, and teamwork; "twenty-first century content" including financial and economic literacy, global awareness, health awareness, and the key skills of critical thinking, problem solving, creativity and innovation, collaboration and contextual learning, plus "media literacy." What is clear from this and other recent US initiatives and consortia is that "academics" alone are no longer seen to be enough: now the "basics" must also include key qualifications and methodological skills of *application*. In effect, this is a demand from the policy community for many of the rich textured "multi-skilling" qualification elements found in European model dual systems of vocational education.

[4] In the United States, these meta-level skills, long a fatally decontextualized mishmash "wish-list" of skills, have begun to gather policy energy as a somewhat more organized and refined set of goals called "21st century" skills. In Europe, especially Germany, they had already gained intensive currency in the 1980s with pressures to meet new skill demands driven by computerization in precision machining and mechanical engineering. Later in the 1990s, they migrated to new areas, including "high tech," for example in the German qualification ordinances inaugurated in 1997 for "IT"—Information Technology (Bundesministerium für Wirtschaft, 1997). There we find the federal requirement, in "Brief essentials of the Training Framework," that these qualifications must be organized and implemented so that those qualified in them are trained to be autonomous technical-professionals in this field:

> "*capable of qualified professional work,*" with "the goal, *above all*, of *independent planning, implementation and monitoring"* of one′s work process and products, "*as well as*" capability to "support" or "advance" in appropriate ways "*the entire context of work processes and procedures of the business* and its mission" [my translation; emphasis added].

At a yet more developed level in the German qualification tradition, more advanced concepts of "shaping competence" have been pioneered by experts such as Felix Rauner, Gerald Heidegger, and others, focused on these forms of autonomous "shaping competence" of work, *in situ*—in the context of sophisticated "work process knowledge" (Rauner et al., 1997).

2.2 Recent and Current Efforts at Reform: The Many Roles of Vocational Education

The primitive universe of US vocational education that became a consensus system in the half century from the 1930s through the 1970s—secondary school "wood shop," "metal shop," and "auto shop" for boys; "home economics" courses on consumer tips, cooking, and home cleaning for girls looking to be wives and mothers after high school—held together as the United States assimilated millions of immigrant families into its industrial mass production system in the years of recovery from the Depression, mass-scale war production, and post-WWII consumer culture "boom." By the 1970s and 1980s, this system was in trouble. Competence in "industrial arts" basic technical drawing and construction or mechanical skills no longer sufficed in an economy being colonized by computers and robotics in every sector as fast as managers could do that. Globalization in trade only exacerbated the crisis in vocational education skills. As Stephen Hamilton pointed out, US firms had to hire college and university educated engineers for jobs that in Europe could be and were being filled by dual-system-trained technicians with strong technical skills and abilities (Hamilton, 1990). As "industrial arts" vocational education gravitated toward a reengineered form as "technology education" in the 1980s, US federal education policy still treated "vocational education" as an option for students less academically inclined and/or intending to enter the labor market directly after "high school," not "college": tertiary education. And as "college" (however low its real academic level) became perceived as the path to "good" jobs, any secondary path not aiming for tertiary degrees became more and more stigmatized as a second-class path, a "parking lot" (as some secondary teachers admit to calling it): a path "for those who cannot succeed in college prep," the path "for dummies," "for losers." The very word "vocational" is so stigmatized that, in 2006, the reauthorized federal Perkins Act changed the name to "career and technical education." This *status crisis*—rarely described as such—is central to how federal policy evolved in the past quarter century. It has led vocational policy to a contradiction. On the one hand, federal policy tries to improve vocational education, explicitly rejecting its second-class status. On the other hand, policy also implicitly accepts that status. US culture and policy constantly places vocational education under pressure for academic improvement (Silverberg et al., 2004), because it constantly prefers that vocational education—to be acceptable—lead toward "college for all" (Rosenbaum, 2001). Vocational education, as such, has never been *good enough*. It has been pressed to become something more than "vocational," because *what it traditionally has been* in the United States *has become historically incompatible with what it now must be*.

The US federal government has enacted some 150 programs and formal legislative acts on education since 1787. Only a small number of them bear on vocational education in any sense—from the two Morrill Acts of 1862 and 1890 supporting "agricultural and mechanical colleges" to the reauthorization of the Carl D. Perkins Act in 2006 (Perkins IV), directly funding federal aid to vocational education (U.S. Public Law 109-270). In between, we had the Smith Hughes Act of 1917 to send funds to states for vocational education—basically the *same model we*

have now with Perkins—and a series of "vocational rehabilitation" acts and programs, in 1918, 1920, 1943, to retrain military servicemen. There have also been acts to assist and train nurses, the "mentally retarded," the deaf, in 1957; and special programs for "the unemployed" and "refugees" in 1962; and those "in welfare programs" in 1964; and, before Perkins a formal Vocational Education Act in 1963. Provision for a National Advisory Council on Vocational Education does not arrive until 1968. We get more "health manpower training" in 1971; a "Comprehensive Employment and Training Act" in 1973 aimed at "the unemployed"; the "Education for All Handicapped Children" Act in 1975 for "special education"; and "Youth Employment and Demonstration Projects Act" in 1977. Thus the modern Perkins vocational legislation beginning in 1984 is built on a long tradition of *funding pushed out to the 50 states*—with special provisions for the "handicapped and disadvantaged, single parents and homemakers, and the incarcerated" (Snyder, Tan, & Hoffman, 2007). Many sections of Perkins vocational legislation, then and now, concern Native Americans on Indian reservations, native Alaskans, native Pacific islanders, inmates in federal prisons, migrant agricultural workers, and other groups. The federal NAVE report itself (Silverberg et al., 2004) notes that, from the 1960s through to the 1990s, federal policy emphasized "set-aside" and "categorical" funding focused on "disadvantaged" and "special populations" while also "prohibiting the use of most federal funds for maintenance (i.e., *operation*) of programs."

This history means that US educational and vocational policy at national and federal level is driven by a heritage strongly influenced by the goal of restoring the injured and disabled, the disadvantaged and marginalized, to mainstream life—a *culture of "rehabilitation*"—within a passive local and 50-state *market model* of education, aided periodically with federal support for "agricultural and mechanical"—technical—colleges. It has simply been assumed, in the US tradition, that only disadvantaged groups really *need* federal education policy attention and action, because local and state primary and secondary schools, plus "opportunities" to attend tertiary education, by individual "choice" (and expense), assures education and career path success as if by an "invisible hand" of the market in education. Thus the US approach has *not* been based on a tradition of "active labor market" policies integrated with proactive federal support of institutions of social partnership to design and operate first-rate modern workforce technical education, carried on at national scale, to contemporary national and global industry skills standards. Since the 1980s and the impact of computers and advanced robotics technology, globalized trade, the internet, and the cyber-marketplace, the *need* for *something like* the latter tradition has been noticed in the United States. And so, for the last quarter century, US "vocational education" policy has scrambled to modernize itself.

In more recent iterations of federal Perkins reauthorizations, since 1990 certainly, we see a reduction of categorical programs and group set-asides; and new emphases on qualitative and structural improvements, such as requirements that federal funds be used (i) for more "integration" of vocational/technical and academic curricula and learning, to improve academic achievement as well as technical skills; (ii) for instruction that includes "all aspects of the industry," not just narrow and

isolated (Tayloristic) skills; (iii) for "Tech Prep" linkage of curricular content and sequencing of upper secondary with postsecondary and tertiary vocational or career technical education, e.g., by "2+2" course articulation of learning content in the last two years of secondary school with a community or technical college two-year associate degree. Here we see the US system trying to evolve toward more modern concepts, and, almost unconsciously, slowly edging toward some principles of *Beruf*. Promotion of the "Tech Prep" concept was built into the 1990 reauthorization of federal Perkins legislation for vocational education, in large measure due to influence from policy thinkers like Dale Parnell, former president of the American Association of Community Colleges, who wrote *The Neglected Majority* (Parnell, 1985), and, with Dan Hull, *Tech Prep Associate Degree* (Parnell & Hull, 1991). Both promoted the concept of *the well-educated technician, able to solve problems and think*. Gene Bottoms was having a related impact, with his research and book on High Schools that Work, and an expanding consortium of US states following his ideas on *deep integration of core subject academics with vocational/career technical studies and project-based learning* in high school (Bottoms, Presson, & Johnson, 1992). Steve Hamilton's book, *Apprenticeship for Adulthood*, explicitly linked US policy needs to European and chiefly German vocational education based on *apprenticeship linked to schools*. All these forms of policy research and advocacy had an ultimately catalytic effect in 1994 federal passage of the national School to Work (STW) Opportunities Act, which aimed to jump-start education linked to occupations and careers in the United States. Thus by the mid-1990s many federal efforts were underway to close the gaps and modernize the US vocational system. In that same period, the National Skills Standards Board (NSSB) was formed in 1994, to establish skills standards profiles, *by sector*, developed by industry experts, to inform and guide education and qualifications systems. Key US job training legislation for the Labor Department, the 1998 Workforce Investment Act (WIA) (U.S. Public Law 105-220) included provisions for "One Stop" counseling and placement centers, an idea partly inspired by European and especially German "BIZ" centers. By the second half of the 1990s, the US Education Department was promoting Beruf-like concepts of "career majors" and "career clusters" for vocational education. It created a special "Building Linkages" program to connect upper secondary and postsecondary/tertiary technical and vocational qualification fields to both state education policies and employer groups setting skills standards in industry—again, *by sector*—first in modern manufacturing and health care; then in information technology and ICT; in arts, audio-video technology and communications; and in transportation systems and logistics. By 1999, a set of 16 national career cluster profile domains had been designated (Hess, 2006). In the 1990s, *modernizing the system* was a strong goal.

That the 1990s system modernization efforts were much needed is clear from the nature of the US sub-baccalaureate labor market. As Norton Grubb (1999) indicates, this labor market in the United States does not reward education well. Those with high school (34.1%) and sub-baccalaureate accumulations of "some college" (28.3%) were three-fifths of the labor force by 1992; but by then, Grubb noted, the wage advantage of "some college" over secondary school completion,

negative in 1970, had gained only 11% (males) to 13% (females). A key problem, he found, was that in this skills market the "interaction of supply and demand" is opaque; and "regression results cannot provide any information about how education institutions or policymakers might improve preparation for this labor market." Using case studies, he located core sources of this opacity: sub-baccalaureate hiring is *local*, *informal,* and essentially *experience-based*— not education based. Employers might favor community college degrees or certificates in hiring, even for jobs not requiring that education. But of all firms studied, Grubb found that "virtually none (1 of 113 employers) provided a wage differential for additional schooling." US employers in this labor market want "basic" skills, cognitive and educational strengths; but mostly they want *job-specific* skills—just as EU dual systems want technical and occupational skills above all. US employers want "motivation" and "interpersonal skills"—just as dual systems emphasize goals of "responsibility" and "self-monitoring" of work planning and execution, as well as teamwork skills. And US employers want "aptitude and common sense" in problem-solving—qualities EU qualification systems include in "methodological" skills they seek, to meet the "nonstandard" tasks of post-Taylorist work contexts. But, as Grubb noted, US employers also want to hire high levels of contingent or "temp" workers for short-cycle jobs—"hire-and-fire" labor markets—thus reinforcing the opacity and disorganization that undermine skill development ladders in the capabilities they claim to want. Results: "economic returns to subbaccalaureate education are. . .uneven"; employers find training and education "chaotic and fragmented"; and "incentives for skill investment are weak." What is "necessary," he says, is *integration* of "higher order and academic competencies" *with* "occupational programs" and "programs combining both classroom instruction and on-the-job experience are the most effective." The United States, he emphasizes, was at most only beginning to build what was needed, in the linkages "envisioned" in School to Work and related federal reforms of the 1990s. The skills opacity of the US sub-baccalaureate labor market shows *why* they were so urgently needed.

2.3 The Political-Cultural Context: Efforts to Modernize Struggling Amidst Institutional Weakness

The problem in this development, painfully clear since 2000 but actually evident all along, is that the US pattern of ad hoc sedimentation of layers of programs, each to correct or meet another aspect of need, results in a patch-work nonsystem with weak instruments, weak focus, and weak outcomes—indeed by world-class standards pathetic results. The fault is not with vocational schools or teachers but with political leaders, who have given them a set of components too weak for the task of being a central support for qualification. This nonsystem is overloaded with ad hoc fixes, like so many freight cars on a train, each connected to what is in front or behind it by only one or two points of contact; each at risk of being disconnected and sidelined at any moment—as key segments have been after only a few years

of under-nourished experimentation. Overloaded, it is also *under-designed*—a system that needs to be coherent, but is not. The recent history and fate of many key components tells the story: one of *fragmentation*.

"Tech Prep," for example, attempts to emulate the concept of full qualification, by bridging across the US divide between upper secondary and "college" or lower tertiary curricula and credentials, "articulating" or harmonizing vocational pathways between the two levels. In this sense, Tech Prep represents a US adaptation or version of the qualification concept ideal. And US federal funding seems to have embedded it successfully: there are over 1000 Tech Prep "consortia" (always combining secondary schools and at least one college (usually two year)); consortium areas "cover most secondary school districts and community colleges," and "include about half of all public high schools." But weakness is evident as soon as we look at elements of quality and scale, as the NAVE report shows. Tech Prep is less available to disadvantaged and urban students; articulation is mostly "course-by-course" rather than programwide; coherence is weak; data tracking is difficult, largely because program format and quality vary so widely, since "few consortia or schools implement Tech Prep as a comprehensive program." The full Tech Prep program includes articulated curricula, sequenced and nonduplicative, between two years each of secondary and tertiary education; "integrated" vocational and contextual academic instruction; work-based learning; qualification in a technical field; Associate or Bachelor's degree or other formal certification; and placement in a relevant job or more advanced education. But less than 15% of Tech Prep students earn "articulated" college credit. By 2001, after a decade of federal promotion, Tech Prep had only 9.4% of all upper secondary students participating. *Of that*, only 5% (effectively 0.47% of all students) get the full Tech Prep program, because less than one in ten consortia provides it. Only 6% (effectively 0.56% of all) have linked vocational studies and work related to studies, because few states (at last report only eight states) require it (Silverberg et al., 2004). Thus, in effect, *only one half of 1%* of US secondary students get full Tech Prep.

A similar sad story can be told about many other key components—what we can call the "flanking" systems—surrounding formal federal aid to states and school districts under Perkins vocational funding. Only many are worse stories, for while there have been several proposals to eliminate Tech Prep, it has survived so far, while many of the other flanking programs have not. STW is among the most notable losses. It explicitly aimed at creating a system to build school-plus-work-based learning; with employer and industry cooperation; with Beruf-prinzip concepts of "career majors" or concentrations; apprenticeships, internships, and career academies; leading to good qualifications that are "portable credentials," assisted by "connecting activities" for BIZ-type counseling and school-employer linkage, "mentors" for advising, all within a "national framework" (U.S. Public Law 103-239). But again quality and scale problems were evident, particularly *scale in quality*. Several years after it started, a national evaluation of the STW program found that just 13% of participating students had "workplace experiences linked to their school work," while *only 3%* had the full STW program vision including "comprehensive career development activities, career-related academics, and work

experience linked to school" (Riley & Herman, 1999). An earlier evaluation in 1997 suggested that such a low rate of implementation of and participation in genuinely full form STW was "not surprising," because states were not capable of all the forms of "integration" (and social partnership organization) necessary, and, allowed to select what elements they wanted, chose elements ad hoc, "building the capacity to deliver each component separately" (Hershey, Hudis, Silverberg, & Haimison, 1997). Begun only in 1994, STW was gone by 2001.

The National Skills Standards Board (NSSB), also begun in 1994, eventually met a similar fate. This program, an initiative under the US Labor Department, had the task of building skill standards frameworks, *by industry sector* and based on industry sector skill content advisory boards. In effect, NSSB was attempting to build "social partnership"-based broad *Beruf*-profil domains, from which more specific industry-certified qualifications could be formed, using both school-based credentials, especially from community and technical colleges, and "registered" (Labor Department approved) apprenticeships in actual work. Establishing the *Fachausschüsse*-style working committees from industry itself took much time, and the process was not linked well in its initial design to schools and education generally. NSSB realized this and, after 2000, made efforts to open dialogue with the Education Department, on cooperation and integration with its STW and "career clusters" programs: and especially with Tech Prep—a natural partnership, since NSSB had industry standards groups, but not linkage to states and schools, while the Education Department and its career clusters and Tech Prep programs had direct-funded program links to states, schools, and community and technical colleges, but not industry standards groups. Unfortunately, this overture was refused, just when the United States needed this next step to build a coherent qualification system. NSSB did develop five sets of industry-based skills standards, including a set in manufacturing I arranged for the BiBB to obtain. But the difficulty of setting up social partnership institutions was not widely understood or appreciated; federal support was weak; and—just as the United Kingdom was establishing a national sector-based skills program—the US federal effort ended. NSSB was gone by 2003.

Related problems in the structure of US vocational education arise from other flanking programs which should strongly support vocational qualification success in the United States, but do not. A further example is the Workforce Investment Act (WIA). According to the National Assessment of Vocational Education, in most states WIA was not well coordinated with secondary vocational education programs supported by Perkins funding; nor with postsecondary community and technical colleges; nor with workforce development "state agencies. . .generally." Differences in data reporting and "accountability measures" are found to be a "disincentive for community colleges to participate in workforce systems" under WIA. And finally, those colleges were not well integrated into WIA's "One Stop Career Centers" (Silverberg et al., 2004). These centers are not a strong link to the labor market in any case. According to employer surveys by the US Chamber of Commerce, only about *5%* of employers use "One Stop" centers for job recruiting and hiring, even though two-thirds report "severe problems" hiring workers (Cheney, 2001). The Building Linkages program of the Education Department, to link industry skills

standards groups to state education systems and schools, launched efforts in half a dozen sectors and a dozen states for a few years, and then was abandoned. The Education Department ended its own federal development of career clusters in 2002. The association of vocational education directors in the states has tried to continue the work, now largely ignored in education policy debates. For a half decade since 2000, US administration policy has attempted to eliminate Tech Prep, and/or all Perkins vocational funding. Congress rejected both attempts. Perkins funding, and Tech Prep as an optional use, both survive, weak and marginalized. Thus flanking programs, which *could* strengthen vocational education, come along, in various separate legislative waves: but some are abandoned even if they get positive results, while others continue as program fragments, starved of robust structures, resources, and coordination.

The weakness and/or cancellation of these types of flanking programs casts a long shadow of negative effects on vocational education itself, due to the much-needed support for it that, compared to full qualification systems, they largely do *not* provide, but *could have*—had they been elements of a strong, coordinated system. For example, only about one in four US upper secondary vocational teachers reports significant ("moderate" or "great") involvement or input from employers on overall curriculum, according to the 2004 NAVE report; only one in five reports it on standard-setting, on specific content or materials, or selection of instruments, tools, equipment; only one in ten on review of quality of student work. The NAVE finds that local employers provide little input on competency standards and "play a limited role in shaping vocational programs." The percentage of vocational teachers reporting "frequent contact" with representatives of business, industry, or unions is under 32% even on having employers make a class presentation; under 24% regarding work on advisory committees; only 16% on curricula and standards; 17% regarding labor market conditions; under 9% on review of student work. Only 5% of vocational teachers report frequently sending students into a business to use technology related to class lesson content. States have the challenge but lack the staff, time, and resources "to set or upgrade standards and develop assessments" and "provide the necessary professional development to teachers," NAVE finds. Thus, states cannot really do the work of *standards and curriculum harmonization* needed for a key federal "Perkins" goal students say they very much want: "integration" of classroom academics with applied learning in concrete practices. This goal, NAVE says, is *supported rhetorically but quite weak in practice*: "Despite legislative and state encouragement, there is little evidence that integrated curricula are being widely developed or used at the local level or that there is school-based support for integration" (Silverberg et al., 2004).

In the United States, thus, we see a broad pattern. The weakness of federal structures devolves to state levels and then to local and school levels. Fifty separate states and over 14,000 school districts each interpret, select, or invent career clusters and set VET credentials in varying and nationally incommensurable packages, frustrating transparency and transferability across states. Social partnership functions at national level are underdeveloped and weak to nonexistent compared to full-qualification systems. Qualification system functions and responsibilities are

assigned—or vaguely assumed to apply—to this or that agency or initiative without providing the strong capacity formation needed to fulfill and integrate them nationally. Vocational policy is stretched out over a parade of old plus new goals and purposes it cannot fulfill, with gaps and shortcomings addressed by ever more ad hoc programs, none of them well integrated in a single coordinated national system. The problem in the United States is not lack of effort but rather *undercoordination* and *weakness* of *institutional structures*.

2.4 Outlook: Crisis and Potential System Redesign

It is not surprising, given this approach in the United States, that it yields such poor results—sufficiently evident in just four findings: (i) *less than 1%* of upper secondary students getting full Tech Prep; (ii) *only 3%* getting full STW; (iii) the proportion continuing a consistent high school-then-(two year or more)-college technical/occupational qualification in the same field at *only 12%* of vocational "concentrators," *only 1.56% of all* upper secondary students; and (iv) *over two thirds—68.3%*—of secondary vocational "concentrators" completing *at most one year or less* of postsecondary/tertiary studies (i.e., "dropping out" with no qualification). Thus, with Perkins vocational funding the largest source of federal funds to upper secondary schools, the US vocational policy agenda tries to "manage" a large ambitious system—*trying to do many of the right things*. And yet these overall systemic results are, by serious qualification system standards, hardly any results at all.

In fairness to US vocational education, however, it cannot be emphasized enough that the education crisis in the United States is *general*, and applies across the board to the entire system, including "academic" or "college prep" pathways, not just to the vocational or career-technical pathway. While many upper-class households and rich communities can afford rich secondary schools and expensive private tertiary education, the system overall is in crisis. Already by 1999, RAND researchers projected, that, by 2015, three-quarters of secondary dropouts will be African-American or Hispanic, while 9 of 10 tertiary graduates will be of white or Asian background, in the largest state, California (with other states perhaps not as bad, but trending similarly) (Vernez, Crop, & Rydell, 1999). As the NAVE evaluation noted, while vocational "concentrators" did a bit worse, still, *less than half* of "academic" path students—only 46.2%—take full "college prep" core courses; and *over two- thirds* of them—68.3%—complete at most *one year or less* of tertiary study (Silverberg et al., 2004). Among advanced countries, the policy consensus is that, today, the "minimum" education needed is some formal education, with a credential or qualification, equivalent to *two years beyond upper secondary*—in US terms, a community college two-year associate degree *or higher*. But the best experts in the United States have consistently clarified that, of US students entering upper secondary education, only one-third—34% (33–35)—will achieve either a two-year Associate's or four-year Bachelor's degree by age 26 (Adelman, 2006). Of the US population 25 or older, only just over one-third—36.2%—reach this international

consensus minimum education (Snyder et al., 2006). If so, by the international consensus standard, the US high-school-then-college education system works for only about a third of American youth. If that is the overall shape of the US education system, the disastrous RAND projection seems quite reasonable.

US VET problems are only part of a broad national system crisis, and VET is not—yet—seen as a main pathway to help solve that crisis, despite the fact that the majority of advanced countries outperforming the United States on academic achievement and graduation rates at secondary levels, and tertiary or college graduation rates, are majority vocational upper secondary national systems. The US education system is in crisis on academic achievement and completion rates not just *despite* but *due to* its bias favoring "college-for-all" *abstract* academics and scorning *applied* academics embedded in VET. The bias is so difficult to overcome because VET is feared in the United States not on technical but on academic grounds, even though the world-class academic quality system output of majority VET and strongly VET-dominant national systems is demonstrable (King, 2003).

What signs of hope are there within this dark landscape? Perhaps surprisingly, some are precisely in vocational and career technical education: though, as usual in the United States, if noticed at all at national level they are seen at most as separate, isolated success stories about "voc. ed." rather than keys to a national qualification system.

- That US vocational or career and technical education (CTE) can dramatically raise academic skills on standardized tests has been proven decisively by the "Math in CTE" project of the National Research Center for Career and Technical Education. Upper secondary academic content was "embedded" in vocational or CTE "content-in-use" practical curricula, by teachers in both domains; students were tested in randomized trials with control groups. Results in geometry, algebra, trigonometry, probability, functions, statistics, and related math domains prove that contextualized vocational learning, done this way, can equal or better standard classroom learning in academics (Stone, Alfeld, Pearson, Lewis, & Jensen, 2006).
- A curriculum model called "Project Lead the Way" (PLTW) builds integrated school-based plus "hands on" work-based vocational and preengineering programs for upper secondary education. These qualify for entry to community college technologist degree or university engineering tertiary studies. PLTW uses rigorous academic plus technical and engineering courses combined with internships in companies, "articulation" agreements with college and university curricula, and school-company "partnership teams" of teachers plus business-industry mentors, coaches, advisors, and curriculum coordinators. Originally begun in 12 high schools in upstate New York in the late 1990s, PLTW is now in 2200 schools in 49 states. Lower-secondary curricula are built around a Gateway to Technology course, and others in Design and Modeling; Electronics; Technology; Automation and Robotics; Flight and Space. Upper-secondary curricula are built on foundation courses of Introduction to Engineering Design; Principles of Engineering; Digital Electronics; leading to specialization courses

in Computer Integrated Manufacturing, Civil Engineering and Architecture, Biotech and Aerospace Engineering, both in development; and a capstone course in Engineering Design and Development. PTLW is especially successful with economically disadvantaged and less academically inclined students (Cech, 2007; Project Lead the Way, 2007).

- In California, "Connect ED," the California Center for College and Career, is pioneering an upper secondary school consortium modeled on quasi-*Berufsprinzip* concepts combining integrated curriculum pathways linking academic and technical or commercial content meeting academic entry requirements for two- and four-year colleges pegged to the California state university system; work-based learning including work-site internships and school-based enterprises; project-based and business problem-based learning; flexible scheduling; mentoring and counseling for students; school-plus-careers professional development for teachers; and academic embeddedness of core content into CTE by industry sectors. Sectors include Agriculture and Natural Resources; Arts, Media and Entertainment; Building and Environmental Design; Business and Finance; Education and Child Development; Energy and Utilities; Engineering; Fashion Design and Production; Health Sciences and Medical Technology; Hospitality and Tourism; Information Technology; Manufacturing; Marketing and Sales; Public Services; Transportation (Hoachlander, 2007).
- The College and Career Transitions Initiative (CCTI) uses nearly these same sectors in 16 "Career Cluster" sector concentrations developed by states and industry with Department of Education support. CCTI is organized and led by the League for Innovation in the Community College, an R and D policy NGO representing a consortium of two-year colleges to develop innovation in community and technical colleges. CCTI initially involved just five Clusters of sectoral career pathways at only 15 community or technical college sites in 13 states. Now the CCTI Network has 160 colleges in its partnership system (Warford, 2006). The Education Department is supporting statewide "articulation agreements" on Programs of Study—linking secondary and postsecondary applied academics career paths—in the 16 career cluster areas.
- High Schools That Work (HSTW), a program led by Gene Bottoms of the Southern Regional Education Board, aims to prepare secondary students for careers and tertiary education through curricular integration of academics and vocational learning. Begun in 1987, it is now a consortium of program partners in 1200 schools or other learning sites in 32 states. The HSTW agenda includes education-business social partnerships, higher standards for career/technical education, "job-shadowing" or *Schnupperlehre* experiences, and apprenticeships or internships where available. HSTW is not a southern regional but rather a nationally influential model, reaching into New England and Canadian border states like New York and Pennsylvania. It is among the most popular models for state education systems, because it shows states how to build these elements at school level, and because it achieves demonstrable results on academics embedded within applied VET learning (Bottoms et al., 1992).

These and many other examples are part of the effort to build what is now called "the new CTE"—a more modernized US vocational education, stressing academic rigor to college prep level to the maximum extent possible, and advanced high technology and globalized business sector knowledge standards for good jobs in well-paying career pathways. There are related efforts under way in a number of states, especially in the northeast and along the northern border and both coasts. What we see is substantial VET "development and research" work being done, in the states and by innovative NGOs, to modernize US vocational education. These innovators at *subnational* level work for a kind of vocational education "insurgency," awaiting national-level leadership to build a qualification system at scale. Whether the federal leadership will be forthcoming is an open question. The fragmentation of the US system, despite a traditional habit of local and state control of education, is driven more by federal-level confusion and neglect than militancy to minimize federal involvement by local and state education systems, who often want more rather than less detailed federal help. US vocational education waits for federal leadership to create a real national qualification system with a strong vocational path—now latent and possible but, so far, still "in development."

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Chapter 3
The Multitiered CTE/VET System in the United States—From High School to Two-Year Colleges

Chris Zirkle

This chapter provides an introduction to the vocational/career and technical education system in the United States. The present system is broad and complex, spanning many grade levels, subject areas, and educational institutions. Over the past several years, the system also has evolved from being initially focused on entry-level job preparation to now include adult retraining programs, college preparatory coursework, postsecondary options and programs, and many other options. This complexity is confounded by the broader educational system in the United States, which leaves decisions regarding vocational/career and technical education largely to each of the states. Despite these challenges, vocational/career and technical education continues to be a key component of the overall education system in the United States.

More than 90% of all high school students in the United States take at least one vocational/career and technical education course, and one in five students takes three or more courses in a single program area (Levesque et al., 2008). This statistic is significant, given that vocational/career and technical education is an "elective" form of education, one that students need not participate in to earn a high school diploma. More than one-third of college students are involved in vocational/career and technical education programs, and significant numbers of adults engage in short-term postsecondary occupational training (Levesque et al., 2008). Formal career and technical education programs have been a part of this country's educational landscape for almost 100 years. Historically viewed as "education for work," the role of career and technical education has expanded in recent years, into preparation for a global economy and workplace, which is characterized by rapid technological change, a demand for strong academic and technical skills, technological proficiency, and further education and training beyond high school. One contemporary definition for vocational/career and technical education provided by Levesque et al. (2008) stated

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> Career and technical education (CTE) spans secondary, postsecondary, and adult education levels. In high schools, CTE encompasses family and consumer sciences education, general labour market preparation, and occupational education, and may form part of a course of study leading to college, employment, or both. At the postsecondary level, career education is linked to preparation for employment in specific occupations or careers, although postsecondary credentials in career fields may also lead to further education. Adults may participate in formal education and training to acquire, maintain, and upgrade their workforce skills (p. iii).

It is commonly accepted that vocational/career and technical education in the United States is also defined as educational courses and programs offered at less than the baccalaureate level. As a result, vocational/career technical education programs at the secondary level can be found in one form or another in virtually all high schools in the United States. Many of the courses and programs are offered in comprehensive high schools, while several states have area vocational/career centers, which have a specific focus on vocational/career and technical education. Some high schools have designed career academies and "schools within a school" focused on specific career clusters. Vocational/career and technical education programs are also offered at the postsecondary level, through a variety of institutions, including public school adult education programs; public, two-year community or technical colleges; public, two-year branch campuses of four-year institutions; or through private, proprietary (for-profit) schools. Vocational/career and technical education programs are also found in the nation's corrections and rehabilitation programs, offering inmates a way to learn technical employability skills, in the hopes of reducing recidivism (the tendency to relapse into crime).

3.1 Funding and Financing Vocational/Career and Technical Education

Vocational/career and technical education 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 state support. At the postsecondary level, educational offerings are funded largely via individual student tuition and state subsidies. Vocational/Career and Technical Education has historically enjoyed 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 & 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 US dollars in federal

support for vocational/career and technical education programs in all 50 states. The law will extend this support through 2012.

3.2 Vocational/Career and Technical Education Within the US Educational System

Vocational/career and technical education is found at secondary and postsecondary levels. Figure 3.1 illustrates the structure of the United States educational system:

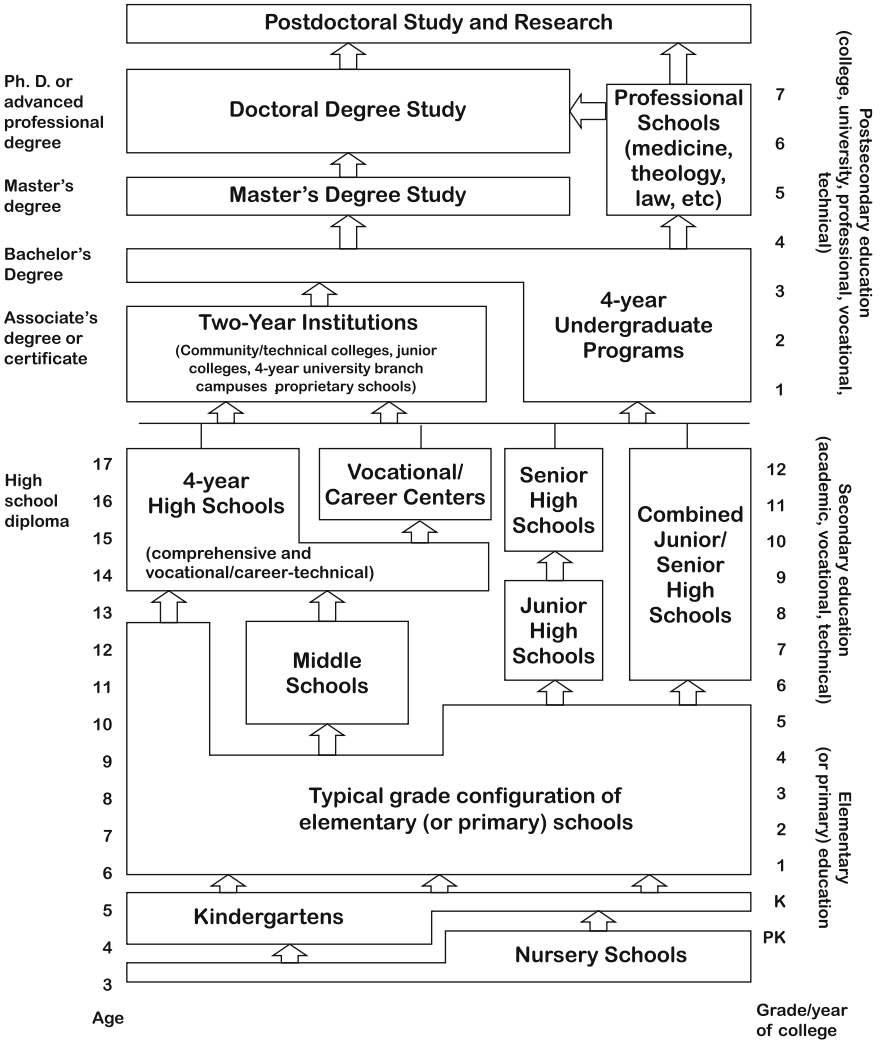

Fig. 3.1 The structure of education in the United States
Source: Adapted from U.S. Department of Education, National Center for Education Statistics, Annual Reports Program, 2007

3.2.1 Secondary Vocational/Career and Technical Education

In the United States, the secondary education system is the responsibility of the states. As a result, there are 50 similar, yet different, models for vocational/career and technical education at the secondary level.

The majority of courses and programs are found at the high school level (grades 9–12), although some "prevocational" courses can be found in earlier grades (7–8). These offerings are introductory in nature, and are designed to allow students the opportunity for career exploration and an orientation to the world of work. There may also be courses and programs targeted toward at-risk students, providing work-based knowledge and skills in collaboration with academics, in order to keep students in school and to prepare them for entry into the workplace upon graduation.

The delivery system for high school vocational/career and technical education can vary greatly from state to state, and also by subject area. There are three major settings for the delivery of vocational/career and technical education courses and programs: comprehensive high schools, vocational/career and technical high schools, and area or regional vocational schools/career centers serving multiple high schools (Scott & Sarkees-Wircenski, 2008). These three settings fall within the high school models illustrated in Fig. 3.1.

Comprehensive high schools, by virtue of their classification, offer a wide range of courses and programs, from general education to college preparatory, as well as vocational/career and technical education. There are approximately 17,000 public and 6300 private comprehensive high schools in the United States (Levesque et al., 2008). Courses and programs in vocational/career and technical education in these schools often reflect the communities in which they are found. For example, comprehensive high 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.

Vocational/career and technical education high schools and area career centers offer a wide variety of courses and programs for students. In the United States, approximately 900 high schools are classified as vocational/career and technical education high schools (Levesque et al., 2008). Area career centers are designed to serve students from a specified geographic area, from several "feeder" high schools. By serving several high schools, economies of scale can be achieved. Thus courses and programs that one high school would find cost-prohibitive to provide can be offered to a large number of students. Students in these programs typically spend one-half of the school day in their vocational/career and technical education program area, and the other half in academic classes such as math, language arts, and the natural sciences.

Vocational/career and technical education courses and programs historically have been focused on the development of skills and knowledge for entry-level employment. However, their mission in recent years has been broadened to include college preparatory offerings, "dual credit" options in which students can earn both high school and college credit simultaneously, and articulation agreements with

postsecondary institutions to provide for a seamless transition from high school to college. These articulation agreements typically address the progression of students from high school vocational/career and technical education programs to two-year colleges. Students may earn college credit while still in high school, thus resulting in a "time-shortened" associate's degree, while other approaches have not shortened the time required for an associate degree, but have allowed enrolment in advanced courses not otherwise permitted. While nationwide data regarding the number of articulation agreements between secondary and postsecondary institutions is unavailable, these programs are increasing in number. This is primarily due to the changing needs of the workplace, which require high levels of technical competence due to the rapid rate of technological change, and the needs of the global marketplace. These needs are best met through additional study past the secondary education level.

3.2.2 Postsecondary Vocational/Career and Technical Education

In terms of grade levels, in the United States, vocational/career and technical education is often defined as "pre-baccalaureate" and as such, includes courses and programs that can be offered at the associate degree level in community/technical colleges, vocational/technical institutes, and junior colleges. These two-year institutions also offer a broad range of nondegree offerings, such as continuing education programs, occupational certificate programs, and custom-designed courses. These institutions can be public, private, or proprietary (for profit).

Similar to secondary education institutions, vocational/career and technical education courses and programs at postsecondary education institutions also tend to reflect the communities in which they are located. For example, in urban areas, offerings in the health occupations are common, as are information technology, business management, and automotive technologies. Two-year colleges are also continually looking for opportunities to broaden their mission by establishing partnerships with four-year universities through articulation/transfer agreements, providing job retraining opportunities for displaced workers, and by utilizing technology to a significant extent to offer courses and programs via distance education.

Associate degree options tend to reflect the many missions of these institutions. For students interested in entering the workplace after degree completion, Associate of Science and Associate of Applied Science degrees focus primarily on technical coursework, and have minimal academic requirements. Associate of Arts degrees that may lead to articulation and transfer to a four-year institution have less technical coursework, and more in academic areas, and are designed to meet the general education requirements of those colleges and universities.

Articulation agreements from two-year colleges to universities do exist, but not in the same large numbers found between secondary and postsecondary institutions (Cohen & Brawer, 2008). Most of these agreements are found in the areas of information technology and heath occupations, which articulate well with baccalaureate programs.

Apprenticeships, which are a combination of on-the-job training and related classroom instruction in which workers learn the practical and theoretical aspects of a highly skilled occupation, are another postsecondary option for vocational/career and technical training. Apprenticeship programs are jointly sponsored by employer and labor groups, individual employers, and/or employer associations. According to the latest statistics, more than 25,000 active apprenticeship programs across the country currently serve more than 400,000 apprentices in a variety of training programs, such as carpentry, plumbing, and electrical trades (United States Department of Labor, 2009)

For purposes of job retraining and skill upgrades, short-term training can also be found in adult programs of vocational/career and technical education, many times in the same buildings as secondary programs, offered in the evening hours. These programs can be sponsored by employers, states, or the federal government, in response to changing needs of the workplace. This arrangement provides for optimal use of the facilities and equipment, as well as providing education and training for an additional student demographic.

Vocational/career and technical education courses and programs can also be found in prisons and correctional facilities, as a way to reduce recidivism. Vocational training, and other special programs designed to train participants for a job, can be found in more than 50% of state prisons and 90% of federal prisons in the United States (Wolf Harlow, 2003). Dependent on the facilities and the availability of qualified instructors, vocational training commonly occurs in subjects, such as, automobile body repair, electronic servicing, graphic arts/printing, horticulture, masonry, refrigeration servicing, and welding (Lewis, Mears, Dubin, & Travis, 2002).

3.3 Program Areas Within Vocational/Career and Technical Education

Traditionally, with some minor changes over the years, there have been six broad areas of study within vocational/career and technical education: Agricultural Education, Business Education, Family and Consumer Sciences Education, Health Occupations Education, Marketing Education and Trade and Industrial Education. A seventh area, Technology Education, has philosophical and curricular goals that are not necessarily aligned with vocational/career and technical education, but has some areas of curricular commonality for the purposes of this text, and so is included in this discussion.

3.3.1 Agricultural Education

Agricultural education prepares students for careers in agriculture and natural resources. Agricultural education was one of the original areas (along with home

economics education and trade and industrial education) to be funded under the Smith-Hughes Act of 1917, the first federal legislation written in support of vocational/career and technical education. According to the National Council for Agricultural Education (2009), over 800,000 students participate in formal agricultural education instructional programs offered in grades seven through adult throughout the 50 states and three US territories. A sampling of areas of study within agricultural education includes agricultural production, agricultural mechanics, horticulture, and landscape management. Technology impacts agriculture and programs exist in such areas as biotechnology and environmental sciences. Connections to academic areas are inherent in agricultural education, especially the natural sciences (biology, chemistry, and physics).

3.3.2 Business Education

Historically regarded as having a secretarial/office orientation, business education has perhaps been the area within vocational/career and technical education most affected by technology. In addition to programs such as administrative office technology, programs within business education now include accounting, business administration and management, and paralegal studies. Information Technology programs are also usually found within business education, and due to technological advances, many programs in this area have been developed to meet the needs of the workplace. Courses and programs in this area include interactive media, computer programing, and computer networking technology. Business and computer technology courses are the most common vocational/career and technical education offered by public high schools (Levesque et al., 2008).

Many business programs at the secondary level provide students the opportunity to continue their education at the postsecondary level, and many of the occupations within business education now require a two-year college degree for entry into the job market. Articulation agreements between high schools and two-year colleges in the area of business education are common.

3.3.3 Family and Consumer Sciences Education (Formerly Home Economics Education)

One of the original program areas funded under the Smith-Hughes Act, family and consumer sciences education has also undergone significant transformation through the years. Beginning in the early 1900s, courses originally named domestic science and household arts have evolved to reflect the changing societal needs of individuals, families, and communities. Family and consumer sciences education now has a much broader mission, as defined by their national standards. These standards were developed by the National Association of State Administrators for Family and Consumer Sciences (NASAFACS) in partnership with VTECS, a

consortium of states whose members pool resources to develop competency-based vocational/career and technical education products that are validated by business, industry, and labor. These 16 standards are focused on providing guidelines for developing programs that give students the opportunity to acquire knowledge, skills, attitudes, and behaviors for family life, work, and careers in 16 areas of study:

- Career, Community, and Family Connections
- Consumer and Family Resources
- Consumer Services
- Early Childhood, Education, and Services
- Facilities Management and Maintenance
- Family
- Family and Community Services
- Food Production and Services
- Food Science, Dietetics, and Nutrition
- Hospitality, Tourism, and Recreation
- Housing, Interiors, and Furnishings
- Human Development
- Interpersonal Relationships
- Nutrition and Wellness
- Parenting
- Textiles and Apparel

As a result of this broad mission, family and consumer sciences education contains programs that have a "family studies" orientation, and may include courses and programs in such subjects as personal development, resource management, life planning, and nutrition and wellness. These programs may also be found at the middle and junior high school level. Other family and consumer sciences education programs have more of a traditional vocational/career and technical education focus and may include courses and programs in early childhood education and care, fashion, clothing and interior design, culinary arts, and hospitality management. Many of these secondary programs have articulation agreements with postsecondary programs.

3.3.4 Health Occupations Education

The growth in the health-care sector in the United States has resulted in a corresponding growth in the number and type of health occupation-related courses and programs available to vocational/career and technical education students. Many of the health-care jobs in most demand in the workplace require less than a four-year degree. The health-care sector is now one of the largest industries in the country, and health care is the most common major field of study among students in associate degree programs (Levesque et al., 2008). Specific programs offered in health

occupations education include such areas as dental assisting, emergency medical technician, nurse assisting, and medical lab technician, and can be completed at either the high school or two-year college level. As with business education, many of these programs begin at the high school level, with the expectation students will continue on to a two-year college and complete an associate degree. Academic connections in health occupations education are prevalent, particularly in the natural sciences, and students enrolled in programs typically also enroll in classes in anatomy and physiology, biology, and chemistry.

3.3.5 Marketing Education

From early beginnings that focused on providing cooperative training in retail store work (Gordon, 2008), the curriculum of marketing education now focuses on how businesses plan, produce, price, distribute, and sell the many products and services demanded by consumers around the world (Marketing Education Association, 2009). Over 7000 high schools in the United States offer marketing education courses and programs (Scott & Sarkees-Wircenski, 2008). While some marketing education programs can be found at the middle and junior high school levels, the majority of the programs begin at the high school level and carry on to postsecondary education. Cooperative education, which allows students the opportunity to participate in job shadowing, field trips, and internships, have been a hallmark of marketing education since its inception. Some areas of study within marketing education include retail marketing and management, travel and tourism, entrepreneurship, and E-commerce.

3.3.6 Trade and Industrial Education

The other original program area designated for funding by the Smith-Hughes Act, trade and industrial education (sometimes known as vocational industrial education, technical education, or industrial and engineering education), encompasses the broadest number of occupations found in the program areas within vocational/career and technical education. This area includes such programs as welding, carpentry, automotive technology, cosmetology, graphic arts, and drafting. Historically, these programs have been specifically targeted for job preparation, since many of the occupations within trade and industrial education did not require postsecondary training. The changing workplace, along with technological innovation, has altered the mission of trade and industrial education from an initial emphasis on entry-level employment to one also focused on postsecondary preparation. In addition to specific occupational preparation, these programs often utilize a cluster approach (Section 3.4.1). From a classroom/lab perspective, trade and industrial education programs require perhaps the greatest attention to detail. The labs are more costly, and have equipment, tools, and materials that are, in general, more hazardous than the other areas of vocational/career and technical education.

3.3.7 Technology Education

Technology education is the study of technology. The curriculum focuses on problem-based learning utilizing math, science, and technology principles. These technological studies involve

- Designing, developing, and utilizing technological systems
- Open-ended, problem-based design activities
- Cognitive, manipulative, and affective learning strategies
- Applying technological knowledge and processes to real-world experiences using up-to-date resources
- Working individually as well as in a team to solve problems (International Technology Education Association, 2003).

Technology education courses and programs are generally found in comprehensive high schools. In addition, many technology education courses are offered at the middle or junior high school level, sometimes as part of a "unified arts" curriculum or as a specialized set of courses that may include family/consumer sciences education, art and/or music, offered for a grading period. Students rotate through these areas during the school year, so each student has an introductory experience in each area.

3.4 Curricular Approaches Within Vocational/Career and Technical Education

Historically vocational/career and technical education prepared students for direct entry into the workplace. As the global workplace has changed, so too have the curricular approaches used within the discipline. There still are many "traditional" types of vocational/career and technical education programs that prepare students to seek immediate employment at the close of their high school studies. However, in addition, many new curricular models have emerged that focus on several outcomes not previously associated with vocational/career and technical education, such as the integration of vocational/career and technical education and academic disciplines, articulation with postsecondary institutions, and entry into broader career fields. Several of these innovative models have been developed in response to the implementation requirements of the Carl D. Perkins Act from the federal government, which has been authorized four times since 1984. The Perkins Act is the present-day version of the original Smith-Hughes Act of 1917.

3.4.1 Career Clusters and Career Academies

As previously noted, vocational/career and technical education, particularly at the secondary level, has transitioned away from specific occupational training for

the workplace, concentrating instead on a broader-based curricular approach that includes entry through professional-level occupations within a broad industry cluster. This curricular approach provides instruction within a family of occupations rather than focusing on one in particular. For example, students in a construction cluster may receive instruction in carpentry, masonry, print reading, plumbing, and the electrical trades.

The U.S. Department of Education has identified 16 career clusters:

- Agriculture, Food, and Natural Resources
- Architecture and Construction
- Arts, Audiovisual Technology and Communications
- Business, Management and Administration
- Education and Training
- Finance
- Government and Public Administration
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety and Security
- Manufacturing
- Marketing, Sales, and Service
- Science, Technology, Engineering, and Mathematics
- Transportation, Distribution, and Logistics

These career clusters can be utilized as a way to structure career academies in high schools, as specific career clusters can be chosen to meet the needs of students in a given school. This approach also includes the academic skills needed for further education and careers, and usually has articulated programing with postsecondary institutions. Career academies were developed in the 1970s as a way to restructure large US high schools into smaller learning communities, usually organized around one of the above listed career clusters. At present, there are more than 2500 high schools structured according to the career academy model (MRDC, 2009).

3.4.2 Tech Prep

Tech Prep dates back to the early 1980s, as highlighted in the book, *The Neglected Majority* by Dale Parnell. Tech Prep has grown into a major national strategy for improving students' academic knowledge and technical skills. As defined in the Carl D. Perkins Vocational and Technical Education Act, Tech Prep is a sequenced program of study that combines at least two years of secondary and two years of postsecondary education. It is designed to help students gain academic knowledge and technical skills, and often earn college credit for their secondary coursework.

Programs are intended to lead to an associate degree or a certificate in a specific career field, and ultimately, to high-wage, high-skill employment or advanced postsecondary training.

To date, roughly 47% of the nation's high schools (or 7400 high schools) offer one or more Tech Prep programs. Nearly every community and technical college in the nation participates in a Tech Prep consortium, as do many four-year colleges and universities, private businesses, and employer and union organizations (U.S. Department of Education, 2008). Research on the effectiveness of Tech Prep has been mixed. While participation rates in Tech Prep in certain states are significantly high (Draeger, 2006; Miller & Gray, 2002: Stone & Aliaga, 2005), completion rates have not always met expectations (Miller & Gray, 2002) and the evaluation systems designed for Tech Prep programs can vary from state to state (Ruhland, 2003).

3.4.3 High Schools That Work

High Schools That Work (HSTW) is an effort-based school improvement initiative founded on the conviction that most students can master rigorous academic and vocational/career and technical studies if school leaders and teachers create an environment that motivates students to make the effort to succeed (Southern Regional Education Board, 2007). The curriculum is focused on a rigorous academic core with either a vocational/career and technical or academic concentration that provides relevant application of learned content. HSTW has a set of "key practices" that impact student achievement:

- High expectations for students
- Program of study—each student is required to complete an upgraded academic core and a technical concentration
- Academic studies that are focused, rigorous, and relevant
- High-demand fields that emphasize the higher-level mathematics, science, literacy, and problem-solving skills needed in the workplace and in further education
- Work-based learning opportunities
- Teachers working together—Provide teams of teachers from several disciplines the time and support to work together
- Students actively engaged—Engage students in academic and vocational/career/technical classrooms in rigorous and challenging proficient-level assignments using research-based instructional strategies and technology
- Guidance—Involve students and their parents in a guidance and advisement system that develops positive relationships and ensures completion of an accelerated program of study with an academic or vocational/career/technical concentration
- Extra help—Provide a structured system of extra help to assist students in completing accelerated programs of study with high-level academic and technical content

- Culture of continuous improvement—Use student assessment and program evaluation data to continuously improve school culture, organization, management, curriculum, and instruction to advance student learning (Southern Regional Education Board, 2007).

As of 2008, there were more than 1200 HSTW sites in 32 states using the framework of HSTW goals and key practices to raise student achievement (Young & Cline, 2008). Limited research has been conducted on the HSTW initiative. Recent studies have shown student participation in HSTW programs of study may lead to increased postsecondary enrolment (Bottoms & Uhn, 2008), improved reading skills (Bottoms, Han, & Murray, 2008), and improved academic performance in urban high school students (Bottoms, Han, & Presson, 2006).

3.4.4 Project Lead the Way

The United States is currently seeking to encourage more students to enter careers in the sciences, engineering, and engineering technology, in response to the need in the United States for more engineers and scientists. A recent curricular initiative, Project Lead the Way (PLTW), was developed in the mid-1990s by a high school teacher, Richard Blais, who was then chairman of the Technology Department at Shenendehowa Central School in upstate New York, working with the New York Department of Education and Hudson Valley Community College. PLTW is a high school preengineering program designed to prepare students for postsecondary engineering studies. The approach seeks to utilize project- and problem-based learning, taken in conjunction with college-preparatory level academics. Initial research on PLTW has shown it to be effective in developing preengineering competencies in high school students (Rogers, 2006). Participation in PLTW has also shown to produce students who achieve significantly higher scores in mathematics and science on standardized assessments than students in comparable vocational career-technical programs (Bottoms & Uhn, 2007). Today PLTW programs can be found in over 2200 schools in all 50 states, with more than 250,000 students who have taken at least one PLTW class (Project Lead the Way, 2008).

3.5 Leadership Components of Vocational/Career and Technical Education

3.5.1 Vocational/Career and Technical Student Organizations

Vocational/Career and technical student organizations (CTSOs) have been a part of vocational/career and technical education for several decades. The mission of these organizations is to provide opportunities to enhance students' leadership and technical skill development. Career and technical student organizations have developed

numerous activities, such as skills contests, community service activities, and leadership development initiatives, to benefit their members. These activities are usually developed to improve the members' leadership, personal characteristics, or employability skills (Zirkle & Connors, 2003). The activities of these student organizations are also designed to be cocurricular and supplement the instruction that is occurring in the classroom and laboratory. Business and industry partners are involved with the activities of career and technical student organizations, including serving as contest judges, providing resource materials, and providing advice related to the operation of the organization. This involvement is beneficial to the overall perceptions of CTE programs. In addition, the leadership and community service aspects of CTSOs assist with improving the image of CTE programs, as many career and technical student organizations are highly involved with community improvement efforts.

Any student enrolled in a vocational/career and technical education program is eligible for membership in the corresponding career and technical student organization. Most of the career and technical student organizations can be found at both the secondary and postsecondary level, although two career and technical student organizations in agriculture are designed specifically for postsecondary students. Generally, vocational/career and technical student organizations form chapters at the local level with advisors and sponsors, with support from state departments of education in the form of state advisors, with administrative and financial assistance (Gordon, 2008). Each student organization has a national office that provides policy and curriculum development assistance to the state and local units. State departments of education support career and technical student organizations through administrative and financial assistance with contests, meetings, and conferences. Many state departments of education designate state advisors for each career and technical student organization and these individuals interact with the local chapters on various activities (Zirkle & Connors, 2003). There are 10 career and technical student organizations that are recognized by the U.S. Department of Education. See Table 3.1.

3.5.2 Advisory Committees

In vocational/career and technical education, advisory committees are groups of employers and community representatives who advise educators on the design, development, operation, evaluation, and revision of CTE programs (Smith, Payne, & Thornton, 2001). Advisory committees are perhaps unique to CTE programs, and do not exist on a formal basis within any of the traditional academic disciplines or other content areas typically found in K-12 schools in the United States.

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). An advisory committee may oversee an

Table 3.1 Vocational/career and technical student organizations

Organization	Current name	Year established	Vocational/career and technical education area
BPA	Business Professionals of America	1966	Business education
DECA	Distributive Education Clubs of America	1947	Marketing education
FBLA	Future Business Leaders of America	1940	Business education
FCCLA	Family, Career, and Community Leaders of America	1945	Family and consumer sciences
FFA	National FFA Organization	1928	Agricultural education
HOSA	Health Education Students of America	1976	Health education
NYFEA	National Young Farmer Educational Association	1982	Adults in agricultural education
PAS	National Postsecondary Agricultural Student Organization	1980	Postsecondary agricultural education
Skills USA-VICA	Skills USA-VICA	1965	Trade and industrial education
TSA	Technology Student Association	1965	Technology education

entire program or school, provide input to a specific department or technical area (craft committee), or advise an entire school district or state system (Backes, 2000). Typically, advisory committees have 5–15 members, and meet at least twice during each academic year to discuss relevant issues. Members are usually solicited by the school to serve as committee members, or are recommended by community leaders. The input and opinions provided by advisory committee members, due to their standing in the business community, is generally highly sought and respected by educational institutions.

Advisory committees can be an excellent resource for the CTE instructors with respect to class and laboratory management. Advice can be obtained from advisory committee members on such topics as new equipment, materials, and processes in the program area. Instructors can use this information to point out curricular shortcomings, lobby for new equipment, address safety concerns, or to just publicize the program in the community.

3.6 Overall Effectiveness

The United States system of vocational/career and technical education serves many students at several different age and grade levels. The effectiveness of the system has been scrutinized for many years. As part of the 1998 Carl D. Perkins Vocational and Technical Education Act, the United States Congress mandated the National Assessment of Vocational Education (NAVE), an evaluation of the implementation and outcomes of vocational education in the United States (United States Department of Education, 2004). As a result of NAVE, several major reports and supplemental studies were commissioned. In its final report to Congress, NAVE described three major findings relative to vocational/career and technical education:

- Vocational/career and technical education has important short- and medium-run earning benefits for most students at both the secondary and postsecondary levels, and these benefits extend to those who are economically disadvantaged.
- Over the last decade of academic reforms, secondary students who participate in vocational/career and technical programs have increased their academic course enrolment and achievement, making them better prepared for both college and careers than were their peers in the past. In fact, students who take both a strong academic curriculum and a vocational/career and technical program of study—still only 13% of high school graduates—may have better outcomes than those who pursue only one of the two programmes.
- While positive change is certainly happening at the high school level, secondary vocational/career and technical education itself is not likely to be a widely effective strategy for improving academic achievement or college attendance without substantial modifications to policy, curriculum, and teacher training. The current legislative approach of encouraging “integration” as a way to move secondary vocational/career and technical education toward supporting academics has been slow to produce significant reforms (p. xviii).

The NAVE report also addressed issues related to improving vocational/career and technical education teacher quality, strengthening the transition for vocational/career and technical education students into postsecondary education, and examining the relationships among enrolment in vocational/career and technical education, academic achievement, and dropout prevention.

3.7 Conclusion

As this chapter has illustrated, the US system of vocational/career and technical education is broad and diverse, and has grown to serve the multiple needs of students and the workplace. This diversity creates challenges, particularly at the high school level, as participation in vocational/career and technical education is an elective choice that faces increasing pressure from emphasis on academic improvement (United States Department of Education, 2004). Despite these pressures, enrolment in vocational/career and technical education courses in programs continues to be significant, perhaps due in part to new curricular approaches that provide options for students in addition to the historical focus on preparation for entry-level employment.

At the postsecondary level, vocational/career and technical education also continues to expand, and can be found in many different types of educational settings and institutions. Courses and programs for these students span many subject areas, and tend to reflect the labor force needs of their local community.

For many students in the United States, the system of vocational/career and technical education is a flexible educational option. Courses and programs continue to offer a direct connection to the labor market for students seeking immediate employment from a secondary education, while the system seeks to develop additional pathways for postsecondary and continuing education opportunities. The entire system has more than 90 years of federal government financial support, and that will likely continue as the United States seeks to retain its standing in the global marketplace.

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Organizational and Internet Resources

Professional Organizations

American Association of Family and Consumer Sciences (AAFCS)
http://www.aafcs.org
Association for Career and Technical Education
http://acteonline.org/
International Technology Education Association
http://www.iteawww.org/
Marketing Education Association
http://www.nationalmea.org/
National Council for Agricultural Education
http://www.teamaged.org/aged.htm

Vocational/Career and Technical Student Organizations

Business Professionals of America
http://www.bpa.org/Distributive Education Clubs of America
http://www.deca.org/
Family, Career and Community Leaders of America, Inc.
http://www.fhahero.org/
FFA
http://www.ffa.org/
Future Business Leaders of America – Phi Beta Lambda
http://www.fbla-pbl.org/
Health Occupations Students of America
http://www.hosa.org/
National Young Farmer Educational Association
http://www.nyfea.org/
National Postsecondary Agricultural Student Organization
http://www.nationalpas.org/
SkillsUSA-VICA
http://skillsusa.org/
Technology Student Association
http://www.tsaweb.org/

Chapter 4
The American Community College

Carsten Schmidtke

4.1 Introduction

From a German standpoint, the American community college may appear as a somewhat peculiar, idiosyncratic institution. Students study for only two years to earn an associate degree and for even shorter time periods if they are interested in an occupational certificate. With the exception of certain occupational programs, almost anyone with a high school diploma or a General Education Development (GED) credential can be admitted to a public community college. Community colleges tend to be popular among students who have not yet decided on a major program of study, who can attend college only part time, who have had poor grades in high school, or who are looking for an occupational qualification rather than an academic one (Chen, 2008). The level of instruction is often below that of a German Gymnasium, and many students who attend would not consider or be considered for university study were they in Germany. How can this be considered true higher education? Would these students not be better served in vocational and other training programs? Possibly so, but during the technology boom of the 1990s, community colleges were able to prepare a large number of students quickly for the workforce while the German system struggled to do the same. Furthermore, community colleges remain an important access point to higher education and must be understood in the context of egalitarian social policies that produced the unified high school diploma for everyone instead of the three-tiered system in existence in Germany.

This chapter helps readers understand the community college through its historical roots and the services it can provide effectively and successfully for today's rapidly changing educational and economic demands. An examination of social roles, students, student services, programs, leadership, finances, and faculty members will explain why the community college developed, how it is different from

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four-year institutions, and why it is an important institution whose purpose is to support economic development in particular as well as advance American society in general.

4.2 History and Background

American community colleges go back to the late nineteenth century. The reason for their existence and their enduring popularity according to Ratcliff (1994) is twofold. First, communities wanted them. Larger universities had turned more and more toward research whereas communities needed colleges that were responsive to local needs and helped train workers who could advance the industrialization of the local economy. In addition, it was a point of pride to be able to advertise one's town as having a college. Second, progressivist ideas of social equality through education had begun to take hold. This equality was to be achieved by promoting public rather than private education, making vocational education equal to academic education (to the point of suggesting that all students be given basic vocational training), and requiring teachers to have postsecondary training (teacher training colleges were called *normal schools*). These seemingly conflicting missions of supporting both industry and social change derive from the American thinking that educational institutions are best suited to respond to societal needs and should be charged with being the driving force behind preparing citizens and workers for change (Scott & Sarkees-Wircenski, 2004).

Cohen and Brawer (2008) defined the community college as "any institution regionally accredited to award the associate in arts or the associate in science as its highest degree" (p. 5). This definition is important in that it distinguishes community colleges from other institutions of higher learning by their focus on the associate degree awarded in four semesters after approximately 60 credit hours. Beginning with Joliet Junior College in Illinois in 1901, the number of junior and community colleges rose rapidly from inception. Table 4.1 shows their growth over the past 100 years.

Many two-year colleges were originally known as *junior colleges* as a result of the tradition to refer to the first two years of university study as the *lower* or *junior*

Table 4.1 Number of junior and community colleges including branch campuses

Year	Number of colleges
1901	1
1920	200
1940	580
1960	600
1980	1220
2000	1600

Source: American Association of Community Colleges (2009)

division. Junior colleges at first tended to focus almost exclusively on academics instead of vocational training as had been hoped for (Ratcliff, 1994).

The community college as a specific type of two-year college emerged after World War II as an institution that was always public, offered a variety of programs, and was to be part of the community if not the center of many communities (hence *community college*) (Bogart, 1994). Colleges changed and increased in number because of shifts in demographics and attitudes toward postsecondary education. First, the postwar years saw a change in the diversity of students. Military veterans on the G.I. Bill, minority students as a result of the developing civil rights movement, the movement of colleges into urban areas, and the baby boomer generation swelled the ranks of college students (Gleazer, 1994b; Witt, Wattenbarger, Gollattscheck, & Suppiger, 1980). Second, the idea of community education and open access was revived. Adult and community education acted as a vehicle to improve the quality of life for everyone in the community, and the attractiveness of open access led to additional increases in enrolment (Cohen & Brawer, 2008; Gleazer, 1994a; Ratcliff, 1994).

Community colleges made postsecondary education accessible to students to whom higher education had thus far been unavailable: those who could not afford tuition; those who had to work and could not attend college full time; those who had not had proper preparation for college from their high schools; those who needed job training; and those who were incarcerated, physically disabled, or otherwise prevented from going to class. As a result, the social purpose of community colleges is intertwined with their academic one, and several questions have been asked over and over again: What exactly is the function and role of these institutions? Is it predominantly social or academic? How well have community colleges achieved their mission and purpose? Will they assume more or less importance in the future? Are they well or ill suited to respond to changing workplaces and economic globalization? How will they have to change to prevail? Should they even prevail, or should academically inclined students attend four-year universities, vocationally inclined students attend career and technology schools, and community members attend programs offered by their municipalities?

This last question concerns the community college's raison d'être vis-à-vis other types of schools. Germany, after all, emphasized the dual system with occupational training on the job and in vocational schools (*Berufsschule*), while community education (languages, health, culture, environment, etc.,) chiefly took place at the local *Volkshochschule*. In the United States, however, progressivist egalitarian ideals required that all students be afforded the opportunity to explore their capabilities and not be constrained by their public school certificate in what they could accomplish in life.

4.3 Social Role

The social roles of community colleges often take precedence over other functions based on the American assumption, as discussed in the previous section, that schools are best able to move society as a whole forward. These social roles of community

colleges are affirmed by the American Association of Community Colleges (2009), whose mission statement for community colleges emphasizes the service to society and community and the equal and fair treatment of all students. Social roles are moving to the forefront again at the beginning of the twenty-first century. Community colleges were created when the rapid industrialization of the United States required a new approach to vocational and community education, and they are being called upon again as change agents at a time when globalization changes the knowledge, skills, and attitudes needed to remain economically competitive.

Still, the question has been asked whether it is socially responsible and defensible to train workers for the nation's businesses at the taxpayer's expense. Should big corporations not fund such programs or administer them themselves? The answer is usually that not only industry but also the public benefits. One of vocational education's major purposes (among others) is to contribute to economic growth, which in turn benefits all of society. Having a degree or certificate leads to higher salaries and economic stability in the future, meaning that program completers will be more likely to become taxpayers and less likely to have to rely on public assistance. Accordingly, Cohen and Brawer (2008) argued that the strength of community colleges lies in their ability to offer people what they need to become productive members of society at large. Despite any obstacles, community colleges do offer opportunities for those who otherwise may not have had access to job training or college study at all and as a result improve life for everyone in the community. Although colleges with open admission policies cannot expect the same results as selective four-year programs elsewhere, community colleges still contribute to the overall well-being of community, state, and nation.

Much of the criticism directed at community colleges has been around for decades and has been tied to their social role. A common charge has been that instead of opening pathways to advanced degrees for highly qualified underrepresented groups, community colleges offer nothing but false hope, i.e., instead of promoting equal opportunity, they have been co-opted by the power elites to maintain the status quo. The argument has been that many nontraditional students will be swayed by the emphasis on job skills and employability, be satisfied with the associate degree, and forego further education for the immediate gratification of paid employment. They will not consider the bachelor's, which alone provides access to better-paying jobs, meaning that they will be unable to reach their full potential and realize their dreams (Pascarella & Terenzini, 1991). Another criticism has been directed at the occupational and career programs offered at community colleges. The separation of vocational education from common education as a result of the Smith-Hughes Act of 1917 had the effect that vocational education turned community colleges essentially into an extension of business and industry and prevented students from achieving full personal development (Scott & Sarkees-Wircenski, 2004).

A third criticism has been academic. The question has been raised if community colleges can really make up for the lack of basic reading, English, writing, and math skills that their students have while simultaneously preparing them for the rigor of four-year colleges. Can students who read below an eighth-grade level truly be

successful academically and economically? Are students being set up for failure? As far back as fifty years ago, Clark (1960) accused community colleges to be gatekeepers for larger universities, and his contention, supported by Astin (1977), was that the support for the community college coming from the ranks of the professoriate was at best disingenuous. By supporting these colleges, educators could claim a commitment to open access and equal opportunity while knowing full well that community colleges would divert the less-prepared students from their own classrooms. Pascarella and Terenzini (1991) acknowledged this ongoing dispute by stating that giving students full access to "participation" was not equal to full access to "opportunity" (p. 641). They believed that increasing developmental course offerings and student support services would help close the gap and allow community colleges to offer a more rigorous curriculum that prepared students for the transfer to four-year colleges.

Recognizing the argument on both sides, Cohen and Brawer (2008) nonetheless concluded that despite any drawbacks community colleges may have, for many students the only alternative to them would be no college at all. This writer's personal experience of teaching at a two-year college for fourteen years corroborates the argument that community colleges do indeed have an important role to play and that their situation is not quite as dire or as conspiratorial as it may sound. The following discussion includes a response to the criticisms above. As students are at the heart of the debate, they are discussed next.

4.4 Students

The total student enrolment in community colleges was 11.7 million in 2009, of whom 6.7 million took courses for credit and 5 million took noncredit courses (American Association of Community Colleges, 2009). Table 4.2 shows enrolment growth for the past forty years.

According to Simmons (1994), the student population at a community college mirrors the ethnic, cultural, gender, age, and socioeconomic diversity of the district more so than a university does. The steady increase in enrolment over the decades can be attributed to various factors such as low tuition, easy accessibility, the availability of special programs, location in urban centers, the rising number

Table 4.2 Total for-credit enrolment at two-year colleges

Year	Enrolment in millions
1965	1.0
1970	2.2
1984	4.3
1999	5.3
2009	6.7

Sources: Kasper (2002, pp. 15–16) and American Association of Community Colleges (2009)

of older students, the increased availability of financial aid for low-income students, the attendance of previously underrepresented groups (women, minorities, disabled students), and the recruitment of underprepared students who in previous decades would never have considered going to college. Others may go because the college is nearby, and they want to remain close to friends and family. Finally, many students attend part-time because they already have families and jobs and need a college that allows them to complete a program of study at their own pace and understands the needs of working adults. Community colleges are also the first step for many international or immigrant students who lack sufficient English skills or the money to begin at a four-year institution (Cohen & Brawer, 2008).

Community colleges have been and continue to be very attractive to ethnic minorities who have not been served well by other institutions, and indeed, 52% of Native American, 43% of African American, and 52% of Latino/freshmen begin their college careers at a community college (American Association of Community Colleges, 2009) (Table 4.3).

In academic ability, community college students tend to lag behind those students at other institutions because students of higher ability often go directly to four-year universities whereas the lower-ability students take advantage of the open-door policies at the community college. Many students are attracted by the community colleges' emphasis on vocational education and hope that training will lead to higher pay and better job security. Although they know that they are academically underprepared and need either developmental coursework or an atmosphere that is more focused on teaching than research, students often resist the academic aspect of their learning as irrelevant and reject everything that is not directly related to earning workplace credentials, an attitude that Grubb and Cox (2005) called "credentialist" and "utilitarian" (p. 96).

A major criticism of community colleges has been the comparatively high dropout rate. How well do students from community colleges perform when compared to their peers at four-year institutions? Of those students starting at a community college in 2003–2004, 55.4% had completed their degrees or were still enrolled as compared to 82.7% of students at four-year universities (Provasnik & Planty, 2008), and of those students who began studying at a community college in 1995–1996, only 34.7% of those who had later transferred to a four-year university had earned their bachelor's degree within six years (National Center for Education Statistics, 2009). In general, students transferring from a community college to a four-year school experience significant adjustment and noncompletion problems.

Table 4.3 Percentage of white vs. minority students at two-year colleges

Year	White	Minority
1976	80	20
1996	69	31
2009	64	36

Source: American Association of Community Colleges (2009)

Because of the level of preparedness when students first started college, they lag behind their peers even after four years. In addition, any transfer from one institution to another brings a certain amount of attrition with it regardless of how well programs are articulated, which made Astin (1977) question the wisdom of recruiting college-ready students to community colleges first. Those students who do adjust, however, tend to do well in the long run. According to Cohen and Brawer (2008), the students who benefit most are students from low-income families who attended a community college strictly for financial reasons but are intellectually capable of catching up with and matching their peers without much effort.

Of course, as Cohen and Brawer (2008) mentioned, a college with open access that enrolls underprepared students who often have work and family obligations, are single parents, come from low-income backgrounds, are the first in their families to attend college, suffer from multiple health problems, have transportation issues, and attend only part-time or intermittently as their situation allows cannot be compared to a selective residential college in matters of student retention. In addition, the open-access-open-return policies of many schools provide little incentive for students to not drop out when life interferes and return later. Another issue is that program completion should not be the only measure of success. Many students enroll only to learn additional skills, not earn a degree, and once they have acquired those skills, they have fulfilled their goal, which may be a new job or a promotion, and return to work. To determine if community colleges are successful in their efforts, a new definition may be needed that no longer makes the associate or bachelor's degree the ultimate measure of success.

Colleges have tried to counteract dropout rates with a variety of programs and initiatives. Academic tutoring and life skills counseling are frequently available, as is on-campus childcare. Some colleges provide on-campus jobs for their students; others make available short-term emergency loans if money is a problem. On the academic side, many colleges have tried to identify at-risk students early. The most common formalized approach is what has been called an *Early Alert* system, where faculty notify counselors or student advisors by way of a standard form if students do not attend class or perform poorly, and those advisors then contact the students and offer support.

4.5 Student Services

Student services are the result of the American assumption that a college's function is not only to educate students but also to guide them in their personal and social development for the benefit of society at large, reemphasizing the social role of the community college. Further, since colleges always depend at least in part on tuition income, they have an incentive to offer orientation sessions, counseling, tutoring, activities, and other services to keep students enrolled until they finish their programs. According to Matson (1994), the list of services differs from college to college, but it can generally be said that as student populations became more

diverse and their needs changed, the number of services increased. Student services listed by Cohen and Brawer (2008) include recruitment, admission, and orientation; advising and assessment; tutoring and developmental and supplemental instruction; student activities; financial aid; health services; personal guidance, mental health, and life skills counseling; career and transfer counseling and employment placement; child care; and special programs and services for underrepresented groups. This extensive list shows what is expected of community colleges and also hints at the characteristics and needs of the student population.

Recruitment means visits to area high schools and participation in recruitment fairs. Such visits inform students about how to get into college, what to expect from college, and why the particular college would be their best choice. For some students, so-called bridge programs are offered the summer before their first semester. These programs seek to help develop skills that will make the transition from high school to college easier. Sometimes such programs are designed for special populations and are available to students throughout their college careers. Many colleges also offer orientation or college-readiness courses, either at the beginning of the semester or weekly for the duration of the semester, where students are taught about study skills, administrative rules and procedures, advising, campus services, library research, health and well-being, and a host of other topics (Cohen & Brawer, 2008).

Counseling covers a broad array of services. One is the transition from the college to the workplace, and as a result, students can take advantage of career assessment and planning, employment counseling, training for interviews, resume writing, and other offers. Incoming students receive academic counseling that includes help with study skills, tutoring, and advice on transferring to other colleges. Academic advising tries to find the right program for students and then helps them select appropriate courses and make sure that all requirements are met. Transfer counseling provides information on the modalities of transferring to a four-year college. Psychological counseling includes everything from help with addiction, parenting, marital problems, mental health issues, eating disorders, and others (Cohen & Brawer, 2008).

Increased diversity also means that students have increasingly diverse needs, which require specially tailored programmes. Many campuses have an office for international students with employees trained in handling academic, personal, and legal issues that these students face such as language barriers, homesickness, and immigration matters. This office also handles all matters concerning student visas. Campuses often have counselors for specific groups such as veterans, minority students, or gay and lesbian students. Another area is services for students with disabilities. As a result of the Americans with Disabilities Act of 1990, such offices handle all accommodations students may need (equipment, extra time, alternative exams, note takers, or interpreters) and communicate these needs to faculty members. However, Simmons (1994) argued that services alone are not sufficient. To be truly responsive to students, teaching, advisement, curriculum, and the entire campus culture will eventually have to change, but special programs can help take steps in the right direction.

4.6 Programs

The first type of program that harks back to the very beginnings of the two-year college is vocational education, also known as technical, occupational, or career education. These are the types of programs in which German students would most likely train through an apprenticeship under the dual system, but in the United States, full-time schooling is usually required to obtain that initial occupational qualification. The first vocational schools date back to the beginning of the industrial revolution in the early 1800s. After the decline of the apprenticeship in the late 1700s and the switch to on-the-job training in factories in only one or two repetitive tasks, workers were often at the mercy of employers with few, if any, protections from layoffs or dangerous working conditions. Schools were designed to address this situation and provide a combination of academic and vocational training to workers to make them more mobile and better able to adjust to change. Other schools followed to introduce workers to the emerging technology of the day. Junior colleges were the postsecondary descendants of such schools (Gordon, 2003).

The goal of vocational programs is for students to earn terminal degrees that will give them access to employment, not transfer, upon graduation. Vocational education programs are often designed with the help of advisory committees comprised of business and industry representatives who have input into what exactly the curriculum will consist of and communicate changing needs to program administrators and faculty. Since these programs are considered to be terminal, they frequently do not articulate well with other postsecondary programs and may have requirements that differ from more academically oriented majors. Many programs conclude with a certificate instead of an associate degree. To help students find work upon graduation, there is a strong pregraduation emphasis on job-placement assistance and on helping the students establish contacts with potential employers (Cohen & Brawer, 2008).

Vocational education has been supported and funded by a number of legislative initiatives. The most influential law is likely the Carl D. Perkins Vocational and Technical Education Act, first passed in 1984 and reauthorized for the fourth time in 2006. Perkins legislation aims to strengthen sub-baccalaureate education through greater accountability for student attainment, expanded cooperation among different institutions, tighter integration of academic and technical learning to improve workplace skills, and intensified collaboration between colleges and industry, which all mean support for initiatives already common at community colleges. Another piece of legislation, the Workforce Investment Act of 1998, provides funds for colleges to consolidate student and workforce services in one office for easier access to information and support (Scott & Sarkees-Wircenski, 2004).

A second type of program is developmental education, also known as remedial education. All American college aspirants must take standardized aptitude tests, most commonly the Scholastic Aptitude Tests (SATs) or the American College Testing (ACT) program. From the mid-1960s to the late 1970s, there was a steep decline in such test scores for basic skills like reading, English, math, and science. A correlation was found between family income and test scores, and as more and

more students from low-income families applied to community colleges, more and more students with scores below the minimum required for admission appeared on college campuses (Spann & McCrimmon, 1994).

This situation posed a conundrum for community colleges as their mission was to provide higher education access to previously underserved populations; at the same time, it made no sense to keep admitting students who did not have the requisite skills to be successful in college. Dropout rates among these students were extremely high, and instructors struggled with students unable to comprehend basic information or complete simple assignments. Traditional approaches such as tutoring helped marginal students but not those with significant deficiencies because faculty were not trained to help them. The answer to the problem was developmental education to help these students catch up, and the need was indeed stunning. In 2000, 42% of public community college students took at least one developmental course, 20% in reading, 23% in writing, and 35% in math (National Center for Education Statistics, 2009).

The exact nature of developmental programs varies. Some colleges offer separate courses in academic departments taught by regular college instructors; some create a separate department for developmental education; others operate centers, often with names such as *College Success Center*, where specialized faculty teach students in a more informal atmosphere and also work with them one-on-one (Spann & McCrimmon, 1994). Whether or not students may take regular academic courses while enrolled in developmental coursework depends on the state, the college, or the program.

According to Spann and McCrimmon (1994), students who need developmental courses have not only gaps in knowledge and skills but also a lack of understanding of the expectations of college in terms of work, commitment, and time management. Developmental courses therefore teach students how to become better and more efficient readers; how to master English grammar and write sentences, paragraphs, and essays; how to handle math from simple computations to basic algebra; and how to develop better study, time management, or stress reduction skills (Cohen & Brawer, 2008). To be truly developmental, courses must not only emphasize cognitive skills alone but also help students with the social and emotional aspects of going to college (Richardson, 1994). These courses are usually added on to a program of study; they do not count toward program requirements and may not be transferred for credit.

Complicating the mission of developmental education is student attitudes. Especially students in vocational programs often see little connection between developmental education and their future careers. In addition to their dislike for subjects they had already struggled with in high school, developmental coursework to them is not an opportunity to open up a world of learning but instead an onerous requirement on the way to better employment that needs to be discharged with the least amount of effort possible. To overcome this student resistance, Grubb and Cox (2005) suggested that developmental education always be integrated with other college programs, that the curriculum be articulated with college-level courses, that courses be properly sequenced, that instructors be given professional development, and that the administration genuinely support developmental education, both in word and deed.

Community education includes literacy training or English language courses, contract work for industry like technical training, employment skills training like resume writing, and enrichment activities like French cooking. Mezack (1994) affirmed that this function is what makes for a true *community* college. Courses may be offered for credit or no credit and last from one hour total to an entire semester or even longer depending on the content. The courses are usually paid for by participant fees; no financial aid or other public support is available, and most participants are interested only in the skills that the course provides, not the degree (Cohen & Brawer, 2008).

Community colleges may also lend their expertise and facilities to community organizations and agencies. In smaller communities, colleges and their leaders can function as change leaders in the community or as the one force that has the clout and the resources to bring divergent interests together. Another outside client is employers for whom community colleges provide professional development and training. The reason community colleges perform this training instead of the companies themselves is that the college is often cheaper, does not interfere with business operations as on-the-job training might, and gives students credentials beyond limited occupational training.

According to Grubb, Badway, Bell, Bragg, and Russman (1997), colleges seek the role of the "entrepreneurial college" (p. 1) because they can serve the community, establish connections with employers, remain competitive with private training providers, and receive infusions of cash or equipment paid for by industry partners. In addition, workforce training helps to position colleges strategically in the political struggle for funding. On the other hand, too much focus on industry training can lead to charges of being too closely aligned with business, and if the entrepreneurial units of the college enjoy greater financial liquidity, rancor in the faculty and staff ranks could develop. The upside, however, is that the entrepreneurial focus can remind the academic units that the community college is not just a temple of learnedness while the academic focus can remind the entrepreneurial units that there is a purpose beyond making money and training people for employment.

The collegiate function means providing transfer courses for students wishing to eventually graduate from a four-year university and making sure that all students receive the same quality and rigor of education they would at universities. Transfer courses are those that are taken at a community college but will be accepted by other universities as equivalent to their own courses. To ensure transferability, community colleges have traditionally signed articulation agreements with universities, specifying which courses would be accepted by the university. However, inconsistent adherence to such agreements and occasional heavy-handedness by universities moved the issue into the political arena. As community colleges enroll proportionately more minority students than universities, the number of minority students unable to transfer to universities is also high, leading to concerns about affirmative action and widening the gap between students of color and others (Wellman, 2002). Many states have stepped in to set up statewide transfer matrixes that specify and mandate for all public colleges and universities which courses can be transferred between which institutions. These systems try to ensure that the same courses have

the same title and course number at all public institutions across the state and that the associate degree will be accepted by universities as equivalent to the first two years of study (Bender, 1994).

Other transfer agreements may be program specific. For example, some community colleges may cooperate with universities on a culinary arts program where students spend the first two years at the community college learning about cooking skills and the second two years at the university with a focus on hotel and restaurant management. A program in information technology may be coupled with one in computer science. In cases like this, anyone completing the first two years can automatically be guaranteed admission into the second two years barring any academic problems.

Additional transfer setups may exist between colleges and high schools or career and technology centers. High school students in grades 11 and 12 may in many states take courses at the local community college and earn high school credit for those courses as well. Such agreements are known by names like *dual* or *concurrent* enrolment. Especially technical colleges have agreements under which students who enroll at area career and technology centers earn dual credit for the courses taken there. The impetus is that those students may be enticed to enroll in college after finishing their career education if they do not have to repeat content already learned (Cohen & Brawer, 1987, 2008). Prager (1994) strongly supported such extended agreements. She especially promoted ideas like Tech Prep, a 2+2 program designed to integrate grades 11–14. The idea of the program is that high schools, career and technology centers, and technical community colleges engage in joint curriculum development to assure students' smooth articulation between secondary and post-secondary education in occupational and technical programs. Further, Prager called for similar agreements with the military to find ways to translate military training into college credit and with proprietary schools, private career schools that offer mostly certificates.

However, challenges remain. For one, community colleges must ensure compatibility with courses at a university so that students who transfer are not disadvantaged; at the same time, all community college students, including those not academically ready for such work, will be enrolled in these courses. Community college instructors, therefore, are always stuck between maintaining rigor and helping their underprepared students (Cohen & Brawer, 1987, 2008). However, because of accessibility issues, Eaton (1994) was unequivocal that such challenges must be overcome for the benefit of students.

Finally, a recent development has been the community college baccalaureate. Especially in technical and occupational fields not commonly available at universities or in underserved areas, some community colleges have been given permission to offer bachelor's degrees to their students. A second motivation for such degrees has been the rate of students who never complete their transfer to a four-year university or struggle to adjust to the new environment; the hope is that students who want and need baccalaureate degrees will be more likely to persist if they can stay at the same institution. This argument once again ties in with the social role of the community college in providing access to education and personal growth, and it is

expressed in the statement of philosophy of the Community College Baccalaureate Association (2009): "The baccalaureate degree is an important entry requirement for the better jobs and a better lifestyle. Therefore, every person should have an opportunity to pursue the baccalaureate degree at a place that is convenient, accessible, and affordable" (para 3). The community college baccalaureate tends to be a highly applied degree with an emphasis on workplace skills rather than theory.

4.7 Organization and Leadership

Community colleges more so than other institutions of higher education tend to have top-down organizational structures with strong leaders, limited faculty governance, and little if any student involvement. As a result of faculty teaching loads, the short tenure of students in their programs, and the need to react quickly to changing economic and political realities, decisions are sometimes made with minimal input from stakeholders.

The most common organizational formats are one college forming its own district, districts with multiple colleges, colleges that are branches of larger universities and thus part of a state university system, and statewide college systems. The majority of colleges have their own districts. A board of trustees or regents provides regulatory oversight. Boards usually have a membership made up of business or civic leaders from the college's district. These boards hire and fire the college president, make sure that the college is managed in compliance with all applicable laws and regulations, oversee facilities management and construction, set staff and faculty salaries, confirm new faculty contracts, and approve or terminate programs (Cohen & Brawer, 2008).

The president of a community college has multiple functions and sometimes has to try to be everything to everybody. Above all, the president is the one who sets the tone for the institutional culture, and his or her role in faculty and staff morale is often underestimated. Presidents help develop institutional missions and goals, make administrative decisions, chair campus committees, meet with the board, raise money, lobby the state legislature, coordinate programs with other colleges, work with community leaders, and provide leadership for all on-campus functions (Cohen & Brawer, 2008; Richardson, Blocker, & Bender, 1994). As a result of the structure of the community college, many presidents have traditionally been iron-fisted leaders who made important decisions on their own and micromanaged all campus affairs. However, the increasing diversity of the constituents community colleges are expected to serve and the complexity of college functions have led to calls for presidents to delegate more decision making and become facilitators who help create a unified purpose for all stakeholders by drawing on the expertise of faculty and staff members to move the college forward (Bryant, 1994; Myran, 1995; Richardson et al., 1994).

Deans or vice presidents oversee the day-to-day administration of the college in areas such as business and finance, academics and instructional services, student

affairs, administrative services, continuing education, or technology. Large colleges are likely to have assistant and associate deans or vice presidents as an additional level of administration as well as directors in charge of specific, limited areas of college management (Richardson et al., 1994). Division or department chairs report to the respective dean or vice president. Depending on each college, academic programs may be divided into divisions of program clusters or related fields or departments of specific academic disciplines. The exact configuration depends on the size of the institution and the number of faculty and students in each program. Technical colleges, for example, often have a general education department or division that comprises everything from physics to history to psychology to speech and writing.

Departments are responsible for setting course schedules, assigning instructors to classes, hiring adjunct instructors, revising program curricula and plans of study, and providing services to all classroom instructors. The department chair manages the departmental budget, evaluates faculty and staff, implements curriculum changes, evaluates student learning throughout the department, lobbies on behalf of the department with the administration, and participates in recruiting new students to the departmental programs. Department chairs are usually permanent appointments and are relieved of any instructional duties; to become chair, someone might rise from the faculty ranks, or a person from the outside may be hired. Faculty are below the department chair, but in large, diversified departments, the position of program coordinator may also exist (Cohen & Brawer, 2008; Richardson et al., 1994).

Most states have asserted some level of state control over community colleges. In some states, special boards or commissions are appointed to oversee community colleges, but in others, they are members of the same higher education agencies that larger universities belong to. The purpose of this state level involvement is to establish consistent policy and programs across colleges and to be able to deal with funding issues in a more efficient manner. The downside is that community colleges are required to compete with research universities for state funding. Furthermore, once the college is more beholden to the state in general and state legislators in particular, it becomes harder to respond to changes at the local level. On the upside, the state is better able to fund programs for special groups of students and to offer insight into whether some programs remain viable (Cohen & Brawer, 2008).

All community colleges are accredited. Accreditation is a review of institutional programs and policies to ascertain that these meet accepted academic standards; it is also required to be able to receive and disburse federal student aid. Accreditation is a peer-review process; institutions join one of several regional accreditation agencies and are then periodically visited by accreditation teams comprised of administrators from other member colleges who check for compliance with standards and federal laws. Many occupational programs (e.g., nursing) must also be licensed or accredited by state boards or professional entities.

4.8 Finances

According to Cohen and Brawer (2008) and Lombardi (1973), community colleges usually have six sources of revenue: tuition and fees paid by students, federal monies, state appropriations, local funds, income from sales and services provided, and other sources often referred to as *soft money* because of their limited and uncertain availability.

State money is generally negotiated each year with members of the state legislature or the state board depending on the funding mechanism in each state. Garms (1977) distinguished five models of state funding: (1) planned economy with centralized control, where the legislature appropriates a certain amount of money annually; (2) planned economy with some decentralization, where the legislature appropriates most of the money, but local sources or additional funding based on need are considered; (3) percentage matching, where the state pays a percentage of the college budget while the rest comes from other sources; (4) flat grant, where colleges receive a fixed amount per full-time enrolled student; and (5) foundation plan, where state and local sources share costs to boost those districts with limited community support. To this list Cohen and Brawer (2008) added one more model, (6) cost-based funding, where state money is provided based on the functions, objectives, and needs for certain programs. A technology-extensive program, for example, may receive extra funds under this system if it helps remedy a labor shortage in the state.

Tuition and fees are a persistent point of contention for every college student and administrator. Students want to be able to afford college, and administrators want to keep their colleges affordable. State legislators, on the other hand, want colleges to collect more tuition money so that state appropriations may be reduced. As a result, the cost of attending a two-year college has seen some steep increases over the years (Table 4.4).

However, as a result of the mission of the community colleges, rates are always below those of major universities to maintain the colleges as points of easy access to higher education. Tuition is closely related to federal aid. Without aid, many students would not be able to afford a college education. Of all 2007–2008 full-time community college students, 65.7% received some sort of financial aid; 55.7% received an average of $3700 in grants, and 22.5% received an average of $4900 in loans (Wei, Berkner, He, & Lew, 2009).

Table 4.4 Increase in annual cost of attending a two-year college

Year	Annual cost	Percentage increase
1976/77	$283	
1986/87	$660	133
1996/97	$1267	107
2006/07	$2017	62

Source: National Center for Education Statistics (2009)

Local sources of funding are most frequently tied to the property tax. Generally, a percentage of the tax property owners in the district pay is set aside for the local community college. This money may be used for any expense. If more funds are needed, colleges may ask for a special purpose tax, which can fund only the one program it is intended for, or a capital outlay tax, which may fund buildings and equipment. Those last two taxes, however, are often subject to approval by the voters in the district.

To bring in extra revenue, colleges often lease facilities to outside businesses or agencies for event hosting. Another source of funding has been to provide paid services for hire to industry clients, usually in areas such as technology training or organizational development. Finally, support may come from industry partners (in the form of money or equipment), donations and gifts, one-time government grants, and income from investments (Cohen & Brawer, 2008; Lombardi, 1973).

Attracting a wider variety of students has led to some funding issues over the years as a result of the law of unintended consequences: Lower tuition rates attract more students, which boosts enrolment, but many of the new students will be low-income and in turn require more financial aid that the college may have to provide; special accommodations must be made for disabled students; and many students who are ill-prepared or not fully committed need ongoing counseling and academic support to be successful in their studies. As a result, more students mean not only more revenue but also more cost, and depending on the programs offered and the location of the college, extra costs can be substantial. In addition, high enrolment numbers are needed to receive as much state money as possible under some funding models, so the reaction has at times been to apply subtle pressure to faculty to relax academic standards to keep everybody enrolled. Other common remedies to funding shortfalls are hiring freezes, replacing departing full-time faculty with adjunct instructors, offering only those courses required for graduation, allowing more students to enroll per course, and postponing equipment purchases and building renovations (Cohen & Brawer, 2008). The recurring nature of such funding problems has compelled Breneman and Nelson (1981) to suggest that community college funding could be more equitably based on a college's ability and willingness to focus on employment and its impact on the local job market, echoing the statement made earlier that degree completion should not be the only measure of community college success.

4.9 Faculty

Community college faculty are said to struggle with defining their identity: They are technically members of the professoriate, yet they are not in many ways, and they feel stuck in an ambiguous environment that matches neither high school nor university yet contains aspects of both. Besides students referring to their instructors as *teachers* rather than *professors*, there are some significant differences between community college instructors and university professors. For one, most instructors

have few to no responsibilities in research and publication; they were hired to teach. Those who do write and publish have reported attitudes among colleagues and administrators ranging from admiration to bewilderment to hostility. At any rate, publishing efforts are rarely if ever rewarded, and the topic of publications is most often related to teaching rather than to discipline-specific issues (McGrath & Spear, 1994).

Teaching loads are also higher than at four-year universities. Whereas a common teaching load at a university may be two courses in the fall and three in the spring, community college instructors routinely teach five or more courses per semester. Department administrators determine course assignments and teaching schedules; instructors can easily teach five sections of the same introductory course semester after semester. Textbook choice tends to be by committee to ensure consistency across sections, and instructors are often expected to spend 35 or even 40 hours a week on campus to be available to their students. Instructors are defined by their teaching, not by discipline; conversations among colleagues are more likely to involve issues of classroom management and teaching methods rather than research controversies in a certain field. The repetitive teaching assignments in conjunction with the lack of student preparedness are said to lead to early burnout and to a decrease in the quality of instruction (Cohen & Brawer, 2008; McGrath & Spear, 1994).

Although there is some variation among states and colleges, few faculty members have doctorates in their disciplines. Most hold a master's degree, and in the case of some technical programs, even a bachelor's or associate degree might suffice if instructors with higher degrees are difficult to find (Fig. 4.1).

Colleges generally offer professional development in areas such as instructional design and methods or classroom management, either by holding workshops on campus or by letting faculty members attend conferences. McGrath and Spear (1994) considered such professional development, in conjunction with giving instructors the opportunity to return to school to earn their doctorates, as a major

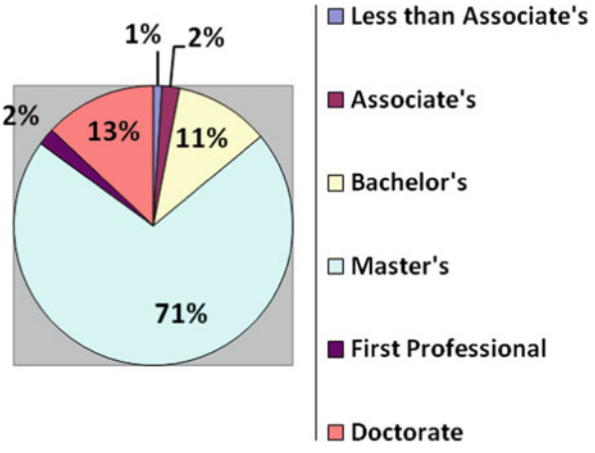

Fig. 4.1 Credentialing of two-year college faculty *Source*: National Center for Education Statistics (2009)

means of preventing burnout in the first place. Tenure often does not exist. A more common system is to have an instructor on probation for one or more years, and after completing this probationary period, the instructor essentially has continuous lifetime employment (Cohen & Brawer, 2008).

Despite the often difficult work environment, Cohen and Brawer (2008) claimed that faculty members tended to be satisfied with their jobs. They know that once their teaching day ends, they can go home to spend time with friends and family and do not have to worry about committee meetings, research articles due in two weeks, or lab experiments in progress. Salaries at community colleges vary considerably, but in the absence of tenure, longevity is usually rewarded, so salaries can be quite generous and can exceed those of an assistant or even associate professor at the nearby four-year university (Illinois Board of Higher Education, 2000). If anything, faculty complain about the lack of preparedness of their students, requirements for on-campus face time, the monotony of course assignments, the grading load, the lack of input on campus issues, and the number of students in their classes.

4.10 Toward the Future

The future of community colleges can best be framed in the context of globalization, especially the development of a global economy through modern technology. In 1996 already, the American Council on International and Intercultural Education (ACIIE) sponsored a conference that linked continued economic development with a more globalized education (ACIIE, 1996). Ruiz (2002) took this argument one step further and asserted that the changes in the composition of and requirements for the workforce of the future make it imperative that community colleges become the force that unites a community view with a global view and teaches students and businesses that the two views are inextricably linked.

To effect all needed changes, strategic planning has to be instituted at the departmental and the institutional levels (Deegan, 1994). First of all, more emphasis must be placed on including an increasingly diverse faculty and staff into the planning process (Acebo, 1994). Next, the challenge is to match student desires with community needs, and if systems thinking and shared governance are implemented, the college will be well positioned to react to change (Myran & Howdyshell, 1994).

Clowes and Levin (1994) suggested that community colleges once again put career and technology education at the center of their efforts. Their reasoning was twofold: Career education will always be needed and can provide steady enrolment and funding, and too much focus on community education or industrial training will lead to more criticism that community colleges are not academic institutions after all. Dougherty (1994) took issue with this idea, claiming that it will be detrimental to those students needing a community college because they cannot afford a university or are not yet ready, and Eaton (1994) seconded, explaining that collegiate programs do not have to be dominant but have to be preserved to guarantee sustained access. Despite such criticism, community colleges remain best situated to

respond to what Gray and Herr (1998) called the "skills-employability paradigm" (p. 8), that is students' employment prospects and by extension the country's prosperity are correlated with how well the skills taught in college match those needed at work.

In this context, globalization and diversity play an important role. To meet the workforce demands of the future, community colleges will have to increase their recruitment of underrepresented groups, many of whom will be cultural and linguistic minorities. Colleges must transform themselves to offer these students a welcoming atmosphere; as these are the students on whom America's future depends, the entire campus has to adopt an attitude of cultural diversity (Forde, 2002). Rendón and Valadez (1994) already foresaw that community colleges will preserve their attraction as a major first step for many minorities, and they anticipated growing numbers of students of color and of immigrants, especially among those who speak Spanish.

In that same vein, the articulation between adult education, high schools, business and industry, and community colleges will have to be strengthened. Since the workforce requires more and more skills from employees, it will become the job of community colleges to elevate more and more adults to a higher level of performance than was needed in the past (Spann, 2000). As community colleges already deliver services to the groups mentioned above, they will be able to improve smooth articulation at a low cost in the era of shrinking higher education budgets (Boylan, Bonham, Clark-Keefe, Drewes, & Saxon, 2004). Many among this new student population will be underprepared, which means developmental education will remain an important area of activity as will literacy training for industry and English-language training for new immigrants (Cohen & Brawer, 2008).

Another development necessitated by globalization is increased emphasis on the community college baccalaureate, especially in rural areas or for programs that are not generally offered at universities. According to Walker (2006), more and more students will need a baccalaureate-level education for their planned careers but are denied access for financial and geographical reason. With increasing international competition, higher levels of required workplace skills, and America's struggle to not only maintain but also increase prosperity, all qualified and motivated students must be reached. Community colleges are best suited to fill this need. This development does not mean that community colleges will turn away from the associate degree, which for many students in technical and occupational programs is the key to career success, but that they need to expand their scope to provide needed services.

Community education likely faces the greatest threat. Industry contract training and adult basic education (ABE) have revenue streams coming from government and industry, but community education by its very nature will likely never become self-supporting, which may make it a target for those trying to contain costs. To make up for the possible loss of recreational community education if it cannot pay for itself, Phelan (1994) and Rendón and Valadez (1994) recommended a broader vision for community building. Economic development, special literacy training geared toward the workforce, and programs that teach workers how to learn in the first place were touted as being attractive to outside agencies and industry partners.

To accomplish this shift, Rendón and Valadez emphasized, changes from leadership to mission to goals down to curriculum and instruction would have to be made. To execute this new direction, community colleges would have to work on globalizing themselves. Levin (2001) in turn argued that global economic developments were shaping even the local workplace as was already evident through modern communication and increased immigration. Meeting the workplace demand by making institutional and curricular changes to prepare students for jobs where global skills are needed could be the future strength of the community college.

4.11 Conclusion

What is the final outcome of this discussion about the role of the community college? This writer believes that the answers to the questions asked at the beginning of this chapter should be an unqualified "Yes." Is community college education true higher education? Yes. Are students served well in community college programs? Yes. Are community colleges an important access point to higher education? Yes. Are they well positioned to respond to the demands of a changing economic and workplace environment? Yes again.

The community college will continue to be looked at as a change agent, and it will have to keep dealing with the fact that its academic mission cannot be separated from its social role, especially with the increasing numbers of new and diverse groups of learners. In the current global economic environment, access becomes more important than ever. Large numbers of people must be reskilled; others who never needed postsecondary education and never had to worry about global issues must be encouraged to consider college; and previously underserved groups must be empowered to seize opportunities. For many people, community colleges will be the convenient and affordable choice in their quest to remain competitive in the workforce. The community college's role in shaping communities and society as a whole has always been part of its mission, and the rapid economic changes the United States has been experiencing give this social role even more urgency.

Community colleges were never designed as institutions to create or preserve a status quo but to change with the needs of society, to respond to local conditions, and this heritage will become an asset. They are well suited to make the changes necessary for the new demands placed on them because of their ability to find creative solutions, adjust quickly to new situations, and work in close cooperation with industry. However, internal structures have to change.

Community colleges must become more unified and integrated in their various functions, particularly academic and entrepreneurial. These two parts of the college can no longer afford to be locked into an adversarial relationship but will have to find ways to cooperate and collaborate. The different units of a community college must learn that they depend on one another to move the institution forward and provide the best possible learning experience for students. For example, developmental education will take on additional importance as more and more workers

need academic skills they never needed before, and tackling this issue must be a concerted effort. This is where the changing role of the college president becomes pivotal. Without a more participatory leadership style, old chasms will remain and retard the community college's ability to respond to its students' needs.

On the college mission and purpose, we seem to have come full circle. Created to help move the United States into the industrial age, community colleges are now called upon to move the country into the global age, and they can and must seize their opportunity to shine in the new economy. Community colleges are uniquely positioned to respond to the increasing need for further education and training beyond the high school level, and their industry connections will be a tremendous asset in designing quality programs. At the same time, they remain a ray of hope and opportunity for those who had always thought that postsecondary education was beyond their reach. These two roles, to be part of the needs and the dreams of people, will likely make the community college a fixture in the American educational landscape for years to come.

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Chapter 5
Governing VET in the United States: Localization Versus Centralization

David Boesel

5.1 Introduction

The governance of vocational education and training in the United States is decentralized, with decision-making power largely in the hands of state and local authorities, while the German model is more centralized and national in scope.[1]

Germany has a dual system of VET that combines in-school education with apprenticeships.[2] In the German system,

- The federal government, in concert with its business and labor partners, has relatively strong central control over vocational education and training through its regulation of apprenticeships.
- The states (*Länder*) control the public vocational schools that apprentices attend part-time; however their curricula are closely coordinated with the apprenticeship programs.
- The structure and governance of vocational education are separate from those of university-oriented academic education. Nevertheless, the academic content of vocational education is substantial.
- VET occurs at the upper secondary level, most often in grades 11–13.
- There is a single set of standards and assessment for a given occupation. An occupational certificate represents a uniform set of skills fairly accurately and is portable.
- Skill training is reasonably well aligned with demand in the labor market.

[1] While governance of VET in Germany is more centralized than in the United States, it is less centralized than in Denmark and Switzerland, largely because of the role of the German states (*Länder*) in providing school-based vocational education (Rauner, Wittig, & Deitmer, 2010).

[2] For a good description and analysis of the dual system in English, see Tremblay and Le Bot (2003).

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In the United States,

- The federal government has relatively weak control over VET.
- The states and localities have relatively strong control over VET, and they vary in the way in which VET structured and governed.
- Vocational education is, for the most part, a division of a regular public education system oriented toward academics. Nevertheless, the academic content of vocational education has historically been slight.
- VET occurs at the secondary and postsecondary levels—primarily in high schools (e.g., grades 9–12) and community and technical colleges (e.g., grades 13–14). Some VET program sequences in fields such as education and health can also extend to four-year colleges. These systems are governed by different bodies.
- Standards and assessments for a given occupation vary by state and within state, from district to district. With the exception of private industry certification, the skills represented by occupational certificates vary widely, and the certificates are not portable nationally.
- Skill training is less well aligned with the labor market than in Germany, especially at the secondary level.

A couple of other contrasts between American and German VET should also be mentioned. First, VET in the German system is a structured program that includes required courses and apprenticeships and leads to certification in an occupational field. A VET student is one who enters the program, usually completes the courses and the related apprenticeship, and emerges with a certificate in his or her field. About two-thirds of German secondary students are VET students. American VET is less well defined and more cafeteria-style. VET does include sequences of courses required for certification in an occupational field, but the requirements vary by state. There is no clear definition of an American VET student. Students may take one, two, three, or more VET courses for a variety of reasons, including career exploration and the acquisition of specific skills, as well as preparation for careers. The 2004 National Assessment of Vocational Education (Silverberg, Warner, & Fong, 2004) distinguishes between "vocational course takers" (those who take at least one year-long occupational credit) comprising almost all secondary students; "occupational investors" (those who take at least three occupational credits), comprising 46% of students in 2000; and "occupational concentrators" (those who take at least three credits *in a single occupational program area*); in 2000, 26% of secondary students were concentrators.

The second contrast between the German and American systems is that for complex cultural and historical reasons, German VET has higher status within secondary education than does American VET. German VET evolved from a longstanding apprenticeship system that was associated with guilds and that produced highly skilled workers. America also had apprenticeships, but the system was not as coherent, extensive, or durable. Rather than emphasizing education and training for work, American public education emphasizes academics and preparation for college. VET has long been regarded as a less desirable form of education designed for students

with less academic ability. For the last several decades, reformers have pushed for greater academic content in VET, greater student participation, and greater status within secondary education. These efforts have had some success, but as a rule, parents of secondary school students still tend to view VET with skepticism.

In Germany, as in the United States, school-based VET is the responsibility of the states (*Länder*). However, in Germany coordination between the federal government (responsible for apprenticeship training) and the states is a legal requirement; there is no such requirement—or coordination—in the United States. At the federal level, the U.S. Department of Education (ED) is responsible for supporting vocational education, while the U.S. Department of Labor (DOL) supports workforce training through the efforts of states and localities. Registered apprenticeships are few in number (around 1% of the workforce), not available to youth in school, run by trade unions, and overseen by the Department of Labor. There is little relation between apprenticeships and vocational education and little coordination between the Departments of Labor and Education, as these agencies tend to be responsive to different constituencies. DOL is primarily responsive to unions and ED is responsive to educators. In the 1990s, the Secretary of Labor made a bid to take over the federal role in VET but was rebuffed.

This chapter focuses mainly on secondary vocational education in the United States, with reference to some aspects of postsecondary education. The first part discusses the role of local, state, and federal authorities in public elementary/secondary education. It then turns to the governance of vocational education, which is part of the larger education system. Thereafter the chapter examines efforts by the federal government to strengthen American vocational education— in effect, moving it closer to the German model—by promoting academic/vocational integration, secondary/postsecondary Tech-Prep,[3] national standards and certification, and improved transitions from school to work.

5.2 Local, State, and Federal Roles

Local, state, and federal roles in the governance of vocational education in the United States are similar to their roles in regular public education.

5.2.1 Regular Public Education

Within the constitutionally decentralized structure of government in the United States, governance of public education is a state function; local school districts (Local Education Agencies, in legal parlance) derive their powers from the states.

The governance of regular public education has been a state responsibility since the earliest years of the republic. Indeed, a number of the colonies that later

[3] Described in Section 5.3.3.

became states (e.g., Massachusetts, Vermont, New Hampshire) required public education. The 1642 Massachusetts Bay School Law, for example, mandated that every town establish a public school supported by fees from all but the poorest families (University of Houston, n.d.). Today every state has a constitution that requires the state legislature to provide for a free public education. For example, Oklahoma's constitution, more concise than most, says simply, "The Legislature shall establish and maintain a system of free public schools wherein all the children of the state shall be educated" (Oklahoma, n.d.). State legislatures authorize and fund state boards, superintendents, and education departments. They establish local districts and authorize them to collect taxes, make education policy, and run the schools. They enact education laws that state departments of education codify and implement. State departments of education facilitate the development of educational legislation and monitor the operation of school systems (Roe & Herrington, n.d.). They also provide leadership, technical assistance, and a range of services to local districts. Roe and Harrington identify four major functions of state departments:

- Regulation—e.g., assuring that basic administration is in compliance with state law; auditing the use of funds; enforcing health and safety rules; certifying teachers; ensuring equal opportunity; and overseeing development of performance standards and assessment instruments.
- Operation—Establishing and providing needed programs if no other agencies do so, for example, teachers' colleges, services for students with disabilities, and programs for migrant workers.
- Administration of special services, especially where statewide uniformity and efficiency are required, e.g., statewide testing, teacher placement and retirement services, teacher professional development, financial services, and control of interscholastic athletics.
- Leadership, including long-range planning; strategies for improving education; services and advice to local agencies; and public information.

Under the aegis of the states, localities have a major role in public education. As a rule, *local school boards* (in counties, cities, townships, etc.,) have legislative powers derived from the state. Separate from the local government, they impose taxes and levies to fund schools. In patterns that vary by state, they also engage in planning, set education policy, and evaluate results; hire and fire superintendents; adopt rules and regulations for the schools; negotiate with unions; and perform a range of other functions. *Local school districts* (Local Education Agencies) administer the public schools. They are separate from other local governments, like school boards, and are headed by superintendents whose executive powers are derived from the state. Local school districts implement school board policies; hire and supervise teachers and administrators; conduct student performance assessments; provide school maintenance and transportation; and in general, run the schools. As a rule, local districts resist state efforts to enlarge their span of control. America's ethos of decentralization supports local control of education in contests between localities

and states, just as the constitutional dispersion of power supports states in contests with the federal government.

The federal role in public elementary/secondary education was initially limited to the collection and dissemination of education statistics, and it remained very small until after World War II. In 1919–1920 the federal government provided just 0.3% of the revenue for public schools. In 1949–1950, the federal contribution was 3%, but by 1979–1980 it increased to a high of 10%. As of 2006, federal funds comprised 9% of public school revenues, while state and local funds comprised 47 and 44%, respectively. However, the federal role in public education is larger than its share of the finances implies.[4]

Given the decentralized structure of power in the United States, the federal government does not, as a rule, require state departments of education or local school districts to act in specified ways, or prohibit them from acting.[5] However, it can and does provide grants that states and districts are free to accept or refuse. With the grants come conditions—sometimes simple, sometimes complex.[6] The minimum condition is usually that a grant be used for a specific purpose or purposes.

The federal government has used education-related grants widely to achieve two overarching goals: to assure that underserved students get the education they deserve—the goal of equity—and to improve education for students in general—the goal of quality. Both goals have been evident in most federal education legislation, but in the 1960s and 1970s, during the civil rights era, equity considerations were predominant. The signature achievement of the 1965 Elementary and Secondary Education Act was Title I, which provided funds for programs designed to eliminate educational inequities by improving the education of economically disadvantaged students. The emphasis on equity shifted to an emphasis on quality in the 1980s, driven by recognition of the need for a highly skilled workforce to compete in a global economy and keep up with technological change. Federal law emphasized the use of grant funds to improve education for all students and has stressed the need for accountability by states and local districts. The 2001 NCLB[7] went further than any previous legislation in emphasizing accountability. It required schools to make Adequate Yearly Progress (AYP) on state tests in reading and math and specified sanctions for schools and districts that failed to do so. In this respect and others, NCLB substantially increased the federal role in the governance of public elementary/secondary education. The grant mechanism gives the federal government some

[4] U.S. Department of Education, National Center for Education Statistics (2006). *Digest of Education Statistics*, Table 158; U.S. Census Bureau (2008). Public Education Finances, 2006. Washington, DC, Author, Figure 1.

[5] These exceptions are often the result of federal court decisions. They include constitutionally protected civil rights—as in school desegregation decisions—and civil liberties.

[6] In 1937, the Supreme Court, in *Steward Machine Co. v. Davis*, ruled that federal financial assistance with conditions does not invade state sovereignty, because the state has the option to accept or reject it.

[7] NCLB was a reauthorization of the Elementary and Secondary Education Act.

degree of influence, but not control, over state and local education agencies.[8] A key question is the extent to which states and localities are willing to accept federal leadership and implement the programs as intended. In the cases examined in this chapter, states and localities tend to adapt VET grants to their own agendas. To the extent that those agendas are consistent with federal goals, states and localities are likely to implement the programs as intended. Otherwise, the tendency is to provide paper compliance but use the grants in ways that are consistent with state and local priorities. Federal agencies do not have the staff to monitor compliance in states and localities closely, and withdrawal of federal funds for nonperformance is extremely rare.

5.2.2 State and Local Roles in Vocational Education

VET governance in the United States is more decentralized than in Germany.

In the German model, VET is regulated through a corporatist arrangement in which the federal government, business groups, and labor organizations (the social partners) govern apprenticeships at the national level. The social partners are responsible for defining the occupations that can be apprenticed; the knowledge, skills, and abilities that an apprentice must have to be qualified for a given occupation; the standards by which the performance of both firms and apprentices are assessed; and the certification of programs and the skills of apprentices. The states (Länder) control the schools that apprentices attend part-time during their apprenticeships, but their curricula are coordinated with the agenda defined at the national level by the social partners.

In the United States, the governance of vocational education follows the pattern of public education in general. In contrast to the German model, VET governance is dispersed among the 50 states and thousands of local districts. State legislatures enact laws that govern vocational education, and state boards formulate VET policies. State directors of vocational education and their offices monitor the implementation of the laws and policies by local education agencies.[9] Many state VET departments have advisory boards composed of representatives of business and industry, labor, and postsecondary institutions, among others.

5.2.2.1 State Role in VET

Drawing on survey data and interviews, Kister (2001) identified 11 areas of responsibility for state VET directors, six of which are arguably the most important:

[8] It is beyond the scope of this chapter to examine the politics that give rise to federal education laws and their execution. However, it is important to keep in mind the role of state and local education associations, teachers' unions, associations of administrators, and public interest groups—among others—in initiating and giving shape to federal education policies and programs.

[9] A recent study found that 36 out of 50 state directors' offices were located within state departments of education, seven were located with higher education boards, and seven had their own boards or were under state workforce development boards (Kister, 2001).

1. Policy—including the development of standards and recommendations for the state legislature and state board.
2. Program design—developing program models and criteria for the certification of local programs.
3. Curriculum, instruction, and assessment—developing curricular frameworks and providing technical assistance to districts and schools.
4. Professional development—providing professional development opportunities for state staff and overseeing professional development for local educators.
5. Evaluation, accountability, and reporting—developing and maintaining program evaluation systems; evaluating state and local programs; and preparing performance reports to the state and federal government.
6. Strategic planning—including the development of state plans required for federal funding.

A major function of many state directors is administering federal VET grants. In recent years these grants have been authorized by the Carl D. Perkins Vocational Education Acts (1984, 1990, 1998, and 2006). The state directors oversee the development of local plans; review and consolidate those plans; develop five-year state plans for the use of Perkins funds; prepare the applications to the U.S. Department of Education's Office of Vocational and Adult Education (OVAE); negotiate annual performance goals with OVAE; receive annual reports from districts on local programs; and prepare annual state reports to OVAE on progress toward their negotiated goals. All of these activities require staff time, and some staff positions in state VET offices are supported by federal grants.

Despite these responsibilities, the state VET offices have tended to shrink over the last two decades. The 1990 Perkins Act reduced funds for state administration and increased those for local programs. The 1994 National Assessment of Vocational Education (NAVE) recommended that full funding be restored and that other steps be taken to strengthen state leadership (Boesel, Hudson, & McFarland, 1994). The 1998 Perkins Act did restore some of the funds for state administration. However, Kister (2001) found that nearly all interview and survey respondents in state VET offices cited inadequate federal funding of state activities and staff reductions as major problems. State directors also reported a shift in their agency's role away from regulating local programs and toward providing services and technical assistance.

5.2.2.2 Local Programs

Local vocational programs are found in comprehensive high schools, area vocational schools, and occupational high schools, all governed by local education authorities.

Most local secondary vocational programs are in comprehensive high schools and are administered by a VET division within the Local Education Agency. Local VET directors are primarily responsible to the district superintendent, but they must also be responsive to the state vocational education department and to a local advisory board. A minority of vocational programs—especially those requiring

expensive equipment—are in area vocational schools (AVSs), which serve multiple high schools from the surrounding area and often include a year or more of postsecondary education. AVS governance structures vary; some are governed by their own boards, others by regular school districts, still others by a variety of other authorities, such as postsecondary boards. Students concentrating on vocational education usually attend the area vocational schools for a half day and take their academic classes at their home schools for the other half day, though some AVSs are converting to full-day schools. Other secondary VET providers include full-day vocational high schools—an older form usually found in large cities. However, vocational high schools are coming back in many areas in the form of specialized VET academies and magnet schools focused on occupational specialties and designed to attract students from throughout the district.

5.2.3 Federal Role in Vocational Education

The federal role has shifted from supporting occupation-specific training in separate vocational programs to supporting broader competencies that integrate vocational and academic education.

Federal vocational education legislation has changed over the years from an emphasis on maintaining vocational programs that provide narrowly defined occupational skills and prepare students for entry-level jobs to an emphasis on reforming vocational programs to teach broadly defined occupational skills and substantial academic skills in order to prepare students for postsecondary education, work, and continuing adult education, consistent with the growth of technology and the emergence of a global economy. In addition, earlier VET legislation supported the separation of vocational and academic education, while more recent legislation has called for the integration of the two.

The first federal law providing grants for local schools—the Smith Hughes Act of 1917—happened to be in vocational education. The act authorized $7.2 million per year to states for vocational education in agriculture, home economics, and trade and industry (T&I), the three big traditional fields. It approved the allocation of funds to separate trade schools but denied them to vocational programs in comprehensive high schools, such as business and commerce. Smith-Hughes supported training for T&I students in specific “hard skills” to prepare them for entry-level jobs. States were required to submit plans specifying how they would use the money; to provide matching funds; and to allocate the funds to vocational programs in local districts. The submission of plans and the state allocation of funds to local programs have remained important features of federal vocational education acts since that time.

Through World War II, the successors to Smith-Hughes maintained and strengthened its key features—support for traditional vocational programs; de-facto separation of vocational and academic education; and an emphasis on occupation-specific skills and entry-level jobs. In the 1960s, however, the federal legislation began to change. The Vocational Education Act of 1963 redefined VET to include new categories of occupations in the service industry, such as office workers, technicians, and

semi-professionals. In so doing, it extended funding to comprehensive high schools. In addition, it provided monies for educating disadvantaged students—part of the equity agenda—and funded the construction of area vocational schools. In 1984 and 1990, the Carl D. Perkins Vocational Education Acts (Perkins I and II) reinforced the emphasis on special populations. Perkins II also emphasized program improvement through education reform. It required the integration of academic and vocational programs; made grants available to support Tech-Prep programs that combined secondary and postsecondary education; and required states to implement systems of performance standards and measures. The 1998 and 2006 Perkins Acts (Perkins III and IV) continued the push for program improvement and established accountability requirements with sanctions for inadequate performance, reflecting the accountability movement that gained momentum in the 1990s.

The federal government has been able to promote some degree of change in vocational education through persistence in efforts to implement provisions of the law. Key to these efforts is the requirement that states applying for grants submit five-year plans to OVAE. The plans must indicate how states intend to use the funds. Local education agencies, in turn, are required to submit their own plans to the state. As a condition of their grants, states must also submit annual reports to OVAE detailing their progress in achieving specific goals. OVAE processes the state applications, awards the grants, reviews the state progress reports, and submits the consolidated report to Congress. At a minimum, the process of planning and performance reporting requires state and local agencies to think in terms of the federal government's agenda. The extent to which those thoughts are about implementing the agenda or circumventing it depends on the agenda of each agency.

While useful, annual performance reporting by the states also has obvious shortcomings as an accountability tool. Chief among them is the incentive toward a positive bias when the subject of an evaluation also performs the evaluation. To provide a more independent and comprehensive assessment of state and local performance, Congress has mandated that research and evaluation offices in the U.S. Department of Education conduct a National Assessment of Vocational Education, to be completed prior to each new round of VET legislation. Taken together, the annual state reports and the national assessments help Congress and the Department of Education gauge the extent to which grant monies are being used as intended and the extent to which federal goals are being achieved.

5.3 Federal Efforts to Implement Reforms

Germany's dual system tends to integrate vocational and academic education, facilitate the transition between secondary and postsecondary education, generate portable skill certificates, and smooth the transition from school to work. American efforts to implement reforms in these areas have met with limited success.

The German model is structurally more coherent than that in the United States in a number of ways. First, in Germany's dual system, hands-on skill training in

apprenticeships is coordinated with occupationally related, high-quality academics in part-time vocational schools.[10] In the United States, academic and vocational education have been largely separate endeavors. For over two decades, the federal government has been trying to bridge that gap by requiring that school districts and schools integrate the two forms of education.

Second, Germany's dual system is situated in higher secondary education, which starts after grade 9 or 10 and continues through grade 12 or 13. In the United States, there is a divide between grades 12 (in high school) and 13 (in postsecondary institutions)—as there is in general education.[11] The federal government is also trying to bridge that gap, by supporting secondary/postsecondary transition programs such as Tech-Prep.

Third, in the German dual system, the specification of apprenticeship occupations, skill content, performance standards, and certification are the responsibility of the social partners. The Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, or BIBB) oversees and coordinates the process. Across the nation, all the apprentices in a given occupation learn roughly the same skills. Curricula in the state-run vocational schools are closely coordinated with the skill content and standards of the apprenticeships. Because all apprentices in an occupation must meet the same high standards, the certificates they receive are recognized by employers throughout the country. In the United States, curriculum, standards, and certification vary by state and locality. Although certificates awarded by industries in fields such as information technology and automotive technology are portable nationally, certificates based on state and local education standards and requirements are less portable.

Fourth, under the German model, the transition from school to work for students in the dual system is relatively smooth. The type and number of apprenticeships available are regulated to some extent by the labor market. Hence there are not large numbers of students being trained in fields for which few jobs are available. In the United States, the school-to-work transition is relatively inefficient, especially at the secondary level. High school programs are not well articulated with the labor market, and program completers often have difficulty finding work in the fields for which they are trained.

After looking briefly at the policy context of reform, we examine federal efforts in the United States to reform VET in each of these four areas.

5.3.1 The Context of VET Reform

The academic accountability movement has constrained VET reform efforts.

Implementation of the 1998 and 2006 Perkins Acts (Perkins III and IV) occurred during the ascendancy of the academic accountability movement. The Elementary

[10] See Stern, Bailey, and Merritt (1997) on the quality of academic instruction in the dual system.

[11] As with many generalizations about VET in the U.S., there is an exception. Many area vocational schools span grades 11–13, as does the dual system in Germany.

and Secondary Education Act, as reauthorized in 1994 and especially in 2001 (the NCLB), placed a heavy emphasis on accountability for academic achievement in an education system already more oriented toward academics than toward VET. A RAND study of Perkins III implementation noted that while "many states and localities have adopted the spirit of the Perkins philosophy to broaden the content of and participation in vocational education . . . Perkins III and concerns about vocational education are overshadowed by state academic standards and assessments and by accountability systems that often ignore vocational and technical learning." Efforts to improve VET are "largely on the margins of other state reforms" (Stasz & Bodilly, 2004).

5.3.2 Academic and Vocational Education

The structure of academic and vocational education in schools has hampered integration efforts, as has the accountability movement.

Throughout most of its history, secondary vocational education in the United States has been separate from academic education. In the 1980s however, several factors led some educators, researchers, and policy makers to conclude that the wall of separation between academic and vocational education should be broken down. First, global and domestic economic pressures prompted American businesses to adopt components of the high-performance workplace, which emphasized the contribution of workers' thinking skills to maximizing efficiency and quality production. The old model in which ideas were considered the province of management and manual labor, the province of workers, was proving inefficient. Second, the emergence of computer and information technology placed a premium on thinking skills and technical knowledge. And third, theoretical work on the benefits of contextualized education supported the integration of academic and vocational education (Boesel et al., 1994; Silverberg et al., 2004).

In 1984, during the Reagan administration, the Report of the National Commission on Excellence in Education, entitled *A Nation at Risk,* expressed alarm at America's competitive position in the global market and stressed the need for rigorous academics in order to make America more competitive. A year later, the National Commission on Secondary Vocational Education published *The Unfinished Agenda: The Role of Vocational Education in High Schools* (1985). The latter report stressed the need for reform of vocational education to meet the international challenge and called for academic/vocational integration. Subsequent reports, including the 1989 NAVE, amplified the theme, and the 1990 Perkins Act required integration as a condition of its basic grants.

Both Perkins II and III are laced with mandates to integrate academic and vocational education. However, the acts do not define integration, and researchers have identified many varieties, including the incorporation of academics in vocational classes and vocational elements in academic classes; cooperation between academic and vocational teachers; curricular alignment; senior projects; career academies; and occupational high schools, among others (Silverberg et al., 2004; Grubb & Stasz,

1993). In practice, for purposes of compliance reporting, almost any kind of instruction that contains an element of academics and an element of vocational education could count as integrated education. It's unlikely that anyone is going to check.

The National Assessments of Vocational Education for 1994 and 2004 both found that state VET directors were fairly active in promoting integration (Boesel et al., 1994, Silverberg et al., 2004). Supportive steps by the states included making applied academic curricular materials available; providing in-service training and technical assistance; recommending curriculum frameworks; and funding integrated pilot projects. The structure of incentives in Perkins encouraged state VET offices to assist in these reform efforts by supporting state administrative activities.

However, supportive activities by the state VTE offices did not translate into thoroughgoing integration at the local level. The 1994 assessment—written four years after passage of the 1990 Perkins Act—found some progress in integrating academic and vocational education in schools, but noted that

> While this progress . . . is commendable, much more work needs to be done. The division between academic and vocational education remains deep, and there is relatively little interaction between teachers on either side. Initiatives to promote integration usually come from the vocational side and may be received less than enthusiastically by academic teachers and administrators. . . Our case studies, site visits, anecdotal information, and published descriptions of integrated programs lead to the conclusion that the current pace of integration will not result in systemic reform in the next five to ten years (Boesel et al., 1994).

Ten years later, the 2004 NAVE reported,

> Despite [Perkins] legislative and state encouragement, there is little evidence that integrated curricula are being widely developed or used at the local level or that there is school-based support for integration. Even so, data from surveys of seniors in eight states suggest that the frequency of activities that draw upon academic skills in vocational classes is expanding somewhat (Silverberg et al., 2004).

The most serious barrier to integration is the longstanding difference in the agendas of secondary academic and vocational educators and the entrenchment of those agendas in school systems. Academic faculties are oriented toward liberal education and college, vocational faculties, toward occupational training and industry. As a rule, local school boards, school administrations, most teachers, and the members of the general public who support them value academic education more highly than vocational education. The school system's organizational structure, job definition, established patterns of behavior, and tradition reflect this preference.

The powerful academic accountability movement may have widened this split. The 2004 NAVE found that "vocational teachers disagree about the role of academics in vocational curricula, and academic faculty place priority on meeting state academic (NCLB) standards" (Silverberg et al., 2004). While in theory there is no conflict between integrated education and academic achievement at the school level, in fact, promoting achievement through traditional academic instruction does conflict with efforts to integrate the two streams. In particular, academic/vocational integration would complicate the efforts of teachers to focus on test-oriented academics, as is strongly encouraged by the NCLB.

5.3.3 Secondary and Postsecondary Education

In the United States, federally supported Tech-Prep programs intended to facilitate a transition between secondary and postsecondary institutions have been implemented piecemeal in local areas.

In Germany's dual system, the majority of secondary students are able to pass through the vocational education system in grades 11–13 without interruption (Barabasch, 2006). In the United States, a relatively small number of students complete vocational programs in area vocational schools with a similar grade range. However, most secondary vocational education is provided in grades 9–12 in comprehensive high schools, while most postsecondary vocational education is provided in grades 13–14 in community colleges. Each system has its own governance and rules. As Grubb and others have pointed out, after high school young people not firmly committed to baccalaureate pathways tend to "mill around" in postsecondary education and the workplace (Grubb, 2002). They move in and out of community colleges and private technical schools, intermixing college courses with work, job search, and unemployment.

Providing a better transition between high school and college has long been a goal of federal and state education policy makers. Proposals to bridge the gap between secondary and postsecondary education started appearing in the early 1980s. In 1985, Dale Parnell proposed a four-year Tech-Prep program that combined the last two years of high school with two years of community college, leading to an associate degree (Parnell, 1985). The program was to offer a common core of technical education in an applied (i.e., integrated) setting. Parnell's proposal was reflected in the 1990 Perkins Act.

Although Perkins II did not define academic/vocational integration, it did define Tech-Prep as "a combined secondary and postsecondary program" that

(A) leads to a two-year associate degree or two-year certificate;
(B) provides technical preparation in at least one field of engineering technology, applied science, mechanical, industrial or practical art or trade, or agriculture, health, or business;
(C) builds student competence in mathematics, science, and communications (including through applied mathematics) through a sequential course of study; and
(D) leads to placement through employment.

Title III of the 1990 Perkins Act made Tech-Prep grants available to the states. All states were funded, and in turn they awarded grants—either competitively or by formula—to local consortia of community colleges and high schools. Community colleges were the principal recipients of Tech-Prep grants, although in some consortia, high schools or vocational districts were the recipients.

As with integration, the 1994 NAVE found that state VET offices were supportive of Tech-Prep programs. The great majority required local districts to adopt the Perkins Tech-Prep elements as a condition of funding—an articulation agreement;

a structured sequence of courses; the goal of an associate degree or two-year certificate; technical preparation in specified occupational fields; and demonstrated competence in math, science, and communications. A majority (61%) of states also required placement in employment. So, both the federal government and most states required local grant recipients to use the Tech-Prep grants as intended for a reasonably well-defined program.

On paper, Tech-Prep programs appeared to be booming. In 1992–1993, 74% of postsecondary institutions responding to a NAVE survey reported having Tech-Prep initiatives, as did 46% of regular school districts. The colleges and school districts also reported taking major steps to implement their programs. In the first few years, the programs were small. The median number of students ranged from 18 to 27, depending on occupational field. Ten years later, the 2004 NAVE found that the total number of Tech-Prep students reported by consortia increased from 173,000 in 1993 to 1,260,000—or about 10% of high school students—in 2001. However, the meaning of participation in a Tech-Prep program varied widely.

Despite fairly clear definitions of Tech-Prep at the federal and state levels, both national assessments found that local institutions defined it in many different ways. As of 2004, the most commonly reported measure of participation in a Tech-Prep program was enrolment in a single vocational course offering postsecondary credit. Even so, relatively few participants, around 15%, actually received college credit. In some states, individuals were only identified as Tech-Prep students after graduating high school and were unaware of having participated in a program. The 2004 NAVE observed that

> [few] consortia or schools implement Tech-Prep as a structured program with at least two years of clearly linked high school courses and at least two years of related postsecondary course work (the two-plus-two design).

Rather, districts and schools tend to implement discrete components of Tech-Prep, such as work-based learning or academic/vocational integration, and represent the part as the whole. Since these elements are becoming more common in vocational education anyway, there is little to distinguish Tech-Prep from vocational education in general (Silverberg et al., 2004).

As with academic/vocational integration, state VET offices tend to support Tech-Prep, but the program design dissipates at the local level as school districts, schools, and postsecondary institutions adapt it to their own needs.

5.3.4 Curricula, Standards, and Certification

In contrast to Germany's dual system, VET curricula, standards, and certification vary by state and locality in the United States. Federal efforts to establish a national system of skill standards have foundered.

Public school curricula are developed by state and local education systems. Some states—known as textbook adoption states—specify the texts their schools are required or allowed to use (in 2006 there were 22 such states). Elsewhere,

districts choose their own curricula, often with state guidance. Maryland state code, for example, requires schools to offer a technology education program that includes the nature of technology, the impact of technology, engineering design and development, and "the designed world." Each of these areas has required subcategories. For example, the nature of technology includes "(1) Its characteristics, scope, and core concepts; (2) the relationships among technologies; and (3) the connections between technology and other fields of study" (COMAR, n.d.). Within that framework, the local district decides what curricular materials and approaches to use.

The federal government has no required skill standards for most occupations outside the government itself.[12] States license many occupations, but within and across states, licensure provisions are uneven. Professions almost always require licences, as do occupations that affect health and safety. The higher skill levels of occupations often require licensing, while the lower levels usually do not. Licensure requirements for a given occupation diverge widely across states. In Kentucky and New Hampshire, for example, there are no requirements for carpentry. In the state of Washington, the only requirements are that the carpenter carry insurance and post bond. In Georgia, only nonresidents require licences—they must be bonded, file monthly tax returns, and withhold 3% of subcontractor wages for taxes. In Nevada certain kinds of carpentry require recent work experience, bonding, and passing a state management and trade exam (National Contractors, n.d.). Often, states requiring a licence for an occupation will recognize licences from other states with the same or higher requirements. In practice, however, reciprocity is fraught with problems, and state licences are not portable nationally.

The effects of licensure requirements on vocational curricula also vary by state and program—especially in secondary schools. In the examples above, few requirements other than the management and trade exam in Nevada might have an effect on the skills and knowledge taught in a secondary school carpentry program. On the other hand, state requirements for licensure as an electrician or a cosmetologist tend to be more specific and are more likely to be reflected in the curricula of those programs.

Since 1990, the Perkins Acts have required states to assess student outcomes, consonant with the broader accountability movement. In response, the states have developed skill standards for students in VET programs. Inevitably, the standards differ among states. Moreover, as the 2004 NAVE noted,

> Few states have any direct measure of whether students have attained proficiency in their knowledge of vocational-technical subject matter. Even in states that provide a common tool (typically a list of competencies), the tool provides little or no assurance of consistent, comparable reporting (Silverberg et al., 2004).

Local practice in assessing state-mandated student competencies often varies from district to district, school to school, and even classroom to classroom. In some

[12] There are exceptions, such as licences for airline pilots, which are approved by the Federal Aviation Administration.

cases teachers rate their students' skills; in others, students assess their own skills (Silverberg et al., 2004). In still other cases, a student's letter grade may be used as a proxy for the attainment of multiple competencies in an occupational area.

In an effort to develop a cohesive system of skill standards, assessment, and certification, the Clinton-era National Skills Standards Act of 1994 established a National Skills Standards Board (NSSB) to develop voluntary national skill standards, assessments, and certifications for workers in high-performance workplaces. NSSB classified the workforce in 15 industry clusters and invited representatives of business, labor, education, and community-based organizations to form a voluntary partnership in each sector to develop standards. As of 2003, just two NSSB-funded groups—the Manufacturing Skill Standards Council and the Sales and Service Voluntary Partnership—had developed standards for their industries.

Also in 1994, the National School to Work Opportunities Act (STWOA) contained a provision requiring states that received school-to-work grants to develop portable credentials based on industry skill standards, including the standards developed through NSSB. Given this commonality, in 1996 the National Skills Standards Board, the National School-to-Work Office, and OVAE formed the Building Linkages project to develop a system linking voluntary national skill standards to schools and businesses and to develop curricular frameworks appropriate to the standards.

The Linkages project had three main goals: (1) to create standards-related materials to integrate into curricula; (2) to devise ways to promote industry-based portable certificates; and (3) to develop buy-in from consumers, such as state and local education agencies, teachers, and employers.[13] Two of the three goals involved public relations, a necessity, because the national standards effort was based on *voluntary* participation. The Linkages project provided grants to states and research organizations to design schooling and develop curricular frameworks to fit the standards of five industry clusters, including the two developed through NSSB. There was disagreement within the five projects about what kind of curricula, instruction, and assessment to recommend. However, there was agreement that it was important to identify occupational clusters to which the curricula and standards applied and to chart career pathways within them. OVAE undertook to develop 16 career clusters and "sell" them to state agencies and local districts.

In the meantime, states had been working on their own occupational standards and assessments. At a 1997 conference in Whitefish, Montana, state directors objected to the occupational clusters OVAE was developing, asserting that they were too broad. Over the next few years, the National Association of State Directors of Vocational and Technical Education (NASDVTEc) organized a campaign to take control of the project. In 2001, OVAE awarded a grant to the organization (now

[13] The discussion of the Linkages project is based on a report by Ruffing (n.d.).

called NASDCTEc, 2007) to further develop and articulate 11 of the 16 OVAE clusters.[14]

By and large, the state directors won the fight for control of standards, but the victory was short-lived. In January 2001, control of the presidency shifted from Democrats (the Clinton administration) to Republicans (the George W. Bush administration), and in September 2002, NASDCTEc received notification that its grant had been canceled.[15] A year later, the Clinton-era National Skills Standards Board was abolished.

Nevertheless, NASDCTEc continued to promote programs developed within the 16-cluster framework. A quick-response survey of state directors by the association in 2007 found that a majority of states embraced the concept of career clusters. It also found that the number of states reporting implementation of clusters in each of the 16 subject areas increased almost across the board from 2004 to 2007 (NASDCTEc, 2007). To what extent school districts and schools are actually using career clusters to guide student educational goals and course selection is unclear, however.

While the federal effort to develop voluntary standards and certification stalled, private-sector industrial standards were proliferating, prompted by the emergence of new fields such as information technology. As Carter (2001) notes, "although some certifications were offered as early as 1930 (welding) and 1950 (finance), most were developed during the 1990s." Through an intensive web search, Carter found 251 certifications in just six fields of study: Computer hardware and software (64); health, nutrition and fitness (28); human resources and management (50); mechanic and laborer (58); miscellaneous, requiring a high school diploma (37); and miscellaneous, requiring a college degree (37). The author notes that despite the growth in certifications, there has been no systematic tracking of the trend, and there is little information as to the validity of the certification requirements. "Whether workers with certification are indeed more highly skilled than are workers without certification is unknown" (Carter, 2001).

5.3.5 The School-to-Work Transition

In contrast to the German dual system, the link between VET programs and the labor market in the United States is weak. The STWOA, an effort to strengthen this link, allowed piecemeal implementation of its basic elements, with predictable results.

In Germany, the dual system assures some proportionality between the demand for labor and the number of students trained in an occupational field. In fields where

[14] In the interim, the name of the organization was changed from National Association of State Directors of Vocational Education to National Association of State Directors of Career Technical Education Consortium.

[15] The grant was reinstated in 2006.

the demand for labor is high, firms tend to have both the incentive and the resources to train and pay apprentices, and apprentices are more likely to find work related to their training. Many students who complete their programs become regular employees of the firms at which they apprentice. Others use their portable credentials to find jobs elsewhere. On the other hand, in fields where demand is low, firms often lack the incentive and resources to train and pay apprentices, so fewer apprenticeships are available.

In the United States, one of the biggest problems with secondary vocational education is insufficient connection between the occupational training a student receives and the labor-market demand for skills in that area. Research in the 1980s and 1990s showed that fewer than half of vocational concentrators found jobs in the occupational fields for which they were trained (Boesel et al., 1994). On the one hand, high school VET concentrators with no further education who did find a training-related job tended to earn more than nonconcentrators. On the other hand, VET concentrators who did not find training-related work earned no more than similar nonvocational graduates (Boesel et al., 1994). The 2004 NAVE also found that VET high school graduates who did not go on to college earned no more than their non-VET counterparts (Silverberg et al., 2004).

In an effort to improve the linkage between training and work, the Clinton Administration proposed, and Congress passed, the School-to-Work Opportunities Act (STWOA) in 1994. The act was an effort to stimulate the development of education and training systems similar to those in Europe, and especially to Germany's dual system. It provided nearly $1.5 billion over five years as seed money for the development of school-to-work programs that had three components:

1. School-based learning, including career majors starting in the 11th grade and extending through two years of college and encompassing integration of academic and technical education; secondary-postsecondary links, such as Tech-Prep; and skill standards and certification, with portable certificates of mastery.
2. Work-based learning related to the career major and the academics in the school-based component, including job shadowing, worksite visits, mentoring, apprenticeships, and/or internships.
3. Connecting activities, such as recruiting business and union partners and providing various support services.

In 1999, Mathematica Policy Research produced a comprehensive assessment of the implementation of the STWOA (Hershey, Silverberg, & Haimson, 1999). Much of the following discussion is drawn from the Mathematica report.

Following the usual pattern, the federal School-to-Work Office in the U.S. Department of Education awarded grants to the states, which then awarded smaller grants to local partnerships composed of school districts, schools, businesses, postsecondary institutions, and other entities such as unions and community

organizations.[16] The partnerships were designed to stimulate and support school-to-work activities, but they did not directly administer the activities—a task usually performed by educators.

As with integration and Tech-Prep, the states responded positively to the STWOA legislation. By fall 1997, 34 grantee states surveyed by Mathematica had formed 1106 local partnerships, including 83% of their school districts. Eventually, all 50 states received and disbursed STWOA funds.

The act permitted local partnerships either to develop focused STW programs for a limited number of students or to make a wider range of activities available to all students. It also allowed partnerships to build on existing arrangements in education or to start new ones. Most local partnerships chose the more incremental approach, supporting activities available to all students and building on existing arrangements. Career development was the most widely used approach. In school, it included activities such as career awareness courses (or career awareness units in other courses), interest inventories, and individual career planning. At work, it included activities such as job shadowing and worksite visits. There were few fully integrated programs, complete Tech-Prep programs, or certificates of mastery. Mathematica found that while 65% of the high school students it surveyed participated in career development activities, 18% participated in career-related academics, 13% in work activities linked to school, and only 3% in all three.

Implementation of the STWOA showed the same kind of diffusion of resources that was evident in the case of integration and Tech-Prep under Perkins II. STW partnerships and schools tended to take the easy route, choosing activities that were consistent with their established agendas. Distributing small amounts of money widely was evidently more popular and less controversial than concentrating resources on more focused programs for smaller numbers of students, and adding on to existing programs ruffled fewer feathers than trying to create new ones.

STW implementation, then, was widespread and shallow. It could hardly have been otherwise, given that its funding amounted to an average $25,000 per year per district and that the legislation allowed the money to be used for small additions to existing programs. Although its adherents tried to build structures and programs that would outlive its five-year funding period, the program was too frail to survive, especially given powerful counter-forces it faced. First, many conservatives were critical of the program, and control of Congress shifted from Democrats to Republicans in 1994.[17] Second, the accountability movement was growing at both the federal and state levels; an increasing emphasis on academics and testing tended to squeeze out other initiatives such as STW. Third, parents and students were wary of the STW

[16] The act also permitted grants to go directly to local partnerships, but this approach was taken much less often.

[17] For example, on learning that Congress refused to reinstate STWOA funding, a representative of the Home School Legal Defense Fund said, “For nearly a decade, home schoolers have been waging war against this dangerous program. It is time to rejoice. The program’s threat of mandatory certificates of mastery has been dealt a mighty blow.” HSLDA News, June 27, 2001.

approach, viewing it as a form of (relatively low-status) vocational education that would limit students' academic experience and their chance for college.

In 1999, Mathematica predicted that career development activities in school would continue to grow, in part because they were already expanding before STW took effect. The outlook for other STW components was doubtful:

> For now, no sustained federal interest in STW concepts has been expressed in subsequent education or workforce development legislation. Without such high-level promotion, the overall vision of an STW system may slip into the shadows of the many other competing demands on schools and teachers.

The STWOA had a sunset clause, and Congress allowed the program to expire at the end of September, 2001.

5.4 Conclusion

While there is a good deal of centralization in the German dual system, the governance of vocational education in the United States is decentralized. Consistent with the federalism of the U.S. Constitution, education is fundamentally a state function. State constitutions require state legislatures to establish and maintain systems of free public education. State legislatures, in turn, authorize local districts to levy taxes, allocate funds, and run the schools. Within the district, the school board typically has legislative powers and the superintendent has executive powers, both derived from the state. Over the years, power has tended to shift from local districts to states in regular elementary/secondary education, while state VET offices have shrunk. The role of the federal government has increased, although it provides less than 10% of the cost of public elementary/secondary education. State legislatures and state and local boards and school administrations constitute widely dispersed power centers, both large and small.

From the federal perspective, and in the view of many researchers, secondary vocational education in the United States has been weak in areas where Germany's dual system has been strong—in integrating academic and vocational education; in linking secondary and advanced vocational education; in developing uniform national occupational standards and certification; and in facilitating the transition from school to work.

On the whole, federal efforts to promote reforms in these areas have shown rather meager results. In the case of academic/vocational integration, Tech-Prep, and the school-to work transition, the relevant state offices were generally cooperative in implementing the programs, in part because the programs did not conflict with their own educational roles and agendas. At the local level, however, the established policies and practices of school districts and schools were directly involved, and the incentives associated with the federal programs—positive or negative—were inadequate to motivate change on a large scale. The federal funds were desirable and useful, but they constituted just a small percentage of a district's budget—not nearly

enough to incentivize major changes. Further, there were hardly any effective sanctions for nonperformance, and compliance reporting was handled largely by the schools and districts themselves. In all three of these reform efforts, districts and schools tended to implement just small changes, or pieces of programs, that were consistent with their own policies and practices.

The efforts to implement voluntary national standards and certification followed a different course. In this case, state interests were directly involved, because the states are responsible for these functions. They set the standards which their districts, schools, and programs are required to meet; they design and implement the assessment process; and they authorize certification. Consistent with their long-established stake in these areas, state VET directors opposed the occupational standards that the OVAE had developed and then, with OVAE's consent, took over the process themselves.

The decentralization of power was fundamental in the outcomes of all these reform efforts, but decentralization is only part of the story. Broad political changes at the national level also affected the reforms. In particular, the shift from Democratic to Republican control of Congress in 1994 and the White House in 2000 doomed two Clinton-era reforms. Moreover, the academic accountability movement, promoted especially by Republicans, may have widened the gap between academic and vocational education and almost certainly tended to marginalize VET and efforts to reform it.

Analogous to the decentralization of political power, the free-market principles undergirding the American economic system also tend to limit federal power and stymie efforts to develop a coherent national system of VET. The latitude accorded economic actors, and especially businesses, has made it highly unlikely that the federal government could configure a corporatist arrangement, such as Germany's, to create and maintain a large national apprenticeship program. The effort to develop national skill standards was a timid step in this direction. Businesses, labor unions, educators, and community organizations were invited to form voluntary partnerships in 15 industry areas to develop national standards. The National Skills Standards Act would never have passed Congress, had participation not been voluntary. Even among the participants, however, the commitment to reach agreement on standards was so constrained that after nine years, standards were developed in only two of the 15 areas, and adherence to those standards was itself voluntary.

The federal reform efforts examined in this chapter did generate small, widespread changes in VET, including increased emphasis on academics, career pathways, and postsecondary education. In addition, the reform efforts had at least three other effects. First, they nationalized the discourse over the reforms by requiring states and localities to make plans for the use of grant monies and to report on their progress in implementing their plans. Second, they generated a small number of fully developed programs. Third, they seeded the ground with possibilities for the development of more such programs in the future, should conditions at the federal, state, and local levels be favorable.

Despite these meager results, other education programs—in particular the NCLB—demonstrate that federally driven reforms, though difficult, can

substantially change behavior in local schools. Among the many elements contributing to NCLB's implementation, two can be mentioned here. The first is political will. The NCLB was the culmination of the potent accountability movement; it had support in both major political parties; and it was implemented in a favorable political climate in Washington—the eight years of the Bush administration. The second key element was the system of sanctions that gave the law teeth. Schools that failed state tests two successive years were designated "in need of improvement"—a euphemism for failure—and continued inability to improve could result in drastic actions such as state takeover of schools. States could minimize the impact of NCLB by lowering test standards, but if they took the law seriously—and many did—the schools' attention shifted strongly to curriculum, standards, and assessments. Passing or doing very well on state tests became a high priority. However, whether such an approach to VET reforms would be feasible or desirable is open to debate.

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Chapter 6
The Education Gospel and Vocationalism in US Higher Education: Triumphs, Tribulations, and Cautions for Other Countries

W. Norton Grubb and Marvin Lazerson

6.1 Introduction: The Education Gospel and International Borrowing

The United States has developed a standard litany of complaints about schooling. We call this ritual the Education Gospel because it has become an article of faith, rather than inviting questions about its empirical assumptions (Grubb & Lazerson, 2004). Starting from condemnation of current schooling, it also brings glad tidings about its potential, in this case the possibility that education reform can lead to social and individual salvation. Like a gospel, it has been accepted by an extraordinary range of report writers, policy makers, reformers, many (but not all) educators, and much of the public. It has also been the subject of constant proselytizing, particularly through its sacred texts: *A Nation at Risk* (NCEE, 1983), other national commission reports, the state and local groups following national reports, writings of prominent academics, and the manifestos of international agencies.

The essential vision of the Education Gospel proclaims that the knowledge revolution (or the Information Society, or the communications revolution) is changing work, shifting away from occupations rooted in industrial production to occupations associated with knowledge and information. This transformation has both increased the skills required for new occupations and updated the three Rs, enhancing the importance of "higher-order" skills including communications skills, problem solving, and reasoning. Obtaining these skills normally requires formal schooling past the high school level, so that some college—though not necessarily a baccalaureate degree—will be necessary for jobs of the future, the claim of College for All (Rosenbaum, 2001).

Another strand of the Education Gospel maintains that individuals are more likely to find their skills becoming obsolete because of the pace of technological change. To keep up with advances in technology, and to change employment

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as firms innovate, workers must engage in lifelong learning. Other forms of work reorganization—including lean production, the elimination of multiple layers of responsibility—require frontline workers to have a greater variety of skills, including personal skills (sometimes called "soft" skills) like independence and initiative. International competition has also increased and greater levels of education are necessary just to keep up with competing countries. But the good news is that an expanded and reformed education system, oriented around preparation for occupations, can meet all these challenges.

Vocationalism takes many forms. Sometimes, of course, it is manifest in curricula that prepare for particular occupations—lawyers in law schools; nurses in community colleges and four-year colleges; auto mechanics in community colleges, trade schools, and (rarely now) secondary schools; business managers at many levels of the education system. In such cases, we can also ask how successful these occupational or professional programs are, by looking at rates of employment in related occupations; sometimes (especially in short-term credential programs, job training, and private trade schools) programs that intend to be vocational do not in fact place their graduates in related employment. In many cases—the professions are the best examples—an occupational education becomes required, and other routes into the occupation—older apprenticeship-based mechanisms—disappear. But in other cases vocationalism manifests itself as pressure for more education, particularly now when many advocates are pushing for College for All, on the grounds that occupations of the future will require at least some postsecondary education. The rhetoric about teaching "the skills of the twenty-first century" and "higher order skills" (or SCANS skills, from the early 1990s) usually comes from the assumption that jobs now require such competencies as problem-formulation and -solving, communications skills, and teamwork. Sometimes schooling is a prerequisite for subsequent and more overtly vocational kind of education; for example, many secondary school students view high school as necessary for access to college so that its purposes are broadly vocational, even though the curriculum is not (Goodlad, 1984, ch. 2; Pope, 2001). Once the major purpose of formal schooling becomes linked to preparation for occupations, vocationalism manifests itself in many overt and covert ways.

Many international manifestations of the Educational Gospel and of vocationalism have also developed. We borrowed the language of a gospel from Kwon's (2001) contention that "the idea of a knowledge-based economy is enthusiastically treated like a gospel among Korean people." Korea has been calling for an Edutopia, Great Britain searching for "key" or "core" skills, Germany developing *Schlüsselqualifikationen* (key qualifications) or *Schlüsselkompetenzen*, the prime minister of Australia rousing his countrymen with *Sleepers, Wake!* (Jones, 1984), the European Union promoting the Europe of Knowledge, the OECD (2001) emphasizing the implications of the Knowledge Revolution and Tertiary Education for All. All over the globe, countries have discovered the importance of the knowledge revolution requiring higher levels and new forms of human capital as ways of competing.

In the borrowings among countries, the relationship between the United States and Germany has been particularly interesting, though each country has frequently

mistaken what the other country has done. In the last decades of the nineteenth century, the American university—born as an institution to prepare leaders for the new country, with an emphasis on the liberal education of free men (and women)—adopted the purposes of the German research university, as well as innovations like seminars and laboratory instruction. US universities also applied the research mission to science, technology, and business methods, rather than to the humanities that dominated the German university (Reuben, 1996). Their contributions to research as well as the education of the elite therefore made them central institutions in American society, "relevant" and in increasing demand, while German universities remained relatively "academic" and removed from the rest of society. The model Humboldt-style university was to prepare knowledgeable German civil servants, but its research mission was devoted to expanding academic discipline-based knowledge, rather than the applied knowledge that became increasingly important in the land-grant oriented US higher education system.

The development of US vocational education at the secondary level, around 1900, also borrowed heavily from German developments, and the extended visit of Georg Kerschensteiner was influential in promoting vocational education. But the United States, without Germany's history of corporatism and employer responsibility, failed to understand the dual nature of the German VET system, and therefore developed an "academic" or entirely school-based system of vocational education, rather than the combined practice/school nexus of German vocational training. The result of these selective borrowings is that the United States created a particularly dynamic set of elite universities, while Germany developed a VET system that has been the envy of many other countries. Currently Germany wants to emulate the US system of higher education, which it considers the best in the world largely based on their high valuation of the American elite universities. Conversely the United States has often been envious of the German VET system, most recently in the 1990s with efforts to develop an American-style apprenticeship mechanism. We return to these influences in the concluding section.

In this chapter we review the development of vocationalism in US higher education—the orientation of colleges and universities around preparation for vocations.[1] We concentrate on four-year colleges that provide baccalaureate degrees and on universities that provide graduate as well as undergraduate education; we do not say much about American two-year or community colleges, though they too have been thoroughly vocationalized (Grubb & Lazerson, 2004, ch. 3; Grubb & Sweet, 2005). These developments in turn created a series of dilemmas, which we review in the second section—with the overall result that while universities in the United States are highly successful, they are constantly criticized for a roster of sins.

[1] We use the English term *vocations* in the sense of careers or callings rather than mere jobs, employment that provides personal meaning, economic benefits, continued development over the life course, social status and connections to the greater society. The German term *Beruf* is closer to our intended meaning, and *Berufsbildung* is a more comprehensive way to describe preparation for employment in its fullest sense.

The final section explores the ways in which German and other efforts to emulate American universities may be based on false information.

6.2 From Moral to Occupational Purposes: Vocationalizing the University

America's colleges and universities began as institutions to prepare moral, civic, and intellectual public leaders. The fundamental goal was to develop one's intellect and moral character. Going to college was not meant for everyone, but only for a small group of leaders (Reuben, 1996, ch. 1).

Interest grew in using college for more overtly vocational purposes in the early and mid-nineteenth century, with the founding of West Point (1802), Rensellaer Polytechnic (1824), and some agricultural colleges in the 1850s. The passage by the US Congress of the Morrill Act in 1862 formally recognized the role of higher education in preparing people for vocations. Each state received federal land to establish at least one institution "to teach such branches of learning as are related to agriculture and the mechanic arts ... in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." This suggested that traditional notions of higher education should coexist with newer expectations that learning be practical and oriented to public needs. The leaders of land-grant universities saw their institutions as universities with broad public responsibilities, and state universities came to symbolize the view that practical knowledge and liberal education could be combined with occupational preparation, offering students a wide range of subject matter.

In practice, most of the land-grant institutions developed curriculums that paralleled those of existing colleges and universities, thereby leaving little to distinguish the Morrill Act schools from others. Even when the practical arts were stressed, doubts persisted that college was the place to prepare for employment; college-based preparation for work was viewed as "academic," irrelevant, even sissified. The industrialist and self-made man, Andrew Carnegie, dismissed school-based learning in favor of the "school of experience":

> While the college student has been learning a little about the barbarous and petty squabbles of a far-distant past, or trying to master languages that are dead ... the future captain of industry is hotly engaged in the school of experience, obtaining the very knowledge required for his triumphs. (Veysey, 1965, pp. 13–14)

Others simply said, "we want no fancy farmers; we want no fancy mechanics" (Bledstein, 1978, ch. 6).

For their part, the land-grant's leaders saw their institutions' future less as technical and trade training schools and more as universities with broad public responsibilities. State universities, more generally, came to symbolize the view that practical knowledge and liberal education could be combined into vocational preparation, offering students a wide range of subject matter from which to choose. In his inaugural address in 1903, President of the University of Wisconsin,

Charles Van Hise (1904) articulated the fundamental rationale that would ultimately shape American higher education:

> Be the choice of the sons and daughters of the state, language, literature, history, political economy, pure science, agriculture, engineering, architecture, sculpture, painting or music, they should find at the state university ample opportunity for the pursuit of the chosen subject. . .Nothing short of such opportunity is just, for each has an equal right to find at the state university the advanced intellectual life adapted to his need. Any narrower view is indefensible. The university should extend its scope until the field is covered from agriculture to the fine arts.

The public universities were not alone in expanding the curriculum in the interests of public service and vocational purposes. During the nineteenth century a number of small "multipurpose" colleges adapted their curriculums to local labor market needs so that they would increase their students' job opportunities and would serve regional and local economic development. Often competing with one another in the same geographic area, the colleges established separate schools and departments of science, engineering, and agriculture, instituted short courses for commercial occupations, and prepared women for teaching (Geiger, 2000).

For women, the rapid growth of public education and the feminization of teaching during the nineteenth century created new occupational opportunities. As states sought to upgrade the quality of teachers, college attendance became almost synonymous with becoming a teacher. As other female professions grew, like nursing and social work, they too expanded the number of women in college and further emphasized the vocational purposes of higher education.

6.2.1 The Rise of the Professions

Between 1880 and the 1930s, American higher education came to define itself in terms of its direct application to specific occupations. Nowhere was this more apparent than in the substantial growth of professional schools, in law, medicine, business, engineering, education, social work, nursing, and dentistry. Multiple explanations account for the explosion in professional preparation. The first was a gradual shift from an apprenticeship system of entering professions—where young professionals would attend college as they found it necessary or thought it useful, but the lack of schooling did not stand in the way of practicing one's vocation—to one where schooling came to dominate professional preparation and entry (Kett, 1994; Douglas, 1921, ch. I). A high school education became the prerequisite for college, and a clear trajectory from high school to college and then to professional life emerged, a sequential rather than simultaneous process in which individuals moved back and forth between school and work.

The movement of the professions into colleges and universities was closely tied to the growing authority of science, in a broad sense. Every profession created a liturgy about the importance of specialized knowledge, whether of biology and chemistry for doctors, of legal procedure and precedent for lawyers, or of applied science for engineers. The expansion of occupational preparation training

in higher education—always called *professional* education to distinguish it from lower-level *vocational* education in high schools—enabled professions to claim a distinct knowledge base, and ever since the process of professionalizing newer occupations has led to more formal schooling. In the process, school-based knowledge came to be more highly prized than work-based knowledge; older conceptions of useful knowledge, arising from the workshop and experience, gave ways to conceptions of knowledge rooted in the university lab and in scientific procedure. While the professions continued to stress the importance of character—every profession adopted a code of ethics, for example—increasingly success in school-based subjects become the necessary condition of entry (Geiger, 2000; Bledstein, 1978, p. 88; Sullivan, 1995).

Patterns of employment also changed. Around 1900, the growth of large bureaucracies and industrial settings created new demands for people to manage complicated work organizations, and the application of scientific discoveries generated new demands for more technical skills. These competencies were largely congruent with university-based education, from the academic learning of business practices and scientific procedures in the classroom to the informal knowledge gained in the interactions of campus life. With these changes, the college degree certified competencies that became highly marketable (Labaree, 1997, pp. 253–258).

The occupational role of higher education was often obscured before World War II. Collegiate enrolment remained limited; as late as 1940, only 9% of the country's 18–24-year-olds were enrolled. Many people viewed college primarily as a social experience, and the liberal arts were still important. But by the 1930s, attendance at college had become tied to "the culture of aspiration" and to upward mobility (Levine, 1986). In cities, the children of immigrants flooded into low-cost, often public colleges where they expected to gain access to the professions and to middle-class status. For many working class young adults, going to college meant part-time evening programs that prepared them to become lawyers, accountants, and business managers. The role of higher education in achieving professional and economic status soon led more and more students to seek entry into higher-reputation universities and colleges, leading for the first time to selective admissions (*numerus clausus*) requiring interviews and tests, and establishing quotas to keep out those who might not fit. With the expansion of enrolments during the 1920s and 1930s came increases in students in professional programs: from 25 and 30% in the teens, when colleges enrolled only 3% of the relevant cohort, to about 35% in the 1920s, when about 6–7% were enrolled, to between 50 and 60% in the 1930s and 1940s, when 7.5–9% were enrolled (Brint, Riddle, Turk-Bicakci, & Levy, 2002).

By World War II, then, the essential elements of a vocationalized higher education system were in place: a large number of institutions emphasized professional preparation to attract students; a majority of students were in professional rather than liberal arts programs; and a quasi-market in higher education existed, with "consumers" choosing among competing institutions on the basis of the advantages they could confer. The monopoly that higher education could claim over routes into the professions, and the increasing adaptability of the college curriculum to labor-market needs, combined to give higher education a new economic prominence. Higher education was still relatively limited, but that was about to change.

6.2.2 The Great Transformation of US Higher Education

The expansion of higher education after World War II reflects the power of a coalition that had already sought universal high school attendance. Policy makers, pressured by middle-class families, supported an expansive higher education system to increase individual economic opportunities and strengthen the nation's economic competitiveness, including the technological training required for the nation's defense and competition with the Soviet Union. States rushed to create low-tuition state universities and to provide generous research funding and financial aid (Douglas, 2000). The clearest result of this was the expansion of public rather than private colleges and universities: in 1947 49% of enrolments were in public institutions, compared to 76% by the end of the century.[2]

While the rhetoric of public purpose justified expansion, the drive by students to attend college has been overwhelmingly based upon individual gain. One measure of this shift has been the attitudes of students. In the late 1960s developing a meaningful philosophy of life was the most important goal of freshmen, rated "essential" or "very important" by 80% of freshmen, while less than 45% of freshmen thought it important to be well-off financially. By the end of the century these two values had traded places: developing a meaningful philosophy was endorsed by only 42%, while 74% wanted to be well-off financially (Astin, 1998). Yet another measure of vocational pressure has been the continued drift toward explicitly occupational majors. The proportion of occupational majors fell slightly during the idealistic 1960, from 62% in 1959–1960 to 58% in 1970–1971; since then the proportion has gone back up to about 65% in 1987–1988, before declining slightly during the expansionary period of the 1990s. These figures are probably underestimates,[3] so by the beginning of the twenty-first century about two-thirds of college undergraduates were in professional fields. Indeed virtually every field of study that grew over the last few decades has been occupational, including business, health professions and biology, computer systems, and various recreation studies; except for psychology and the life sciences, both closely linked to health occupations, and two small fields labeled "liberal/general studies" and "interdisciplinary studies," no liberal arts field grew relative to other fields. The result, as Brint (2002, p. 235) has emphasized, is a substantial shift: *During a period in which the system grew by 50%, almost every field which constituted the old liberal arts core of the undergraduate college was in absolute decline as measured by numbers of graduates.*

A number of institutional transformations helped the development of more vocational forms of higher education. One has been the expansion of student choice, in place of the nineteenth-century college with prescribed courses. For the most part student choice drives what colleges and universities offer, both the choices *among* institutions, and the choices of majors *within* institutions. If humanities departments

[2] Digest of Educational Statistics (2001, tables 172–173, pp. 206–207).

[3] See Brint, Riddle, Turk-Bicakci, and Levy (2002, table 1). On the reasons that these are underestimates, see p. 7.

have declined and business schools increased, if general education seems peripheral, if the balance of "the liberal *and* the practical" threatens to come apart, the combination of professionalism and student choice is to blame. Currently, it seems quaint to envision a college with a single curriculum, and those that try—St. John's College with its Great Books program, the University of Chicago with its prescribed curriculum during the Hutchins era—have not been widely emulated.

Another transformation has been the creation of a relatively new institution: the second-tier, regional public university, especially attentive to regional labor-market demands. Most of these universities emerged from teacher training colleges or technical and agricultural colleges, and therefore originated in explicitly occupational institutions; others emerged from multipurpose colleges, or community colleges adding additional years of study.[4] They are comprehensive institutions, providing both academic and professional offerings, but they are overwhelmingly occupational (or professional), with the majority enrolling 60% or more of their students in professional fields—business, engineering, education, medical occupations like nursing, library "science," information technology, and emerging occupations in environmental issues and web programming. Almost none of them have recreated the old liberal arts colleges. They are much less selective than the first-tier universities, often accepting 80–90% of students who apply; perhaps reflecting this fact, their graduation rates are often abysmally low, in the range of 25–50%. Every state has established such institutions: they are the California State Universities rather than the University of California system, the state colleges in Texas rather than the universities, the Universities of Western and Northern Illinois rather than the flagship University of Illinois at Champaign-Urbana— institutions that most Europeans have never heard of. These regional institutions account for about 57% of enrolments in all public four-year colleges and universities, and about 37% of all public and private enrolment. These are now the modal institutions of American higher education, even if ideals of a "real college" are dominated by private liberal arts colleges like Swarthmore or Oberlin, or large research universities like Harvard or Berkeley.

Among private institutions, the great transformation has been the evolution of most liberal arts colleges into vocationalized institutions. When David Breneman (1994) went in search of liberal arts colleges, he found that most of them had become "small professional schools with a liberal arts tradition, but little of the reality of a traditional liberal college." Of the liberal arts colleges defined by the Carnegie Commission, professional degrees increased between 1972 and 1988 from 11 to 24% in the elite colleges, and from 41 to 64% in the less-selective colleges. He concluded that "we are indeed losing many of our liberal arts colleges, not through closures but through steady change into a different type of institution"—driven once again by the combination of student choice and vocational pressure.

[4] Dunham (1969, p. 28) provides a useful table showing the origins of state colleges and universities: 59% originated as teachers' colleges, 14% as technical or agricultural colleges, 10% as multipurpose colleges, 8% as junior colleges, 6% as academies, and 3% as religious or YMCA institutions.

Overall, then, a mass system of higher education in the United States has been inextricably tied to its occupational purposes. Students come in order to get ahead, to become credentialed and licensed and valuable in the labor market. Many believe, rightly, that they have no choice; the deterioration of the labor market for high school graduates, who have to settle for low-skilled, low-paid, and insecure work, has meant that going to college is a much better bet than finding a job right after high school.

6.3 The Dilemmas of the Professionalized University

The development of US higher education has brought with it a number of triumphs: expanding enrolments, greater funding, a central role in the economy, and greater access for "nontraditional" students. Colleges and universities are treasured places, respites from the competition outside their doors, where dissent and free speech are valued and where culture and intellect can thrive in many forms. The research universities of the country are revered for their national and international contributions; comprehensive state universities are important to their regional communities in similar ways. The benefits of an expansive higher education system are extraordinary.

And yet criticism abounds, captured in such book titles as *The Fall of the American University*, *Dry Rot in the Ivory Tower,* and *The Moral Collapse of the University*. Some criticize the faculty, some the students, and others contrast the older image of college with the more utilitarian reality of a vocationalized university (Lazerson, 1998). The irony is that vocationalism, which has allowed postsecondary education to expand, has created many of these controversies.

6.3.1 The Fragility of Liberal Education

Critics of rampant vocationalism have often concentrated on strengthening intellectual and civic purposes, general and liberal education, and the humanities—often without recognizing the rise of vocational pressures. They invariably have battled against overwhelming trends: the rise in professional majors, the large number of new professionally dominated institutions with weak traditions of liberal education, and the conversion of many liberal arts colleges into vocationalized institutions. With the coming of vocationalism, faculty are themselves divided about higher education: business and medical faculty vote along with philosophers and English professors, and in many institutions the occupational faculty outweighs the academic faculty.

Other aspects of student choice have further weakened coherent programs of liberal education. Both traditional-age and older students have adopted a pattern sometimes referred to as "swirling," taking courses in a variety of institutions and accumulating degrees credit by credit. Often the result is a patchwork of courses

without any coherence, a potpourri from several institutions where the consistency that might emerge in a single institution is destroyed (Smith, 1993).

Finally, the courses included in general education requirements have been redirected toward the ubiquitous "skills of the twenty-first century." George Mason University requires students to take courses in oral communications, written communications, quantitative reasoning, information technology, and global understanding as well as more conventional breadth requirements. James Madison University has defined Cluster One of its general education program as "Skills for the twenty-first century" including "effective oral and written communication, critical thinking, and technology used for interpersonal communication and information retrieval." The California State University campuses require oral communication, written communication, and critical thinking, as well as what Chico State calls "lifelong learning," which includes "life skills" like child development, human sexuality, basic nutrition, and leisure pursuits. Southwest Texas State requires a physical fitness and wellness course as part of general education, something that can be fulfilled with a varsity sport, the marching band, or "Strutters" (a drill team). It is easy to get on the web and find examples of general education run amuck—all related to some worthy purpose, but far from the intellectual discipline and moral intention of the liberal arts.

The decline of liberal education is an example of "death by a thousand cuts," particularly the transformation of student and faculty goals and the exaltation of student choice as part of vocationalism. The intellectual and moral traditions associated with liberal education are most vibrant in institutions where occupational pressures are postponed, in the elite private and public colleges where most students go on to graduate school for their occupational preparation. The defenders of intellectual and civic traditions continue to fight, but with limited success.

6.3.2 The Dilemmas of Professional Preparation in the University

While complaints of the Education Gospel have critiqued K-12 schooling for its inadequate preparation of the "workforce of the twenty-first century," we might expect education and employment to be most congruent at the level of professional preparation, partly because professionalism has been founded on specialized knowledge available through formal schooling. However, the content of professional education has itself been a source of unending complaint, with amazingly identical attacks on one profession after another.

Most obviously, critics have regularly faulted professional schools for providing the wrong kinds of skills. The critics of medical education have cited a bloated curriculum, emphasis on rote memory, and inattention to patients as people.[5] Reformers

[5] This section draws on Grubb and Lazerson (2004, pp. 74–77); see this source for the many citations to commission and reform reports related to the different professions.

of nursing education have listed "twenty-one competencies for the twenty-first century," with greater attention to higher order and interpersonal skills. The American Bar Association regularly complains about the lack of attention to written and oral expression, problem solving and legal analysis, communication, counseling, and negotiation. Business education is exhorted to improve "creative analytical power" including imaginative thinking, interpersonal abilities, communication skills, and willingness to take responsibility. The criticisms of education schools have followed the same pattern, pushing intellectually more demanding preparation and professionally relevant standards of entry.

A second strand of critique has attacked professional schools for elevating research and academic knowledge over practice and on-the-job learning—an obvious consequence of locating professional preparation in the research university. The American Bar Association has criticized law professors for failing to provide a "practitioner role model," and complained that new lawyers cannot draft contracts or complete forms routinely required by courts. In teacher education, the complaint about overly academic teaching—of theory with few classroom applications and of new teachers poorly prepared to manage their classrooms—has been common. The National League of Nursing has called for more collaboration between nursing programs and practice. In engineering, the Olin Foundation became so disgusted with the separation of professional education from practice that it set up a new engineering school—Olin College—rather than attempting to reform existing schools. The antidotes in these examples include recruiting more practitioners to teach, incorporating more practice-oriented coursework, and introducing more intensive internships.

Other efforts to overcome the separation of professional education from practice have included calls to incorporate social and ethical dimensions, as in the demand that doctors and nurses treat the "whole person" and respect patient and familial desires, rather than emphasizing the technical dimensions of care. Lawyers have been criticized for not considering the personal costs and ethical questions that affect their clients. In the wake of Enron and WorldCom scandals and now the financial collapse of 2008, business professionals are now told to make ethics central to their practice. Especially in the caring professions like teaching and social work, professionals are exhorted to recognize the economic, social, and cultural conditions in which their clients live, to be more sensitive to low-income and minority clients and to linguistic differences. These are calls for conceiving of professional competence in context, rather than equating professionalism with the individual and technical skills that have dominated professional education.

The similarity in the critiques of professional education is stunning, and it reflects the same criticisms the Education Gospel has leveled at K-12 schooling. Even at the professional level, where the linkages between education and employment are the most consistent, and where the need for school-based learning has been best established, the mismatch between school-based learning and job requirements remains pervasive. Even as vocationalism has given the university new goals and greater stature, it has brought to it new and greater conflicts.

6.3.3 Utilitarian Conceptions of Education

The expansion of occupational purposes in higher education is one form of a larger problem: the tendency to turn education into a commodity with economic value. At the social level, the rhetoric of the Education Gospel assumes that the expansion of higher education serves the goals of economic growth and competitiveness, a utilitarian conception of education. At the individual level, students in vocationalized systems of schooling may adopt similar attitudes toward learning that are counterproductive. In many countries—the English-speaking countries are good examples—students have adopted highly utilitarian and credentialist views of schooling: utilitarian in the sense that they see their schooling as useful only to future employment, and credentialist in the sense that they concentrate on accumulating the credentials they think necessary for further success, rather than the learning that credentials are supposed to represent. Under such conditions, there's a great deal of talk about the practical side of education over theory, about "relevance" and "hands-on" approaches in preference to book learning, about "learning by doing."[6]

As Cox (2009) has shown for community college students in the United States, such attitudes may get in the way of learning. Students with overly vocational goals avoid any instruction that seems to be "academic" or "not relevant," they see learning in terms of accumulating facts and discrete skills necessary to pass tests and earn credentials rather than broader understanding; and instructors are often unaware of their students' attitudes that may conflict with their conceptions about the purposes of schooling and the nature of learning. Pope (2001) has identified similar reactions among US secondary students, and Grubb (2009, ch. 5) has documented that more vocational attitudes among high school students actually lower their test scores. There is a great deal of anecdotal evidence and faculty complaint about students with limited and utilitarian conceptions of learning. Paradoxically, then, the constant insistence in education on "skills" for occupations may undermine the effort to develop a broader variety of conceptual abilities and other higher-order competencies; the focus may actually decrease learning-important competencies necessary for future success.

The sarcastic comments, particularly in the United States and the United Kingdom, about such vocational fields of study as golf course management, leisure studies, and subfields of business like fashion accessories merchandising also reflect the sense that vocationalism run amuck has taken over the university, that it does not even stand for any form of genuine learning, but is essentially a process of lengthening schooling as a form of licensing. Of course, there are older models that continue to exert some power: the liberal arts colleges in the United States, intended to prepare generations of leaders; the Oxbridge tradition in England, with its distaste for

[6] John Dewey has been widely misunderstood on this point. He called for integrating classroom-based "knowing" and experience-based "doing"—"learning *and* doing," not "learning *by* doing." As he wrote, "Learning by doing does not, of course, mean the substitution of manual occupations or handwork for textbook studying" (Dewey & Dewey, 1915, p. 74).

commonplace subjects like business and education; the University of Helsinki with its links to early nation-building. In some countries, a principled stand in favor of broad education has helped prevent an overly utilitarian approach, as in the broad disciplinary learning in the German *Gymnasium* or Finland's national curriculum with its wide array of subjects at every level. But the pressure from vocationalism is to transform education thoroughly, leading under extreme conditions to universities offering narrow work skills for routinized employment and the search among students for fast access to employment.

6.3.4 The Dangers of Overeducation

In a vocationalized system of schooling, appropriate levels of schooling are defined by the schooling required for jobs—not by the requirements of political participation, or conceptions of liberal education, or vague notions of "educating all children to the limit of their abilities." In turn, the quasi-markets in formal education created by vocationalism should establish an equilibrium between the supply and demand for skills. As occupations become more complex, young people and schools should receive information about the requirements for skilled occupations; students should stay in school long enough to gain the necessary competencies, and there should be no undereducation. Similarly, employers have no incentive to hire workers with more schooling than they need, and the problem of overeducation should be avoided. When markets work as they are supposed to, with earnings as an equilibrating mechanism, there ought to be a perfect match between the amount of schooling and skills individuals attain and the amount that employers require. In practice these quasi-markets don't work perfectly and mismatches can occur. The dominant fear and focus of most public debate and policy has focused on *undereducation*—the complaint that people are not acquiring enough school-based skills for the jobs of the knowledge revolution.

At the same time, there has been an equally persistent concern with individuals completing more formal schooling than their jobs require—usually termed overeducation. In the 1970s, for example, Freeman (1976) wrote about *The Overeducated American* based on evidence that economic returns were declining, and Bird (1975) exposed *The Case Against College* by describing the large number of worthy jobs that required no postsecondary education. Another way to document overschooling has been to compare the schooling *requirements* of occupations with the average *attainments* of people holding these jobs. This exercise shows an increase in overschooling during the 1960s and 1970s (Rumberger, 1981, table 6). In 1991 the Department of Labor measured overschooling by asking individuals about the requirements of their work (Eck, 1993). Only 65% of college graduates said that their jobs required a four-year college education, indicating that about 35% were overeducated. Nearly 66% of those with some college and 85% of those with a high school diploma responded that the levels of schooling they attained were unnecessary, suggesting that overeducation is greatest at the lowest levels of schooling, where individuals find only unskilled work. More recent results confirm that about

35–40% of the labor force in the United States may have too much schooling for their jobs, and that overeducation is substantially higher than it is in Germany with its highly regulated education and labor markets.[7]

Where formal schooling becomes the dominant route to occupations, individuals competing with one another tend to accumulate more formal schooling than their jobs require, as a way of beating out competition or of attaining the status of professionals. In addition, where the information about the qualifications of individuals seeking employment is imperfect, as it is with "informal" credentials in the United States, then individuals obtain more schooling to signal their greater ability—a *socially* irrational escalation of schooling that is still *individually* rational.[8] Politically, the pressure from virtually all members of the Education Coalition has been to escalate years of schooling, most recently in College for All. But when individuals are overeducated, the economic benefits of schooling are lower, about one-half to three-quarters of the returns for required schooling (Groot and Van den Brink, 2000). Berg and Gorelick (1970) labeled overschooling "the great training robbery," because it requires individuals to invest more in schooling than is strictly necessary. Finally, overeducation has powerful effects on equity as well, since low-income and minority Americans who increase their schooling still find that they lack the education required for middle-level positions.

A different mechanism also leads to overeducation, one rooted in the workplace rather than in the expansion of schooling—the deskilling of work. Employers can minimize costs by substituting cheaper unskilled workers for more skilled workers (Braverman, 1974). Deskilling often takes place as occupations are divided into components—for example, as medical practice became divided into a hierarchy of doctors, physicians' assistants, nurses, licensed vocational nurses, and practical nurses, or as computer operations have been divided into systems design, routine programming, and low-level applications (like word processing) that require no programming skill. Deskilling can undermine both experience-based skills as well as school-based skills. When it creates low-skilled work with lower educational requirements, it contributes to overeducation as those individuals whose jobs are deskilled have more schooling than they need.

Overeducation may preserve the individual benefits of schooling, but undermine its social value. Indeed, most Americans believe that college is now necessary for jobs that high school graduates used to perform: 87% of the general public agree that a college diploma has become as important as a high school diploma used to be (Immerwahr & Foleno, 2000). Under these circumstances a great deal of post-secondary education looks like overeducation—students getting master's degrees where baccalaureate degrees were once sufficient, or earning baccalaureate degrees

[7] See Daly, Büchel, and Duncan (2000, table 1); the review in Hartog (2000), especially Tables 1 and 2; and the special issue of *Economics of Education Review* on overeducation, Vol. 19 (2000). Most of the public debate in Germany has focused on the undereducation of its young people, with too many leaving school before receiving their diplomas and not receiving adequate preparation in technological competences.

[8] See the review of signaling by Riley (1979), especially Section 5.1 on educational screening.

for jobs that a high school or community college graduate could perform. The pressure for College for All can only intensify this process, as levels of formal education outrun the demands of jobs.

6.3.5 The Equity Effects of Postsecondary Vocationalism

One consequence of vocationalism has been the differentiation of the *system* of higher education, along largely vocational lines. At the bottom level are the community colleges, with open access allowing second chances for students who did poorly in high school. The second-tier regional universities and unselective private universities, for students with a little more money and somewhat better high school records, have minimal admission standards and offer a great variety of occupational majors for middle-level managerial positions and for the less prestigious, lower-paid professions (like teaching and social work); like the community colleges, they have low graduation rates. The public universities and flagship campuses stand above them, and the elite research universities rise triumphant at the apex, preparing their students for professional and graduate schools and access to well-paid, high-status professions.

State systems of higher education after World War II have reflected this duality of expansive opportunity and inegalitarian differentiation. California provides the most formalized example: the 1960 Master Plan designated universities for professional education and PhDs, and reserved them for the top 12.5% of graduating high school students. The state colleges admit the top 33% of the graduating class and provide baccalaureate degrees and a few master's degrees, but (until very recently) no PhDs. The community colleges are accessible to all, virtually without cost, and offer both occupational preparation and academic transfer to four-year institutions. Equity and meritocracy can coexist: such systems have simultaneously opened up tertiary education for millions of Americans—College for All—and have still allowed a variety of elite institutions.

One consequence of a highly differentiated higher education system is that debates about access to different types of institutions are constant. The most desirable institutions are highly selective, and lower-income students, as well as racial minorities like black and Latino students, are much less likely to enroll. The community colleges and some regional universities are unselective, and enroll more lower-income and minority students. In between is a vast array of universities of different levels of selectiveness, with enrolments varying with class, race, and high school preparation.

The conflict between selective admissions and egalitarian goals (including College for All) has been most strident around affirmative action, the practice where some students who might not have been admitted on their academic merits are accepted—black and Latino students, sometimes lower-income students, sometimes athletes, or artists, or other groups. On the one hand, nineteenth-century conceptions of elite higher education and early-twentieth-century notions of meritocratic access through grades and test scores are hostile to any form of affirmative action.

On the other hand, equality of educational opportunity and the ethic of College for All argue for a greater inclusiveness in postsecondary education. Equally vitriolic debates have taken place over outreach programs to high school students, the standardized testing used in admissions (especially the Scholastic Aptitude Test), the extent of public funding and levels of tuition, and federal funding for grants and loans.

These equity issues are cases where public policy takes a clear stand on who will win and who will lose—on who will have access to which colleges and to which degrees. As things now stand, postsecondary education is very much a *filtering* system—where those students with the most promise are selected into elite institutions and have lavish sums spent on them, while those who have not proven themselves and who have the fewest resources are relegated to institutions (like community colleges and unselective regional universities) where they receive the bare minimum of a college education. Vocationalism has shaped these battles and given them much of their significance: if higher education were not the gateway to professional occupations, levels of public funding and debates over entrance requirements (including affirmative action) would not have the political and emotional intensity they currently possess. The role of higher education in providing access to the American Dream—the vision of upward mobility through individual efforts— is simultaneously its foundation and its burden, and conflict is the price it has to pay.

6.4 The International Influence of American Higher Education

Currently the American university is embattled on many fronts. Its critics call it elitist, and unwelcoming to low-income students, African American, and Latino students, while others bemoan the low standards and vocational majors of many universities (especially the regional universities). Government support has expanded enormously since World War II; but with the increased fraction of students going to tertiary education, government funding per student has been dwindling, tuition has been increasing, and there are substantial pressures to limit costs. Higher education is simultaneously criticized for abandoning general education and for being "irrelevant" to many students. Professionalism and professional schools have helped expend the university, but the critiques of professional education are constant and amazingly similar across the professions. Very few in the United States seem satisfied with the condition of the American university, even though everyone wants to be part of it.

Yet internationally the American system is often seen as "the best in the world," and many countries have modified their systems of higher education to emulate American universities. However, these efforts mistake the nature of the American system in several ways. While the well-known elite research universities may well be among "the best in the world," the largest number of American institutions are the regional universities, highly vocational (or professional) in their subjects and well oriented to local labour-market demands, but their quality is unclear and their

graduation rates low. The expansion of tertiary education in other countries needs to be careful about the quality of new institutions; otherwise an undesirable aspect of the American system—the enormous range in quality— may be replicated. (This is, for example, a serious problem in Korea, where the expansion of private universities has introduced a large number of profit-making institutions of unknown quality.) Furthermore, the expansion of a university system invites the problem of overeducation, as students decide to pursue more and more schooling as a way of staying competitive in labor markets, even without a substantial need for new university graduates.

As universities expand, they also become more vocationalized, or professionalized—at least if they follow the logic of the American system and the Education Gospel. But this brings several problems. One is that the prevocational goals of universities—civic and moral goals in the United States epitomized by general education, humanistic goals in Germany,[9] Confucian values in Korea and China—tend to be undermined by vocational purposes, and so the "new" universities" fail to live up to the ideals of the "old" universities. If students become overly preoccupied with individual advancement and occupational success, then this utilitarian attitude may itself undermine learning. Paradoxically, then, the expansion of universities without attention to student motivation may actually undermine learning and bring an anti-intellectual dimension to student attitudes (Cox, 2009). And of course the expansion of higher education brings with it increased costs, either for students or for governments, and the debate over who should pay these expanded costs is one of the costs of expansion.

In Germany, emulation of the United States has also taken the form of introducing the elite *Spitzenuniversitäten*, to create universities that can compete with world elite universities, provide research in more applied areas of the economy, and become less rigid and "academic." But emulating the elite American universities is not simple. Most of these universities were well developed before 1900; very few universities established since then have been able to break into the front ranks (Kerr, 1991). They have also become what Clark Kerr called "multiversities," serving many goals simultaneously—undergraduate education (including its recreational component like clubs and sports), both pure and applied research linked to graduate education, local economic development goals, and several cultural purposes—some of these unfamiliar in German universities. It is also likely that Germany leaders pushing for such institutions vastly underestimate the fiscal costs of establishing and maintaining them, costs that in the United States are borne by high tuition, huge federal investments in research, a rich array of alumni giving, and a long history of philanthropy directed at colleges and universities. Moreover, there appears to be limited understanding of the enormous fiscal costs of establishing and maintaining US-style elite universities, many of which are private with large endowments

[9] Germany, like most European countries, is in the process of shifting to three-year bachelor degrees and away from its tradition of professionally oriented diplomas. The outcome of this shift in terms of professional preparation is unclear, though there are substantial complaints that the B.A. is of insufficient worth in the labor market.

and vast fundraising activities. With no tradition of alumni giving and attention to the student experience, both of which are pervasive in the United States, and with very low tuition charges, almost all of the costs of creating German elite institutions have to be borne by government and dramatic increases in corporate research funding. The tasks are daunting. Most of the top universities in the world teach in English, the world language—19 of the 20 top-10 universities in the Shanghai rankings are in the United States or the United Kingdom—and it's unclear whether German-speaking universities can have such drawing power. And once the relatively egalitarian status of German universities system is compromised, it may be difficult to keep other kinds of inequalities from proliferating—and this would lead in the end to something like the US system of amazingly unequal universities.

Above all, the logic of the Education Gospel, the major rationale for expanding formal schooling, is itself flawed. At the individual level, such expansion may indeed accommodate the demand by students and their families for places in higher education, as is occurring throughout Europe, but in the absence of substantially increased demand for well-educated workers, this simply fuels overeducation. The Education Gospel proclaims much greater needs for highly educated workers, but these forecasts are in most cases exaggerated[10] —and Germany should be careful what its own forecasts say about the demands for educated workers. At the social level, the belief that more education will contribute to economic growth and international competitiveness is an overly simple model of growth, particularly in contrast to micro-growth models that include dozens of factors necessary for growth of which education is only one (e.g., Landau, Taylor, & Wright, 1996).[11] Furthermore, the choice to expand tertiary education rather than improving secondary education leads to unequal growth rates (Barro, 2000), a special problem in countries like the United States which already have highly unequal distributions of earnings (typically a lesser problem in Germany with its strong welfare state, which is itself under serious challenge even as income inequality in Germany is increasing). So the basic rationale for the continued expansion of tertiary education is at best precarious, and at worst deceiving.

An alternative to emulating the United States is to draw on the strengths of the German system, rather than the imagined strengths of the American system. Its secondary dual system is among the strongest VET systems in the world, though from an American perspective the academic component seems somewhat weak, and the coordination between the academic component operated by the *Länder* and the vocational component overseen by national employer associations could be stronger. One reform might therefore concentrate on coordinating the academic and the occupational components of the dual system, wherever it is practiced. The *Fachhochschulen* appear to be superior to our community colleges because of their

[10] For the United States, see Grubb and Lazerson (2004, ch. 7); for the United Kingdom, see Grubb (2004) and Wolf (2002).

[11] See Grubb and Lazerson (2004, ch. 6) and Wolff (2006) for this argument for the United States; see Wolf (2002) for a similar argument for the United Kingdom.

more advanced level, and they combine both occupational and related academic preparation. The current efforts to introduce more work experience and internships into the university build on the rationale for the dual system and the history of employer involvement in education, and might prevent the critique of professional education in the United States for being too academic, too research-oriented, and too far from the reality of practice. On the other hand, the efforts to maintain even levels of quality among universities has been consistent with the more egalitarian nature of German society, and the efforts to develop a tier of *Spitzenuniversitäten* is both inconsistent with this history and unlikely to attract large numbers of international students.

In the end, the United States and Germany come from two quite different traditions in education, and borrowing the practices from one country to the other is inevitably awkward. Both have vocationalized their education systems, to be sure, but in quite different ways. The United States envies Germany or its dual system of VET, but lacks the institutions—including strong unions, employer associations, and government interventions in labor markets—that shape the German system. Consistent with its other institutions, the American system is more *laissez faire* and much less regulated than the German system, a difference extending even to variation in testing and assessment practices. US research universities have developed in very different ways from the German models the Americans emulated near the end of the nineteenth century, and have always been better integrated into both national and regional economic development, vocational or professional preparation, and other utilitarian goals than their German counterparts are. And above all, the attitudes toward equity and inequality in the two countries is quite different, with a weak and *laissez faire* welfare state in the United States in contrast to a much greater support for equity and a strong corporatist welfare state in Germany (Esping-Anderson, 1990)—a difference that is most evident in the enormous variation in the quality of both American K-12 schools and its postsecondary institutions. Even when ideas travel lightly from country to country, like the claims of the Education Gospel, it is much more difficult for institutions to follow.

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Chapter 7
College for All: The American Model for Career and Technical Education

Steve Klein and Kimberly A. Green

7.1 Introduction

Throughout the twentieth century, vocational-technical education in the United States changed to respond to the needs of the labor market, workplace, and economy. We established new program areas like business education, information technology, marketing education, and health occupations. We increased capacity by building area technical schools and community colleges; developed guidance and advisement systems; and put into place expectations for gender equity in occupations. We built an infrastructure for vocational technical education that capably met the needs of the twentieth century.

This infrastructure is being challenged by the demands of the twenty-first-century economy, as is the delivery system and content of career and technical education (CTE). Our economy is now focused on knowledge acquisition and application; it is a skill-based economy that is changing rapidly. Today's economy demands a more dynamic kind of educational preparation, one that equips all students with the academic, technical, and employability skills and knowledge they need to be successful. To meet these new expectations, more Americans will need to pursue postsecondary education. A July 13, 2009 report published by the Executive office of the President Council of Economic Advisers, *Preparing the Workers of Today for the Jobs of Tomorrow*, indicates that "occupations that employ large shares of workers with post-secondary education and training are growing faster than others. While expected growth in construction and some manufacturing industries will create job opportunities at all skill levels, workers will be better positioned for good jobs if they acquire additional training and education. Occupations that have grown recently require more formal post-secondary schooling than occupations that have declined."

This growing consensus that all students need to be prepared for some postsecondary education was reinforced on February 24, 2009 when, in his first report to Congress, President Obama asked "every American to commit to at least one year

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or more of higher education or career training. This can be community college or a four-year school; vocational training or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma." This call for expanded college-going is further supported by federal labor-market projections that indicate that employment growth between 2006 and 2016 will be greatest in careers that require "some postsecondary education." In this timeframe, the demand for associate degrees is projected to increase by 18.6%, and the demand for other postsecondary vocational awards is projected to grow by 13.6% (U.S. Department of Labor, 2009).

To achieve the President's goal, more students need to go to college. But how will the United States achieve this? Unfortunately, simply ratcheting up high school students' academic course-taking loads is not enough. For while many students plan to attend postsecondary education, the brute fact is that there is a gap between students' aspirations and their actual life experiences: of every 100 students who begin ninth grade, only 68 graduate high school in four years, 40 begin any sort of postsecondary education, 27 make it to their sophomore year, and only 18 graduate with a four-year college degree. Odds like this are not encouraging (Hunt & Tierney, 2006).

Another solution to this goal of motivating more students to attend college is to engage more students in their learning, thereby increasing their preparedness, interest, focus, and success in postsecondary education. The American mantra to achieve this goal is rigor, relevance, and relationships. And so we come to the title of our chapter, *College for All: The American Model for Career and Technical Education.*

"College"[1] is not a word often associated with CTE in the United States. Commonly held perceptions are that CTE is for *those* kids who aren't going to college and that it functions as an alternative educational pathway for youth destined for employment in blue-collar jobs with low or minimal academic requirements. Changing these perceptions is essential because high-quality CTE is probably one of the best college access programs in the United States. But perceptions will only change if the concept proves viable in the field.

Career and technical education in the United States is in the midst of a fundamental transformation that is redefining what content is identified, how that content is organized, and how it is delivered at the secondary level. This new conception of CTE emphasizes both career and postsecondary preparation for students. Programmatic changes focus on aligning secondary and postsecondary coursework in broadly defined, sequenced, nonduplicative programs of study anchored within 16 Career Clusters™ that span the global economy. Instruction is, by design, standards-based, incorporating rigorous, state-defined academic knowledge that all high school students are expected to master integrated with challenging, industry-recognized technical content valued in the workplace.

[1] It is important to note that the authors of this chapter believe that college should be interpreted in the broadest sense, to include myriad forms of postsecondary education such as degrees, industry certificates and credentials, as well as apprenticeships. College consists of more than just study toward a four-year baccalaureate degree.

7.2 From Whence We Came

Historically, secondary vocational education programs were designed to provide narrow, occupationally specific technical instruction to prepare youth for immediate workforce entry. Often tailored for young adults with learning styles or cognitive "deficits" that made them less likely to succeed in traditional classrooms, vocational education earned the reputation as a dropout-prevention strategy, one offered as a separate, parallel track from the traditional academic curriculum. Due to their perceived learning deficiencies, students concentrating in vocational coursework often received watered-down academic instruction as a complement to their technical coursework, with core subject areas taught in an applied context (CORD, 1999).

Because secondary programs were geared primarily toward workforce preparation, students completing a traditional vocational program often lacked the academic skills to make immediate transitions to postsecondary education without completing remedial coursework. By failing to equip high school students with the requisite academic skills for postsecondary success, traditional vocational education programs effectively terminated students' educational aspirations, establishing an academic ceiling that few could surpass.

The unintended consequences of participation in vocational education historically manifested themselves in two ways. First, students taking relatively large amounts of vocational coursework graduated high school lacking the full complement of academic skills needed to succeed in college. Although recent changes in state academic requirements have helped to increase the academic preparation of all students, and particularly of those with large occupational credit loads, students completing greater numbers of occupational courses continue to lag behind those concentrating in other subject areas (Levesque et al., 2008).

As illustrated in Table 7.1, occupational course taking is inversely related to students' academic preparation, although the gaps between those taking little or no CTE and those with heavier credit loads have declined over time. For example, in 1990, less than one-fifth (18%) of students taking the greatest number of occupational credits met the New Basics core academic standards, as compared to over half (55%) of those taking less than 2.0 occupational credits. Though course-taking differences have narrowed over time, as late as 2005, students who obtained 4.0 or more occupational credits were less likely to meet the New Basics core academic standards than those who took no occupational coursework (60% vs. 72%), and were less likely to complete a four-year college preparatory course load (37%vs. 62%).

Lacking the requisite academic skills upon graduating high school, those taking large amounts of occupational courses who are choosing to pursue postsecondary education are more likely to require remedial coursework once enrolled. Transcript data from 1992 public high school graduates reveal that remedial course taking in postsecondary education increased with the number of occupational credits students earned during high school (Fig. 7.1). On average, those completing 4.00 or more occupational courses while in high school took nearly twice as many remedial courses in college as those who took no occupational credits (1.39 vs. 0.68 remedial credits).

Table 7.1 Percentage of public high school graduates meeting selected academic course-taking benchmarks, by occupational credits earned in high school: 1990, 2000, and 2005

	New Basics core academic standards			Four-year college preparatory coursework		
Occupational credits	1990	2000	2005	1990	2000	2005
All graduates	38.1	57.9	65.9	28.7	41.8	48.1
None	54.6	66.1	71.9	45.4	53.5	62.2
0.01–1.99 credits	52.2	62.5	69.1	41.7	49.8	55.6
2.00–3.99 credits	38.7	59.0	67.3	29.5	43.6	49.4
4.00 or more credits	18.1	50.1	60.2	9.5	29.0	36.6

Note: New Basics core academic standards include four years of English and three years each of mathematics, science, and social studies. Four-year college preparatory coursework is defined as earning 4.0 or more credits in English; 3.0 or more credits in mathematics at the algebra 1 or higher level; 2.0 or more credits in biology, chemistry, or physics; 2.0 or more credits in social studies with at least 1.0 credit in US or world history; and 2.0 or more credits in a single foreign language. For standard error tables, see http://nces.ed.gov/pubs2008/2008035se.pdf
Source: Levesque et al. (2008, table 2.25). Data from U.S. Department of Education, National Center for Education Statistics, the 1990, 2000, and 2005 High School Transcript Studies (HSTS)

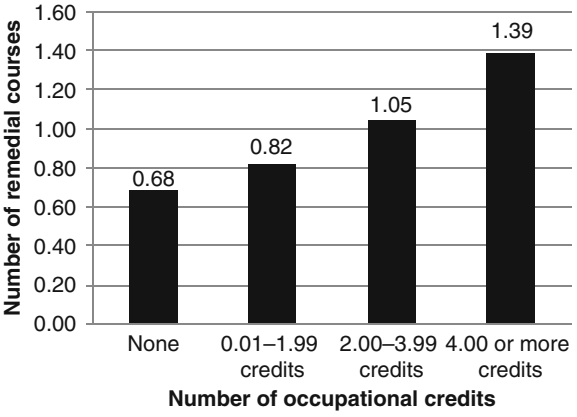

Fig. 7.1 Number of postsecondary remedial courses taken
Source: Levesque et al. (2008). Data from U.S. Department of Education, National Center for Education Statistics, The National Education Longitudinal Study of 1988 (NELS:88/2000), "Fourth Follow-up, 2000"

One consequence of entering postsecondary education unprepared for college-level coursework is that students are less likely to complete a degree or certificate than their peers who have no need for remediation, and this finding holds irrespective of the level of students' CTE course taking. Analysis of postsecondary transcripts of 1992 twelfth graders who enrolled in a postsecondary institution between 1992 and 2000 reveals that 69% of those who had never participated in remedial postsecondary coursework had earned a degree or certificate by 2000, compared to between 30 and 57% of those who had enrolled in one or more remedial courses, with the range explained by the type and amount of remedial course

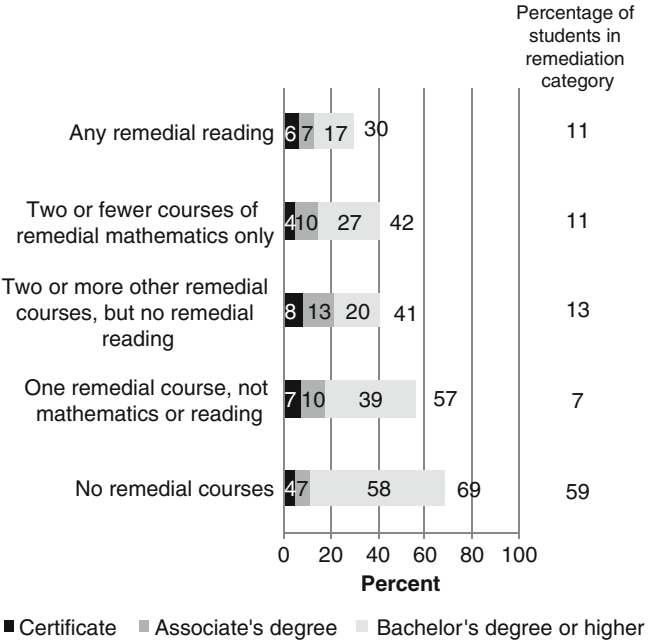

Fig. 7.2 Educational attainment of remedial course takers who earned a specific degree or certificate, by type and intensity of postsecondary remedial coursework: 2000
Source: Adelman (2004). Data from U.S. Department of Education, National Center for Education Statistics, The National Education Longitudinal Study of 1988 (NELS:88/2000), "Fourth Follow-up, 2000"

taking (Fig. 7.2).[2] Simply put, individuals who enter college lacking the minimum academic skills to succeed are much less likely to persist and complete, and CTE students, due to their relatively lower levels of academic skill attainment, are at particular risk.

Historically, heavy participation in vocational education also has been associated with diminished postsecondary matriculation in advanced postsecondary education. As recently as 2000, high school students earning relatively greater levels of occupational credits were less likely to enroll in any postsecondary institution (Table 7.2). Those who did enroll also were more likely to do so first in a two-year or less-than-two-year institution than their peers who earned fewer or no occupational credits. These reduced rates of transition between the secondary and postsecondary sectors indicates, at least to date, that students choosing to take heavier loads of CTE coursework are more likely to limit their educational opportunities.

As might be expected given their diminished postsecondary enrollment experiences, students who were heavy consumers of occupational coursework were less likely to pursue earning any postsecondary credential (Table 7.3). For example, just

[2] See http://nces.ed.gov/programs/coe/2004/section3/indicator18.asp.

Table 7.2 Percentage of 1992 public high school graduates who enrolled in postsecondary education by 2000, by institutional type and occupational credits earned in high school

Occupational credits earned in high school	Enrolled by 2000	Four-year institution	Two-year or less-than-two-year institution
All high school graduates	83.2	57.2	42.8
None	92.0	76.0	24.0
0.01–1.99 credits	89.5	67.8	32.2
2.00–3.99 credits	85.5	53.0	47.0
4.00 or more credits	70.3	37.8	62.2

Source: Levesque et al. (2008, table 2.29). Data from U.S. Department of Education, National Center for Education Statistics, The National Education Longitudinal Study of 1988 (NELS:88/2000), "Fourth Follow-up, 2000"

Table 7.3 Percentage distribution of 1992 public high school graduates who enrolled in postsecondary education, and their highest postsecondary credential earned as of 2000, by occupational credits earned in high school

			Postsecondary credential earned		
Occupational credits	No postsecondary credential earned	Total	Certificate	Associate's	Bachelor's degree or higher
All graduates	39.3	60.7	5.7	9.3	45.7
None	27.1	72.9	2.0	4.7	66.1
0.01–1.99 credits	34.9	65.1	5.2	5.8	54.1
2.00–3.99 credits	38.8	61.2	6.2	10.8	44.2
4.00 or more credits	52.6	47.4	7.4	14.6	25.4

Source: Levesque et al. (2008, table 2.32). Data from U.S. Department of Education, National Center for Education Statistics, The National Education Longitudinal Study of 1988 (NELS:88/2000), "Fourth Follow-up, 2000"

47% of high school graduates who completed 4.0 or more occupational credits and who attended a postsecondary institution by 2000 had attained some form of postsecondary credential, compared to 73% of those who earned no occupational credits while in high school.

In sum, postsecondary opportunities for students taking relatively greater occupational course loads appear to have been compromised to date, with those investing more heavily in CTE coursework less likely to possess the academic skills needed for postsecondary success. Proposed changes to the American CTE system are intended to address this shortcoming by fundamentally redesigning how CTE instruction is organized and delivered.

7.2.1 Breaking Down the Walls

For decades, secondary and postsecondary educational systems operated relatively independent of one another. This model functioned well in an economy that offered

limitless opportunity for workers in the skilled trades, because high school students graduating with a vocational skill set were often able to find immediate employment that offered a living wage. With the outsourcing of relatively high-paying jobs overseas and changes in marketplace skill demands, this traditional approach to CTE instruction has proven less viable over time, as employers increasingly call for workers with general workforce readiness skills, basic academic knowledge, and the ability to combine the two to continue their on-the-job learning.

Until recently, efforts to improve the provision of CTE have focused on strengthening the academic core within CTE coursework, while maintaining a separate, but equal, educational program. These efforts, termed "integration," center on identifying the academic knowledge embedded within technical coursework, with technical curricula offered as a separate platform for teaching academic skills. Recognizing that integration may take many forms, educators have experimented with multiple strategies for "bulking up" the academic content within technical coursework (Grubb, Davis, Lum, Plihal, & Morgaine, 1991).

In addition to marketplace changes, developments within the secondary educational sector are contributing to the decline of the traditional vocational model. Beginning with the release of *A Nation at Risk* in 1983, national attention has increasingly focused on the deterioration in academic skill holdings among America's youth. States initially responded to the alarms sounded in the *Nation at Risk* report by developing standards for core academic subject areas and, spurred by federal policy contained in successive reauthorizations of the *Elementary and Secondary Education Act of 1965* (ESEA), over the last two decades have worked to create statewide assessments to hold school districts accountable for student learning.

The federal *No Child Left Behind Act of 2001* (NCLB), which established federal expectations for public school children's academic performances, might better be termed the "High School for All Act." The goal of this landmark federal legislation is to ensure that all students graduate high school with a solid foundation of academic skills. The act reinforces this expectation by requiring that each state establish rigorous academic standards that are aligned with state-developed assessments. States are held accountable by the federal government for moving students toward achieving these standards through the use of a high-stakes statewide accountability system that sanctions schools failing to achieve state-established benchmarks.

To promote student learning, states have responded to NCLB legislation by ratcheting up high school graduation requirements, most often by increasing the number of core academic courses required for graduation. Although student participation in CTE has remained relatively steady over time, educators have voiced concern with the survival of technical training, fearing that rising academic requirements are beginning to crowd out CTE in the high school curriculum (Fletcher, 2006).[3] If instructional expectations do not change, there is a concern that students will

[3] Recent statistics indicate that 91 percent of 1990 high school graduates completed at least one occupational course, compared to 92 percent of 2005 graduates. However, the proportion of CTE credits earned in high school has fallen from 1990 to 2005 due to increased academic course taking.

be increasingly unable to participate in CTE coursework. Recognizing the need to respond, in the early part of the twenty-first century, CTE educators began adopting a new conception for programmatic delivery.

The data are both clear and conflicting at the same time. Clearly, students cannot exchange academic coursework for CTE coursework. This fact has a detrimental impact on students' postsecondary attendance and success rates. Yet there is also evidence from the State Consolidated Annual Reports required by the *Carl D. Perkins Career and Technical Education Act of 2006* (P.L. 109–270), commonly referred to as "Perkins IV," that student enrollments in CTE are increasing. According to the U.S. Department of Education's (2008) annual *Report to Congress on State Performance Program Year 2006–07* for the Carl D. Perkins Vocational and Technical Education Act of 1998 (Perkins III), it was noted that "states reported a higher number of students as having enrolled in career and technical education courses . . . [and that this] level of enrollment is the highest in the eight years (PY 1999–2007) of Perkins III implementation." CTE seems to be offering students something that they are seeking.

7.2.2 Same Thing, New Name?

The workplace of the twenty-first century requires that educators make substantive changes in the content of CTE instruction. The complexity of modern technical careers requires that workers be outfitted with a rigorous academic foundation, while ongoing technological change requires that they also receive transferable and adaptable technical skills that enable them to be lifelong learners. This new set of workplace demands requires that CTE's mission change from simply preparing individuals for workplace entry to its new, dual mission of readying participants for both postsecondary matriculation and career success.

Through Perkins IV, Congress directed states seeking a share of the $1.1 billion federal investment in CTE to commit "to develop more fully the academic and career and technical skills of secondary and postsecondary education students" so that they can be prepared for "high skill, high wage, or high demand occupations" and "have the knowledge and skills needed to keep the United States competitive." Performance indicators contained within the law value postsecondary enrollment and employment equally, and states are required to report annually on their progress in improving student and program performance on both sets of measures.

Although Perkins directs states in their efforts to accomplish this dual mission, the reality of changing the system requires the adoption of a new framework and model for CTE. To assist states in moving toward this vision, the U.S. Department of Education, in collaboration with the National Association of State Directors of Career Technical Education Consortium (2009), initiated efforts to identify Career Clusters™ and Career Pathways for organizing CTE content beginning in 1999.[4]

[4] Detailed information on the development of the Career Clusters™ and Pathways effort as well as resource documents and materials may be downloaded from the States' Career Clusters™ Initiative website; see http://www.careerclusters.org/

Products from this early work form a context for ongoing efforts to transform the organization and delivery of CTE within American secondary schools and colleges.

7.3 Career Clusters™ and Pathways

To help structure the content of modern CTE programs, the Office of Vocational and Adult Education, U.S. Department of Education, has defined *16 Career Clusters™* that, taken together, span the breadth of the American economy. All jobs in the American economy fall within at least one Career Cluster™, though some skill areas may cross Career Clusters™. These 16 Career Clusters™ and their descriptions are identified in Fig. 7.3.

Career Clusters™ not only expand the scope of CTE to include all sectors of the economy, but also though the use of programs of study, are intended to define a sequence of instruction that connects secondary and postsecondary education through integrated academic and technical content. Specifically, Career Clusters™ and Career Pathways are designed to enable learners to move through a progression of knowledge and skills that lead to the award of a durable, portable credential (which may be a degree, certificate, or credential) with value that is recognized in the workforce.

7.3.1 The Career Clusters™ Model: The Structure

Traditional vocational education prepared students with occupational skills for a single job. Career Clusters™ provide for a progression of learning that becomes more specific over time. Students beginning in the early grades are introduced to essential knowledge and skills[5] common to all 16 Career Clusters™, then progress through more advanced coursework, and ultimately learn occupation-specific content in the latter part of high school or upon enrolling in postsecondary education. This broader instructional model ensures that youth are exposed to a range of potential careers, thus increasing their career awareness while preserving their educational options.

Recognizing that there are multiple occupations within a given Career Cluster™, educators collaborated with business leaders to group occupations that share common knowledge and skills with the Career Clusters™. These materials, which are available for download by educators through the States' Career Clusters™ Initiative, provide standardized models that most states are either adopting or adapting to help inform educators, students, and parents about the career

[5] In addition, recent work by the States' Career Clusters™ Initiative has added a level below the foundation knowledge and skills called "essential knowledge and skills", which are shared among all Career Clusters™. All Career Cluster™-related knowledge and skills statements can be found at www.careerclusters.org

Career Cluster™	Description of Career Cluster™
Agriculture, Food, and Natural Resources	The production, processing, marketing, distribution, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.
Architecture and Construction	Careers in designing, planning, managing, building, and maintaining the built environment.
Arts, A/V Technology and Communications	Designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.
Business Management and Administration	Encompasses planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.
Education and Training	Planning, managing, and providing education and training services, and related learning support services.
Finance	Planning, services for financial and investment planning, banking, insurance, and business financial management.
Government and Public Administration	Executing governmental functions to include Governance; National Security; Foreign Service; Planning; Revenue and Taxation; Regulation; and Management and Administration at the local, state, and federal levels.
Health Science	Planning, managing, and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development.
Hospitality and Tourism	Encompasses the management, marketing, and operations of restaurants and other foodservices, lodging, attractions, recreation events, and travel-related services.
Human Services	Preparing individuals for employment in career pathways that relate to families and human needs.
Information Technology	Building Linkages in IT Occupations Framework: For Entry Level, Technical, and Professional Careers Related to the Design, Development, Support and Management of Hardware, Software, Multimedia, and Systems Integration Services.
Law, Public Safety, Corrections, and Security	Planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services.
Manufacturing	Planning, managing and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.
Marketing	Planning, managing, and performing marketing activities to reach organizational objectives.
Science, Technology, Engineering, and Mathematics	Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.
Transportation, Distribution, and Logistics	Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.

Fig. 7.3 The 16 Career Clusters™
Source: © NASDCTEc/National Career Technical Education Foundation (NCTEF). Available at http://www.careertech.org/career-clusters/glance/clusters.html

opportunities that underlie a program of study.[6] To illustrate, the Architecture and Construction Career Cluster™ encompasses three distinct pathways: (1) Design/Pre-construction, (2) Construction, and (3) Maintenance/Operations, each of which encompasses a unique set of occupations. A list of the occupations associated with each of these pathways is shown in Fig. 7.4.

Individuals pursuing studies in the Construction Pathway are simultaneously preparing themselves for employment within 36 distinct occupations geared toward the building industry, including general contractor, construction engineer, estimator, carpenter, electrician, painter, and so on. These occupations require differing levels of educational preparation, with some terminating in a credential or certificate typically awarded at the sub-baccalaureate level, while others require advanced postsecondary education at the four-year college or university level. And, in some instances, career pathways may extend to the graduate level, with individuals requiring a master's, doctorate, or professional degree before they are permitted to practice

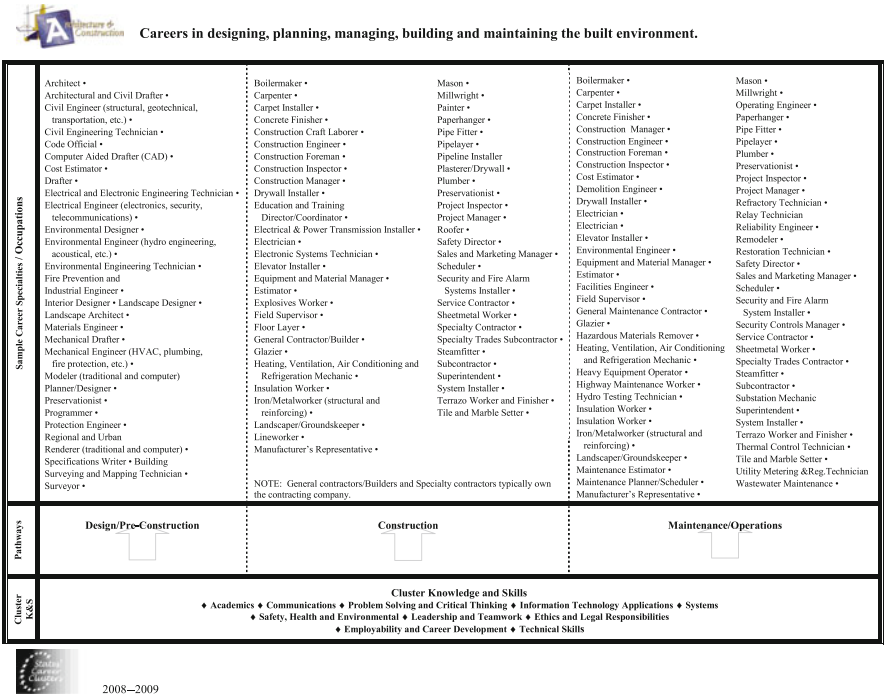

Fig. 7.4 Pathways and occupations within the architecture and construction cluster
Source: © NASDCTEc/NCTEF. Available at http://www.careerclusters.org

[6] Models for each of the 16 Career Clusters™, containing information on the occupations and pathways within each cluster, may be downloaded at http://www.careertech.org/career-clusters/resources/career-frames.html

in their field. The US federal government has identified 79 Career Pathways within the 16 Career Clusters™.

7.3.2 The Career Clusters™ Model: The Content

To support this new model, there was a need to develop new content. What was missing was the middle ground between general employability skills and occupation-specific content. Fig. 7.5 showcases, from the Science, Technology, Engineering, and Mathematics (STEM) Career Cluster™, the progression of instruction from broad employability or essential knowledge and skills through Career Cluster™, Career Pathway, and occupation-specific knowledge and skills. Knowledge and skill statements have been developed for each of the 16 Career Clusters™ by national

Occupation-Specific Knowledge and Skills

- **Knowledge and skill related to a specific job**
  ***Example*:** Geothermal Engineer
  - Experience with corrosion control and mitigation systems in geothermal plants.
  - Process-oriented background specializing in gas extraction systems and well field pressure control.
  - Experience in H2S abatement technologies on the primary vent gas, steam vent stream, and condensate streams.

Pathway Knowledge and Skills

- **Common to one career pathway**
  Example: Engineering Technology
  - Demonstrate the ability to use Newton's Laws of Motion to analyze static and dynamic systems with and without the presence of external forces.
  - Use the laws of conservation of energy, charge, and momentum to solve a variety of problems involving mechanical, fluid, chemical, biological, electrical, and thermal systems.
  - Use the relationships between energy, work, and power to solve a variety of problems involving mechanical, fluid, electrical, and thermal systems.
  - Use the principles of ray optics to describe reflection and refraction of light.

Cluster Foundation Knowledge and Skills

- **Common to one Career Cluster™**
  Example: *Effectively develop and apply the skills inherent in systems engineering where requirements, configuration, integration, project management, quality assurance, and process applications are necessary.*

Essential Knowledge and Skills

- **Common to all Career Clusters™ and pathways**
  Example*: Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication in the workplace.*

Fig. 7.5 Progression of instruction from essential to occupation-specific knowledge and skills in the STEM Career Cluster™
Source: © NASDCTEc/NCTEF, 2008. The Vehicle of Implementation: Programs of Study

advisory committees comprising of secondary and postsecondary educators, industry and labor representatives. In addition, these knowledge and skill statements have undergone several updates, reviews, and national validations meeting psychometric standards.

While Career Clusters™ and Career Pathways form the framework for modern CTE, it is programs of study that act as the vehicle to implement the framework. To motivate educators to change their instructional design and delivery, Perkins IV requires states, local educational agencies, and community colleges to implement at least one program of study, which many states are now using to restructure their delivery of CTE coursework. Specifically, the federal legislation outlines four broad elements that constitute a program of study (POS):

- Incorporates secondary education and postsecondary education elements.
- Includes coherent and rigorous content, aligned with challenging academic standards, and relevant career and technical content in a coordinated, nonduplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education.
- May include the opportunity for secondary education students to participate in dual or concurrent enrollment programs or other ways to acquire postsecondary education credits.
- Leads to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.

Though the Perkins IV legislation lays out an overarching vision of the components of a program of study, educators are, in practice, taking differing steps to implement these programs at the local level. For example, states are assigning differing priorities on identified components and employing differing strategies to implement POS elements at the state and local levels. As a consequence, the design and content of POS vary across states and there is some danger that, without unifying guidance at the national level, state POS systems will evolve in different directions. Lack of consistency is due, in part, to an absence of quality materials to guide POS development. The reality is that widespread changes are still needed in curriculum, assessments, guidance and counseling, initial teacher preparation and professional development, and instructional delivery if this new approach to offering CTE instruction is to be viable, and new models for delivering these pedagogical components have yet to be created and circulated.

7.3.3 Program of Study Plans

To assist educators in sequencing instruction, the States' Career Clusters™ Initiative has developed sample programs of study (see Fig. 7.6) that provide examples of how these elements may be incorporated into a learning plan for students. These plans can be used by educators to sequence instruction, by counselors to help

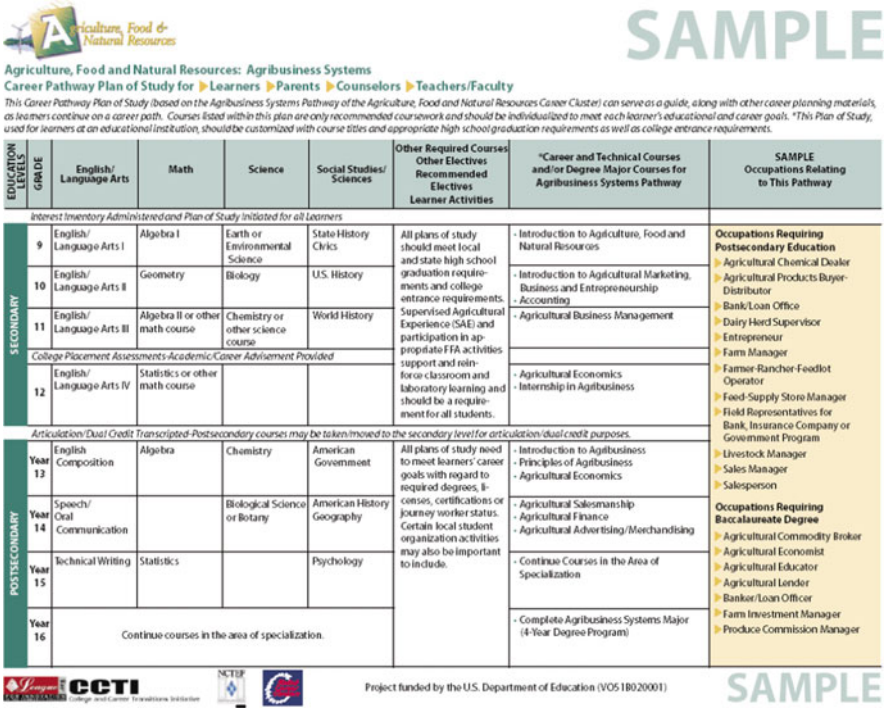

Fig. 7.6 Sample program of study in the Agriculture, Food, and Natural Resource Career Cluster™ for the agribusiness systems pathway
Source: © NASDCTEc/NCTEF. Available at http://www.careerclusters.org

guide students in their selection of courses, and by students and parents to make informed enrollment choices.[7]

One benefit of the program of study template is that it allows students (and parents) to see the type of preparatory coursework that an individual would need to make a successful transition into postsecondary education. While these education plans are dynamic and meant to be modified over time, their use helps to ensure that young adults make appropriate educational investments throughout their educational careers. This can help reduce the need for postsecondary remediation, which might otherwise be needed if students did not take the appropriate coursework to permit them to pursue their postsecondary career goals.

[7] See www.careerclusters.org for more information on these programs of study.

7.4 Benefits of Career Clusters™ and the New CTE Model

This new CTE model offers a number of benefits. Promoting the alignment of academic knowledge and technical content within and across educational sectors helps ensure that students graduate high school with the skills they need to make a seamless transition into postsecondary education. And by moving young adults through a progression of sequenced coursework—beginning with basic skills in high school that progress into advanced coursework offered at the postsecondary level—this model can help preserve students' career and life options. Further, this new model, as shown in Fig. 7.7, incorporates many benefits for stakeholders.

While this new model for CTE is still too new to have produced data and research to prove its effectiveness, there are many promising signs. Studies of career academies, a high school program in which curriculum integrates academic and CTE courses organized around one or more broad career themes, offer evidence that students may learn better when information is provided in context. Nonexperimental evaluations have documented that academy students have better attendance and grades, fail fewer courses, have lower dropout and higher high school completion rates, and are more likely to go on to college (and four-year colleges, in particular), than their high school peers (Stern & Stearns, 2006).

Learners	Enhances academic achievement by providing real-world relevance. Provides opportunities to explore multiple pathways. Helps connect high-profile careers to real-life situations. Provides smoother entry into postsecondary education. Helps students make better career decisions.
Teachers/Faculty	Helps tailor curriculum to the needs of the community. Provides an opportunity to integrate CTE and traditional academics. Offers an opportunity to enhance academic achievement for all students. Helps learners become more focused and engaged.
Schools/Colleges	Broadens the scope of existing curricula. Encourages coordination among faculty. Provides a framework for curriculum alignment. Encourages coordination between secondary and postsecondary education. Reduces need for remediation.
Counselor	Connects learner interest with coursework. Motivates learners to reach higher levels of academic achievement. Shows relevance of school to postsecondary and lifelong learning.
Employers	Improves the connection of the education system to the needs of the workplace. Connects education, workforce development, and economic development. Provides a well-qualified workforce that can quickly adapt to changing needs. Offers an opportunity for input in school curriculum.

Fig. 7.7 Benefits of Career Clusters™ model
Source: NASDCTEc/NCTEF, Career Clusters™ Tour Guide: Module 1 (2005)

Leading U.S. policy organizations like the National Governors' Association, the U.S. Chamber of Commerce, and the National Association of State Boards of Education have made CTE a policy priority and have published resources advocating for this new model of CTE. Data collection efforts will be hampered, however, since the federal Perkins legislation does not stipulate a set of reporting requirements surrounding the use of programs of study. Another challenge is that states and local agencies are using differing approaches to define and implement programs of study, meaning there is a lack of valid, and at times, reliable data across educational agencies. Over time, these difficulties will likely be surmounted, but in the short term, system implementation is proceeding as a matter of faith.

7.5 Are We Ready?

There are several promising models for implementing Career Clusters™ and programs of study. Some are exploring the use of Career Clusters™ and programs of study to transform traditional CTE programs. The California multiple pathways movement views this as a new educational model for all students.[8] Theme-based high schools, career academies, technical high schools, and charter and magnet schools are all variations of this new instructional model. Cities like New York City and states like California are leading the way in using this instructional model as a vehicle to achieve their educational goals. As is the tradition in the United States, we are letting the marketplace take hold of this innovation, test it out, and improve it. While we don't know if this new model will become mainstreamed, we do know it is getting attention and gaining momentum. The July 2009 report published by the Executive Office of the President's Council of Economic Advisers, *Preparing the Workers of Today for the Jobs of Tomorrow*, offers the following recommendation (p. 17):

> - The goals of components of the post-high school system should be aligned and the curriculum cumulative.
>
> . . . One approach to helping students put together courses that generate marketable skills even if the student is not continually enrolled is "career pathway" (or "career cluster") programs. These programs typically involve a careful map of required courses and training, designed to be internally coherent and linked to the demands of specific jobs. Career pathways can begin as early as middle school and can include accelerated programs that blend basic skills and occupational training.

Despite this attention and momentum toward developing a new conception of CTE, the American system of delivering CTE is in an early phase of transformation. While most CTE administrators, teachers, and faculty support the goal of preparing students for postsecondary transition using the Career Clusters'™ delivery model,

[8] See http://www.connectedcalifornia.org/ for more information on the multiple pathways model.

some still cling to the belief that some kids are made to "work with their hands" or "aren't cut out for college." These voices are growing weaker, but still exist. The coming decade will provide evidence of whether this new American experiment to transform CTE will be successful.

7.6 Conclusion: The Wrong Goal, The Right Direction?

While the evolving American conception of CTE is aligned, through Career Clusters™ and programs of study, with the goals of "College for All," perhaps "College for All" isn't really the right goal. America's new approach is intended to preserve all students' education and life options. Between rising college costs, IT platforms that offer new kinds of educational possibilities, the rapid pace of technological change, "College for All" may be a panacea, but it is a misnomer for the real focus of the American education system—skills. Perhaps it would be better not to tie our country's future to an institution, a degree, or specific programs but instead redefine the goal as "skills for all." As Henry Ford said, "[t]he only real security that a man will have in this world is a reserve of knowledge, experience, and ability." Modern CTE is the vehicle to ensure that this goal—skills for all—can be achieved in the United States.

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Chapter 8
Vocational Education Then and Now: So What's the Difference? A Dialogue About the Philosophy of VET in the United States

Philip L. Smith and Antje Barabasch

8.1 Introduction

We worked on this chapter over two years and were engaged in an intense dialogue about the role of vocational education and training (VET) in the United States. A few of the questions that Antje Barabasch asked remained in this final version of the chapter. In this way it partially seems like a dialogue, which could have occurred between a journalist and a historian engaged in a conversation, raising a number of issues that illustrate our different cultural understanding of purposes and virtues (*Wirksamkeit*) of vocational education and training (VET). If our exchange ends with more questions than answers, it may be all for the better. To expect easy resolution of issues stemming from cultural differences is almost always a mistake, whether those conflicts exist within or between cultural groups.

The other chapters in this book explain and elaborate how VET in the United States is organized, structured, and governed. Labor-market outcomes and needs are discussed and a critique on the situation of VET is offered. Although the German system has been at different points in time a model for a variety of initiatives in the United States targeted toward the restructuring of VET, it never had been implemented comprehensively; and neither did it have a long-lasting effect on VET developments. Therefore, it seems to us that it might be difficult from a German perspective to understand current developments in the United States, especially why they occur the way they do. In this chapter we attempt to identify and explore the different ways VET is conceptualized and defended in Germany and the United States in order to improve our cultural, historical, and philosophical insight into the development of these differences.

Each way of looking at VET should be used to help imagine new options for reversing the apparent deterioration of living conditions for large numbers of people in both countries. Rather than construct our own theories as to how VET should be conducted, we want to discuss ideas and approaches that have emerged in our

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two cultures over the last century, and identify points of intersection. We need to appreciate each other's convictions and failures without assuming that one approach is superior to the other. A deeper and more reflective grasp of the philosophical rationale that prevails in the United States and Germany toward education in general and vocational education in particular should help us work together with greater profit.

To what extent did German and American scholars and policy makers of the nineteenth century agree on the foundations of education? If there was agreement, why did the educational systems of the two countries develop in such contrasting ways? Antje Barabasch takes the role of the German scholar, who makes observations and judgments about VET based on her own cultural understanding. Central to her concern is the issue of general-versus-vocational education. She believes it to be the driving question in current policy debates. The "college for all policy," which is popular in the United States, rejects the historically grown German understanding of VET as a necessary path for certain types of individuals. The German system of VET, which was and remains a valuable foundation of a thriving German economy, is currently being questioned within the country, even by German industry. Many believe it to be inadequate as preparation for the modern workplace, and for coping with the market-driven challenges to an individual's life course (Crouch, Finegold, & Sako, 1999; Culpepper, 1999; Flecker & Schulten, 1999; Steinmann, 2000). Philip L. Smith, an American philosopher of education, contextualizes the main ideas that have led the United States to adopt its own unique approach to VET, which it, also, now seems to be questioning. He addresses many of the standard questions about VET, but raises a number of his own questions that are characteristic of philosophy.

8.2 Smith on Education and Vocationalism in the United States

Americans have always been ambivalent about education. They tend to be suspicious about the value of formalized learning of the sort associated with schooling. For a good portion of the country's early history, educational institutions were seen as reflections of old world cultures (Urban & Wagoner, 2009). And old world cultures were precisely what the American ethos was designed to avoid. Besides, the struggle to survive in a land without the basic amenities required for civilized life put an emphasis on practical skills and action, not on tradition or deep reflection. So, this combination of wanting a new more liberating culture and the need to deal with the perils of nature in the raw produced an atmosphere of impatience when it came to traditional school subject matter and teaching methods associated with institutionalized learning. Americans of that day who were not of this attitude, who instead valued formal instruction, actually played to the prejudice against traditional schooling. They worked initially to emulate the educational practices of Europe. Latin, Greek and knowledge of the classics were thought of as the measure of a person who was properly prepared for a rich human life.

8.2.1 The Era of the Common School

Even after the American Revolution, when there was widespread recognition that the country needed to educate its citizens in a deliberate fashion in order for its democratic experiment to succeed, the model for doing this remained rather traditional in form and content until the end of the Colonial period. The 1820s, the beginning of the Jacksonian age, witnessed the beginning of a new form of America's democratic experiment. After the presidential election of 1828, which saw Andrew Jackson take office, a new attitude began to show itself. The period of high ideals that defined the early Republic had come to its useful end. In place of the romantic celebration of democratic sentiments, of the sort that characterized the French Revolution and the writings of John Locke, the American public wanted a more practical implementation of its democratic values. Talk about the glories of democracy and the type of literary education it required was replaced by an interest in "doing business" and fostering the kind of skills and attitudes that were useful to practical-minded people. Thus began the era of the Common School, the first public schools in America, which serve as the foundation for public education in the United States to this very day (Church & Sedlak, 1976).

Actually, there were two factions vying to control the hearts and minds of Americans after the Colonial period. Jacksonians pushed hard for rule by the "common man," for the authority of popular opinion, and for personal freedom, no matter how benighted or untutored they may have seemed. They believed that the best education came from actual life-experience, not from formal schooling (Church & Sedlak, 1976). The people who came up with the idea of the Common School, who called themselves "Whigs" – a term derived from the British middle-class politics – were appalled by these sentiments. They believed that what the country desperately needed, at that moment, and far into the future, was a massive effort to develop an infrastructure to support a bourgeois democracy and an industrious middle class. The Jacksonian celebration of an unfettered individual, free from the tyranny of government, and frivolous social conventions, had gone way too far, in their view. So, they organized politically under the banner of the Whig Political Party, which was a forerunner to today's Republican Party. Among other things, Whigs were the driving force behind the institutionalization of free public schools in the United States.

Jacksonian democracy made a deep and permanent imprint on American life. But Whig bourgeois republicanism did too. The conflicting influence of these two traditions can be seen to this day in the ambiguous attitude Americans have toward their educational institutions. They want them, but are predictably suspicious of their tendencies. Americans tend to be fearful that institutionalized learning will be used for cultural or political indoctrination, "old world" style. Or, almost as bad, they worry that whatever the schools strive to do will quickly become obsolete and irrelevant to the practical business of life. These worries are the source of a longstanding and nagging presence of anti-intellectualism in American life. They also lay bare the inclination of Americans to reduce the objective value of ideas to their useful effects and to regard the search for any deep understanding as purely personal,

i.e., as important, perhaps, for private purposes, but not for conducting important worldly transactions (Diggins, 1994).

Whigs were by no means free of this prejudice. But they were convinced that their understanding had more far-reaching social utility than Jacksonians could imagine. Controlling the Common School movement as they did, Whigs set up an educational system that standardized the curriculum and emphasized modern subjects, that were worldly, rather than classical subjects that most decidedly were not. Put another way, the Whig curriculum featured subjects that were designed primarily to give the learner dominion over nature, rather than a deep and, from the Whig perspective, "unproductive" urge to understand the human condition. Using ideas found in work of nineteenth-century German educational reformers, Johann Pestalozzi, Johann Herbart, and Friedrich Froebel, Whig educators introduced a new pedagogy that focused on the positive motivation of students, along with programs to train teachers in the proper utilizations of modern instructional methods (Church & Sedlak, 1976).

Whigs believed that the Common School would simultaneously serve two important functions. One was to cultivate citizenship for the type of society where one is expected to participate in government and the cultural affairs of everyday life. The other was to assure that the country would become materially strong through the economic contributions of its citizens, who fully and freely utilize their individual talents (Urban & Wagoner, 2009). The first function suggested the need for, if not exactly an intellectually serious liberal education, at least a hearty general orientation to the rights and responsibilities of civic life in a modern economic and political democracy. The second function recognized the importance of vocation, not in the grand sense of a "calling," but in the practical sense of a "job" that would, at a minimum, allow an individual to be independent and self-determined. It also assumed that concern for the welfare of others would take care of itself if everyone learned to do their own work well.

This view of education assumes that most everyone has the capacity and motivation to be productive and self-sustaining. There is now as there was then plenty of evidence to the contrary. High dropout rates, lower educational standards, rising poverty and diminished social solidarity have not completely turned Americans against this picture of education. However, doubts about the intentions, motives, and competence of those who run the schools, as well as many of those who attend them, have led these people to believe that education should be geared even more to the cultivation of skills and attitudes believed to contribute materially to the functioning of a free society, rather than to the cultivation of a higher culture.

It should be said that faith in this Whig picture of education has ebbed and flowed over the years. Currently it is being tested as never before. Indeed, it may be fading permanently as a civic commitment of mainstream America. One factor is the sheer size of the American population (304 million in July 2008). This by itself makes it difficult for any single vision of education to meet with widespread public support. Another factor is the American attitude toward diversity. We encourage people nowadays to manufacture social differences, not merely to celebrate them. It also turns out that recognizing diversity among individuals and groups is good for

niche-market business practices. Mass production and marketing to a broad audience have little economic payoff these days. The Whig picture of a homogeneous public operating within a single sociocultural framework appears to have exhausted itself. The same forces that are encouraging specialization and commercialization in the larger society seem to be changing American education along these lines, too (Bloom, 1987).

Until now the most serious test of American faith in its Common School philosophy occurred after the end of the Civil War in 1865, when there was unimpeded industrial growth and rising immigration. Reforms back then favored schools designed for specific groups of students in recognition of the particular roles they were likely to play in American life (Church & Sedlak, 1976, p. 192). But the appeal of Whig thinking proved to be remarkably resilient. By the end of the century public schools had returned to a Common School philosophy with renewed vigor and determination. Whether this will happen again remains to be seen. What seems clear is that the dominating presence of economic and commercial values has not only accelerated dramatically in our time, but their range of influence is no longer restricted to local or regional interests. Technology has allowed these values to play themselves out on a global stage. The pressure on everyone, every organization, every government, to operate successfully in this mode stems not primarily from a commitment to a way of life, as was the case with the Whigs, but from a basic impulse to survive as a viable entity in the world, politically and otherwise.

If these developments are taking place on a global scale, why does it prevent Americans from training the workforce in a different way, e.g., in apprenticeships like in Germany?

The answer is that Americans, like Europeans, cannot sustain their identity playing exclusively on a global stage. As in Europe, this means, protecting their culture by designing their educational institutions in what they believe are appropriate ways. While public schools in America returned to a Common School philosophy by the end of the twentieth century, corporate forms of business and government had trumped the country's cultural values. Correspondingly, these corporate forms of social organization were made possible because of powerful, largely electronic, technology. In short, economic and political interests operating today dominate the formal values of American culture; and they exploit market labour at will. Far from preventing the training of a workforce, these interests control it without moral sensitivity.

The pressure on the American system to operate on these terms is immense. But even if they force Americans to give up their dream of free and responsible citizens, educated both to rule and to work, it is unlikely that the United States would move toward a European-style social democracy, and its associated educational policies that officially acknowledge the cultural status of socially functional subgroups. To begin with, silly or not, Americans are unsettled thinking of themselves as "old-world." They retain an aspect of the country's initial self-image, expressed largely in negative terms, as being anything but old-world.

Does "old world" imply conservative ways of schooling, separation and exclusion, and/or highly bureaucratic structures?

Yes, as far as most Americans are concerned. This may have nothing to do with Europe as it is today, or with how Europeans actually view themselves. The point is that most Americans see themselves as more modern than Europeans, because they believe Europe is still in the iron grip of centralized authority, cultural and otherwise, with little or no sense of pragmatic flexibility.

The average American has only this vague sense of what 'old-world' means. It should be seen more as an attitude than a theory, or set of facts. "Old-world" is understood to be more or less synonymous with "naïveté," or "impractical." This attitude comes from having little actual contact with Europeans, plus from constantly being told that America is the greatest country on earth. The truth is that Americans and Europeans are in the same boat, as far as being subject to worldwide economic pressures. Both are questioning their educational systems for exactly this reason. Do these systems serve their best interest? The current situation is daunting precisely because it is so ubiquitous.

Technology compresses space and time by enabling people to do things more easily and quickly. Ironically it can also create problems when used unintelligently. Education has the potential to alleviate these problems or make them worse, depending on how it understands and nurtures intelligence. If our educational institutions focus exclusively on technological and economic objectives, without concern for their impact on the larger culture, or way of life, the consequences will be disastrous. We could win by increasing our wealth, power, and status, yet lose by using these assets in foolish ways (Smith & Marx, 1994; Sturken, Thomas, & Ball-Rokeach, 2004).

8.2.2 American Approaches to Vocational Learning

Americans are looking at education increasingly in vocational terms. Their understanding of vocational learning is neither subtle nor deep. They speak the various languages of the high professions and applied sciences, as if the high professions and applied sciences were not themselves market-driven pursuits. But make no mistake about it; the American thirst for expertise is predictably driven by money, power, and status. Europeans may see nothing new here. But the difference now is that Americans are less aware than they once were of alternatives to material success. The use of technology for one's own purposes, having been dressed up in the specialized terminologies of professional service ideals, has no serious competition for the minds and hearts of those who operate and support American educational institutions. Vocations, high and low, have been forced to repackage themselves as means for self-serving material ends. Any other attitude is usually seen as an excuse for ineffectiveness, and as an obstacle to progress.

In the late 1800s American educational reform at the pre-college level put a strong emphasis on manual training, or "training of the hand," at least for a certain segment of the school-age population. It was largely an attempt to serve the emerging needs of a society that was growing to become an industrial behemoth. But it was also an attempt to foster genuine educational development of the child

through purposeful bodily activity. Along with a new emphasis on physical education, manual training was introduced into the curriculum of American schools to help restore a balanced social order that was threatened by industrialization and urbanization (Church & Sedlak, 1976). Beyond that, and more importantly from an educator's point of view, manual training was advertised as good for students, as nurturing their personal growth in a manner that was unlikely to come about in any other way.

Manual training was originally a European idea. The difference was that Europeans were more willing to admit that manual training was being utilized more as a palliative for some of the nastier side effects of the Industrial Revolution. In the United States, where it was important to maintain fidelity with the idea of an autonomous individual being, educational innovations needed to be expressed in terms of the democratic benefits for those being educated, rather than the interests of a powerful and imposing social system. There were numerous influential social critics at the time warning Americans about the dangers of monopolistic capitalism and special-interest politics. But it took the philosopher, John Dewey, to conceptualize educational reforms, like manual training, in a way that showed them to be intellectually serious, yet respectful of the individual in a manner Americans could accept.

Dewey was an empiricist, more radical than conventional, who saw human beings in naturalistic terms, as more like animals than gods. However, unlike other animals, people were born without much in the way of instincts. They need to learn in order to know. Because he was an empiricist, he believed that people learn essentially through experience. Of course, they learn through reflection, too. But activity of the mind is rooted within, and inextricably bound up with, experience gained through bodily activity (Dewey, 1916). Dewey's radical and philosophically original conception of human experience emphasized the active, or behavioral side of experience over the purely mental, or contemplative side. To paraphrase his view, verb forms of mental predicates are logically prior to noun forms. Human intelligence begins with conduct, not exclusively with what or how we think. Dewey was not, strictly speaking, a behaviorist. He acknowledged that what and how we think, as well as how we feel, are as real and important as what we do. What he meant to argue was that, as biological organisms, our actions have priority in our evolutionary history. Our actions are the touchstone for the veridical character of our experience. Thinking and believing emerge initially as tools of action. We recognize the inherent value of the mental side of experience after a long and arduous process of evolutionary development. We come slowly to recognize that our ability to tinker with our environment can make a big difference to our advantage. Our challenge is to actually make this happen. Meeting the challenge is what Dewey meant by "educational progress." If acting intelligently is not at the core of what we do in education, there is little value to anything else we might achieve.

Dewey also studied German developments in vocational education and training but disagreed with one of the leading scholars, Georg Kerschensteiner (1854–1932), at the time. Kerschensteiner attempted to instrumentalize vocational schooling for the development of industrial manpower and combine it with an unreflective

ideologization in favor of current national power relations. Kerschensteiner's essay with the title "Wie ist unsere männliche Jugend von der Entlassung aus der Volksschule bis zum Eintritt in den Heeresdienst am zweckmäßigsten für die staatsbürgerliche Gesellschaft zu erziehen?" [How can our young men in the period between graduation from the common school and admission to the military service appropriately and purposefully be educated for our civil society?] had led to intense discussions and great disagreement between the two scholars. Kerschensteiner thought in terms of the utilization of human capital, while Dewey favored the ideas of free citizenship and education for democracy based on the constitution of the United States and was convinced that an early occupational orientation or a vocationalization of schooling would be counterproductive. Therefore, it seems that a separation of schooling into an academic strand based in schools and training as a practical preparation for work based in companies still prevails in people's minds (Rauner, 2006). *Kerschensteiner, nevertheless, needs to be given credit for raising interest in vocational education and training and the German approaches toward it in the United States* (Gonon, 2008; Kerschensteiner, 1911). *But, what was Dewey's approach toward education for occupations?*

Dewey's plan for educational progress placed the learning of occupations above the study of traditional school subject matter. The idea of using occupations as the core of the school curriculum gained currency in the nineteenth century, largely through the work of Froebel, who along with Pestalozzi and Herbart argued that children learn best by engaging in activity with practical objectives (Church & Sedlak, 1976). The material to be studied needed to be geared to the actual abilities of the student, and connected to previous experience. Dewey expanded on this idea. Observing that human beings were social rather than solitary animals, living normally in groups, more like lions and bees, rather than alone, like moose or bears, he concluded that their experience is social before it is personal. That is to say, the former makes the latter possible, or at least give it a richer character. Dewey also connected experience with activity. He regarded the latter as a precondition for the former. Occupations were defined as activities necessary for living. They were tied logically to wholesome human practices, but not necessarily to wage-earning jobs, and were expected to cultivate the mental side of experience, as well as the behavioral side. Dewey had no objection to traditional school subject matter, nor did he think it should be ignored. Rather it was its formality and the way it was taught that bothered him. Any field of knowledge that fails to recognize the contingencies of reality and the endless possibilities found in human experience will eventually, according to Dewey, work to our detriment.

On these grounds Dewey saw the opposition between vocational and literary learning as a false choice. In his view, one requires the other. How is this possible? Dewey followed a general strategy whereby, if one good thing (e.g., freedom) had to be sacrificed in order to secure another good thing (e.g., equality), odds were there was something wrong with the way these things were understood. This type of thinking employs a dialectical logic. Dewey picked it up from the German philosopher, Georg Wilhelm Friedrich Hegel (1770–1831). The ancient Greeks used the term "dialectic" to refer to various methods of reasoning and discussion in order

to discover the truth. Another German philosopher, Immanuel Kant (1724–1804) applied the term to the criticism of the contradictions that arise from supposing that we can have knowledge of objects that we cannot literally experience. Hegel applied the term to the process of thought by which apparent contradictions, which were termed "thesis" and "antithesis," are reconciled as part of a higher truth, or "synthesis."

Using Hegel's formulation of a dialectical process, Dewey recognized that cleverness in reformulating ideas does not always translate into intelligent or honest depiction of reality, and that there are many times when we simply need to make hard choices. But there are numerous occasions too, when the problem lies with our own assumptions. This is where Hegel's dialectic comes in, or at least Dewey's naturalized version of it. We need to see possibilities beyond the moment. We need to work with others to devise new options that can be brought about by our own hands. New assumptions help us find new and better ways to act. Correspondingly, acting more smartly will help us see new possibilities that move us beyond the assumptions on which our actions rest.

8.2.3 The Future of VET in the United States

Dewey spent the majority of his 92 years working to explain and defend his transactional approach to growth and development. His position on vocational and liberal learning is a case in point. Practical education helps give liberal learning existential validity. But correspondingly, liberal learning helps assure that practical education will have the right purpose and outcome. Assuming that Dewey made his case as regards growth and development, was there ever a time when educational practice reflected his ideas? How do things look today? Is there any reason for optimism? Given conditions in education today, what would we expect to see as the future of VET?

Could there be any role in VET for the idea of an apprenticeship derived from the German-speaking countries?

The European idea of apprenticeship never took root in the United States. As a matter of cultural difference, Americans viewed it as unduly restrictive for inventive, freedom-loving individuals (Church & Sedlak, 1976). As a practical matter, industrial work does not demand the skilled hands of an artisan. Progressive-minded educational reformers in the United States argued instead for "training of the hand" primarily on the grounds that it contributed to the personal growth and development of the students. Not that they failed to appreciate the economic benefits of vocational learning, only that they were seen as having secondary importance. At least to the satisfaction of those who supported the Manual Training movement, it had established its educational purity by emphasizing its fundamental nonvocational purpose.

For most of the twentieth century this area of the curriculum in American schools was known as the "Industrial Arts" (Cremin, 1964; Ravitch, 2000). The name was in many ways an unfortunate choice. In the first place, the "Industrial Arts" was

less about industry and more about the arts. It was mostly about building things and being industrious for the sake of what students might learn in the process. Only secondarily, if at all, was it done for the sake of making a living. The values that guided teaching in this area were usually out of line with the perceptions of the students themselves, who were frequently required to take Industrial Arts courses whether they liked it or not. They were out of line, too, with the expectations of the public, which was required to pay for the Industrial Arts. More recently the area renamed itself "Technology Education." But this designation has failed to capture the spirit of the original Industrial Arts movement, or the values that currently drive popular support for technology. The number of educators working in this area, who understand and promote its rationale, has continued to decline, along with support for the area itself.

If there was ever a time when serious vocational education in the United States was in the hands of Industrial Arts educators, that time has long passed. For most of the twentieth century vocational education, understood as formal programs offered by schools, and other institutions purporting educational goals, was controlled by those who saw it as a form of low-end job training. This attitude, too, is disappearing. The emphasis now is on preparation for higher-end professional activity. An obvious explanation for this change of attitude toward vocational education is the emergence of electronic technology, especially computers, as a critical factor in the growth of the American economy. Unsurprisingly, literary learning is still not seen as having much importance. More than ever educational programs must be shown to have a clear and immediate market payoff, if there is to be any realistic expectation that they will garner popular or political support (Ravitch, 2000).

David Brooks, a prominent American political commentator, who writes with intellectual sophistication on trends in American culture, believes that, "…the United States became the leading economic power of the 20th century because it possessed a ferocious belief that people have the power to transform their own lives"; and that it was this belief that, "…gave Americans an unparalleled commitment to education, hard work and economic freedom" (Brooks, 1976, p. A19).

Make no mistake about it. For a long time in America there was a deep and abiding commitment to education as a means for one to "get ahead."

Brooks thinks that while Americans have held on to their belief in self-determination, they have lost their deep and abiding commitment to education as the means for achieving it. The romantic faith that education would benefit the individual materially, intellectually, and morally, while at the same time fuel American development, has always existed partly as myth alongside of the uglier aspects of American life referred to earlier. Nevertheless, it has been critical to American success in the past. Brooks contends that the loss of this faith is proving to be disastrous for the country. He utilized research from two recently published books to make his case.

The Race Between Education and Technology, (Goldin & Katz, 2008) documents the rate of increase in the average level of education for Americans between 1870 and 1950. Educational attainment rose 0.08% a year per decade. By 1960 the average American could boast 14 years of schooling. The steady increase over

that time allowed the United State to build up a 35-year lead over the rest of the Industrialized world. In 1950, no European country enrolled as many as 30% of its older teens in full-time secondary schools, whereas the United States enrolled 70%. By 1970 enrollment growth of older teens in American schools had slowed to a trickle. By 1990 this enrolment growth had stopped altogether (Goldin & Katz, 2008). The big lead America enjoyed over the rest of the world in years of schooling quickly disappeared. There are now a number of European countries that have surged ahead of the United States on this measure. The thesis of *The Race Between Education and Technology* is that school enrollment by itself is a predictor of technological development. When the rate of school enrollment declines, especially among older teens, long-term economic prospects of the nation are threatened and the gap between rich and poor will predictably increase. Thus, we have, according to the authors, a race between education and technology. Unless school enrollment increases relative to technological change, economic development will lag and prospects for a rosy future will suffer.

There are two surprising aspects of this analysis. The first is that American schools between 1870 and 1950 contributed to the development of technology quite apart from whatever else they were doing. The second surprising feature is that these technological developments, whatever they were, contributed mightily to the economic health and overall strength of the nation. Both these claims deserve further examination. But what seems clear immediately is that formal education and technological development are somehow linked. When educational progress outpaces technological change, economic inequality narrows (Goldin & Katz, 2008). The market is flooded with skilled workers, causing wages to rise modestly but evenly over the market. In periods, like the one we are in currently, when educational attainment lags behind technological change, inequality widens as a proportionally small number of skilled workers garner higher wages, while a larger proportion of unskilled workers, defined by current market demands, have little bargaining power.

The second publication Brooks uses, by James Heckman, a University of Chicago economist, titled *Schools, Skills and Synapses*, attempts to explain why high school graduation rates peaked in the United States during the late 1960s, at about 80%, and have been in decline ever since (Heckman, 2008). According to Heckman, the problem is caused less by failing schools, lack of funding, and rising college tuition, and more by the deterioration of the American family over the past 40 years. Fewer children are being raised in an atmosphere that promotes, what Heckman calls, "human capital development." More simply stated, the problem is caused by an environment that fails to teach children how to take advantage of their economic potential. They are raised in circumstances that pay no attention to the skills and attitudes that allow them to benefit from, or contribute to, American ideals, especially that ferocious belief in the power to transform their lives through education, hard work, and economic freedom.

According to Heckman, it is possible to predict, with depressing accuracy, who will complete high school and college and who will not by the time children are 5 years old. Success in American life presumes marketable skills and the ability to think. It requires emotional stability, self-control, sociability, and motivation as

well. IQ matters, too, but not as much. Adopting policies that blunted the destructive effects of globalization, outsourcing, unregulated immigration, and predatory capitalism would certainly help moderate this problem. But without the essential character traits that allow individuals to take advantage of their opportunities, these reform measures would come to naught. American prosperity came about because it got more out of its citizens than other nations were able to achieve. The situation changed sometime during the 1970s. Heckman warns that unless the condition is reversed America could find itself on a slide from which it may never recover. David Brooks thinks that boosting educational attainment, especially at the bottom of the economic social order, is a more promising strategy for encouraging economic growth than trying to reorganize society on a larger stage.

Assuming that "an atmosphere that promotes human capital development" is not itself an objectionable idea, how can it be used to rebuild that "unparalleled commitment to education" that Brooks thinks Americans have lost? In another commentary Brooks offers this observation: "If you grew up in the 1950s, you were inclined to regard your identity as something you were born with. If you were born in the 1970s, you were more likely to regard your identity as something you created" (Brooks, 1976). What it meant to have "an identity you were born with" was experienced by Americans of that time as a practical and emotional imperative, rather than some sort of cosmic fate. They tended to see themselves with a moral duty to play the cards life had dealt them, and were comfortable with the challenge. This attitude disappeared quickly early in the 1960s, along with the social milieu that fostered it. Children born in the first few years after World War II were starting to come of age. Officially called "Baby-Boomers," they were sometimes referred to as the "spoiled generation." The Civil Rights movement was in full swing. The Vietnam War had divided the country. By the 1970s Americans were obsessed with exposing the wrongdoings of public officials. Traditional moral values were scorned. Educational institutions had lost the confidence of taxpayers and the lion's share of their former authority. Performance levels slipped noticeably.

What role did vocational education play during this time?

Vocational education was not criticized in the same manner as other aspects of education. People still needed to make a living. The middle class viewed instruction of this kind as free of double-talk and moral preaching. Yet vocational educators who were not content functioning merely to help others find employment faced the daunting challenge of conceptualizing vocational programs in a way that would meet the increasingly high occupational and status expectations of students, while at the same time promoting the best intellectual and normative standards of socially important professions.

John Dewey's philosophy of education is a good place to start trying to figure out how this might be done. If occupations are rooted in the ecology of living, if they require but are not reducible to knowledge and skills, and if they are expected to develop qualities that elevate the human mind and culture, then there is reason to believe that Deweyan-inspired VET is an education that might be offered proudly to anyone. Of course, making an education like this appealing to students, consistent with the ambitions and the expectations of their families and society, while

simultaneously making sure it comports with the higher values of learning, is easier said than done. But, then, how is this more difficult to achieve than what we strive for now? The difference is that Deweyan-inspired VET, done well, may be more sensible and coherent. Whatever the difficulties in meeting the challenges of education are today, this kind of VET would at least have the advantage of connecting up with the world in which people actually live. Tied to the full range of occupational interests, along with real economic concerns and available jobs, Deweyan -inspired VET could produce impressive outcomes.

8.3 Conclusion

Understood in this way, VET aligns with the German philosophical tradition where a strong partnership between the state, unions, employers, schools and the apprentices ensures that training not just meets not only the requirements of the market, but also provides the individual apprentice with life skills that are useful above and beyond any job that a student so prepared might acquire. In today's economy no one can predict with much accuracy the skills and competencies one will need to remain useful in the economic sector. But aspects of that education would retain their value regardless.

Perhaps the most critical question we could ask is how occupations are related to each other and how they fit within the general structure of society? Dewey believed that these occupations would and should be interactive and cooperative. He wanted them defined in "progressive terms," by which he meant that while the accumulated wisdom they embodied should not be forgotten, neither should there be silly restrictions on how they are practiced. He also felt strongly that a person's association with particular occupations should not be allowed to permanently assign that individual to that specific line of work. It would profit the occupations themselves, not just workers, if individuals were allowed to move between occupations. To encourage a learner to experiment with a wide range of life's possibilities was for Dewey a moral, as well as practical, imperative. Freedom disciplined by the ecology of life should not be seen as irrational or something to be feared. Nor should anyone fear education that reconstructs the way people understand and conduct their lives. If this is what VET strives for already, then Dewey's ideas are merely redundant.

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Chapter 9
Career Counselling/Career and Technical Education

Spectrum of Interventions in the American K-16 System

Antje Barabasch and Cass Dykeman

9.1 Introduction

> *We guide our boys and girls to some extent, than drop them into this complex world to sink or swim as the case may be. Yet there is no part of life where the need for guidance is more emphatic than the transition from school to work, – the choice of a vocation, adequate preparation for it, and the attainment of efficiency and success.*
> *Frank Parsons*

Ask a group of American school counsellors or career and technical education (CTE) teachers when this quote was written and most would date it from the last 10 years. Yet this quote is from Frank Parsons' seminal work on career counselling and was published in 1908! The history of career counselling (CC) and CTE over the subsequent 100 years is a history of isolated advances and systemic stasis.

In the early 1960s the professional association for counsellors in the United States asked one of its premier theorists to produce a monograph detailing the systemic changes that needed to occur in the profession in order to help students better develop both their personal and career selves. This monograph by Gil Wrenn was entitled *The Counselor in a Changing World* (Wrenn, 1962). Four decades later the recommendations in this watershed monograph still wait to be implemented nationwide.

In 2004 the Organization for Economic Cooperation and Development (OECD) published the findings of a review of career guidance policies in 14 OECD countries.

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One of the conclusions of the report was that students in schools needed more assistance than personal interviews. They needed "a developmental approach, embedded in the curriculum and with a strong experiential component" (Organization for Economic Co-operation and Development, 2004, p. 39).

Thus, on both a US national level and an international level the story of CC and CTE progress remains localized. The systemic CC and CTE promises contained in the work of Parsons and Wrenn still remain unfulfilled.

In this chapter we provide key CC and CTE-related definitions. We then explore within the CC/CTE spectrum of interventions in the American K-16 system: (1) goals (2) early developments, (3) important legislation, (4) present status and practices, (5) specific K-12 practices, and (6) future prospects and challenges.

9.2 Definitions

The interrelated fields of CC and CTE possess a wide variety of specialized terms. In this section we define the terms: career counselling, career guidance, career and technical education, career development, and career advising.

9.2.1 Career Counselling

This is usually offered by certified counsellors, who use tests and conversations to help their clients to develop a clearer idea about their skills, knowledge, competences, interests, needs, etc., in order to adjust occupational aspirations. Counsellors help with the preparation for interviews and support when emotional problems hamper one's study. They also help when financial support is needed by pointing out sources where one can apply for support. If needed, assistance is also provided with finding a job. A new term used for that is "Career Coaching" (Gordon, 2006). Hansen (1997) has extended the concept and included the private sphere in the advising process. He calls it integrative life planning. The term "vocational counselling" is sometimes still seen in the literature, but it is generally considered an antiquated synonym for career counselling.

9.2.2 Career Guidance

The term used today is not occupational guidance but instead career guidance thus reflecting a change in approaches towards career preparation. Occupational guidance mainly refers to directing people into jobs that are needed in the labour market, but it does not necessarily pay attention to individuals' needs and the individual potential for further development. The new term reflects the shift away from an instrumentation of guidance in favour of the interest of employers and of the market towards the needs of the individual (Herr, Cramer, & Niles, 2004). Now, the identification of one's self-image, as well as support in analysing one's own interests, needs,

skills and competences, self-realization and self-acceptance are in the foreground. The underlying philosophy is that the individual needs to have a clear idea about oneself, and one's own traits, goals, values, interests, skills and competences in order to make a decision about a career. The new understanding, nevertheless, includes preparing people for labour-market requirements, but extends it, because it pays more attention to individual needs. Career guidance refers to the whole lifespan and includes several programmes, which are intended to aid participants in the process of acquiring the necessary skills in areas such as career planning, job search, assertiveness and self-confidence, frustration management, stress reduction, and decision making (Herr & Cramer, 1996). In the United States, professional counsellors provide both career counselling via individuals and groups and career guidance via curricula.

9.2.3 Career and Technical Education

This term includes systematic programmes for occupational preparation (Gray & Herr, 1998). It is understood as a continuous process that can start in kindergarten itself, should be strategic and continuously implemented in every grade in order to have long lasting and sustainable effects and prepare participants for occupational changes or new orientations in the world of work. There are different terms used to describe aspects of career education or preparation. Career education and career development refer to educational measures starting in kindergarten up to high school or the first years in college and are supposed to support the development of career aspirations as well as life and career planning.

9.2.4 Career Development

The term career development is specifically concerned with an individual's gradual development of various career-related competences. Career guidance stands for advising and accompanying this developmental process by teachers and especially accredited career counsellors as well as school counsellors. Career counselling is exclusively pursued by experts who usually hold a degree in counselling acquired at a university. They sometimes work in schools, more often in colleges, Departments of Labor and other career advising centres.

The foundation for an early career development intervention is the idea that a successful school-to-work transition is not a singular event but instead a process which involves the realization of one's own interests, values, skills as well as an early awareness about different professions. Until 2006 funding for several measures in this field was available through the ACRN (America's Career Resource Network) in the frame of the No Child Left Behind Act (U.S. Department of Education, Office of Elementary and Secondary Education, 2002). Those benefits have been terminated with very limited and circumscribed funding for career counselling left in its place (Office of Adult & Vocational Education, U.S. Department of Education, 2006, 2008).

Career development also refers to the development of some kind of occupational identity including self-realization, self-confidence in regard to one's own work and skills as well as the ability to make plans (Herr et al., 2004). It can also be defined as "the total constellation of psychological, sociological, educational, physical, economic, and chance factors that combine to influence the nature and significance of work in the total lifespan of any given individual." (National Career Development Association, 2008, p. 2). In her major review of career theory, research, and practice, Fouad (2007, pp. 545–546) noted Parsons' (1909) seminal influence. She stated

> The fundamental notion that has driven career development researchers and practitioners for the past 100 years has been Parsons' (1909) premise that in choosing a career, individuals need to know themselves, know the world of work, and have some "true reasoning" between the two. His original notion of true reasoning was essentially the ability to analyze self in relation to the world of work, and it has become known as the person-environment fit model.

Fouad went on to note other factors reported in the literature as influences on career development. These included motivation, self-efficacy, gender, sexual orientation, race/ethnicity, social class, and relationships. Foaud's traditional listing of explanatory factors of career development is not without its distracters. Australian career psychologists Pryor and Bright (2003, p. 121) emphasized

> Contemporary career development theories as outlined in standard texts. . . .tend to focus on a small range of variables believed to be relevant to career decision-making and development and to emphasize career decision-making as a rational and controlled process of logical deduction. Along with this is an almost exclusive emphasis on the decision maker as though he or she was the only relevant career choice influence. This has resulted typically in oversimplifying decision-making as a static matching of individual characteristics with occupations' demands and rewards.

In contrast to contemporary theories, Jim Bright and his colleagues posited that Chaos Theory represents a better descriptor for the process of career development (Borg, Bright, & Pryor, 2006; Bright & Pryor, 2005; Bright, Pryor, Wilkenfeld, & Earl, 2005; Pryor, & Bright, 2003). Bright and Pryor (2005) explained that factors such as Fouad listed are inherently unpredictable and subject to change. They also noted that chance and minor life experiences can have a disproportionate influence that cannot be accounted for by traditional theories (Borg et al., 2006; Bright et al., 2005). For most American adults, Bright and his colleagues' ideas do not come as a surprise. When most American adults reflect on their own career narratives, happenstance, serendipity, and the incidental are prominent.

9.2.5 Career Advising

The terms "Career Advising" and "Career Counselling" are often used synonymously, although they refer to different tasks. Teachers and career centre paraprofessionals serve as advisors even though they have little or no training in this area. They support students in the process of finding and processing information about possible

career pathways. They support through asking targeted questions and dispense information that support the development of analytical skills (Butler, 1995). The ultimate goal of advising students is supposedly to get them interested in pursuing a college degree (Gordon, 2006).

9.3 Goals

The general goal of career education programmes is to increase the number of young adults who would enter college to acquire a degree there. This includes the intent that students enter community colleges where they specialize in various vocations that would be comparable to German vocational education and training programmes. The major difference is that the Germans often go through a dual training that involves part-time schooling in a vocational school and part-time training in a company while CTE programmes at community colleges include practical training in school-based workshops.

As a high school counsellor in the United States, the second author of this chapter consistently faced parent opposition to their children enrolling in CTE coursework. A common response heard from parents was "My child doesn't need career education, she is going to college". This statement emerges out of a general belief that the only path to academic success in the United States involves obtaining a baccalaureate degree. In addition, there is a strong belief among social conservatives in the United States that CTE represents "social engineering" initiatives of the political left that should be fought (Deckman, 2006). Biases such as these and their deleterious effects are detailed in an influential book by Ken Gray and Ed Herr (2006) entitled *Other ways to win: Creating alternatives for high school graduates.* It outlines the problems that result from false perceptions about CTE. Although the infrastructure, personnel, and expertise for appropriate career education and career guidance does exist, it is often not frequented because of the deeply embedded belief that career education (formerly called vocational education and training) is for other people's children. Further, some studies indicate that students perceive only limited effects of career education regarding their career choice (Helwig, 1998).

9.4 Early Development

Frank Parsons was the first American who advocated career education. He worked in Boston and was concerned that many young adults had nowhere to go in order to receive advice and often ended up in low-paid blue-collar jobs. In 1909 Parsons wrote his approach towards career counselling down. It comprised the analysis of individual interests and skills, advice about different occupations, and mentoring to cope with problems. Since then the idea of career counselling has taken hold widely so that the service is now even provided in kindergarten. Parsons also initiated the first national conference on career guidance in 1910 in Boston. Between

1900 and 1940 interest in the evaluation and assessment of the advising process has grown. The goal was simply of an instrumental nature. Classifications of group characteristics should be identified in order to determine who would be a suitable candidate for the military or for certain industries. Various American scientists developed tests which are partially in use today. In this context names worth mentioning are Lewis Terman, Louis Thurstone, Arthur Otis, Robert Woodworth, and Clark Hull. In 1939 the *Dictionary of Occupational Titles* was first published. Since more than 40 years, extensive scholarship about career development as a lifelong task has emerged. A lot of career education measures have been implemented. Under the Nixon administration the so-called Career Education Movement has been established in which a lot of prominent counsellors advocated for the establishment of career education programmes. The goal of these measures was the introduction of various occupations and possible career pathways to the students, who need to acquire soft skills, such as being able to make decisions, acquiring primary vocational skills as well as the development of self-perception. Hoyt (1977, p. 5) defined career education in the following way:

> Career education is an effort aimed at refocusing American education and the actions of the broader community in ways that will help individuals acquire and utilize the knowledge, skills, and attitudes necessary for each to make work a meaningful, productive and satisfying part of his or her way of living.

Since then the career guidance movement has progressed. There are statewide programmes that support career education and career guidance in various institutions. Universities offer degree programmes for career counsellors. The introduction of modern technologies, especially various computer programmes, supports the preparation in schools. The whole sector of career guidance and counselling has increasingly been professionalized. While the functional benefit for the economy stands in the foreground, guidance is today more concerned with the individual benefits and uses a lot of testing measures to support the process. Career counsellors also work on individual psychological problems that derive from career decision making or being in a difficult job situation. That includes problems with deviant behaviour and social problems (Drummond & Ryan, 1995).

9.5 Important Legislation

The most important law for CTE is the Carl D. Perkins Vocational and Technical Education Act (1998). Being part of the vocational law in the United States indicates that career education and career guidance are inextricably intertwined with career and technical education as well as the transitioning into other educational strands. This law defines career guidance and academic counselling as mainly referring to occupational guidance and steering. It also determines that students and parents should have access to information that supports an occupational orientation and the career planning process. This includes information about various occupations or

careers as well as information about financial support for further studies to acquire a bachelor's or master's degree. Each state should authorize an institution that distributes occupational information including information about prospects in non-traditional occupations. Teachers, vocational teachers, professors, administrators, and career counsellors need to be equipped with the necessary knowledge, skills, and information material in order to advise students and parents, especially those with special needs. It is also anchored in the law that coordination and communication on a federal, state, and local level between administrators and programme planners need to be improved in order to avoid an interfering of measures and to ensure an extensive use of the materials and resources. The act further points out that career education measures need to be evaluated in order to provide for continuous qualitative improvement of information material. Labour market forecasts need to be available for the different economic sectors in order to inform about skill needs in the future.

The Carl D. Perkins Vocational and Technical Education Act of 1998 also talks about preparing plans in each state about measures in career education and guidance. Parents, students, representatives of various TechPrep consortia and colleges, industry, unions, and communities need to be included in the planning process. The plans must indicate how high schools and institutions of further and higher education will work on bridging career education programmes in order to promote a smooth school-to-work transition. Local agencies should make sure that they publish best practices in order to support the qualitative improvement of programmes across the country.

The School-to-Work Opportunities Act (1994) was released and with it money had been invested in several vocational programmes which intended to ease the transition from school to work. High schools and community colleges set up programmes in cooperation with partners from the industry in which academic and vocational education are combined. The law also introduced the term "career majors", which refers to various combinations of courses for specific vocational fields. The act further outlined that career education should start in Grade 7 or earlier.

The National Career Development Guidelines (NCDG), first released in 1989 by the National Occupational Information Coordinating Committee (NOICC) (Miller, Goodman, & Collison, 1991) are guidelines for measuring acquired competences in career education. The NCDG also contain strategies for the introduction of career development programmes for young people and adults. They form the foundation for the development of career guidance programmes in the states and their educational institutions. They also determine expected outcomes in primary school, middle school, secondary school, and adult education. The policy specifies competences that should be acquired in different career education measures. They can be assigned to the following areas: self-awareness, identification of one's occupational and educational interests, and career planning. Qualifications for career counsellors are specified as well as the endowment of career centres. The guidelines serve as a measure for the national standardization of career guidance.

9.6 Present Status and Practices

While a wide variety of career education interventions occur nationwide, none are taking place nationwide in a standardized and systematic manner. The problem of a lack of standardization and systematization creates an accountability problem. Many school boards in the United States hire consultants who evaluate programmes in order to ensure that predetermined outcome measures are met. To what extent each high school offers career education and career counselling is mainly dependent on state funding as well as the initiative of school principals and teachers. There is no policy in place that requires schools to introduce certain career development interventions. Cass Dykeman and his colleagues developed a taxonomy of the 44 career development interventions that occur in American public schools (Dykeman et al., 2003b). A cluster analysis of the 44 interventions produced a four-part typology. The four types were (1) Work-based Interventions (e.g., Job Shadowing), (2) Advising Interventions (e.g., Career Interests Assessment), (3) Introductory Interventions (e.g., Career Day/Career Fair), and (4) Curriculum-based Interventions (e.g., School-Based Enterprise).

But, many adults in the United States never manage to acquire a higher educational degree or do not even graduate from high school. According to Zirkle (2004) more than half of all yearly high school graduates do not acquire another degree. The rate of students who graduate from high school varies between 60% and 90% in the federal states (National Center for Higher Education Management Systems, 2007). The process of career counselling is complicated by the stigma of CTE. Too often high school students from a low socioeconomic background are advised by school counsellors to attend career tech classes and lower-level academic classes, which support the social economic stratification in society (Oakes, 2005; Urban & Wagoner, 2003). On the other hand, there are a variety of well-paid occupations that can be pursued without owning a four-year college or two-year liberal arts college degree (Gray & Herr, 1998). Some forecasts predict that only 23% of the jobs in the future will actually require a bachelor or higher college degree (Gray, 2000). Most of the potential job opportunities in the future will be available in technical occupations of which only 25% require a college degree. Approximately 43% of college graduates are expected to be overeducated for their jobs. Besides technicians, employees will be needed in health occupations such as nursing, drivers, and sales representatives, in middle-management positions in trade and industry, and as primary school teachers (U.S. Department of Labor Employment & Training Administration, 2008).

The gap between expected job and earning opportunities and predicted labour-market needs can only be overcome by extensive career education measures that aim at informing about labour-market realities and requirements. At the same time one needs to keep in mind that prognostics are a guideline, but not a guarantee for future labour-market developments. The willingness to engage in lifelong learning is an essential precondition for coping with changing labour-market requirements and conditions.

There are approximately 15 million secondary and postsecondary career and technical education students in the United States (Association for Career and Technical Education, 2008). CTE programming is offered in about 20,000 comprehensive high schools, career and technical high schools, community colleges, technical institutes, skill centres, and other public and private two- and four-year colleges (Association for Career and Technical Education, 2008).

Approximately 100,000 school counsellors work in the United States. The reported national student to counsellor ratio is 1:488, but can vary from 1:225 in Alabama to 1:971 in California (American School Counselor Association, 2008). The recommended ratio for adequate implementation of guidance programming (including career development) is 250 students to 1 counsellor (American School Counselor Association). Therefore, it can be argued that there is no sufficient provision of career guidance and counselling in place.

US federal funding for career and technical education is provided through the Carl D. Perkins Career and Technical Education Improvement Act of 2006. This act is commonly known as "Perkins IV". Money provided based on this act amounts to approximately $1.3 billon per annum. In addition to Perkins IV, the No Child Left Behind Act of 2001 provides approximately $48 million per annum for elementary and secondary school programmes.

9.7 National Standards

On the federal level the National Occupational Information Coordinating Committee (NOICC) provides information about occupations and the labour market. The committee also connects various agencies, which compile information materials, and it supports the development of distribution channels. In the schools there are career resource centres (CRC) that provide a wide selection of career assessments information.

Other institutions that are concerned with compiling and distributing occupational and career information and standards are the U.S. Department of Education, Office of Vocational and Adult Education (OVAE) (2006), the Federal Interagency Committee, and the State Occupational Information Coordinating Committees (SOICC). The Labor Market Information Division (LMI) releases important labour market information for the state. Nevertheless, some policies offer guidelines for the design and implementation of career education and career guidance measures. Standards have been defined regarding the outcomes of career interventions. These standards include the (1) SCANS Competency Standards (US Department of Labor, Secretary's Commission on Achieving Necessary Skills, 1991), (2) the National Career Development Guidelines (National Occupational Information Coordinating Committee, 1989) and (3) the ASCA National Model: A Foundation for School Counseling Programs (Bowers & Hatch, 2005). There are no federally mandated framework curricula in the United States and each state has to develop its own curricula. Learning outcomes are measured with a variety of standardized

multiple-choice tests that can be taken in various grades. Some states have developed framework curricula for career education, which serve as guidelines for developing measures in the individual schools. At the end the school has to decide which measures they want to implement. Therefore, nationally binding statements about career education in the United States are impossible. A fair amount of literature is available that contains suggested curricula as well as pedagogical guidelines and working materials. The National Research Center for Career and Technical Education is charged by the federal government with distributing the science and best practices in CTE (see http://www.nccte.com/).

Another important set of national standards are the U.S. Department of Labor's Foundational Competencies, Industry Related Competencies, and Occupation Related Competencies. These detailed competencies can be accessed on the U.S. Department of Labor's One-Stop Career Centers (Career One Stop, U.S. Department of Labor, 2008).

Finally, the National Career Development Association's (NCDA) policy statement on career development serves as a national guiding force for professional counsellors engaged in career development work (National Career Development Association, 2008). In grades K through 8, the following principles guide the NCDA's policy statement (NCDA, 2008, p. 1):

1. Making the classroom a workplace.
2. Teaching/reinforcing productive work habits.
3. Helping pupils understand career applications of subject matter.
4. Using community resource persons to emphasize both work and occupations.
5. Emphasizing career awareness but not specific occupational choices.
6. Reducing bias and stereotyping in career awareness.

The focus of the policy statement shifts at the high school level. The focus at this level is preparing students seeking one of the following (NCDA, 2008, p. 1):

1. Immediate employment after leaving high school.
2. Some form of postsecondary voc-tech education.
3. Enrolment in four-year colleges/universities.

Across all grades the NCDA policy statement emphasizes (1) partnership with parents and family, (2) the strong relationship between education and occupational success.

9.8 Career Information Practices

The Occupational Information Network (O*NET) is a primary database of occupational requirements and worker attributes (U.S. Department of Labor Employment & Training Administration, 2007). This system replaced the U.S

Department of Labor's *Dictionary of Occupational Titles* (1991). New jobs are created on a daily base and others become obsolete. The dictionary lists all registered occupations.

The *New Guide for Occupational Exploration* (Farr & Shatkin, 2006) consists of an overview about vocations that can be categorized in fields according to certain interests. It includes the following sectors: art and culture, science, plants and animals, homeland security, mechanics, industry, economics, trade, hospitality, humanitarian assistance, leadership, and physical presentation. For each field the following questions are answered:

1. What kind of work would you do?
2. Which skills and competences do you need?
3. How can you find out if you would like this kind of work and where could you acquire the necessary skills for it?
4. How can you prepare yourself for this kind of work? How can you get access to this work field?
5. What else should you know about this type of work?

Unlike O*NET, this text list occupations alphabetically rather than numerically.

The Standard Occupational Classification Manual (U.S. Department of Labor Bureau of Labor Statistics, 2000) sorts all occupations according to 22 working fields and 60 main groups. It is also divided into four levels (division, major group, minor group, unit group). The system is more complicated and usually requires some guidance for navigating it. Counsellors use the system in order to categorize information materials.

With the help of statistical information career counsellors can inform about labour-market trends and developments as well as future labour-market needs. Such information is available through the U.S. Department of Labor's Bureau of Labor Statistics. This bureau does this through its well-respected Occupational Outlook Handbook and Occupational Outlook Quarterly. These publications as well as others detailing US employment projects are available online at the bureau's occupation information website (see: http://www.bls.gov/bls/occupation.htm).

The U.S. Census Bureau also collects information during its decennial national census. The census provides an overview about the demography of the population, the amount of employees in the occupations, vocational pathways, and occupational plans, as well as further education options. Occupational information is available on the Census Bureau's website (see: http://www.census.gov/hhes/www/ioindex/ioindex.html).

9.9 Career Assessment

With increasingly fragmented families, economies, and societies, how is a person to make a sustainable career choice in an efficient manner? One answer to this question is career assessment. The remainder of this section discusses such assessment in

terms of high school, college, and adult clients. Finally, issues with self-knowledge and career interest assessment are presented.

9.9.1 High School-Aged Clients

The four most commonly employed career assessments are the Career Occupational Preference System Interest Inventory (COPS), Self-Directed Search (SDS), ASVAB, and DISCOVER. The COPS is a test that consists of 168 units. With it the interest in certain occupational tasks and activities in accordance with the 14 career clusters can be captured. Each cluster is tuned to the high school and college curriculum as well as present occupational information. The COPS system is based on a "hands-on" approach towards career exploration. It contains working leaflets about educational planning and a list of proposals for activities.

The career interest assessment parts of the SDS, ASVAB, and DISCOVER are all based upon John Holland's influential and well-researched "RIASEC" typology of career interests (1997). RIASEC is an acronym for the six types: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. The SDS and DISCOVER can be taken online. The ASVAB is provided through the U.S. Department of Defense in a wide variety of settings.

9.9.2 College-Aged and Adult Clients

The SDS is also used extensively with college-aged and adult clients. Other commonly used career interest assessments are the Strong Interest Inventory and the Campbell Interest and Skills Inventory. Both are based upon Holland's typology described in the previous section. However, the Campbell breaks Holland's realistic type into two types. These types are "Producing" (i.e., mechanical crafts, woodworking, farming/forestry, plants/gardens, animal care) and "Adventuring" (i.e., athletics/physical fitness, military/law enforcement, risks/adventure). Both the Strong and the Campbell tests can be taken online.

9.9.3 Self-Knowledge and Career Interest Assessment

Seminal career development theorist Donald Super (1990) held that a career choice is the act of putting into action a self-concept. And here lies the problem with career interest assessments. What do the results mean when a person has little self-knowledge typically expressed as a flat (i.e., undifferentiated) profile between the Holland types? Persons with such profiles typically have greater difficulty with career choices (Sackett & Hansen, 1995). Thus, the production of useful career interest assessments in high school or later is dependent on systematic, comprehensive education about self-knowledge throughout the K-12 system. Such education is the focus of the next section.

9.9.4 Qualitative/Constructivist Career Assessment

This emerging approach to assessment views individuals as active agents in the design and implementation of their careers (Mcmahon & Watson, 2008). Assessment is seen as idiographic in nature in that "the individual serves as the reference point in both identifying pertinent themes and interpreting the meaning of those events" (Whiston, 2005, p. 371). Versus nomothetic instruments such as a Strong Interest Inventory, assessment strategies commonly used in this approach include idiographic tools such as the life line, card sorts, life roles circles, and the goal map (Brott, 2004).

9.10 Specific K-12 Practices

In the United States, K-12 career guidance activities are shaped by American School Counselor Association's ASCA National Model: A Foundation for School Counseling Programs (Bowers & Hatch, 2005). This comprehensive, developmental model suggests that career guidance be delivered through both classroom and individual student planning. The purpose of this model is to organize school counsellors as curriculum leaders in reference to national guidance outcomes for students. These national outcomes are entitled the ASCA National Standards for Students (American School Counselor Association, 2004a). These outcomes fall in one of three domains (i.e., Academic Development, Career Development, Personal/Social Development). Within the career development domain there are the following standards:

Standard A: Students will acquire the skills to investigate the world of work in relation to knowledge of self and to make informed career decisions.
Standard B: Students will employ strategies to achieve future career goals with success and satisfaction.
Standard C: Students will understand the relationship between personal qualities, education, training, and the world of work.

Each standard possesses a variety of competencies and indicators. For example in Standard C there is

Competency 1: Acquire Knowledge to Achieve Career Goals (i.e., C.1).

Indicator 1: Understand the relationship between educational achievement and career success (i.e., C.1.1).

There exist well-tested tools for formative evaluation of the aforementioned K-12 career development framework (American School Counselor Association, 2004b; Campbell & Dahir, 1997; Gysbers & Henderson, 2006). In addition, sound evidence exists on this framework's efficacy (Gysbers, 2004). The University of Massachusetts' Center for School Counseling Outcome Research maintains a large

database of research studies showing this evidence in the area of career counselling (Center for School Counseling Outcome Research, 2008).

In a key empirical study on outcomes related to this model, Gysbers and his colleagues reported

> After researchers controlled for differences between schools due to socioeconomic status and enrollment size, students attending middle schools with more fully implemented comprehensive programs reported (a) feeling safer attending their schools, (b) having better relationships with their teachers, (c) believing that their education was more relevant and important to their futures, (d) being more satisfied with the quality of education available to them in their schools, (e) having fewer problems related to the physical and interpersonal milieu in their schools, and (f) earning higher grades. (Lapan, Gysbers, & Petroski, 2001, p. 320).

Despite the fact that the US educational system possesses a detailed and proven model for effective school counselling delivery (including its career counselling component), implementation is spotty nationwide (Rowley, Stroh, & Sink, 2005).

Exemplary Practices

The U.S. Department of Education's Institute of Education Sciences maintains a website (i.e., IES What Works) examining educational best practices including career development interventions. For example, they reported on the effectiveness of interventions designed to assist students in (1) staying in school, (2) progressing in school, and (3) completing school (Institute of Education Sciences, U.S. Department of Education, 2008). Four programmes that had a heavy CC and/or CTE component were ALAS (Achievement for Latinos through Academic Success), Career Academies, Check & Connect, and Job Start. See Table 9.1 for these programmes' areas of positive effect.

In addition to the U.S. Department of Education's Institute of Education Sciences, the National Research Center for Career and Technical Education (NRCCTE) disseminates research on best practices in the areas of CC and CTE (National Research Center for Career and Technical Education, 2008a). To that end, The NRCCTE maintains an extensive web-accessible database on CC/CTE programme effectiveness research (National Research Center for Career and Technical Education, 2008b).

Table 9.1 Areas of positive effect

Intervention/effect	Staying in school	Progressing in school	Completing school
ALAS	Positive effect	Positive effect	
Career Academies	Positive effect	Positive effect	
Check & Connect	Positive effect	Positive effect	
Job Start			Positive effect

9.11 Future Prospects and Challenges

> The best thing about the future is that it comes only one day *at a time.* (Abraham Lincoln, 16th President of the United States)

American career counselling and education face four critical challenges as the future unyieldingly presses into the present. These challenges are (1) determining active ingredients and effective dosages, (2) determining the optimal balance between generic and specific job skills training, (3) closing the achievement gap, and (4) addressing generational changes.

9.11.1 Active Ingredients and Dosage

At all levels of American government, there is increasing pressure to conduct only evidence-based practices in education (Honig & Coburn, 2008). There is evidence that comprehensive packages of CC (e.g., Gysbers, 2008) and CTE (e.g., Bucknam & Brand, 1983) are effective. Dykeman, Wood, Ingram, and Herr (2003a) identified the 44 specific interventions that occur across the CC/CTE spectrum. However, which interventions are the "active ingredients" for the aforementioned packages is unknown. Also unknown is what dosage of an intervention is needed to make it effective. Clearly, huge gaps remain in research on effective practices in the CC/CTE spectrum.

9.11.2 Generic Versus Specific Job Skills

While the tension between generic versus specific job skills training goes back to Parsons (1909), the emphasis in twentieth-century America was on specific job skills training, because persons seldom changed careers. However, persons entering the job market now will most likely have multiple careers and numerous jobs within each career. At present, the optimal balance between generic and specific job skills training remains an open question in the United States (Schneeberger, 2006). The German-speaking countries, although facing similar labour-market developments in terms of the need to change careers, are still maintaining a dual model of training as the major form of secondary education. This model emphasizes practical experience training over general education after grade 9, 10, or 13 depending on the type of school a student is attending.

Career counselling in the United States is more challenged in this regard. The current "College for All" policy as well as the general public obsession with college degrees, based on the assumption of upward economic mobility, influences the way career guidance and career counselling is conducted (Gray & Herr, 2006). Therefore, many school counsellors tend to advise well-performing students to follow an academic track while poor-performing students are often guided into vocational tracks. Nevertheless, considering the high student ratio of college

non-completers and the "skill need" forecasts it might be recommendable to put more effort into guidance and counselling about educational pathways where participants can acquire specific work. This lack of guidance has led to the growth of the "reverse transfer" phenomenon—baccalaureate completers transferring to community colleges to acquire high-wage skills (Winter, Harris, & Ziegler, 2001).

9.11.3 Achievement Gap

The United States is heading towards a nation where students of colour are in the majority (Western Interstate Commission for Higher Education, 2008). This shift is problematic because of the long-standing achievement gap between Caucasian students and students of colour (Portes & Salas, 2007). The research in the ability of interventions in the CC/CTE spectrum to positively impact this achievement gap is mixed at present (Castellano et al., 2007).

The reason for this mixed record of leveraging positive change in this gap may be the foundational (yet commonly ignored) nature of the educational process. Harris and Herrington (2006) examine the course of this achievement gap over the past half-century. What they found was that the government accountability initiatives that have occurred over the last decade (i.e., school takeovers, school oversight, school reconstitution, school report cards, vouchers, charter schools, school choice) have actually increased this gap. Harris and Herrington reported that what they found decreased the gap historically was teacher training and retention. Thus, in the absence of effective reform of underlying factors, the ability of CC/CTE to leverage a reduction in this gap will remain fallow.

9.11.4 Generational Changes

Those born in the United States between 1981 and 2001 are referred to as the "Generation Y" cohort. They differ from the previous X and Baby-Boomer generations (Deloitte Consulting, 2008; Lyons, Higgins, & Duxbury, 2007). Characteristics that distinguish this generation include the following: (a) lack of trust in corporations, (b) a focus on personal success, (c) a short-term career perspective, (d) ability to multitask and maintain several dialogues simultaneously, (e) access information 24 hours a day and work anytime and anyplace, and (f) thrive on change (Swenson, 2008). Both educators and employers are still figuring out how to engage Generation Y at school and in the workplace (Sandars & Morrison, 2007).

9.12 Conclusion

In this chapter we explored CC and CTE goals, early developments, important legislation, present status and practices, specific K-12 practices, and future prospects and challenges. The CC/CTE spectrum has a long and rich history of contributing to the

economic and social well-being of society. However, CC and CTE cannot rest on its laurels. Given the information presented in the future prospects and challenges section, CC and CTE practitioners must continue to change and innovate if they wish to remain strong contributors to the commonweal.

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Chapter 10
Apprenticeship in the United States

Robert I. Lerman and Felix Rauner

10.1 Apprenticeship and Vocational Education in the United States

Apprenticeship in the United States in the tradition of master craftsman training plays only a minor role in the qualification and credentialing of employees for careers in the intermediate sector. Although vocational education is common, it operates mainly through school-based programs in high schools and postsecondary education with little related work experience or direct involvement of employers. Schools often offer general work experience for course credit through what is known as "cooperative education" but often the connection with an occupational program is minimal. Formal apprenticeships called "Registered Apprenticeships" and overseen by the Office of Apprenticeship in the U.S. Department of Labor train nearly 500,000 adult workers for occupations though the system is unlinked to high schools and only sometimes linked with community colleges or other postsecondary educational institutions.

Some attempts to integrate apprenticeship training into the higher secondary level through youth apprenticeship began in the late 1980s, yet failed almost completely (Lerman, 2003). Apprenticeship training of the European type exists in a few states, including Wisconsin. But, a dual system of school-based and work-based training leading to an occupational qualification high school has not emerged. One reason is that the providers of adult apprenticeship programs, in the "registered apprenticeship" system opposed youth apprenticeships and wanted to restrict the "apprenticeship" label for use in their own programs (Glover & Bilginsoy, 2005, p. 346).

Recent years have witnessed efforts to improve the transition from vocational education to higher education (Glover & Bilginsoy, 2005, p. 345). The Carl D. Perkins Act is the most important legal basis for the public funding of vocational

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and preparatory programs (Katzis, 2001). The 1998 amendments to the Perkins Act aimed to promote the integration of academic and vocational education and to improve the preparation of vocational education students to enter colleges.

Debates over extending vocational education into an apprenticeship or work-based system arose in the late 1980s and early 1990s. In 1992, as part of his Job Training 2000 initiative, the first George Bush administration called for including "...voluntary apprentice programs for high school students, combining quality education, on-the-job training, and mentoring." This Bush administration sponsored youth apprenticeship demonstrations in several sites. The idea of "youth apprenticeship" emerged out of concern for the unstructured school-to-work transition (Lerman & Pouncy, 1990; Hamilton, 1990; Commission on the Skills of the American Workforce, 1990). Between 1990 and 1992, Republicans and Democrats in Congress introduced four bills proposing federal government support for youth apprenticeship. The National Youth Apprenticeship Act established as criteria "a comprehensive program of instruction which merges learning in the classroom and in the workplace." This program was intended for high school juniors and seniors as a way of improving the school-to-work transition.

The efforts to develop youth apprenticeship resulted partly from frustration with the dispersed and uneven nature of the existing vocational education and training system. The high school vocational education programs looked largely disconnected from employers. Federal job training for youth was proving unsuccessful (Lerman, 1996), and many programs were poorly coordinated. In 1992 the General Accounting Office prepared an overview for the Senate of all programs financed as job training by the national government. In fiscal year 1991 a total of 125 different national programs "in education and employment training" were funded with $16.4 billion and administered by 14 governmental departments and agencies (National Youth Employment Coalition and Youth and America's Future, 1992, p. i).

Efforts to coordinate these programs using "Private Industry Councils (PICs)" were proving ineffective as well. To cite one study, "It is amazing when you talk to business persons how little thought is given beyond the next board of directors meeting or the next quarter or the next profit and loss statement. A human development system is a long-term plan and a long-term investment" (Barrios-Paoli, 1992, p. 38).

The Clinton administration entered with a strong interest in improving job training and especially the school-to-work transition. Training was viewed as a cornerstone of their economic and social policy, a way of reconciling open trade policies with concerns about workers. Some favored the youth apprenticeship model similar to a dual system of vocational training following the model of European states like Germany, Switzerland, and Denmark. "The German 'dual system'—so named because students are taught both in schools and workplaces—has attracted particular attention," as Richard Mendel summarizes the attitude widely held among VET experts in the United Staes during the early and mid-1990s (Mendel, 1994, p. 12). For the first time talk was not about national *programs*, but about *system-building*. To implement this vision, Congress passed and President Clinton signed the School-to-Work Opportunity Act (STWOA) of May 1994. Along with STWOA, Congress established the National Skill Standards Board aimed at providing the industry-based and occupation-based credentials that might be achieved through youth apprenticeship.

Yet, two problems arose in the process of implementing STWOA. First, the legislation did little to emphasize apprenticeship, in part because of concerns by labor unions that youth apprenticeship might conflict with the existing adult Registered Apprenticeship system. In addition, the administrators of the new law did little to nothing to promote apprenticeship as a major part of state programs to improve the school-to-work transition. One reason was the worry that having high school students select an occupational, work-based option would involve tracking and stigmatization of the program. Instead of promoting in-depth interventions for a segment of young people interested in work-based learning, STWOA pushed state programs to provide low-intensity interventions (career plans, job shadowing) for all students.[1] Federal officials failed to draw on the successes of the Youth Apprenticeship initiative taking place in the state of Wisconsin.[2]

The second problem was one of federalism, with an awkward division of roles for national and state governments. When passing the STWOA, Congress emphasized "that ultimate responsibility for system-building lies with the states." Congress could only take the role of a catalyst in order to initiate this process. The optimism that accompanied this initiative was supported by a sort of grand coalition between the two big parties, the industry and the trade unions, representatives of the educational system, the departments of labor and of education as well as renowned VET researchers. But at the time, distinguished VET experts Steve Hamilton and David Stern warned of the illusion that it was possible to create a VET system comparable to those existing in Central European countries without establishing a stable national framework for a training system at the level of the federal government and with the support of a well-developed VET research and governance. Steve Hamilton wrote, "It's very hard to find an existing organisation that has the confidence of both the 'business' community and the education community." David Stern stated, "That unless and until such an institution is put into place, the US will not have widespread participation in apprenticeship" (quoted in Mendel, 1994, p. 22). Unfortunately, the ambitious initiatives to establish vocational education and training using models like the European dual systems shared the fate of their predecessors: they failed. Despite this and other failures, debates on initiatives to establish an "apprenticeship system" obviously reemerge periodically.

In a recent book chapter, one of us (Lerman, 2008) argued that the considerable skills gap in the American employment system cannot be easily overcome by the community colleges or by high schools. The chapter criticized the American "college for all" policy as being costly and ineffective for the United States (Lerman, 2008, p. 20) and called for expanding apprenticeship in the United States. The crucial argument is "that doing better requires public policymakers and education and training practitioners must recognize and address the multidimensional nature of skills, the variety of learning approaches, including the value of contextualized

[1] The motto of the first director of the School-to-Work office was "All Means All."

[2] The Wisconsin Youth Apprenticeship program remains strong, with 22 programs, about 2,000 youth apprentices, and continuing financial support (albeit modest) from the state government.

learning, and the desirability of close links with employers and workplace" (Lerman, 2008, p. 23). Thus, a fundamental problem of American education research and policy is the inattention toward all educational contents and types of learning not established in colleges and higher education. Literacy research and the practice of assessment have concentrated on fundamental skills in mathematics, languages, and natural sciences. Ignored is the great variety of domain-specific (vocational) competences as developed in vocational training systems.

A necessary component to a skills strategy is qualification and competence research that builds upon Howard Gardner's concepts of *multiple competence* and *intelligence* (Gardner, 2002). Otherwise wrong data would lead to wrong conclusions and to political decisions in the wrong direction: "Given the uncoordinated and opaque approach to occupational certification in the US, it is not surprising that policymakers rarely incorporate this dimension into deliberations about the skills of American workers" (Lerman, 2008, p. 38). Lerman draws the following conclusion: "One highly successful system to train adults for rewarding careers is apprenticeship. While apprenticeship provides a large component of training for careers in some countries and is growing in others, only a small and declining share of adults in the US participate. One way to shore up and expand apprenticeship in the US would be to increase its federal budget allocation, which at present is minimal. Expanding apprenticeship is likely to prove far more effective in raising long-term earnings at modest costs than is increasing the share of students entering college" (Lerman, 2008, p. 70).

In the pedagogical debate, workplace learning has played a considerable role for decades. The important studies on the relationship of working and learning by Lave and Wenger (1991), Collins, Brown, and Newman (1989), Schön (1983), Garfinkel (1986), and Polanyi (1966) continue to shape the international debates in vocational pedagogy, and increasingly those in the German-speaking countries (cf. Grollmann, Luomi-Messerer, Stenström, & Tutschner, 2007).

Opinions on whether strengthening vocational education in general and apprenticeship training in particular can improve the competitiveness of the US economy remain controversial. In several studies on the relationship between education and competitiveness, the education system is blamed for the shortcomings of the US economy especially in the manufacturing sector (US Congress, 1988; US Congress, 1990; Hatsopoulos et al., 1988; Kazis, 1989; Berger et al., 1989; Tenbrock, 1994). The MIT study "Made in America" concluded that ". . .without major changes in the ways schools and firms train workers over the course of a lifetime, no amount of microeconomic fine-tuning or technological innovation will be able to produce significantly improved economic performance and a rising standard of living" (Dertouzos et al., 1989, p. 81). Moreover, the relationship between vocational education and competitiveness has changed little over the past 18 years (Hall & Soskice, 2001).

Vocational education is rarely mentioned in studies highlighting the importance of educational improvement on the economy. In the tradition of American industrial culture, vocational education that includes the process of qualifying for an occupation is a contradiction in terms. Vocational *training* is traditionally perceived as

"in-plant training" and "on-the-job training." Vocational *education*, on the other hand, is a part of public education and aims not so much at the impartation of professional skills, but rather at vocational guidance and prevocational education. "Schools should educate, industry must train" (Phillips, 1984, p. 253) is a position that is widely shared by enterprises, trade unions, pedagogues, and educational practitioners. But, the vocational dimension has always attracted advocates as well. In 2009, President Barack Obama proposed substantial increases in funding for US community colleges, highlighting the ability of these schools to provide training for careers. In addition, there have been frequent attempts to adapt the school system (especially the high school) better to the qualification requirements of the employment system.

Several elements of the education system have played and continue to play crucial parts in the ambivalent development of the US education system. People see the school as a *central social and cultural institution of the community* and often the social center of the township; at the same time, the school is viewed as a *regional agency of democratic development* and a provider of skills for the job market. More recently, the goal of equality in outcome as well as opportunity is coming into conflict with the recognition that people should have a variety of pathways to rewarding careers. When university education is viewed as the only nonstigmatized route for everyone, it becomes difficult to adopt effective career-focused policies.

The next sections examine and draw lessons from two elements of the US skill development system. The first is the school-based vocational education that developed in high schools but has now largely eroded over time, though replaced with some new institutional forms. The second is the employer-based US apprenticeship system, regulated primarily through the U.S. Department of Labor's Office of Apprenticeship.

10.2 The Historical Evolution of US Vocational Education

When the European immigrants came to America, apprenticeship came as well. In the colonial era, however, apprentices were often treated only as cheap workers who had no rights. The period of "apprenticeship" was therefore extended to up to 14 years. The continuous flow of immigrants served to fulfill the increasing demand for skilled workers in the age of industrialization at the end of the nineteenth century. Apprenticeship training therefore played only a minor part.

Herbert Kliebard dates the emergence of a national movement for the establishment of vocational education at the time following the World's Fair of 1876 in Philadelphia (Kliebard, 1999). In the course of the rapid industrialization the educational system became increasingly important for the economy and faced pressure from business to improve the preparation of the work force. The presentation of training methods from various industrial countries played a surprisingly central part in the world's fairs in Philadelphia and later in Chicago (Gordon, 1999, pp. 10 ff.). Particular attention was paid to the Russian "training method" as well

as to the vocational-pedagogic concept of "Sjöld" developed in Sweden (Reincke, 1995). The Russian method was characterized by a course-based manual training in training centers, which imparted basic skills in a systematic way.

US responses to the Russian method varied. One group of work and vocational pedagogues enthusiastically adopted this method and acknowledged its high efficiency. Their objective was to organize vocational schools according to the model of German vocational schools and to integrate them in the public school system. Opponents of the Russian method came from pedagogues who adhered to the Swedish pedagogy of work. Gustav Larsson formulated the distinction between training oriented toward operational tasks and a work pedagogy oriented toward understanding and education (Larsson, 1902). Bennett criticized the Russian method as incompatible with the paradigms of American education and as "...military in character..." and with an emphasis on "...rules, orders, dictation..." (Bennett, quoted from Reincke, 1995, p. 262). At the International Congress of Education within the Columbia World's Fair in Chicago (1893), the dispute between the two groups was decided in favor of the American Sjöld, an approach involving the integration of vocational education into the public school system. Over time, schools added vocational preparation, guidance, and ultimately created vocational education concentrations in comprehensive schools as well as separate vocational schools. But, the vocational tracks became stigmatized because of their extensive use by students who underachieved in academic subjects.

The introduction of vocational contents in school attracted opposition by many in the progressive education movement, who argued that schools should be creators of democracy and not tools of efficiency. Wirth (1972) refers to a controversy at the end of the nineteenth century between followers of a vocational education system integrated into the educational system (Literal Vocational Education) and proponents of an "industrial education" unequivocally oriented to labor-market demands.[3]

In the US educational system, "vocationalism" has long been suspected of an antidemocratic education policy. The great American philosopher John Dewey tried to reconcile vocationalism and political emancipation in an egalitarian and democratic concept of education. He attempted to counter attempts to bring a business-oriented, one-dimensional functionalism to education. In Dewey's view, work-related education is a contribution to democratic education as it gives young people the opportunity to learn to master their own living conditions. The school is a "testing ground" for work-related contents that are free from any immediate influence of business, "Vocational Education" is a means to the reform of industrial society: "...there is danger that vocational education will be interpreted in theory

[3] This conflict overlapped the debate between the African-American activists Booker T. Washington and W. E. B. Du Bois about the adequate schooling and vocational education for African Americans. While Washington held the position (and fought for it) that African-American pupils and young people should be qualified for the labor market in order to become economically independent from the whites, Du Bois regarded this as a strategy to uphold the existing power structures and social segregation of blacks and whites (Parnell, 1985).

and practice as trade education: as a means of securing technical efficiency in specialized future pursuits. Education would then become an instrument of perpetuating unchanged the existing industrial order of society, instead of operating as a means of its transformation. . .” (Dewey, 1966, pp. 316 and 319).

A turning point in vocational school development came with the Smith-Hughes Act (Federal Vocational Education Act) of 1917. Since then, vocational education at the high school has been contested terrain, with some seeing a conflict between the democratic ideals of education and the demands of the industry for highly qualified workers and diversified production processes. The results have been largely an uneasy and unsatisfactory compromise. Although vocational education developed into a separated branch of the public school system, the programs lacked direct linkage with in-company training and high-quality training. To this day, Americans make a sharp distinction between “education” as a task of the communities and “training the workforce” as a task of the enterprises. The approach leaves little room for a type of high school vocational education that leads to valued vocational qualifications.

In fact, while high schools became comprehensive in combing academic and vocational courses, they increasingly focused on preparing students for college. One result is that vocational education came to be considered an inferior option, one for those with weak academic skills. Schools began to face harsh criticism for the practice of “tracking” students to vocational programs. Of special concern was that tracking was channeling students to academic, vocational, or general diplomas based not only on their performance but also on their expected performance using social class and race as proxies (Rosenbaum, 2001). Subsequently, counselors have overreacted and become reluctant to encourage noncollege routes even for students highly unprepared for college.

Today, only a small minority of schools in the United States is a vocational or technical high school. These supplement the educational program of the high schools especially for those students who consider undergoing practical training or attending a community college for vocational education. The share of seniors who were occupational concentrators and took at least one advanced course in the occupational field declined from 24 to 14.4% from 1982 to 1998. At the same time, an array of other career-focused programs have surfaced, including Career Academies (high schools organized around an occupational or industry focus) and Tech-Prep programs (occupational-related instruction with links between high schools and two-year community colleges).

Some vocational preparation takes place through internships arranged by the high schools. Often, they are carried out in the context of the relevant “vocational courses.” However, most students who work part-time outside a school context do not view this work as part of their “education.” These students constitute more than 30% of high school students, especially among those in their last or senior year.

The clear separation of “education” and “work” has intensified. A relatively high youth unemployment as well as an overly long period of working in low-paid and semi-skilled jobs after finishing high school (floundering period) is the consequence. All regional and national efforts to solve this problem remained more or less

unsuccessful. One positive sign is the creation of the national "Tech-Prep" program, which for the first time attempts to link vocational education at high schools with studies at the community colleges. The "2+2 Curriculum" that ranges across school levels increased the attractiveness of vocational education at high schools as a part of an integrated educational program that also gives access to higher education.

10.3 Adult Apprenticeship Training in the United States

The Registered Apprenticeship system of the United States operates with virtually no connection to the formal education system of high schools and colleges. Young people up through their mid-20s and even 30s have long entered apprenticeships either by having a job and bidding for an apprenticeship slot or entering through a union as part of a joint apprenticeship program run as part of a collective bargaining agreement between unions and employers. Unlike their German counterparts, US apprentices are typically in the mid- to late 20s and often already have relevant work experience. The older age of entry in the United States is not because of age restrictions. Individuals can enter as early as age 16 with a parent's permission or 18 otherwise.

The governing law, which emerged from a joint effort that involved employer associations and trade unions and few, if any, education representatives, is the National Apprenticeship Act (Fitzgerald Act) on August 16, 1937. Under this law, the US Department of Labor as well as state apprenticeship councils have been in charge of promoting, overseeing, and regulating apprenticeship.

The law put together regulations that had already existed in various laws of single states. Whereas more recent laws on employment and training such as the "Job Training Partnership Act" (1982) and the "Vocational Education Act" of 1989 had a length of 77 and 56 pages respectively, the National Apprenticeship Act is only one page in length. To this day there has been no amendment. This illustrates the minor social and economic relevance of this type of vocational education in the United States.

Though coordination between apprenticeship and the educational administration was foreseen in the act, it has never been put into practice. In the oversight hearing of 1984, almost 50 years after the enactment of the law, this lack of coordination was unanimously regarded as a fault (cf. Oversight Hearings on the National Apprenticeship Training Act). Within the Department of Labor, the responsibility is now with the Office of Apprenticeship (OA). The OA has major responsibilities in the following areas:

- Registration of new "apprenticeable occupations" and publication of these in a bulletin.
- Review of the legitimacy of the agreement on new occupations at the lower levels of VET administration.
- Registration and evaluation of apprenticeship programs.
- Counseling and support for regional OA offices and "apprenticeships councils" in the states and at the local level.

The OA is supported in its advisory activities to the federal government by the "Advisory Committee on Apprenticeship" (ACA).

In 26 states, State Apprenticeship Agencies (SAAs) decide on registration of apprenticeship programs, provide technical assistance, and monitor compliance with regulations.[4] The "Apprenticeship Agencies" are institutions at the state level that are meant to be comparable to the OA at the federal level. In states that have not obtained state authority for registration, the federal OA oversees the program. Both the federal and state authorities who deal with apprenticeship are woefully understaffed. In some states, only one or two people provide the staffing for the apprenticeship program in the entire state. Some regard this organizational dualism of states with SACs and those subject to a central administration as in need of reform. But, without additional budgetary authority, the issue is somewhat moot.

Joint Apprenticeship Committees (JACs), in which employers and trade unions are each represented, and other union-affiliated programs are responsible for about two-thirds of apprentices and act as contractual partners in defining apprenticeship standards. In other cases, employers play the central role in adapting standards. The OA helps develop and oversees apprenticeship standards in cooperation with the state bodies, supervises compliance with these standards, and initiates and advises apprenticeship programs. At the federal level, the expectations are broad. They include (1) a schedule of work processes for which the apprentice will train; (2) organized, usually classroom instruction expected to be 144 hours per year; (3) progressive wage increases over the training period; (4) supervision of and adequate facilities for training; and (5) no discrimination. Beyond these features, the OA approves the specific plans put forward by employers or joint programs when they meet reasonable criteria for occupational mastery. Recently, OA specified that apprenticeships could be approved that base completion on a competency-based standard, in addition to a time-based standard, and hybrid standard. Because the specifics of programs are designed in a decentralized fashion, there are large numbers of individual occupational profiles—over 900.

Job profiles may be recognized as "apprenticeable" at the local level in accordance with these standards. All attempts to limit the number of occupations and to concentrate on broad and comprehensive occupational profiles have failed so far. New apprenticeship occupations can arise very quickly; for example, between March 1988 and June 1989, BAT (the predecessor agency to OA) registered 26 new apprenticeship occupations. Under the US approach, apprenticeship occupations have a different legal quality from the vocational training curricula in Germany, which are enacted as statutory instruments by the ministry in charge. In addition, all the procedures for VET planning differ considerably. In the United States, the initiative to develop a new occupation may be launched by an enterprise. If the profile complies with the criteria for apprenticeable occupations and follows generally

[4] In 2008, the Department of Labor issued regulations that grant exclusive authority for registering programs to State Apprenticeship Agencies (which are government entities). State Apprenticeship Councils (which included labor and business representatives) are required as advisory groups, but no longer have registration authority.

accepted standards for the occupation, there is usually no obstacle to the recognition of the occupation by OA.

Instead of an occupational profile or a training curriculum, typical work processes are used to describe an apprenticeable occupation. These work processes roughly correspond to the training modules in German training curricula. For each of these work processes the training time is specified in hours or days. In case the training process involves several companies under the coordination of a training provider, this list serves for the supervision of training.

Until recently, one expectation of programs has been theoretical instruction of a minimum of 144 hours per year. Usually, these instruction hours have not counted as working time. However, regulations vary at the state level. In general, theoretical instruction is more similar to in-company instruction than to school instruction at vocational schools in Germany. This is already expressed by the term "related instruction" or "related (classroom) teaching." This instruction takes place at schools of various types (high schools, vocational training centers, technical schools, community colleges), as well as in company institutions and training centers operated by Joint Apprenticeship and Training Committees (JATC). Theoretical knowledge acquired before the beginning of apprenticeship training may be accredited. If school lessons are organized as block courses, the apprentice is unemployed during that period and receives unemployment benefits unless stipulated otherwise by collective agreements or the standards agreed upon.

A key element of the apprenticeship standards is the fixing of the salary. Often, salaries are based on a collective bargaining agreement. The definition of the training time is also part of the apprenticeship standards. Until recently, the standard hours for work-based training was 2,000 hours.

Several national programs are based on agreements between trade unions and employer associations at the federal level. In these cases joint training committees are established. One well-known example is the "National Joint Apprenticeship and Training Committee for the Electrical Industry." The apprenticeship standards are directly negotiated and agreed upon with the OA and the "State Apprenticeship Councils."

Regulations issued by OA in 2008 aim to increase the portability and flexibility of the registered apprenticeship system. On portability, the OA requires states to accept on a reciprocal basis the apprenticeship qualifications of individuals meeting the standards applied in other states. The added flexibility comes by allowing for intermediate qualifications—called interim credentials—that allow programs to shorten training programs and to allow credentialing at a middle-skill level. At the same time, the interim credential must be a step toward a full credential in an occupation. The regulations allow for competence-based criteria rather than simply the completion of a specified number of hours of work-based and classroom-based learning. Programs can also use a combination of time-based and competence-based criteria.

The trainee concludes an apprentice agreement with the relevant OA authority (state or federal) and with the apprenticeship committee that is responsible for his or her program. Although the OA is responsible for overseeing the quality of the programs, both the relevant federal and state authorities are woefully understaffed.

In some states, only one or two people provide the staffing for the apprenticeship program in the entire state.

One indication of the low interest by the US Congress in apprenticeship is that in the course of 70 years after the enactment of 1937 Act, very few hearings have been held and very few, if any, amendments to the Act have been passed. The Congress and various administrations have emphasized issues of discrimination, against minorities (especially black and Hispanic workers) and women. But, no effort has been launched to legislate concerning the structure, funding base, scale, mode for developing occupational standards, or governance during the act's history. Occasionally, new regulations are issued, as with the 2008 rules and those promoting cooperation between school-based VET and apprenticeship training in the Vocational Education Act (Carl Perkins Act) of 1984.

Recent data from most of the states in the United States show apprenticeship training in the United States is predominantly rooted in the craft trades. Five of the top six occupations in 2007 are linked with the construction industry (electrician, carpenter, plumber, construction craft laborers, and pipe fitters). About 36% of apprenticeship sponsors but over 50% of apprentices are in the construction industry. By implication, the construction programs are considerably larger than average.

Despite the rapid growth in US employment since the 1950s, the amount of training through apprentice has not kept pace with demands. In 1952 the Bureau of Labor Statistics reported a dramatic shortage of skilled workers in the aeronautics and automotive sectors, but also in other sectors of metal works. "The bureau noted, with some alarm, that the pool of these skilled workers was drying up, due to retirement and reduced immigration from Europe, and a lack of adequate apprenticeship programs" (Nobel, 1986, p. 39). In recent years, shortages of skilled workers have appeared in a range of areas, from nursing to welding to machinists. Still, apprenticeship has not reached sufficient scale to satisfy the demand. While other modes of vocational education, particularly in community colleges, have increased substantially, they often are ill-matched to the skills required in many occupations. As of 2007, about 480,000 workers were training as apprentices. This number made up about 0.3% of total employment. Even if the nonregistered apprenticeships are included, the proportion of apprentices remains less than 1%. Even relative to the numbers entering the workforce, the figure is still low, about 3% for registered apprenticeships and perhaps 6–8% for all apprenticeships.

Trade unions have a considerable influence on apprenticeship training via the "Joint Programs." Although programs connected with unions make up less than 30% of all registered apprenticeship programs, union-connected sponsors provide nearly two-thirds of all registered apprenticeships. Given that the rate of unionization of American employees is less than 10% in the private sector and that many "modern" enterprises consider being "union free" as a part of their image, those trying to expand apprenticeship face the challenge of persuading employers that apprenticeship can be a sound training solution for non-union firms. Still, in a recent survey of apprenticeship sponsors, 85% of non-union apprenticeship sponsors reported they were highly satisfied with their programs (Lerman, Eyster, & Chambers, 2009).

10.4 Apprenticeship 2000 and Other Policy Forums

In December 1987 the Department of Labor launched an initiative called "Apprenticeship 2000." Its purpose was to evaluate the current training situation in the United States and to highlight the role of apprenticeship in meeting the increasing demands for skill likely to arise in the US economy by the year 2000. The effort reached out to a broad audience, especially VET experts, and involved written and oral surveys, hearings and discussions.

The public dialogue on the future of apprenticeship training concentrated on five questions.

1. Can and should apprenticeship training be expanded to all sectors of the employment system?
2. What constraints and parameters of the employment system should determine a possible expansion of apprenticeship training?
3. What should be the "delivery system" for an expanded training system?
4. What role should the government play in an expanded training program?
5. How can apprenticeship training be linked more effectively to the employment system?

The answers to these questions given by industry and trade unions, JATCs, government agencies, education offices, and other interest groups were systematically analyzed by the predecessor agency to the OA, then called the Bureau of Apprenticeship Training. A vast majority of respondents was in favor of an expansion of apprenticeship training. Remarkably however, only 82% of the JATCs answered the question and only 50% were in favor of an expanded apprenticeship system. A minority of respondents held the opinion that high-skill occupations, especially in sectors like banking and insurance, petrochemicals, services, high technology and electronics, federal agencies, and healthcare should be excluded.

Two-thirds of respondents held the opinion that the expansion of apprenticeship training should not include all sectors of the employment system. However, there was little agreement as to how far and according to what criteria apprenticeship training should be limited. There was a balance of the arguments in favor of further specialization on the one hand and broader occupations on the other.

The answers to questions concerning the delivery system roughly mirror the current distribution among JATCs, enterprises, and other providers of apprenticeship programs. A majority of respondents favored a strengthening of related instruction outside the workplace in order to lay more emphasis on "education" in apprenticeship. This opinion was held mainly by respondents from education, government, and business.

The question of the future role of government in vocational education and training found a relatively big response. On the whole an intensification of all activities was favored that were already undertaken by the federal government and the states. The answers may well be interpreted as a support for the strengthening of the government's responsibilities in the development of the VET system. The generalization

of "standards" at the federal level as well as support for the development of curricula are positions that are now more widely held than at the time of the 1984 oversight hearing in Congress. Only 12% of the respondents favored a reduction of the government's responsibilities.

One question asked whether and how the connection between in-company training and school instruction, or between practical and theoretical vocational education, might be developed further. A majority of 90% supported a close linkage of in-company and school-based vocational education. Only in the JATC group there was a significant proportion against this idea. Despite the broad approval for a support of theoretical instruction and a close connection between school and company the proposals as to how this might be achieved were highly divergent. Moreover, the heterogeneous interests of business and training providers became quite obvious.

One can hardly fail to notice the critical attitude toward the school system and the resulting reservation using schools, since many have failed to provide skills in reading, writing, and mathematics. Many were explicitly critical of the education system for the alarming number of graduates who lack basic competences.

The review included a discussion about whether alternative models for apprenticeships could improve overall effectiveness and thereby attract more employers to sponsor programs. As noted, registered apprenticeships have historically been designed around 2,000 hours of on-the-job training and 144 hours of formal instruction, although on-the-job training can vary up to approximately 8,000 hours. During the course of Apprenticeship 2000, the possibility of using competences and milestones rather than a required number of hours to define completion of an apprenticeship gained support. Although some raised concerns about maintaining quality and not diluting the concept of apprenticeship, many recognized that incorporating competence-based apprenticeship might open up new options for credentialing and engage more and more varied participants, both workers and employers. This position has now been incorporated under the latest regulations.

With the passage of the 1997 Workforce Investment Act (WIA), the Bureau of Apprenticeship and Training (now the Office of Apprenticeship) and the National Association of State and Territorial Apprenticeship Directors (NASTAD) cosponsored four 1-1/2-day forums in 1999 as part of the *Apprenticeship Impact Project (AIP)*. The AIP forums explored ways to expand and strengthen registered apprenticeships in the context of the new emerging workforce development system. Among the critical issues raised in these discussions were

- Concern about negative images and misconceptions about apprenticeships;
- Challenges resulting from the reported shortages of skilled workers;
- Special training needs of women and minorities, who now constitute the largest number of new entrants to the labor market;
- The need for improved linkages with community-based organizations and educational institutions from elementary through postsecondary levels in order to spur outreach and recruitment; and
- Creating opportunities for effective linkages with the new One-Stop Career Center system (Coffey Communications, 2000).

The forums identified tools and strategies to address each of these issues and to strengthen linkages to the new One-Stop Career system. The OA developed new marketing materials, including the dissemination of brochures describing promising practices and evaluation findings and other material produced under the Advanced Apprenticeship Initiative.

In 2001, the Government Accounting Office published a review of apprenticeship that contributed to the ongoing discussions about how apprenticeship relates to broader labor-market policies. The GAO report concluded that DOL should be more active in identifying new apprenticeable occupations and enlisting new sponsors. Rather than relying mainly on employers' requests for apprentice programs, GAO recommended more use of systematic labor-market analysis to identify potential apprenticeable occupations. GAO also recommended placing more emphasis on addressing employer apprehension or concerns about some structural components of apprenticeships, such as mandated incremental wage increases.

As the Office of Apprenticeship moves forward to try to encourage more apprenticeship programs, it must consider how potential sponsors see the barriers as well as advantages of the registered apprenticeship approach. Among the key barriers identified are the following:

1. *Costs.* An apprentice often receives, in the first year of his or her traineeship, 50% of the wages of a skilled worker. Depending on the agreement, the amount will rise, usually by 10–15%. In addition, smaller enterprises worry about the start-up costs of apprenticeship programs.
2. *Control by trade unions*. Some employers see apprenticeship programs used only for trades with high rates of unionization. This opinion is widely held, even though the greater part of apprenticeship programs is established in "non-union" enterprises.
3. *Fear of "pirating."* Many companies fear that costs are incurred when their training investments are exploited by nontraining companies through the poaching of qualified trainees (the "free rider" argument).
4. *Lack of structural support.* Enterprises abstain from starting an apprenticeship program above all when they are small businesses. The reason is that setting up a program is costly, especially with the minimal assistance and infrastructure available.
5. *Role of the government.* Many enterprises in principle choose not to participate in programs that have any connection to public institutions. This traditional aversion to government programs also exists with regard to apprenticeship programs, although public administration plays a relatively unimportant part in this case. Programs with at least five apprentices must have plans to insure equal opportunity to women and minorities.

Many employers see the benefits of apprenticeship as well worth the costs (Lerman et al., 2009). Nearly all sponsors report that the apprenticeship program helps them meet skill demands. Also viewed as an important benefit of apprenticeship was reliably documenting appropriate skills, raising productivity and worker morale,

and reducing safety problems. Only 5–8% did not find these benefits of apprenticeship at all important. Nearly 87% of sponsors reported they would strongly recommend registered apprenticeship and another 11% would recommend apprenticeship with some reservations. Only about 2–3% answered that they would not positively recommend apprenticeship. Surprisingly, only about one-quarter of sponsors regarded poaching as a significant problem. In fact, 46% of sponsors reported that was not a problem at all and another 29% perceived poaching as only a minor problem.

Whether these positive attitudes and renewed marketing efforts at the Department of Labor and in particular states will lead to an expansion of registered apprenticeship is uncertain at best. Continuing vocational education and training at the community colleges appears to attract more attention though the gains appear well below those accruing to apprenticeship training. Without strong action and leadership, the education-oriented approach through community colleges and technical colleges will become the default option for transitioning between high schools and the employment system.

10.5 Conclusion

Vocational education remains an underappreciated aspect of education in the United States. As a result,

1. the qualification of workers for the intermediate sector of the employment system takes place predominantly in the enterprises via on-the-job training;
2. an important exception is apprenticeship, where employer-sponsored and joint employer-union programs provide high-quality training, especially in the construction sector;
3. skill preparation for workers in the intermediate sector also takes place in community colleges and for-profit career schools, although the quality of training and the match between curriculum and career are uneven;
4. training for less-advantaged youth, adults, and displaced workers comes through the Workforce Investment or WIA system; local boards govern programs that provide grants for training often through community colleges and local nonprofits; evidence from past similar programs (the Job Training Partnership Act—JTPA) suggests workers gain only modestly from the training (Orr, Bloom, Bell, Doolittle, & Lin, 1996);
5. overall, the US education policy has not been successful in integrating the variety of programs for vocational education and training into one VET system.

What should guide an integrated system? At the moment, the United States has a dispersed array of providers of training, with only modest quality assurance. Some governors provide leadership but the problem is complicated not only by uncertainties in the job market but also by the strength of political forces that

emphasize academic education over other routes to career success. Further, training providers—whether they are high school vocational education, community colleges, for-profit programs, or local community groups—will be difficult to displace. In this context, the public sector can lead through three concrete steps.

- Help industry associations, labor associations, and apprenticeship programs develop transparent and high-quality occupational credentials. In August 2009, the Office of Apprenticeship awarded industry groups to incorporate competence-based apprenticeship models as well as hybrid models (combining time-based and competency-based criteria). The awards went to industries that traditionally sponsor apprenticeship programs, such as construction, and to other industries, such as computer learning.[5] These grants follow earlier efforts that funding industry groups to build or improve apprenticeship models in metalworking and nursing.
- Increase funding for apprenticeship training and for training with a high track record of meeting these credentials; offer companies modest subsidies to expand registered apprenticeship, a known high-quality and cost-effective training approach. Since 2007, South Carolina has been offering subsidies of $1,000 per apprentice for up to four years. The subsidy is apparently helping the effectiveness of outreach consultants approach employers under the Apprenticeship Carolina program and to attract employer sponsors into the registered apprenticeship system. Expanding the budget of the Office of Apprenticeship from about $20 million to $40 million would likely yield important net benefits. Given the expected present value of the lifetime earnings gains associated with apprenticeship training (about $200,000 or more), the doubling of OA's budget would at least break even if the added staff could generate 100 more apprentices. In South Carolina, a budget of about $1.5 million over 1.5 years directed toward recruiting employers to join or expand apprenticeship programs managed to generate about 800 new apprentices.
- Conduct research on training outcomes as well as impact studies on the net effects of alternative types of training. Research on the impact of apprenticeship training in the state of Washington reveals very substantial earnings gains for apprentices. To make the evidence more complete, the government should undertake projects to replicate the Washington findings in other states and to conduct experimental studies on the impact of apprenticeship training on the earnings of workers. In addition, demonstration projects should be undertaken to estimate the costs and benefits of apprenticeship training from the perspective of employers involved in sponsoring the training.

In the history of vocational education in the United States, the idea of dual apprenticeship training always fascinated and inspired VET experts. As noted, one of the authors (Lerman) proposed dual training or youth apprenticeship system back in

[5] See http://www.dol.gov/opa/media/press/eta/eta20090916.htm for the announcement.

1990. The case for such an approach remains strong: "A large scale youth apprenticeship system has the potential for dealing effectively with the nation's two youth problems: the low skills, motivation and career options of none-college-bound youths and the more intractable economic and social problems of inner-city youths" (Lerman, 2007, p. 166).

Finally, we may ask why some countries have and others have not adopted significant, work-based and high-quality vocational education systems. One possibility is that if vocational education is viewed as a dimension of different market economies, then countries with a coordinated (social) market economy and a long-standing tradition of social partnership are more successful in establishing such vocational education and training systems. However, the remarkably stable establishment of dual apprenticeship training in Switzerland appears to contradict this thesis. A related possibility is embedding apprenticeship training into the industrial culture as a crucial factor (Ruth, 1995; Laske, 1998; Rasmussen & Rauner, 1996).

The political system of the United States with its pronounced federalism and the structure of a liberal market economy were key factors that impeded the development of a vocational education and training system. The institutions for management and coordination at the different levels as well as their vertical cooperation are underdeveloped. They do not provide a basis for a top-down, coordinated administration of a large vocational education and training system. However, creative public policies can still make a difference and shift the paradigm toward dual systems that involve high-quality work-based training linked with academic instruction and well matched toward the careers of the future.

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Chapter 11
Vocational Education and Training (VET) Quality and Evaluation: Its Place in the US Community College

Pradeep Kotamraju

11.1 Introduction

The subject of postsecondary[1] vocational education and training (VET[2]) in the United States is vast and covers almost a century of research, policy, and practice on the community college (Cohen & Brawer, 2008). This chapter focuses on VET quality and evaluation after 1980 and restricts its discussion to community college VET.[3] Community college VET's connective status between the high school on the one hand (Barnett & Bragg, 2006; Dare, 2006) and workforce development on the other has long been recognized (Carnevale & Desrochers, 2001; Van Noy & Jacobs, 2009). But little is known about the level and direction of the educational quality of VET programs. The absence of appropriate VET evaluation systems is the main reason why information about VET quality is difficult to obtain. Moreover, appropriate VET evaluation systems require overcoming definitional, technical, and policy issues that confront it if community college VET is to make its case for

[1] Confusion abounds when attempting to define education beyond high school. The generic term is *postsecondary education*, which includes (a) four-year private and public colleges and universities, (b) two-year institutions, including comprehensive community colleges that offer liberal arts and transfer education as well as vocational education and training (VET), and (c) publicly funded technical institutes that focus exclusively on VET. However, the term *college* (as in "college for all") is generally used to refer to four-year institutions, not necessarily two-year institutions. More recently, the term postsecondary education has also encompassed private two-year and four-year proprietary institutions, as well as industry-based apprenticeship programs. In this chapter, the term postsecondary education is used to describe any education beyond high school.

[2] This chapter uses the term *vocational education and training* (VET), which the rest of the world generally uses to define courses and programs offered in high school and college that target education and training for occupational work.

[3] A broader perspective on the community college is presented in Chapter 4 of this volume by Carsten Schmidtke.

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adding value to, and improving the quality of, the US higher education and workforce development systems. The VET evaluation system discussed in this chapter is known as the Perkins Performance Accountability Reporting System (PPARS). It refers to the performance-based accountability system put in place by all states to meet the accountability requirements under the Carl D. Perkins Act. Perkins refers to the federal legislation that supports VET both at the secondary and postsecondary levels. Unless otherwise noted, the use of the term *college* in this chapter refers to US community (or two-year) colleges. When the term *VET* is used, it generally refers to community college VET.

This chapter discusses the definitional, technical, and policy issues that connect VET evaluation to quality, the latter being expressed as the level of VET student performance. The chapter raises and answers the following three questions:

1. Why have current VET evaluation systems not been able to provide useful information about VET quality?
2. In which direction does VET evaluation need to move in order to begin documenting VET quality?
3. How will the placing of VET evaluation within the larger context of education and workforce development policy help connect VET evaluation to VET quality?

Section 11.2 of this chapter outlines the present state of VET evaluation. The PPARS is used as a vehicle to show why evaluation systems have thus far not moved beyond compliance. Section 11.3 focuses on the link between evaluation and quality. Recently available VET student performance data are used to show the level and direction of VET quality. Section 11.4 discusses the definitional and technical issues PPARS must overcome if it is to effectively connect VET evaluation to VET quality as measured by student performance. Section 11.5 concludes the chapter by indicating that VET must address and overcome the policy differences that have emerged when connecting VET evaluation to VET quality. Only after addressing such differences will the placement of VET within the broader context of twenty-first-century education and workforce development policy raise overall VET quality. Without such necessary changes, the perception of the low value of the VET educational experience will persist.

11.2 Where Does Community College VET Evaluation Stand?

Evaluation frameworks, processes, procedures, and tools within community colleges are not developed in a vacuum. How such components of the evaluation process evolve largely depends on the balance struck between the internal processes of the institution and external pressures placed upon it (Alfred, 2008). The assessment and accountability tools adopted by community colleges vary depending on (a) their goals and audiences and (b) their institutional roles and culture (Volkwein,

1999). Assessment and accountability often exist side by side within colleges. In theory, assessment provides formative information, whereas accountability focuses on summative data. Student learning assessment and performance-based accountability systems should be linked (Banta, 2007). But because of recent demands to make higher education outcomes more visible (U.S. Department of Education, 2006), performance-based accountability systems have become the default when it comes to evaluating student, program, college, or state performance (Dougherty & Hong, 2006).

Community colleges primarily engage in institutional and program-level self-assessment of student learning for accreditation purposes. Such assessment focuses on student learning, but can and does include specific programs, whole departments, and entire institutions. Speaking more generally, such assessment is undertaken because colleges want to improve internally and seek ways to work optimally, but the initial motivation for undertaking such self-evaluation comes from external accreditation requirements (Beno, 2004; Bers, 2004; Serban & Friedlander, 2004). Within the US educational system, there has been a gradual movement toward using accountability systems that meet preset performance, budgeting, or funding requirements set by different statutory, legislative, and nongovernmental agencies and entities (Dougherty & Hong, 2006; McClendon, Hearn, & Deaton, 2006; National Center for Public Policy in Higher Education, 2008). The current accountability requirements under the 2006 Carl D. Perkins Career and Technical Education Act (Perkins IV) (U.S. Department of Education, Office of Vocational and Adult Education, 2009) are a noteworthy exemplification of this trend.

A report from the U.S. Government Accountability Office (GAO) explains in detail the PPARS system (U.S. Government Accountability Office, 2009), which generally takes the form of individual states meeting predetermined performance targets set through prior negotiations (undertaken every two years) between the states and the U.S. Department of Education. Separate performance targets for disaggregated populations are not required under Perkins. But all states are expected to meet or exceed the negotiated targets for every single indicator. At the postsecondary level, states negotiate on six separate targets:

1. *Technical Skill Attainment*—a weighted average of VET student pass rates on industry-based certifications and externally monitored, state-developed assessment exams.
2. *Graduation Rate*—the percentage of VET college majors who obtain an academic credential such as an associate's degree, a diploma, or a certificate.
3. *Retention + Transfer Rate*—the percentage of VET college majors who either are retained in the major or have transferred to other postsecondary institutions.
4. *Employment Placement Rate*—the percentage of VET college majors who are placed in employment once they leave postsecondary education with or without a degree.

5. *Nontraditional*[4] *Participation Rate*—the percentage of VET college participants who enroll in nontraditional VET programs and for whom these programs are nontraditional for their gender.
6. *Nontraditional Completion Rate*—the percentage of VET college graduates who complete nontraditional VET programs and for whom these programs are nontraditional for their gender.

As long as states—and now for each school district or community college recipient of Perkins funds—meet or exceed their previously negotiated targets, nothing more needs to be done. Corrective action is taken only when a state's or local recipient's performance on any one indicator does not meet at least 90% of the negotiated performance target. Usually, corrective action requires the state or local recipient to develop and implement an improvement plan, which describes how the state or local recipient will address the specific area of underperformance. If the state or local recipient fails to show progress and improvement and still continues to fall consistently below the 90% target for three years consecutively, financial sanctions can be imposed either by the U.S. Department of Education (on the state) or by the state itself (on the local recipient) (U.S. Government Accountability Office, 2009).

A major drawback of PPARS is that, in essence, the system is an agglomeration of 50 separate state accountability systems. Every state defines Perkins input, output, and outcome measures somewhat differently. Measurement techniques across different states are not the same. Several states have difficulty collecting disaggregated information, particularly for special populations. These include individuals with disabilities; individuals from economically disadvantaged families, including foster children; individuals preparing for nontraditional training and employment; single parents, including single pregnant women; displaced homemakers; and individuals with limited English proficiency. The collection of required data—such as employment placement and student transfer information, generally obtained from outside the system—is often difficult (Stevens, 2001; U.S. Government Accountability Office, 2009). Nevertheless, the systematic collection of aggregated and disaggregated VET data has increased and improved as Perkins has progressed through different reauthorizations. As an example, one state director of research within a higher education system office informed this author that were it not for PPARS, the state would have been much slower to collect information on certificates and diplomas (i.e., awards of shorter length than associate's degree). Certificates and diplomas figured more prominently in documenting student success under PPARS.

The GAO report (U.S. Government Accountability Office, 2009) found that states faced the greatest challenges with meeting the PPARS performance targets for the separate technical skills attainment indicator. As states began reporting on technical skill attainment, they encountered problems that were not foreseen during the

[4] The term *nontraditional* is defined very specifically in Perkins as referring to VET student enrollment and completion of those programs that are nontraditional for the student's gender (e.g., women in welding or men in nursing).

writing of the most recent Perkins act (Perkins IV) or addressed in the guidance provided by the U.S. Department of Education. These problems included difficulties with reporting disaggregated population data, specifically those concerning special populations, which are unique to Perkins, and these generally do not appear in other collegewide data systems. Additionally, states found that the costs of reporting on technical skill attainment measures were high. Much of this was due to the fact that states had to develop brand new technical skill assessment systems as well as a full-fledged reporting system for the technical skill assessment measure (U.S. Government Accountability Office, 2009). Inevitably, because of all these issues, and because of the overriding concern of meeting previously negotiated performance levels for the technical skill attainment measure, states are seeking paths of least resistance. Typically, at the postsecondary level, the technical skill attainment measures default to the few programs that have external licensure requirements such as those in the health field. Alternatively, colleges are still continuing to use a grade point average (GPA) cutoff, completing a set of technical courses, or graduation itself, as a proxy for technical skill attainment.

Although PPARS does tie federal funding to performance, this link is extremely weak. Under the current system, no state has yet been financially sanctioned (U.S. Government Accountability Office, 2009), and the relationship of funding to performance within states is only just being defined. At the federal level, there are no incentives in PPARS for improving or improved performance. States have the discretion to create such incentives, but their use within states has been rather limited. As it stands, PPARS can be described as a system without teeth, relying "solely on information as a lever for encouraging [state or college] performance" (McClendon et al., 2006, p. 17).

To be fair, at the federal, state, and college levels, PPARS was seen basically as a reporting tool for complying with Perkins requirements. Using PPARS as a vehicle for analysis and continuous improvement was not the primary focus at any level of the educational system. Moreover, PPARS was developed out of unit record data systems that reside only at the state and college levels. The federal government receives aggregate-level data from states, restricting it to only basic descriptive reporting. The same is true for the Integrated Postsecondary Education Data System (IPEDS), discussed more in Section 11.4. In short, the use of PPARS as a tool for continuous improvement in student performance remains incidental and subsidiary.

Performance-based accountability systems such as PPARS arose because of the lack of easily accessible, formative student learning assessment information within VET (Bers, 2004). Little to no evidence suggests that PPARS is being used to measure and improve VET quality. Under Perkins IV, accountability and assessment requirements were intended to encourage the principles of continuous improvement, enable data-driven and research-based decision making within VET, and allow states and local VET jurisdictions to improve VET programs and practices (Schray, 2000), specifically targeting the "hard to serve" VET student. But such goals have fallen far short of expectations. Even within states, where such continuous improvement systems could conceivably exist, it is not clear to what extent information about VET can be extracted—much less be compared with other states—and used to say

s something about VET quality and student achievement. In other words, college (and even high school-level) PPARS meets only the compliance requirements of the legislation. There is no proof that PPARS is being used as a comprehensive evidence-based evaluation system for collectively documenting VET quality. As a performance-based accountability system, PPARS leaves the picture of VET quality fuzzy. The remainder of this chapter attempts to make this picture clearer.

11.3 VET Student Performance as an Indicator of VET Quality

When taken in the aggregate—or when disaggregated by age cohorts, gender, race, ethnicity, and other socioeconomic characteristics, including income and financial status—the current community college VET student body may be described as extremely diverse, consisting of first-time college goers and a preponderance of women, minorities, and older students (over the age of 25), especially compared to the student bodies of other types of postsecondary institutions (U.S. Department of Education, National Center for Education Statistics, 2008). Many VET students do not come to college directly from high school—the typical wait period is usually two years—and for some, high school is only a distant memory. Most students take classes and work at the same time. Incoming students generally belong to the middle to lower ranks of their high school graduating classes; many enter with limited literacy, numeracy, and science skills (Hoachlander, Sikora, & Horn, Carroll, 2003).

Table 11.1 shows the growth in VET enrollment by various socioeconomic and demographic variables, some of which have also been characterized as risk factors that prevent students from completing programs in college (Hoachlander et al., 2003).

Given the data presented in Table 11.1, the VET student body of today is younger (62%) and has more women (63%) and minorities (50%). Many students are single or separated (72%), and a substantially large percentage receives financial aid (61%). Many VET students have parents who do not have a bachelor's degree (53%), and quite a few have parents with only a high school education (40%). It should also be noted that the trend in all these variables is rising, some more uniformly than others. More generally, VET students represent a substantial proportion of total college enrollments, and their share is growing. The figures in the above table are comparable to those obtained for the average community college student. For instance, using overall figures from 2007, 50% of all college enrollees were below the age of 24; 60% of college enrollees were part-time, 58% were women, and 43% were minorities (U.S. Department of Education, National Center for Education Statistics, 2009).

The National Research Center for Career and Technical Education (NRCCTE) conceptualizes VET student success as occurring across three domains: *Engagement*—that is, completing high school and/or postsecondary programs; *Achievement*—both technical and academic achievement outcomes; the acquisition of industry credentials; and *Transitions*-movement from high school to continued formal learning at the postsecondary level without the need for education;

Table 11.1 Growth in VET enrollment

		Students who are					Students' parents' education	
Year	Total	Female (%)	Minority (%)	Age<25 (%)	Receiving financial aid (%)	Single or separated (%)	<=High school (%)	>HS and <BA (%)
1990	5,867	58	29	48	42	66	37	16
2000	5,933	57	38	48	52	65	42	22
2004	5,399	63	50	62	61	72	40	26

Source: U.S. Department of Education, National Center for Education Statistics (2008); see also Hoachlander et al. (2003) for the description of risk factors. (NB: The percentage share of VET in total college enrollment by various socioeconomic and demographic variables for selected years)

movement from education to the workplace (NRCCTE, 2008, 2009). Getting on a pathway to postsecondary education and the workplace is determined by the "college readiness" of any prospective college student. In the case of students requiring remediation, once they successfully complete remedial coursework, they are considered ready to pursue any of the pathways defined below:

- A *general pathway* usually means that students choose neither an academic program nor a VET program. Students on a general pathway enroll in courses in either, both, or neither of the two areas. In college, such students are usually described as undecided majors; their relationship to VET is fleeting.
- An *academic pathway* is one in which students concentrate in an academic area even though they may be introduced to VET through some course-taking. In community college, these students may major in the liberal arts and sciences; they generally intend to transfer to four-year institutions. By becoming familiar with VET, they may improve their chances at pursuing baccalaureate programs, many of which have VET links.
- A *VET pathway* is one in which students combine VET course-taking with liberal arts and sciences course-taking within a VET program of study. In college, such students are enrolled in occupational programs, but depending on the type of credential they choose to complete, their coursework often includes non-VET requirements.

The connection of high school students to VET varies from weak to strong. For those entering college for the first time straight from high school, for many, prior connection to VET can be minimal (e.g., one or two courses). The connection may be stronger for those not coming directly from high school because their purpose for enrolling in college may be to build skills for employment; for such students, the broader college experience may be overwhelming. Whether coming directly from high school or from the workplace, for some entering students, the transition to college VET is smooth. For currently employed or displaced workers, their chosen pathways relate to their prior employment experiences. Students entering college through full-fledged, dedicated, aligned pathways from high school VET to college VET programs have a head start in their VET education (Dare, 2006; Lewis, Kosine, & Overman, 2008).

Evidence-based evaluation systems start with the premise that quality can be represented by the level of student academic and technical performance, with increases in performance indicating rising quality. Such systems then identify the different "stop-out" points VET students may encounter along a given career pathway. The measures constructed within this system must precisely indicate the level and extent of success, as outlined below. Then, using a system such as PPARS, a cohort of students may be identified, either in the aggregate or disaggregated by different groupings (e.g., by the different pathways described above). Using these data, colleges may extract information on performance indicators such as retention, graduation, and transfer. Adding these values together determines the rate of student success. To the VET student success rate, one may add the employment placement

of VET students in order to extend the measure of program quality beyond mere college success.

The VET student success rate is obtained when the total number of successful VET students is taken as a percentage of all students in a VET pathway. The higher the student success or employment placement rate, the higher one may judge the educational quality of the student experience. A fuller picture of the level of quality of a given program may be gained using comparative information broken out by different pathways or by using some other form of disaggregation. Colleges may wish to compare the success rate of VET students against that of students in other pathways (i.e., academic, general). Many states have designed systems similar to the one described here.

Using data made available at the national level, one may estimate the level of student performance for the VET and the academic pathways. The data are derived from a National Center for Education Statistics (NCES) study (U.S. Department of Education, 2004) of first-time college goers who entered either VET or academic programs during the 1995–1996 academic year. Education and employment outcomes of these students were determined six years later. Table 11.2 shows the student success rate for the two pathways.

Almost 9 out of 10 of the 2001 graduates, regardless of type of credential, found employment. However, VET graduates who received certificates were more likely to be employed than those who did not graduate (87% vs. 74%); the difference between associate degree completers and noncompleters was negligible (87% vs. 89%).

No separate information in the NCES study [31] was given regarding outcomes by disaggregated populations such as age, race/ethnicity, gender, income status, and

Table 11.2 Measuring student success rates

Students who entered in 1995–1996 did one of the following:	VET pathway (%)	Academic pathway (%)
Received a credential (Graduation rate)	40	21
– Associate degrees	15	21
– Certificates	25	n.a.
Continued enrollment in program (Retention rate)	12	19
Transferred and received a bachelor's degree (Transfer rate)	8[5]	21
Overall success rate (Graduation + Retention + Transfer rates)	60	61

Source: U.S. Department of Education, National Center for Education Statistics (2008). This source indicates that the number of academic certificates was very small and that data needed to be interpreted with caution

[5] This figure can be assumed to be an underestimate. Under Perkins, as long as the student transfers to and enrolls in a four-year institution, he or she is considered a success.

work status while going to school or school attendance while working. However, using the VET student success rate of 60% (derived from Table 11.2), we may say that 40%[6] of VET students who entered college programs in 1995–1996 left postsecondary education without any credentials six years later. Job or financial demands were often cited as the primary reason for dropping out. Also, many of these students may have left college because of at least one of the risk factors that generally prevent students from finishing their studies. A different NCES study (U.S. Department of Education, National Center for Education Statistics, 2009) showed that the average graduation rate (measured as completing after three years of entering) of the entering 2004 community college cohort (of first-time, full-time students) was 22%. The graduation rate for African Americans in this cohort was 14%; for Hispanics, 16%; for White students, 25%; for men, 21%; and for women, 23%. At four-year institutions, the corresponding rates for all categories were two to three times higher.

Based on such statistics, and given the percentages described in Table 11.2, we may fairly say that VET performance at the disaggregated level is disconcertingly low. Overall, the performance picture for VET programs is not promising. The typical VET program performs poorly on two counts: First, the "absolute numbers" do not look good. Second, on a more relative basis, VET student performance is generally much lower than student performance in academic or general pathways. The public perception of VET as being of low quality remains strong due to such analyses. However, the need remains to guide VET policy through the use of systematic evaluations of VET student performance at single points in time, over multiple points in time, and compared to other student groups. Such evaluative measures, used as continuous improvement strategies, should result in the generation of evidence to assert VET program quality.

11.4 Definitional and Technical Issues When Connecting VET Evaluation to Quality

Connecting evaluation to quality in community college VET through student performance data requires us to address the place of VET within a larger educational and workforce development framework. Failure to adequately contextualize VET has resulted in confusion at both the federal and state levels. This confusion can be divided into three major areas: definitional, technical, and policy. This section discusses definitional and technical issues related to VET.

Today, VET in the United States is called career and technical education (CTE). For almost a hundred years, it was referred to as vocational education; in essence, it was considered to be occupational training. CTE is occasionally referred to as the "new" vocational education, to distinguish it from the "old." A simple way to distinguish the "old" from the "new" is to consider the 16 career clusters that now

[6] Based on the previous footnote, this figure is probably an overestimate.

describe CTE. "Old" vocational education was described by only five clusters (i.e., agriculture, construction, manufacturing, construction, transportation), whereas the "new" CTE includes all 16 clusters. This expanded CTE now includes clusters such as information and communication technologies, engineering, health, education, and business (National Association of State Directors of Career and Technical Education, 2006). At the community college level, the term more commonly used to describe VET is *occupational or workforce education*. Defining community college VET in this manner increases confusion because the connections between postsecondary VET and federal and state policy are unclear. There are some who believe that every educational program can lead to a particular vocation, a precept fundamental to the so-called new vocationalism (Grubb & Lazerson, 2007); others claim that the new vocationalism goes beyond occupational work (Bragg, 2001). There are at least three definitions of VET that may be applicable. One can define VET narrowly as the "old" VET, more widely, as the "new" VET (CTE), or as all-encompassing, in which all higher education may be seen as VET.

When presenting VET data and information, researchers, policymakers, and practitioners draw from three different and unrelated sources. These are (a) the state-based PPARS system, (b) the college-level Integrated Postsecondary Education Data System (IPEDS), and (c) NCES sample survey data. Information about VET can be obtained directly from PPARS, but only at the national or state levels. The IPEDS data do not explicitly obtain VET information, although this information may be imputed from the program data submitted by colleges. The NCES sample survey data are primarily used by the U.S. Department of Education to provide descriptive information about various aspects of the condition of education nationally (U.S. Department of Education, National Center for Education Statistics, 2008, 2009).

Researchers have used the same NCES datasets to analyze the various relationships between the following sets of variables: structural shifts in the financing, funding, and delivery of VET; changing federal and state education policy; and academic and labor-market success (Bishop & Mane, 2004; Hoachlander et al., 2003; U.S. Department of Education, National Center for Education Statistics, 2008). However, the results obtained in such studies are particular to the research approaches adopted, and the conclusions drawn in such studies do not permit broad generalizations about VET student performance. In addition, the implications drawn from such studies have often added to the overall policy confusion regarding VET. For instance, the Hoachlander study (Hoachlander et al., 2003) seems to indicate that VET student performance is generally below that of their peers. But the 2008 NCES study (U.S. Department of Education, National Center for Education Statistics, 2008) shows that the performance of VET students is on par with that of their peers, even though overall community college student performance is generally considered to be poor. (See Table 11.2 above and the discussion in the previous section).

Therefore, to obtain a more general picture of VET quality, one must return to national data systems, PPARS and IPEDS, and ask why these two systems have said very little about VET quality, remembering that quality is defined as the level and improvement in VET student performance. Community colleges need to collect data and information to meet reporting requirements under PPARS and IPEDS.

At present, most colleges use two separate processes and procedures, and sometimes even two separate systems, for collecting data and information. Both PPARS and IPEDS were established around the same time—during the early 1990s—by the U.S. Department of Education but independent of one another. This may have occurred because at the time these systems were created, PPARS was seen as meeting high school VET reporting requirements, whereas IPEDS was targeted toward postsecondary student data.

Under IPEDS, all colleges submit their student outcome data (i.e., graduation, retention, and transfer rates) either directly to the U.S. Department of Education or through their state postsecondary system. In essence, IPEDS focuses on providing data elements that go into defining a success rate (see Table 11.2). As explained, PPARS makes no attempt to identify student success rates, although it clearly has the capacity to do so. After almost three decades, however, there is still no connection between PPARS and IPEDS at the federal level. Until very recently, few discussions have been held regarding linking the two systems. Some states do use the same data system to extract information for both IPEDS and PPARS reporting requirements; however, most linkages between the systems are weak, perfunctory, or nonexistent. The broader question that remains is why the linkages between IPEDS and PPARS are so weak. The answer lies in the evolution of the US workforce development and educational policy context in the last quarter of a century, as well as the role of VET within that policy context.

11.5 The Unfulfilled Policy Promise of Connecting Evaluation to Quality in VET

Given the Obama administration's emphasis on the community college as a linchpin of economic recovery, community college VET sits today at a very important juncture within the US education and workforce development landscape. Despite this, only recently has VET been included in policy discussions at state and local levels regarding the role of the community college in education and workforce development. At least at the federal level, VET is now being seen as adding value to education and workforce development in three ways. First, colleges are seeking out high-performing students whose ultimate goal is to transfer to four-year institutions as new students. Second, many currently employed workers chose to come to their local community college in order to improve their skills by taking and completing appropriate combinations of noncredit and credit courses within a self-defined pathway. The primary goal of such currently employed workers is to increase their employment prospects and improve their chances for moving on to further education. Third, newly established (and developing) secondary and postsecondary partnerships have expanded the VET student population to include high school students simultaneously enrolled in such college credit-earning programs as dual credit/dual enrollment and Tech Prep. Arriving at this position of relative strength and centrality to the nation's overall education and workforce development

context took VET almost 25 years. During this past quarter-century, however, VET had no clear place in federal and state policy discussions.

Regarded as a failure by some, VET was formerly seen as irrelevant and unable to meet twenty-first-century challenges in education and workforce development. When Perkins came up for reauthorization in early 2000s, serious consideration was given to withdrawing federal funding for all or most of VET. Three reasons were given for why VET was viewed as irrelevant. First, VET enrollments, which had been continuously rising since the early 1950s, began to taper off in the 1980s and 1990s (Cohen & Brawer, 2008). Second, occupational programs beyond high school, which were previously part of the separate and extended (K-12 plus the first two years post-high school) US vocational education system, now became part of more comprehensive postsecondary systems, usually community colleges. Postsecondary VET's connection to high school vocational programs was officially severed in most states (Cohen & Brawer, 2008; Rosenfeld, 1999). Third, the twenty-first-century global economy was perceived as demanding higher technical, transferable skills, specifically in new and emerging middle-level occupations. Further, Americans' growing desire to acquire education beyond high school took root as the labor market began to require some amount of postsecondary education for employment and employability (Barton, 2008; Holzer & Lerman, 2007).

The 1980s and 1990s thus were not particularly good years for VET; the once lauded separate US vocational education system was suddenly seen as a liability in this era. VET's inability to use performance-based evaluation systems such as PPARS to prove its quality and value added to the US education system was also a critical flaw. This lack of connection between evaluation and quality permitted others to make a strong case against VET (Office of Management and Budget, 2004; U.S. Department of Education, 2004).

In response, a comprehensive strategy was adopted to strengthen VET evaluation systems such as PPARS (Schray, 2000). Simultaneously, VET advocates began to show how and why including VET in US education and workforce development policy was critical to raising the quality of US education overall (Association of Career and Technical Education, 2007). The policy case essentially revolved around VET's critical role in high school redesign, career pathways, and US competitiveness in the global economy. The inclusion of all of these roles in the 2006 reauthorization of Perkins was seen as a policy success for VET. VET evaluation systems need to improve very quickly if the case for VET's central role to US education and workforce development policy, as exemplified by Perkins IV, is to be fully realized. Failing this, VET may be in jeopardy.

From a policy perspective, confusion has always existed regarding where VET fits and to what policy sphere it belongs: education, workforce development, or both. At present, gaps and disconnects exist between VET and workforce development (Grubb, 2001) that are not being addressed either within Perkins (managed by the U.S. Department of Education) or the Workforce Investment (WIA) Act (managed by the U.S. Department of Labor). Growing numbers of new and currently employed workers are using Adult Basic Education (ABE) programs to address employability deficiencies before entering college occupational programs. The connections

between these ABE programs and Perkins are currently being hampered by Perkins rules and regulations (Grubb, 2001) explicitly barring any expenditure on prevocational, adult basic education, or remedial education programs. Thus, despite the growing importance of VET to other federal programs such as ABE and WIA, such programs still use separate evaluation systems. This disconnect underscores the need to clearly align both federal education and workforce development policies and VET and ABE data systems (Stevens, 2001). Until this happens, VET's increasing quality will always be understated.

The question of why VET never considered using IPEDS remains. IPEDS was and is restrictive in the way it defines its student population. IPEDS uses a student cohort consisting typically of 18- to 24-year-olds entering postsecondary education directly from high school, usually in the fall semester. PPARS includes students of all ages who may enter at any time during the academic year; PPARS uses either an entry or an exit student cohort. Given the history of US VET, many presumed that Perkins was primarily a federal high school program that needed to be aligned more closely with the No Child Left Behind (NCLB) legislation. Consequently, many saw no need to connect the postsecondary IPEDS system to the (presumed) secondary PPARS. If the two data systems are to be connected, this perceived technical gap needs to be bridged.

IPEDS focuses more on graduating high school students who proceed directly to college, many of whom intend to transfer to four-year universities. PPARS primarily targets VET students who typically are (a) older, (b) more likely to be women and/or minorities, (c) more likely to have no prior educational experience beyond high school, (d) more likely to have multiple demands on their time, and (e) more likely to be not quite prepared for college learning. Such students' primary motivation is to enter and complete occupational programs and then enter employment immediately. IPEDS can therefore be said to focus more on enhancing the transfer mission of colleges. PPARS, conversely, focuses almost exclusively on the completion of occupational programs that lead to immediate employment. In fact, until the most recent iteration of Perkins, no attempt was made to collect information on transfer and retention. With community colleges now ascendant in the public policy discussion, policymakers have an opportune moment to revisit the goals of IPEDS and PPARS and align the two systems more closely.

Within the policy discussion of VET, community colleges have generally been seen as an afterthought and incidental to raising the quality of VET. Nevertheless, the assumed lack of academic rigor among high school VET students tended to indict all of VET, including VET at the postsecondary level. Contrary evidence has been presented in several studies conducted by John Bishop and his colleagues using NCES sample data (Bishop & Mane, 2004). At a broader level, the sustained seriousness with which all of VET has been assailed prompted some at the college level to propose a "separate but equal" postsecondary federal VET program (Rosenfeld, 1999) that in essence would split Perkins in two. Although such a splitting did not occur in Perkins IV, the reauthorization has refocused and strengthened secondary and postsecondary VET relationships. However, the linkages between secondary and postsecondary data systems remain virtually nonexistent in most states. Recently, the federal government has invested considerable sums to build

such linked systems so that a clearer picture of the education and employment progress of VET students can be ascertained more effectively.

In conclusion, first, community college VET will serve itself best if it comes to an agreement on the appropriate definition of VET. VET may need to be defined differently depending on its focus, as considered in this section. For accountability under PPARS, the VET definition should follow closely the 16 career clusters because these programs are funded under Perkins. If the policy goal is to spread the gospel of the "new vocationalism," however, then the VET definition should be broadened and education and workforce development policy should be aligned so that the distinction between VET and non-VET becomes inconsequential.

Second, by redefining performance under PPARS as student success rates, the technical issues that separate PPARS from IPEDS can be bridged. One could argue that by using a more narrow accountability definition (using the 16 career clusters), PPARS is more suitable for determining VET's absolute and relative value-add to the education and workforce development enterprise. At the same time, IPEDS can provide a measure of the effectiveness of the "new vocationalism" because nearly all programs under this conceptualization of VET lead to a vocation. PPARS and IPEDS must be more closely aligned if contemporary VET is to reflect this "new vocationalism."

Third, one needs to return to the fundamental questions that have been bedeviling VET over the past 25 years: Would VET be further along, and better off, if it existed as a stand-alone, separate educational system? Or, when organizationally embedded within larger education and workforce development systems, as it is now, does VET do better? These questions remain open and demand further analysis. However, given the recent and changing dynamics within education and workforce development, the likelihood of a separate VET system gets smaller by the day. It is therefore incumbent upon all of VET, not just the VET at the postsecondary level, to establish procedures, processes, and policies that overcome the issues discussed in this chapter. In so doing, the likelihood increases that the quality of the VET educational experience for students, faculty, and administrators will be improved. Should that occur, those outside VET may be increasingly drawn to a higher quality VET educational experience.

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Chapter 12
Teacher Education and Professional Development[1]

Richard L. Lynch and Simone R. Kirpal

12.1 Historical Introduction

With the onset of the Industrial Revolution near the turn of the twentieth century, the United States encountered the sudden need to prepare large numbers of workers for trade and manufacturing employment. As a response, the first manual training school was established in St. Louis, Missouri (as a part of Washington University) in 1880, with other manual training schools being added shortly after in Chicago, Illinois; New Orleans, Louisiana; Toledo, Ohio; and New York.

When leaders in education and industry began to realize that an increasingly diverse student population was not receiving the type of education needed to prepare them for life outside of school, various organizations and industrial groups began to lobby for federal funds in support of job training or vocational education in US public schools. This eventually resulted in the passage of the Smith-Hughes Act of 1917, which provided federal funds at the high school level in support of programs in vocational education (Barlow, 1976; Scott & Sarkees-Wircenski, 2008). Since then the federal government has continued to fund vocational education through a series of new and renewed federal legislation.

It is important to note that public education in the United States is almost exclusively the responsibility of the 50 states and territories and their related authorities. Most education decisions are left in the hands of locally elected city or county school boards. Even within local school districts, there is often great variability, and many curricular and instructional decisions are made at the individual secondary school or postsecondary college site (Lynch, 2000). But even though a relatively small proportion of the total dollars (estimated between 9 and 10%) allotted for education

[1]This chapter is based on Lynch, R. L., & Ruhland, S. K. (2007). Career and technical teaching and teacher education in the United States of America. In P. Grollmann & F. Rauner (Eds.), International perspectives on lecturers in technical and vocational education (pp. 277–306). Dordrecht: Springer.

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is spent on vocational education (now referred to as career and technical education (CTE)) yearly in the United States, the federal legislation has had an enormous impact on providing direction and financial support for program structure, curriculum, targeted audiences, and teacher qualifications. With some support from federal funds, there are now a great variety of employment-related education programs and courses to prepare youth and adults of all ages for various careers. (For further discussion and elaboration about VET or CTE and its governance in the United States see other chapters in this volume, particularly those by Boesel (Chapter 5) and Zirkle (Chapter 3)).

As a prelude to the Smith-Hughes Act of 1917, much debate and discussion occurred about the proper way to train teachers of CTE. Charles Prosser, the Director of the first Federal Board for Vocational Education, drafted 16 theorems to serve as a foundation for sound and successful vocational education programs. Two of those theorems related directly to the preparation of teachers, linking teaching closely to practical knowledge and skills: "Vocational education will be effective in proportion as the instructor has had successful experience in the application of skills and knowledge to the operations and processes he [sic] undertakes to teach" (Prosser & Quigley, 1950, p. 223) and "The only reliable source of content for specific training in an occupation is in the experiences of masters of that occupation" (Prosser & Quigley, 1950, p. 226).

Prosser believed that teachers' trade experience would correlate with student outcomes: the more trade experience, the better the outcomes of students. College-level training for trade teachers was neither expected nor considered especially desirable. In fact, he believed that the academic nature of a college education and the time it took to complete a degree would provide difficulties for a practically oriented and experienced craftsperson who was probably older, needed income, and whose needs could not be met at a residential campus. Prosser and the Federal Board concluded that normal schools or state colleges and universities were not capable of preparing teachers for CTE. Prosser did believe in some teacher training for trade teachers, but it was different from the type normally provided for prospective elementary and high school academic teachers. He detailed the competencies and curriculum that should be required and recommended that delivery be provided under the supervision and control of a state board of vocational education (Prosser & Quigley, 1950; Lynch, 1997).

It is interesting to note that Prosser held a different view on teacher training for home economics and agriculture teachers, the other two programs funded through the Smith-Hughes Act of 1917. Prosser believed that most of the "boys" would have worked and lived on farms and studied agriculture in high school. Similarly, a "girl" would have acquired "homemaking interests, insights, and practical doing and managing abilities. . .under the cooperative tutorage of her mother and her high school homemaking teacher" (Prosser & Quigley, 1950, p. 310). So teachers of high school agriculture and home economics programs could be college trained provided they had previously completed high school agriculture or home economics classes and had practical experience identified with the skills or knowledge needed to teach in these areas.

Based on this rationale, we find a two-tier system of preparing teachers throughout the more than 90-year history of CTE in the United States. Those who are teaching in various trade and health fields typically come with years of practical experience in jobs or professions related to their teaching field as their primary credential for teaching. Those teaching agriculture, business, family and consumer sciences (formerly called home economics), technology education (formerly called industrial arts), or marketing (formerly called distributive education) typically are college educated and prepared to teach through preservice teacher education programs in colleges and universities. With definition and description of those vocational areas—and their partial linkage to research in the respective field or profession at the university—we find a teacher preparation structure similar to the German tradition of vocational disciplines that link the preparation of vocational teachers at university to teach in vocational schools in a particular domain or profession in which they specialize. Notably, the establishment of vocational study programs at universities has a longer tradition in the United States than in Germany, in particular in the domains of the personal service sector such as nursing (Pahl & Rauner, 2008).

Various iterations of this two-tier level for preparing teachers are still very much in existence in CTE today. In general, though, the trend in the United States today is to require all CTE teachers to either have a baccalaureate degree, as a minimum, prior to entering teaching or to acquire one within a certain timeframe, say 5–10 years, after beginning to teach. Some specific teacher education is required either through a preservice teacher education program or some version of school-based training sponsored by a local school system or state department of education.

12.2 The Work Environments of Teachers in Career and Technical Education

CTE cuts a broad swath in the educational landscape in the United States, encompassing a tremendous number of programs at both secondary and postsecondary levels. There are some programs in middle high schools (e.g., 6th, 7th, and 8th grades) as well, usually focused on purposes of career exploration in such areas as business, manufacturing and construction, agriculture, family and consumer sciences, and health. At the high school level, CTE is offered for purposes of general and specific labor-market preparation in comprehensive public high schools (e.g., grades 9–12); vocational high schools, area vocational schools, or regional centers; and, more recently, in career academies. At the postsecondary level, CTE is offered in community colleges, technical colleges, and adult learning centers. In addition, several other variations of secondary and postsecondary delivery systems are available in the United States, including privately owned proprietary schools (which offer postsecondary CTE and training in a wide range of very specific occupations such as accounting, automotive technician, barber, or x-ray technologist), vendor certification programs, and human resource development. This range of education-delivery programs sets the scene for the broad variety of work contexts of teachers in CTE.

12.2.1 Career and Technical Education at the High School Level

About two-thirds of all *public high schools* offer at least one CTE program, usually identified as three Carnegie unit credits in a single program area identified with a specific labor-market specialty. Unverified data from a recent national assessment of vocational education indicates that 96% of all US high school students take at least one course classified as career and technical; about 25% are "concentrators" who take at least three credits in one occupational area; and 44% are "investors" who take at least three occupational courses, but in different programs (U.S. Department of Education, 2002c).

Comprehensive public high schools offer some CTE courses or programs in addition to their generally academic-oriented courses. Typically, those schools serve a wide range of students, with varying abilities and very diverse social-economic demographics, who are enrolled in college preparatory, career and technical, special education, and general programs. *Vocational high schools* are sometimes referred to as "magnet schools," "technical schools," or by some other moniker. In 1999–2000, there were 1,048 vocational high schools in the United States (U.S. Department of Education, 2001). They are more apt to be in urban areas and provide CTE programs that can be accessed by students from several of the district's high schools. Those schools also increasingly offer industry- or vendor-sponsored certification programs (e.g., auto service, metalworking, information technology)[2]; apprentice training; and opportunities for graduates to take state-required licensing examinations such as those offered by the National Occupational Competency Testing Institute (NOCTI, 2002). In addition, they often enroll adults in the instructional programs as well, sometimes in separate evening classes and sometimes directly with the high school students. *Area vocational schools* function in very similar ways, only they serve students from several district high schools, who have chosen to enroll in CTE programs.

Career academies are characterized by a program and structure that seek to ensure that the graduates are technically and academically proficient to enter the workforce and enroll in postsecondary education. The original academies were targeted at students who were at risk of dropping out of school, not doing well in the comprehensive high school, or who were just not well served by the structure in a typical classroom. Most of the over 1,500 high school career academies (Stone & Bae, 2002) combine what is thought to be among the greatest strengths of the vocational and comprehensive high schools: (a) clusters of students who share many of the same classes each day and have the same teachers from year to year; (b) academic courses that meet high school graduation and college entrance requirements; (c) career and technical courses sufficient to comprise a career major;

[2] Fifty-five percent of vocational high schools and 27 per cent of comprehensive high schools report offering vendor certification programmes (U.S. Department of Education, 1999a).

(d) work-based learning experiences built into the curriculum; and (e) business persons who advise the school district on important components of the program such as curriculum, work-based learning, financial aspects, specific courses to offer, and equipment (Lynch, 2000).

Throughout the United States, CTE at the high school level has been historically—and still is in much of the country today—identified with seven program areas: agriculture, business, family and consumer sciences (formerly called home economics), marketing (formerly distributive education), health, trade and industry—or industrial education, and technical. Technology education, usually considered more compatible with general or academic education purposes, is often cited as an eighth program area or field within CTE. Increasingly, programs in business and marketing are being combined for program planning and enrollment-reporting purposes. A number of curriculum standards have been developed by professional associations in those different programs in high school CTE.

In addition, various local school systems and some state systems throughout the country are increasingly replacing or modifying some of these historical programs and/or are adding new programs in response to local or state industry needs; changes in the economy which demand changes in career and technical programs; job and career opportunities for graduates; opportunities for students to start on a career pathway in high school and continue on with it into postsecondary education (i.e., a Tech Prep or articulated, secondary-postsecondary curriculum model); and closer alignment with industry skill standards or new career pathways or clusters. A few examples of "new" programs include culinary arts, computer technology, the performing arts, hospitality and tourism, preengineering, construction or building trades, and auto technology. Another relatively new initiative in the United States includes the conceptualization of 16 career clusters to address the academic and career needs of all students. These clusters are thought to be organized better around today's occupations, workplaces, and the US economy. The framework for these career clusters was originally developed by the federal Department of Education's Office of Vocational and Adult Education. At the present time, this initiative is being managed by the National Association of State Directors of Career Technical Education Consortium (NASDVTEc). Its work focuses on the development and implementation of foundation courses, technical core courses, and specialty courses over a span of grades 9–16. State economies vary in what industries and occupations are important, so areas of career clusters within a state also vary.

12.2.2 Postsecondary Career and Technical Education Programs

Community and technical colleges maintain a unique position to provide education and training for today's workforce. With students seeking employment-related education and workers returning to school to enhance their job skills, enrollments in postsecondary institutions have been increasing enormously over the last years in the United States.

Community colleges are organized to provide postsecondary education programs that serve the community. However, the way in which community colleges do this may vary considerably. For example, some will emphasize college transfer programs by focusing on general education that is typically required in the first two years of an undergraduate education—and which is thus almost identical with the content students would complete in the first two years in a bachelor's degree program at a four-year college or university. Others focus on technical education and offer a wide range of programs, courses, and credentials—including associate degrees, diploma, advanced diploma, certificate, license, etc. Community colleges enroll about 44% of all undergraduates in US higher-education institutions, and about 45% of first-time freshmen enroll in community colleges (Coley, 2000; Phillippe, 2000).

Technical colleges are similar to community colleges, but their primary mission is to provide education and training in CTE at the postsecondary level. The curriculum is typically competency-based, benchmarked to business and industry standards, occupationally focused, and technically oriented. Education and training programs are usually developed and delivered using state-of-the-art equipment, the latest technology, and contextualized instructional techniques. Long- and short-term training programs customized for area industries are typically offered, often delivered on company sites. Credentials awarded at technical colleges include the associate degree, one- and two-year technical diploma, short-term (i.e., less than one year) diploma, certificates, apprenticeship, and advanced technical certificates. There are some technical colleges or institutions that do combine general education with technical coursework, and credits earned may transfer to four-year institutions.

In addition to community and technical colleges as the main providers for CTE programs at the postsecondary level, *adult learning centers* provide education and training outside the formal schooling system for adults and youth. While those institutions may focus on literacy or completion of a general education diploma, they also offer apprenticeship programs or other work-related courses. Over 46% of the adult population participates in one or more types of adult education, with work-related and professional development courses identified most frequently (U.S. Department of Education, 1999b).

Several other variations of postsecondary education are available in the United States. Two that are most prominent and rapidly growing are proprietary schools and vendor certification programs. Proprietary schools are privately owned, often organized as a corporation, governed by a board of directors, and are in the business of providing specialized, postsecondary CTE for a profit. Vendor certification programs are designed by vendors themselves and are based on industry standards, skills, and knowledge needed, typical problems to be solved, and a level of performance that must be met. Certification is awarded by a vendor following the "passage of an exam benchmarked to predetermined occupations or professional standards" (Carnevale & Desrochers, 2001, p. 19).

12.2.3 Reforms in the Area of TVET

Several prominent initiatives have been enacted either through federal legislation and/or as the result of education commissions that have influenced the content and pedagogy of CTE and teacher education in the United States. These reforms seek to target content knowledge and delivery of CTE courses toward that which is thought to be essential for students to know and do in modern workplaces and to continue to learn throughout their lives. Most of these reforms have been discussed elsewhere throughout this volume (see, for example, Chapters 5, 2, and 3 by Boesel, King, and Zirkle respectively). In summary, the main initiatives include the following:

- Tech Prep—a planned, sequenced program of study that combines secondary and postsecondary education. Currently funded through the Carl D. Perkins Vocational and Technical Education Act of 2006 (Perkins IV), Tech Prep is designed to provide students with both academic knowledge and technical skills leading toward an associate degree or a certificate in a specific career field.
- Integration of academic and vocational education—mandated in federal Perkins legislation and advocated by most policy groups that have addressed CTE, this initiative fosters academic rigor required of students in career and technical programs, especially in math, science, and language arts.
- SCANS skills—in 1991, the Secretary's Commission on Achieving Necessary Skills researched the general skills that US young people need to succeed in the world of work. Three fundamental skills (i.e., basic skills, thinking skills, personal skills) and five workplace competences (i.e., use of resources, interpersonal skills, acquiring and using information, understanding systems, and use of technology) were identified as essential areas that students needed to be prepared for pursuing postsecondary education and/or entering the workplace.
- School-to-work—in an effort to improve the linkages between education and work, Congress passed the School-to-Work Opportunities Act (STWOA) in 1994. It provided nearly $1.5 billion over five years as seed money for the development of school-to-work programs that had three components: (a) school-based learning (e.g., career majors, high academic standards), (b) work-based learning (e.g., workplace mentors, internships, job shadowing), and (c) connecting activities, such as career counseling, job placement, and support services. STWOA had a sunset clause, and Congress allowed the program to expire at the end of September, 2001.
- Twenty-first Century Skills—the Partnership for the 21st Century brought together representatives from the business community, education leaders, and policymakers to advocate for inclusion of twenty-first entury skills and outcomes, as they have defined them, to ensure every child's success as a citizen and worker. In essence, the framework includes student mastery of core subjects and skills in three areas: learning and innovation (e.g., creativity, critical thinking, problem solving); information, media, and technology; and life and career skills.

12.3 Preparation of Teachers for Career and Technical Education

The best, most effective way to educate and prepare career and technical teachers in the United States continues to be debated. The literature has been repleted with studies and reports proposing new or reformed requirements for state certification; standards that prospective teachers must meet; new structures to prepare teachers; specific experiences with children prior to licensure that must be completed; scores on standardized tests that should be achieved; required hours of industry experience that must be acquired; and on and on. Professional associations, education reform groups, political action forces, and others regularly weigh in on the subject and offer plenty of advice to state teacher regulation boards and to colleges and universities on how to best certify and prepare teachers.

12.3.1 Teacher Certification and Licensure: Public Elementary and Secondary Schools

What is common across the 50 states of the United States is that all teachers, including CTE teachers, must meet certain state requirements prior to being issued a license or certificate to teach in public elementary and secondary schools (K-12). Each state has a governing board and staff that oversees the certification and licensing of K-12 teachers in that state, reflecting the belief that the education of children and youth should be safeguarded by requirements governing qualifications of teacher applicants and that the licensure of teachers is, indeed, in the purview of the public good. However, certification policies and procedures vary widely throughout the 50 states with all states typically setting minimum requirements—such as good health, no criminal record, possibly US citizenship, and some sort of determination of a predisposition to work well with young people.

Generally all K-12 teachers, except those in certain fields identified with CTE, are required to have earned a baccalaureate degree. Some states also require teachers to earn a minimal score on a test of academic achievement, typically using the Praxis series from Educational Testing Services (2003). Praxis I focuses on basic academic skills (reading, mathematics, writing) and is often administered prior to students' admission to preservice teacher education at a college or university or, if being prepared through some alternative route, prior to being issued a state teaching license. Some states also require a minimal score on Praxis II, which focuses on subject-specific assessments (e.g., physics, biology, business education) and principles of teaching and learning. This is usually required at the end of a teacher education program or prior to award of an initial teaching license. Praxis III is a classroom performance instrument for assessing actual teaching skills and performance and is usually administered by the end of the teachers' first year of teaching.

State certification requirements for career and technical teachers at the high school level typically have been much more flexible than for academic or elementary

school teachers. Nearly all states allow a special category for certifying trade, industry, and health occupations teachers by substituting years of work experience in place of a college degree. In fact, there are only three states that absolutely require a baccalaureate degree and seven others require an associate's (i.e., two-year) degree to begin to teach a trade or health subject. At least 43 states permit trade and health teachers to substitute work experience—usually requiring at least two years as a minimum—for any college-level preparation. Five states do require trade and health teachers to earn a baccalaureate degree before they are fully certified (Lynch, 1998). Some states also require prospective trade teachers to pass an occupational test of competency, such as one or more of the 170 written or performance assessments of technical skills administered by the National Occupational Competency Testing Institute (http://www.nocti.org). Most states require teacher applicants in all other subjects identified with CTE to hold a baccalaureate degree but they do permit a route into teaching that does not require traditional university teacher preparation.

Thus, there are two main avenues for career and technical teachers in the United States to acquire certification and obtain an initial license to teach: (a) traditional preservice teacher education at a college or university or (b) an alternative route that may have varying structures and pathways. In addition, there are many forms of in-service, professional development that are available in most places for most CTE teachers through either graduate studies at colleges and universities or school system-level staff development.

12.3.2 Requirements for Teaching in Postsecondary Institutions

Requirements to enter into teaching in postsecondary institutions in the United States are much more disparate than for entry into middle or secondary schools. Bartlett (2002) reviewed the research and literature on state policy and procedures, reporting that very few states require licensure or certification to teach in community or technical colleges. His major finding was that there is a "lack of available knowledge, consistency, and organization of the requirements in this country for an individual to become a postsecondary career and technical educator" (Bartlett, 2002, p. 121).

Rather than relying on state licensing or certification in the United States, states and colleges tend to rely on *standards* for postsecondary career and technical teachers. Standards for faculty qualifications are usually set by one of six regional accreditation agencies authorized to accredit postsecondary community and technical colleges: the Western Association of Schools and Colleges Commission for Community and Junior Colleges; the Northwest Commission on Colleges and Universities; the Middle States Association of Colleges and Schools; the Southern Association of Colleges and Schools; the North Central Association of Colleges and Schools; and the New England Association of Schools and Colleges Commission on Technical and Career Institutions. There are also national accreditation agencies that have specific standards for college faculty, such as the Accreditation Council on Independent Colleges and Schools; Accrediting Commission of Career

Schools and Colleges; and the Council on Occupational Education Commission on Standards and Accreditation. Some community or technical colleges also rely on standards developed by specialized national accreditors of specific programs, such as those developed by the Commission on Accreditation of Allied Health Education Programs; the American Council for Construction Education; the American Association of Family and Consumer Sciences Council for Accreditation; and the National Accrediting Commission of Cosmetology Arts and Sciences, Inc. (www.chea.org).

The standards vary and, in some instances, are quite general such as simply requiring that "faculty be academically prepared and qualified," or "possess educational credentials that testify to appropriate preparation for the courses they are teaching," or an institution, to be accredited, must have a "sufficient number of faculty members who are qualified by appropriate education, training, and experience to support its programs" (Bartlett, 2002, pp. 111–112). Others are more specific, such as requiring faculty members to possess a degree one level above the degree program in which they are teaching (e.g., a baccalaureate degree to teach in an associate degree program) or a specific number of hours of work experience, or an occupational license or certificate to teach in a specialized program (e.g., licensed nurse, cosmetologist, plumber). To teach in specific career and technical postsecondary education programs, the common denominators seem to be that faculty must document (a) work experience either through specific number of years of employment in the field or profession (e.g., two years); (b) an occupational license and/or a portfolio of work-related activities (i.e., a skill base); and (c) some traditional college-level course work, usually resulting in a degree or a diploma one level above the degree or diploma in which students are enrolled.

12.3.3 College and University Preservice Teacher Education

Today, the typically required curriculum for a career and technical teacher education student completing a baccalaureate degree at a college and university consists of 124 semester credits, roughly split into three categories: subject matter, general education, and professional education. The subject matter is typically offered through a professional school, general education through a college of liberal arts, and professional education courses in an education college or department. As for professional education courses, Bruening et al. (2001) found that students typically were required to complete semester credits in curriculum development, history and philosophy of education and/or vocational education, integration strategies and techniques, methods of teaching, program planning, and technology to participate in field-based experiences.

Colleges and university teacher education programs typically have institutional approval by which the state has approved the education unit to prepare teachers in compliance with state certification requirements for K-12 teachers. In addition to state approval, about half of all colleges or schools of education are also nationally accredited by the National Council for Accrediting Teacher Education (NCATE).

To be nationally accredited, all career and technical teacher education programs must be approved through a college, school, or department of education and meet standards in six areas related to student performances and the capacity of the unit to deliver, manage, and govern high-quality teacher education (National Council for Accrediting Teacher Education, 1997–2003). In addition to state and NCATE standards and guidelines, colleges and universities are giving increased attention in their preservice teacher education programs through the work of the Interstate New Teacher Assessment and Support Consortium (INTASC, 1992), which was established in 1987. INTASC has developed core standards which require novice teachers to demonstrate competence in 10 different areas such as content knowledge and ability to transfer this knowledge; use of diverse instructional strategies; use of effective verbal, nonverbal, and media communications; use of formal and informal evaluation strategies; and ability to further develop professionally. While those standards are being increasingly applied for a range of discipline-specific teaching, so far there are no plans to produce specific initial standards or performance assessments prior to awarding an initial teaching license in CTE fields.

12.3.4 Alternative Routes to Teaching

Forty-five out of the 50 states offer some form of alternative route to teaching in all subject areas, including elementary education (U.S. Department of Education, 2002b). Alternative routes to certification have primarily been implemented to broaden the pool of prospective K-12 teachers, seeking to address concerns about quality in teacher education, teacher development, professionalism, and retention (Roach & Cohen, 2002). They are being designed to attract and hold a segment of the population not currently engaged in education. For CTE teachers, an alternative preparation program is increasingly becoming the most common route into teaching.

In its broadest sense, alternative certification is the term applied to policies, programs, and practices designed to certify teachers who have not completed an undergraduate degree in education. The definition of alternative certification varies among the states and encompasses a wide range of practices, from emergency certification given to those with no teaching background to programs designed to license or certify individuals who have an undergraduate degree in the field in which they plan to teach. In analyzing survey data from state departments of education about alternative certification for CTE teachers, Ruhland and Bremer (2002) found that various states are resorting to several routes in order to certify teachers for career and technical fields. Across the country, the most prevalent routes do not require university course work in teacher education. However, one common route does indicate that the emergency-certified teacher will take traditional teacher education courses required for full certification.

Beyond this assessment, not very much is known about the substance of CTE teacher preparation through alternative routes or whether or not it ever has been successful in producing teachers who are effective with students in classrooms. The

one exception has been the longstanding practice in the United States of certifying trade and industrial teachers and some health teachers who did not hold baccalaureate degrees. In reviewing nearly 40 studies as a prelude to their report to Congress, Boesel and McFarland (1994) reported in the National Assessment of Vocational Education, that the practice of certifying teachers who do not have at least a baccalaureate degree should be discontinued. Further, Lynch (1996) concluded that the "survival skill training" that is typically provided to alternatively certified teachers is not sufficient for most trade and other teachers, especially if they have not had college-level education and college preparation in academic and subject-area content.

However, given the anticipated overall shortage of teachers in the United States, including CTE teachers, in the years ahead, no one seriously questions the fact that most states and/or local school districts will need to continue to provide some form of alternative route to teacher certification. Concerning how preparation through alternative routes can be improved, several studies indicate that any template for alternative teacher development should incorporate techniques known to correlate with good teacher education programs. Those include a solid grounding (i.e., a degree) in the subject(s) being taught; some coursework or a workshop prior to teaching that emphasizes curriculum and instructional planning, teaching methods, classroom assessment, and student diversity and classroom management; on-the-job mentoring from master teachers in the same subject area as the novice; rigorous screening of applicants before acceptance into an alternative certification program; and solid assessment practices with the novice teachers (e.g., use of Praxis III). In addition, states need to address how to make teaching in CTE more attractive if they are to resolve problems of recruitment and retention.

12.4 Teachers' Continuing Professional Development

Current federal legislation providing funds in support of state and local programs of CTE permit money to be used for the professional development of K-12 and postsecondary teachers. These funds are intended to be used to improve teachers' knowledge and skills and, theoretically, should aid in preparing teachers to achieve the goals delineated in the legislation, such as those identified with CTE reform initiatives; improving programs of CTE; introducing teachers to career clusters; integration of contextual teaching and learning; integration of technology into the curriculum; and inclusion of 'soft,' SCANS, or 21st Century job-related skills. Teachers have returned to industry for internships, participated in company training programs, interviewed employers and employees about new knowledge and skills in the workplace, and have increasingly sought advice from business persons on education-related matters. Most initial contracts that CTE teachers hold include some conditions requiring them to participate in professional development or continuing education, at least until they earn tenure.

A major initiative in the United States that has advanced the professional development of middle and high school CTE teachers is the National Board for

Professional Teaching Standards (NBPTS). Created in the early 1990s, NBPTS has established a long-term, ambitious agenda in order to accomplish a three-part mission to (a) establish high and rigorous standards for what accomplished teachers should know and be able to do; (b) develop and operate a national voluntary system to assess and certify teachers who meet these standards; and (c) advance related education reforms for the purpose of improving student learning in US schools. In order to meet this agenda, NBPTS has developed standards for nearly 30 subject areas in US K-12 schools, including CTE (National Board for Professional Teaching Standards, 2002). In 1997, NBPTS approved 13 standards to assess highly accomplished teachers in CTE. Those were clustered into four broad areas that collectively represent accomplished teaching of CTE students, age 11–18: creating a productive learning environment; advancing student learning; helping students make the transition to work and adult roles; and improving education through professional development and outreach. Each of the 13 standards states one aspect of accomplished teaching in terms of observable teacher actions that have an impact on students. Teachers who successfully pass the national assessment in CTE are evaluated to be among the best the profession has to offer. Teachers must have at least three years of classroom experience and hold an earned baccalaureate degree before they are eligible for national assessment and certification.

In addition to establishing standards for teachers' continuing professional development, about 45% of all K-12 CTE teachers hold a postgraduate degree from a college or university (Guarino, Brewer, & Hove, 2000). However, little is known about the specific degree structure of graduate programs in CTE, how many universities offer such programs, and what standards or curriculum frameworks are used to underpin graduate degrees. Presumably, many of the colleges and universities that continue to offer preservice teacher education programs also offer graduate programs targeted at CTE (Lynch, 1991; Bruening et al., 2001).

The University Council for Workforce and Human Resource Education (UCWHRE, 2009) currently consists of 18 US universities that provide leadership, research, service, and instruction in CTE and in human resource training and development. UCWHRE is committed to studying significant issues in CTE in the United States and is concerned with the professional preparation of individuals preparing for roles in CTE and HRD. Membership is limited to universities that (a) have a doctoral program with an emphasis in CTE and HRD, (b) are supported by graduate faculty with expertise in those areas, and (c) have faculty who provide leadership and contributions to the field of CTE and HRD (http://www.hre.uiuc.edu).

Another possible indicator of graduate quality in CTE is the annual report of the best graduate schools by U.S. News & World Report, which evaluates graduate programs in various fields of education every year. The rankings are based on expert opinion about program quality on the one hand, and statistical indicators that describe the strength of a school's faculty, its research, and the performance of students both as they enter and leave on the other hand. In its 2009 edition, the magazine identified the top seven graduate programs in vocational and technical education (i.e., CTE) to be University of Georgia, Athens; Ohio State University, Columbus; Pennsylvania State University, University Park; University

of Minnesota, Twin Cities; Virginia Tech, Blacksburg; the University of Illinois-Urbana Champaign; and Oklahoma State University, Stillwater (http://grad-schools.usnews.rankingandreviews.com).

12.5 Supply and Demand of CTE Teachers at High School Level

The CTE secondary teaching force has declined since the early 1980s. Student enrollment, pupil-teacher ratios, and course-taking patterns are common indicators of demand for CTE teachers. In all indices, the United States took a significant downward turn throughout the 1980s and 1990s in its high school CTE programs. For example, in 1998, students earned 4.0 credits in CTE courses of the total numbers they completed for high school graduation, compared to 4.6 credits in 1982 (U.S. Department of Education, 2002a).

Indicators for the supply of CTE teachers include the number of new teachers being certified each year, the number of certified teachers who enter the profession, and the number leaving the profession. Again, the 1980s and 1990s witnessed a significant decline in the CTE teaching force. Many colleges and universities closed their CTE teacher education programs; fewer CTE college graduates with certification chose to teach, but rather went to work in industry; and large numbers left teaching—some reports citing as much as a 50% teacher attrition rate within the first five years. Overall supply of and demand for CTE teachers can also be directly impacted based upon the number of reported teaching vacancies. And again, various state-level and some national reports cited the large number of CTE high school programs that were closed during the last two decades of the twentieth century (Guarino, Brewer, & Hove, 2000; Lynch, 1991, 1997).

This downward trend may gradually be reversing itself. Some state-level data indicate that the demand for CTE teachers is increasing due to (a) increased numbers of students entering high schools; (b) more college-preparation students choosing to take electives in CTE programs; (c) better, improved, or new CTE programs that are attractive to students; (d) the recognition by students and parents that all high school students need some basic work skills in order to enter employment; and (e) the influence of several national or federal initiatives—School-to-Work Opportunities Act of 1994, Tech Prep, integration of academics into CTE courses, and technology infusion into the schools and curriculum. The federal Department of Education estimates that schools will need to hire more than two million new teachers in the next decade due to teacher retirements and increased enrollments. Shortages are most acute in urban and rural disadvantaged districts and in the fields of special education, science, mathematics, and some programs in CTE.

12.6 Issues and Challenges

In this final section we draw attention to three issues related to CTE that may present the greatest challenges for CTE teachers today.

12.6.1 High School Quality

A considerable debate in the professional literature and policy arenas concerns the role and quality of CTE in US high schools. Indeed, there are many CTE programs that are exemplary with solid standards, increased integration of academics, quality instruction, appropriate learning experiences for students, outcomes that result in good job placements, and other positive indicators. Supported by federal funding for CTE, many programs have improved curriculum and instruction and have forged articulation agreements with postsecondary technical and community colleges. However, there are also programs that are mirrored in a twentieth century model of factory, farm, and homemaking. There are high school programs that are "dumping grounds" for students who cannot or will not do what is necessary to master appropriate academics. Equipment, curriculum, and other instructional resources are limited or outdated. Some school administrators continue to use high school CTE programs as dumping grounds for students who need to be kept in school, busy, and out of trouble (Grollmann, 2005).

Within the debates about directions in CTE a few influential groups and individuals recommend elimination of all high school CTE and shifting technical and job-skill training to postsecondary institutions instead. They advocate that the high school curriculum ought to focus only on academics and that its sole purpose is to prepare students for postsecondary education. Looking at standardized test scores of students' academic achievement, which especially in math and science encounter a strong push in the United States, no data or substantive, large-scale research findings lead to the conclusion that CTE adds value in raising students' test scores on standardized tests. Thus, the direction offered favors to increase student enrollment in more rigorous academic courses in math, science, and languages rather than supporting CTE programs.

Other studies point out that enrollments in Tech Prep programs of study and in some career academies have shown positive results in other measures of student achievement, such as improved graduation rates, less tardiness and absenteeism in classes, improved grade point averages, increased matriculation of high school students into postsecondary education, and better engagement of students with school subjects. Thus, another trend calls for more integration of academic and vocational education—in the sense of more merging of the hand and the mind. Yet other groups seek the encouragement of both: some employment preparation in high school through CTE as well as rigorous academics whereby the students are prepared for postsecondary education while concomitantly acquiring job skills and work experience. A few suggest limiting high school CTE to those students who are economically, culturally, socially, or academically challenged.

No doubt the debates will continue, and federal and state legislative initiatives will favor one or the other of the dichotomies or find some compromise somewhere on a midpoint in the continuum.

12.6.2 Teacher Preparation

To teach in elementary education, high school academic subject areas, and several programs identified with CTE (e.g., agriculture, business, family and consumer sciences), a baccalaureate degree is almost universally a prerequisite to obtain a teaching license. However, in trade and industrial education and in the many specialties identified with health occupations, experience in industry or a medical field is often considered a sufficient prerequisite for teacher licensure. Even with a baccalaureate degree as a foundation and as an absolute requirement, the debate rages around alternative teacher preparation programs and their impact on teacher quality and student achievement. The most significant questions seem to be the following: Where do alternatively certified candidates come from and what knowledge and experience do they bring to teaching? Do they know enough and do they know how to teach it? How should they best be mentored and taught in the time given to teach them prior to licensure? What is critical to be taught in that short timeframe to prepare them to assume teaching responsibilities in real classrooms? In what types of schools and districts are they being placed? Are they being successful with students in teaching them high standards and in teaching the knowledge and skills students need for employment and/or entering into postsecondary education?

Within the traditional teacher preparation programs in colleges and universities, challenges also abound. Many colleges of education are cited as being poor of quality in student demographics (e.g., populated by students with low standardized test scores and/or who find the curriculum easier than that offered in professional schools or in colleges of arts and sciences); poor of quality in curriculum and instruction—often providing insufficient substance in the subject matter and insufficient clinical experiences with students; and often lacking in financial resources, equipment, technology, and inadequate depth and breadth of faculty to produce quality teachers. Many are accused of loading up teacher education students' programs of study with methods courses at the expense of solid academic, subject matter courses.

12.6.3 Conditions of Teaching

A final challenge is the prevailing perception that the conditions for teachers in many US public schools are less than exemplary. Studies show teachers are demoralized by large classes, students who are unmotivated to learn and frequently absent from classes, CTE courses that are often used as "dumping grounds" for low-achieving students, facilities and equipment that are just too outdated to be effective in teaching students appropriate job skills and knowledge, and poor salaries. Teacher turnover is high. Teachers complain of an overemphasis on standardized test scores which result in teaching by rote memorization exercises and drills to the exclusion of creative instructional methods that teach students to solve problems, collaborate with others to complete assignments, engage in work- and community-based learning activities, integrate knowledge from various disciplines and vocational fields, and have many samples of their work assessed through authentic means.

To bring about the initiatives proposed in various policy-influencing and legislative initiatives surrounding CTE, increased emphasis undoubtedly needs to be placed on improving professional development and overall working conditions for teachers. The challenge then becomes determining whether states and local school districts are willing to invest resources to ensure that quality professional development is available to CTE teachers on an ongoing basis and followed up with appropriate support to insure that the teachers are learning from it. And, of course, educators' claim that the continuing call to raise teacher salaries, provide adequate support in the classrooms—especially targeted at poor readers and students who are otherwise behind grade level, and generally improve the environment in schools has largely gone unanswered.

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Chapter 13
Reflections on US Perspectives on VET

James Raymond Stone III

13.1 The Non-system of VET in the United States

Understanding the vocational education and training (VET) system in the United States should begin with an understanding that there is no VET system in the United States. It is, as Jeff King ("Dilemmas of Design: Education versus Qualification in the U.S. Vocational System") observes, a non-system overloaded with ad hoc fixes dating all the way back to 1862. Instead of a national system, US states have been the primary governing bodies making and carrying out education policy, a point also made by David Boesel ("Governing VET in the United States: Localization versus Centralization") in his comparison of the governance structures of American and German VET. The federal government exerts only minimal influence on public education, and then only through achievement standards tied to federal grants. Some would argue, however, that the federal legislation known as No Child Left Behind (NCLB, 2001) is more than a minimal influence. Yet decisions about curricula, specific course content, and course levels are made at the state level and/or at the local level by autonomous school districts within states. This means that public education in the United States is not just one system but 50 different state systems and thousands of district systems (as Boesel, Chapter 5, this volume, points out), each with its own history and practices. In place of a national education authority exerting a governance function, as we find in most first-world industrialized nations, in the United States, schools, state governments, and business organizations, operating in loose partnerships with the federal government, seek to support all youth in successfully and efficiently transitioning from public education to further education and/or the workplace.

In this chapter, I comment on other chapters in this volume and offer my perspective on the current status of VET in the United States—better known here as career and technical education (CTE)—and the pressures that have produced this status. Education, in general, has been assigned the task of preparing a workforce

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that will enable American companies to compete in a global economy. A consensus has arisen that the best way to accomplish this goal is to require all students to take rigorous academics, especially in mathematics and science, in order to prepare them for college and careers. "College for all" has become the mantra of a series of reports decrying the poor performance of the American educational system and the need for higher standards and increased rigor. I raise questions about the efficacy of this approach and examine the purposes of CTE at the secondary and postsecondary levels.

13.1.1 The Reality of American CTE

Zirkle (Chapter 3, this volume) lays out the various components ordinarily associated with US CTE. The graphic included in his description, adapted from one developed by the U.S. Department of Education, National Center for Education Statistics (NCES), suggests a level of organization and clarity that may not really exist within the US non-system. Further, the graphic and Zirkle's otherwise thorough corresponding discussion of the primary structures of CTE omit an important component of the American non-system, notably the role of federal programs targeting at-risk groups who historically have had difficulty fully entering and engaging in the labor market. The federal Workforce Investment Act (WIA, 1998) targets adults and youth who meet such at-risk criteria. Another federal program, the Job Corps, targets at-risk youth and combines intensive skill training and academics designed to help youth obtain a General Educational Development (GED) certificate by passing a series of standardized tests normed to reflect a level of skills and knowledge equivalent to that signified by a regular high school diploma. More than 70% of its enrollees are minorities; all are paid a monthly allowance with increases based on tenure. Job Corps also provides career counseling and transition support to its students for up to 12 months after they graduate from the program. A random assignment study found that Job Corps participation had a significant impact on literacy skills and earnings in the four years following the program; however, after seven years, the earnings advantage for participants had disappeared (Schochet, McConnell, & Burghardt, 2003). Other federally funded programs target youth with disabilities. Notable is the Job Accommodations Network, which is not a program but a technical assistance service provided to employers to attract, hire, and retain young workers with disabilities.[1] Aside from data on the number of businesses seeking information about the program, no studies detail its impact on participants.

Grubb (1996) found that the vast array of government-sponsored job training programs omitted from the Zirkle discussion do not increase earnings substantially. In his analyses, he did not distinguish between youth and adult students, although he did include youth. One explanation for this lack of impact on earnings is that such programs target and enrol individuals with substantial barriers to employment—low

[1] See http://www.dol.gov/odep.

skill levels, a lack of motivation or initiative, drug and alcohol abuse problems, or physical disabilities—not otherwise described in the available data but apparent to employers. Grubb's analyses and others point to a mixed review of all government programs targeted at low-skilled young people.

Apprenticeships represent another point of departure between American-style CTE and the German model of VET, for example. Its omission is well explained by Smith and Barabasch ("Vocational Education Then and Now: So What's the Difference? A Dialogue about the Philosophy of VET in the USA") in their historical analysis of the different approaches by the United States and Germany to apprenticeships and why the German approach simply never took hold in America. It may be that Americans view apprenticeships as restrictive, but it may also be true that our collective frontier mentality—the belief that held sway at least until the early twentieth century that you could always pick up and move west if the labor situation wasn't to your liking—may have mitigated against their growth. Another stark contrast between the American approach to apprenticeships and that of many European nations is the age of apprenticeship. As Lerman and Rauner point out ("Apprenticeship in the USA"), American apprentices enter the system in their mid-20 s, often with years of experience behind them. European apprenticeships, conversely, are part of students' experiences in (secondary-level) vocational schools. A lack of union support for youth apprenticeships further undermines American apprenticeships. At present, less than 13% of all workers are unionized, and less than 8% of private-sector workers belong to a union. Lerman and Rauner place the figure even lower.

Finally, any discussion of American CTE must include the role of company-based training provided by companies to their employees independent of government or educational connections. Organizations like the American Society for Training and Development, 2009) annually proclaim that in-company training constitutes a larger investment in CTE than that provided through public schools and colleges; a total of $154 billion in 2008 (ASTD, 2009). It is within this business-based system, note Lerman and Rauner, that most occupational training and certification for workers takes place.

What we have today in the United States are nonparallel CTE subsystems with few structural connections between them: US CTE takes place in a public education system largely limited to high school; community or technical colleges serving a wide range of public needs; various government programs; a miniscule apprenticeship system; and a large business-based training system disconnected from all of the others.

13.2 The Contested Purpose of Public Education

It is a curious phenomenon of the American perspective that national economic competitiveness is assumed to be directly related to the quality of the public education system. In the mid-1950s, America felt itself challenged scientifically and

economically by the Soviet Union and the rise of Sputnik; this led to the National Defense Education Act, the intent of which was to produce more math-proficient high school graduates and move more students through the educational pipeline to college. By the early 1980s, the United States perceived economic threats from Germany, Japan, and other industrialized democracies. This fear was captured in *A Nation at Risk (NCLB)* (National Commission on Excellence in Education, 1983), which blamed public schools for the nation's economic decline and argued that improving the quality of schools was critical to future American economic competitiveness.

In the early part of the twenty-first century, the federal *No Child Left Behind* education legislation was premised on the belief that America's students were falling behind our economic competitors in math and science; this threatened our economic future. Unlike earlier legislative efforts, the economic threat to which NCLB responded is more generic in nature. This may be in part because our new economic competitors (e.g., Mexico, China, Vietnam) are nations with arguably inferior education systems but millions of very low-paid workers eager for employment. Regardless, the popular, assumed fix for real or rhetorical economic and social ills usually lies in the realm of public education.

A Nation at Risk and reports like it spurred what has become nearly three decades of so-called education reform designed at least in part with the goal of improving America's competitiveness in the new global economy. This quarter-century churn of reform has had a profound impact on secondary CTE. In the early stages of these reform efforts, low-achieving students were assumed to be bound for work and often assigned to vocational education programs (now called career and technical education, or CTE). What many now call "old voc ed" was inconsistent in the type and quality of its offerings. Many of these programs were of poor quality and provided little vocational or academic development for their students. There were however, many high-quality vocational programs that served students and their communities well (Kemple & Willner, 2008; Stone, 2008). Regardless, these students tended not to measure up well against their more academically oriented peers, making vocational education a target for education reformers.

More recently, federally supported investments in school reform efforts have assumed that all youth should exit high school "college- and career-ready"—with a pronounced focus on moving all students toward college, predicated on the assumption that if a student is college-ready, she is also career-ready. This has been a driving force behind many of the changes in secondary CTE (including in the change in nomenclature from *vocational* to *career and technical education*).

The irony in this debate, predicated on assumptions about the demise of US economic competitiveness, is that the US economy historically has been rated as the most competitive in the world, having only recently been overtaken by the Swiss (Schwab & Porter, 2009). The factors identified with the nation's fall from #1 to #2 have little to do with education—although it is on the list. Rather, they include such factors as labor-employer relations, flexibility of wage determination, female participation in the workforce, poor infrastructure, and poor worker health. Despite evidence to contrary, global competitiveness arguments continue to be employed as

a means of diminishing the presence of high school CTE—or move it toward a more academic preparatory model.

Have the many reforms of the past 25 years since *A Nation at Risk* achieved their goals? The rhetoric of those advocating for more rigorous academics implies they have not.

> The United States faces an unprecedented challenge to its long-term global economic leadership. And a fall from leadership would threaten the security of the nation and the prosperity of its citizens... ***High school students in the U.S. perform well below those in other industrialized nations in the fields of mathematics and science*** ... [and thus we need to make] STEM [science, technical, engineering, mathematics] education a national priority. (Council on Competitiveness, 2004, p. 51—emphasis added)
>
> If trends in U.S. research and education continue, our nation will squander its economic leadership, and the result will be a lower standard of living for the American people... By 2015 [the country needs to] ***double*** the number of bachelor's degrees awarded annually to U.S. students in ***science, math, and engineering***. (National Summit on Competitiveness, 2005, p. 21—emphasis added)
>
> If we continue on our current course, and the number of nations outpacing us in the education race continues to grow at its current rate, the American standard of living will steadily fall relative to those nations, rich and poor, that are doing a better job. (National Center on Education and the Economy, 2007, p. xix)

Such assertions are the same as those used in *A Nation at Risk*, despite the many changes that have occurred in American education since that report was released.

Statements such as these have led to states increasing the academic demands on high school students. In 1984, high school graduates earned an average 12.9 academic credits and 4.7 in CTE. A CTE "concentrator" or major was considered one who took three or more credits in a specific labor-market preparation area (e.g., auto technology). By 2004, average academic credits increased to 19.0 (NCES, 2004), while CTE credits declined to 3.5 (NCES, 2008); a CTE concentrator was now measured as a student who took two or more credits. The average student in 2004 had in effect experienced one full year more of academic courses than his or her 1984 counterpart and one full credit less of CTE.

During these 20 years, however, scores on the reading test in the National Assessment of Educational Progress (NAEP) changed very little, moving only within a five-point range between 285 and 290, with the lowest average score occurring in 2004 (a statistically significant decline; NCES, 2004). In the same period, the average number of credits earned in both science and mathematics doubled (from 1.5 to 3.2 in science and 1.7 to 3.6 in math); in both disciplines, however, NAEP math scores showed no increase and science scores were statistically significantly lower.

Despite a lack of supporting evidence, the education reform debates of the past three decades have led to the "college for all" mentality that has become the assumed solution to the problems vexing American public education. This has had a profound impact on secondary CTE. Indeed, Zirkle (Chapter 3, this volume) discusses the trend toward high school CTE as providing a taste of occupational possibilities through what are largely introductory courses. Specific skill development leading to industry certification is assumed to be the province of postsecondary education and training systems.

13.3 CTE and the American High School

The role of CTE in American high schools has always been controversial due to a fundamental debate about the purpose of secondary education. The debate has been raging for over a century, and at the heart of these arguments is what Lewis (2000) described as education's basic dilemma: the conflicting functions of maximizing each student's potential while simultaneously selecting and socializing all students for their future occupational roles and places in society. On the one hand, some argue that students who lack the ability and/or ambition to continue on to a university education should be taught a practical skill in high school so that they may be immediately employable upon graduation from the 12th grade (Murray, 2008). Such students are often placed in CTE while in high school. This has resulted, some point out, in a tracking practice that has in itself raised several concerns (Oakes, Gamaron, & Page, 1992), especially as such tracking conflicts with the ideals of a democratic society. On the other hand, others argue that in a democratic society, all students should be given the opportunity for higher education; their college for all policy would mean educating all high school students the same way with one purpose: admission to college (e.g., American Diploma Project, 2004; National Center on Education and the Economy, 2007). Barabasch and Dykeman ("The Career Counseling/Career and Technical Education Spectrum of Interventions in the American K-16 System") describe American parents' resistance to CTE and acceptance of the idea that "the only path to academic success in the United States involves obtaining a baccalaureate degree." This tension is artfully presented by Smith and Barabasch (Chapter 8, this volume), who describe the conflicting values that pit the need to educate the nation's citizenry to fully function in a democratic society (the common school) against a utilitarian view that seeks to fit the person to future life roles, including vocation.

One aspect of the historical development of American CTE not mentioned by the contributing authors to this volume and important to understanding the development of American CTE is the political tension that was resolved by the early federal intervention supporting CTE. Thompson (1973) described how vocational education became a prominent topic of discussion among American educators in the early part of the twentieth century. The social challenge of the day was how to effectively shift the American workforce from an agrarian to an industrial base. The competing interests of labor and powerful industrialists of the time over who would control such education or training led to a compromise between the American Federation of Labor (AFL), which had long opposed such programs as discriminatory, and the National Association of Manufacturers (NAM). Their political compromise—which put control of vocational education in the hands of the public schools—met the AFL's concern that working-class interests would be protected by providing them with a voice in education policy development and satisfied the NAM that such education would provide a more effective means of helping American manufacturers compete in expanding international markets.

From these origins, CTE developed as a major part of the modern American high school experience. Silverberg, Warner, Fong, and Goodwin (2004) reported that the average high school student took more CTE credits than any other subject area except English. Relatively few students, however, take a sufficient number of credits to lead to an industry-recognized credential or provide enough skills to make them attractive to employers after graduation. More recent analyses (NCES, 2008) show that this situation has changed. On average, high school students in America earn more credits in English (4.3), social studies (3.9), and mathematics (3.6) than in CTE (3.5). This represents a decline of fully one academic credit over the past decade. This is likely an artifact of NCLB, which aimed to boost all students' proficiency in core academic subjects. The net effect of this legislation has been a dramatic increase in the number of academic courses students are compelled to take in order to graduate. The consequence has been a constriction of the amount of curriculum space and school time left for CTE.

Although historically rooted in preparing young people to move directly into the workforce, CTE's purpose has evolved over the past decades. I described the current role of CTE as providing all students with education about work, education for work, or education through work (Stone, 2001). That is, CTE introduces youth to the workplace and helps them develop generalizable workplace skills. It also prepares youth with occupation-specific workplace skills and provides a context through which academic skills in math, science, and reading can be enhanced. Gray (2002) posited the debate over high school CTE as a set of four possible choices. The first, advocated by the federal government, argues that the primary purpose of high school CTE should be to provide an integrated sequence of occupational and academic coursework in order to prepare students for postsecondary, pre-baccalaureate technical education. This is a variation on the "education about work" theme. The second is in line with the historic or traditional role of CTE; that is, to provide an occupational sequence of courses with the sole aim of preparing students for the transition from high school to full-time employment or education about and for work. The third conceptualizes CTE courses as arenas providing contextualized teaching and learning of applied academics or education through work. The last alternative Gray envisions is the elimination of CTE in favor of the universal provision of a common academic program for all students.

Ultimately, what is and isn't included in the high school curriculum is a direct reflection of those skills and attitudes valued by the society—and necessary for the economy—at any given time in history. The transmission of the values of the dominant culture to the next generation has historically shaped the structure and curriculum of education and will continue to be the guiding force for reform movements in the future. The unfortunate aspect of this is that such a system may also perpetuate inequalities between social classes (Blau & Duncan, 1967; Hauser & Sewell, 1984). Evidence for this concern is shown, according to some, by examining the characteristics of those students who participate in CTE. High school CTE is overpopulated with special needs and disadvantaged students (Silverberg et al., 2004).

13.3.1 College for All: The New Mantra for CTE

The vision of the new CTE articulated by Klein and Green ("College for All: The American Model for Career and Technical Education") is, as Klein and Green state in their conclusion, essentially "faith-based." As they put it, "implementation [of the college-for-all model of CTE] is proceeding as a matter of faith. . . we are letting the marketplace take hold of this innovation, test it out, and improve it." Their assumption is that any "difficulties will be surmounted" by market forces (despite evidence to the contrary; e.g., Tech Prep) and the new model will make life—and American education—better. This view fits with what Grubb and Lazerson ("The Education Gospel and Vocationalism in U.S. Higher Education: Triumphs, Tribulations, and Cautions for Other Countries") identify as the education gospel. The driving assumption is that "good jobs" require a college credential. Although college for all has captured the national debate over how to improve CTE, the personal and societal benefits or consequences of such a policy remain unclear.

This approach is not without its critics. King (Chapter 2, this volume) reminds us that *vocational education* as a term is so stigmatized in America that the federal congress changed it to career and technical education. He also notes the contradictory nature of federal policy that prefers that secondary vocational education lead to college rather than to the workplace. It is certainly antithetical to the German approach described by Smith and Barabasch (Chapter 8, this volume). The ascendancy of college for all has been challenged by others who argue that it shortchanges young people who are uninterested in or unsuited for college (Barton, 2008; Cohen & Besharov, 2002).

Although Klein and Green open by essentially defining "college" in a footnote as *any* education or training that follows high school graduation, I caution the international reader that this is not a widely held definition in the United States. Indeed, within a page of offering this definition, Klein and Green discuss the academic skills necessary to succeed specifically in *four-year college* (i.e., university). This contradiction continues through their discussion of the data on the performance of CTE students compared to those in a college preparatory (i.e., four-year university) track.

The national conversation about redefining CTE continues. The skepticism about CTE by American parents and many in the business community continues to plague efforts to make CTE a valued part of education. Advocates, like the National Association of State Directors of CTE (NASDCTEc) seek to reposition American CTE in the public's mind in a way that more closely approximates how German VET is valued by German parents, as discussed by Boesel (Chapter 5, this volume), yet without a comparable structure of industry, government, and education partnerships. This is, in part, an explanation for the contradiction described by King ("Dilemmas of Design: Education versus Qualifications in the U.S. Vocational System", Chapter 2, this volume).

As these chapters were written, national CTE leaders began a series of meetings, retreats, and web-based discussions aimed at creating a new vision for American

CTE (National Association of State Directors of Career and Technical Education Consortium [NASDCTEc], 2009).[2] These discussions are grounded in the emerging description of college for all articulated by Klein and Green.

13.3.2 College for All: The Premise for the New CTE

There is an implicit assumption in the college-for-all philosophy that CTE provides little or no value to participants. That perspective ignores strong evidence that the "old" vocational education had a positive effect of keeping youth in school (Plank, DeLuca, & Estacion, 2005). Economists have also demonstrated the labor market payoff to high school students who invest in CTE (Bishop & Mane, 2004). The challenge in moving toward college for all as the new model of CTE is in maintaining the value that the much-maligned "old" system of vocational education provided to many youth who might be developmentally ready for a more intense, industry-skill oriented program of studies in high school.

Oft-cited data about CTE often confuses correlation with causality. For example, the relatively lower academic outcomes of students who invest heavily in CTE coursework ignore the reality that such students enter high school at an academic disadvantage compared to the average college preparatory student (Agodini, Uhl, & Novak, 2004). When such covariates are accommodated in analyses, the results often show no difference in academic achievement (McGinley, 2002; Stone & Aliaga, 2005; Stonefield, 2008). What is remarkable and often overlooked by CTE critics is the tremendous growth in academic course-taking by CTE majors in recent years. By 2005, fully 60% of CTE majors met the new basics requirement, and 37% met the college preparatory requirement (see King, "Dilemmas of Design: Education versus Qualification in the U.S. Vocational System").

In considering a college-for-all approach to redefining CTE, its advocates fail to acknowledge four critical issues:

- There is no discussion addressing the key issue identified by King (Chapter 2, this volume) of the lack of a national system of qualifications, unless college degrees of any sort are accepted as a default national qualification.
- "College for all" ignores what Peter Cappelli (2009) described as the fallacy of composition: the assumption that what is true for individuals is true for society as a whole. This is an important concept in macro-economic theory (e.g., in explaining the paradox of thrift and the claim that minimum wage legislation causes unemployment). In this case, it is likely true for an individual that obtaining a college degree will increase earnings, but it is not true that if all workers obtained a college degree, all wages (and job prospects) would increase. Cappelli argued that rather than more traditional academic coursework, training and work experience are better human capital investments.

[2] See http://blog.careertech.org/?p=769.

- Who will pay for "college for all"? As Barton (2006) observed, high school is the last education opportunity paid for wholly by the public. Its purpose, he suggested, has to be doing the best it can to provide all who leave it the foundation necessary to enter, or further prepare for, adult life. As discussed earlier, the combination of decreasing returns to college combined with rapidly increasing college costs makes attending college increasingly difficult for more students each year.
- Finally, the college-for-all argument denies the realities of the labor market. Barton (2008) raised the question of how many college graduates are needed in the labor market and suggested we may be already over-supplied. I discuss this in more detail in the following section.

13.3.3 College for All and the Labor Market

As one examines what employers want from their employees, it is clear that many opportunities are available to non-college-degreed youth if they possess the proper skills and training that could be provided by secondary and postsecondary CTE programs, including postsecondary certificate and degree programs. Stone and Alfeld (2006) discussed the new basic skills identified as necessary for success in the workplace of the twenty-first century: reliability, positive attitude, willingness to work hard, ninth-grade or higher mathematics abilities, ninth-grade or higher reading abilities, the ability to solve semi-structured problems at levels much higher than today's high school graduates, the ability to work in groups, the ability to make effective oral and written presentations, and the ability to use personal computers to carry out simple tasks like word processing. Many of these skills are nonacademic and can be developed in CTE and other forms of educational experience. Other reports (Barton, 2006; Mathematica Policy Research, 2002) have concluded that employers place a higher premium on hiring individuals who show good work habits, confidence, and leadership skills—often described as "soft skills." These are skill sets that many if not most youth lack, yet are also the kinds of skills that are the focus of quality high school CTE programs.

This discussion assumes that young, skilled applicants can get past the natural employer preference for older workers; employers offering stable, high-wage jobs do not like to hire workers until they are well into their 20s, regardless of how well they did in high school (Barton, 2006). Related to this is one explanation for the college-for-all phenomenon: college degrees have become a proxy for employability or work readiness (Stone & Alfeld, 2006). Believing that the high school diploma no longer signifies meaningful achievement, and in the absence of a national system of industry credentials, employers rely on college degrees to ensure they're hiring the right candidates. As Barton (2006) noted, if employers don't want to hire high school graduates until six years out of high school, no change in the high school curriculum will make them any older.

Recent projections from the U.S. Department of Labor suggest a trifurcation of the labor market with roughly equal growth in high-skill professional jobs and

low-skill service jobs on the opposite ends of both education requirements and earnings (U.S. Department of Labor, 2009). In between are middle-skill occupations, expected to provide nearly half of all new jobs by 2018. Middle-skill occupations require skills, which may include community college certificates, diplomas, and degrees; extensive employer-provided education and training; or apprenticeships (Holzer & Lerman, 2009). They pay well and importantly, do not offshore easily (Council on Competitiveness, 2005).

It is important to distinguish between middle-skill occupations and the sub-baccalaureate labor market. While the sub-baccalaureate labor market includes middle-skill occupations, it also includes low-skilled occupations that require little preparation and offer low wages and few benefits. Many discussions of the sub-baccalaureate labor market fail to make this distinction (Grubb, 1996).

Hecker (2005) found that of the top 30 occupations expected to generate new growth in the future, only eight require formal post-high school education; the rest require no more than on-the-job training. A more recent report (Lacey & Wright, 2009) shows little change. They estimated of the top 30 jobs expected to produce the largest actual growth, only 1 in 3 require any formal education beyond high school.

While "college for all" drives the education reform debate in the United States, emerging indicators ought to give its advocates pause. Recent national data indicate that there have been increases in college enrollment and completion since the early 1970s. Rosenbaum (2002) found that 42% of US high school graduates complete and graduate from college within 10 years of leaving high school. This figure excludes high school students who fail to graduate. Other studies put the success rate much lower, with less than 20% of all students completing a four-year degree within six years (National Center for Public Policy and Higher Education, 2004). Adelman (as cited by David Glenn in a 2006 *Chronicle of Higher Education* article) reported that 28% of adults reported earning a baccalaureate degree and another 7% reported earning an associate degree. These data suggest a certain kind of balance in labor-market demand for education credentials and the available supply.

Regardless, such degrees are coming at increased costs to students and their families. The Public Interest Research Group (Swarthout, 2006) found that more than two-thirds of college graduates leave with debt, and between 23 and 55% of new graduates leave with loans described as unmanageable. This has led to a phenomenon of "boomerang children" who leave home, go to college, fail economically, and end up returning home to live with their parents. Examining these and other data confirms Barton's (2008) concern and his challenge to conventional wisdom about the ability of the US labor market to absorb the number of college graduates we are producing.

Many college graduates' debt problems are in part a function of the labor market into which they are now moving. Researchers have observed that a proportion of university-degree holders take high school-level jobs, and about 40% of graduates thought a university degree was not needed to obtain the job they held a year after graduation (Barton, 2008; Pryor & Schaffer, 1997; Rosenbaum, 2002). What

appears to be clear is that some—and perhaps many—university-educated workers are engaged in downward occupational mobility: that is, they are taking jobs for which a university degree is not needed. The value of college as workforce preparation for the individual is increasingly being challenged (Cronin & Horton, 2009).

If the value of the baccalaureate degree in the labor market declines due to oversupply, it is useful to consider what other non-baccalaureate, middle-skill occupations will provide the wages and benefits associated with a middle-class lifestyle. A partial list might include air traffic controllers, carpenters, electricians, masons, plumbers, radiation therapists, fire fighters, lift installers, dental hygienists, lorry drivers, auto technicians, and registered nurses (Goldberger, Lessell, & Biswas, 2005). These and other occupations appeal to many who are not enamored of traditional schooling or who seek a more instrumental value in their learning. For many youth, education in the abstract has limited appeal. Such learning opportunities are the focus of secondary and postsecondary CTE programs.

13.3.4 More Is Not Better; It May Actually Be Worse

The assumption that the skills required for successful entry into college are the same as those required for successful entry into the workforce is a major driver of the college-for-all solution to workforce development issues. This has led to increased academic requirements for all high school students. For more than 20 years, our nation has asked its students to take more courses in the core academic disciplines. Standards have been adopted with the goal of making these courses more rigorous, but such reforms have not produced improved performance outcomes on tests administered as part of the NAEP, which measures what these courses were designed to teach. There is no question that a sound basic education is essential for all workers in a global economy experiencing high rates of technological change. Unfortunately, the current approach of more academics as the strategy for increasing rigour—especially in science and mathematics—is not producing the outcomes intended. A more effective approach may lie in alternative delivery systems for math, literacy, and science. One such model was developed and tested by the National Research Center for Career and Technical Education (Stone, Alfeld, & Pearson, 2008).

The modern emphasis on science and mathematics has created the STEM (science, technology, math, and engineering) acronym. Performance in science and mathematics courses has always served a sorting function by identifying high-performing students who are then encouraged to prepare for science and engineering occupations. The prevailing assumption, reflected in the quotations from the various reports presented above, is that if more students take more of these courses, the nation will produce more engineers and scientists. As a result of having more of these workers, the nation will produce the technological innovations that will enable American workers to compete with low-wage counterparts in other nations.

13.3.5 How Many Scientists and Engineers Do We Need?

Lowell and Salzman (2007) analyzed the flow of students through the science and engineering education pipeline. Their analysis found that the education system produces qualified graduates far in excess of demand. Science and engineering occupations make up only about one-twentieth of all workers. Each year, there are more than three times as many four-year college graduates competing for jobs in these occupations than there are openings. From 1985 to 2000, an average of about 435,000 US citizens and permanent residents graduated with bachelor's, master's, and doctoral degrees in science and engineering. Over the same period, there were about 150,000 jobs added annually to the science and engineering workforce (net of retirements).

Findings such as these have had little impact on the push for more academics in high school. Reports such as *The Toolbox Revisited* (Adelman, 2006) and *Ready or Not: Achieving a High School Diploma that Counts* (American Diploma Project, 2004) have succeeded in equating studying mathematics beyond Algebra II with increased postsecondary success. There is no question that students who earn high school credits in trigonometry, precalculus, and calculus are more likely to obtain postsecondary degrees. To assume, however, that requiring more such courses will lead to more college graduates confuses cause and effect. It is not these courses, by themselves, that improve the likelihood of obtaining degrees. Students who succeed in advanced mathematics have a combination of skills, knowledge, and motivation that enables them to do well in academic subjects in school. Simply requiring students, regardless of their ability level, to take more higher-level courses will have little impact on the characteristics that produce this success.

In general, the idea of a university degree for all persists; recent national data indicate that there have been increases in postsecondary enrollments and completions since the early 1970s. Between 1972 and 2004, the rate at which high school completers enrolled in college in the fall term immediately after finishing high school increased from 49 to 67% (NCES, 2004). Yet another trend that is unmistakable is the persistently high rate of high school dropouts. Determining who is a high school dropout is difficult. State and local methods of reporting dropouts vary widely, and it is in the self-interest of educational agencies to define and count dropouts in ways that minimize the actual number. In some measures, individuals who obtain a GED certificate are counted; in others, they are not. There is one indicator, however, that can be applied uniformly across states: the ratio of the number of graduates reported by state educational agencies to the number of 17-year-olds in the population. Barton (2005) reported this figure for the past 130 years, from school years 1869–1870 through 1999–2000. The ratio reached a peak at 77% in 1969, declined to 70% in 1995, and stayed at approximately that level for the remainder of the period examined. This indicator is lower than other measures of dropouts, but it has the advantage that it is not influenced by reporting policies of local school districts or the self-report and nonresponse biases inherent in population surveys and longitudinal studies of defined cohorts of students. These youth who exit high school early are poorly prepared to enter the workplace or enter postsecondary education.

13.4 CTE and the American Two-Year College

If secondary CTE continues its trend toward an introduction to the workplace in lieu of preparation for the work place, community (or technical) two-year colleges are expected to assume a larger role in occupational preparation. In the United States, postsecondary CTE is usually considered pre-baccalaureate education or training. This system of higher education is, as Schmidtke notes ("The American Community College"), peculiarly American. Especially in the technical education arena, it is thought by many not to be part of higher education, yet it is not part of secondary education either. It sits astride the two systems and reflects a market-driven response to the supply and demand of the labor market.

Many 16-to-24-year-olds avail themselves of courses and programs at their local community colleges, although the two-year college system also serves adults of all ages. Many of these students never enrol in formal programs but simply attend to take a course or two, presumably to improve their labor-market opportunity. Community colleges' "open entry, open exit" approach to providing learning opportunities has created both opportunities and what Schmidtke described as false hope for the academically underprepared student. This is part of the low perception of CTE noted by Kotamraju (Chapter 11, this volume) in his analysis of community college CTE evaluation.

Postsecondary CTE includes offerings from two-year colleges (community and technical colleges), proprietary postsecondary schools, and adult learning centers, as well as professional associations or labor unions, government agencies, and the like. According to recent estimates, over 40% of the for-credit courses in higher education are taken at two-year community colleges in the United States (Silverberg et al., 2004), whereas another 20% are taken at proprietary two-year institutes. Community and technical colleges offer several types of credentials for students in a career pathway as well for adults engaged in continued education and those transitioning to a different job. Typically four kinds of degrees or credentials are offered: an associate of arts (AA), which is assumed to be a university transfer degree; an associate of science (AS) degree, which is a blend of transfer and occupational credits; and the associate of applied arts (AAS) degree, which is heavily vocational in content. In addition to these three degrees, students often opt for a credential that may require 6–18 months to complete (e.g., welding, carpentry). Bailey et al. (2004) found that 29% of all students enrolled in postsecondary education in 2000 were students in a vocational sub-baccalaureate program. They also found that 64.5% of those students in 2000 earned an AA degree, whereas 33.3% earned only a certificate.

A study conducted in the 1990s (Grubb, 1996) examining the effect of occupational course participation in community colleges found significant labor-market payoffs for such participation. The report noted the following:

- Both certificates and associate degrees increase the earnings of those who receive them—not as much as a baccalaureate degree, which requires between two and four times as many credits—but still by substantial and statistically significant amounts.

- There appear to be "program effects." In general, completion of a certificate is more beneficial than completion of one year of college without a credential. An associate degree is more valuable than two years of college, and a baccalaureate degree increases earnings more than four years of college without the credential.
- The benefits of sub-baccalaureate credentials vary substantially by field of study.
- The effects of having a job related to an individual's field of study are substantial. The returns to related employment are almost always higher than the returns to unrelated employment. The completion of coursework is necessary but not sufficient to realize economic benefit, and placement in a related occupation is crucial.

Although the improved economic outcomes for attending community college are documented and substantial, there still exists a gap in actual earnings between advantaged and disadvantaged groups who participate. According to some authors, this gap widens as a result of education beyond the high school diploma. At the same time, on an individual level, students with two-year degrees earn more than if they had entered the workforce with only a high school diploma (Bryant, 2001). Recent reports (Cherry, 2009) showed that half of all workers with an associate degree earn more than the lowest quartile of baccalaureate degree holders.

With visible support from the current federal administration, community colleges are being pushed to the forefront of the workforce development discussion. Several initiatives are currently working their way through the US Congress that will provide a large infusion of federal support to expand community college access, improve affordability, and facilitate program completion for more workers seeking to gain employability skills (House Bill H.R. 3221, passed September 17, 2009).

An increasingly popular and federally supported effort is to more closely link community college CTE with high school CTE, first through the Tech Prep initiative described by King (Chapter 2, this volume) and more recently through Programs of Study (POS)(see Lewis, Kosine, & Overman, 2008). The federal Perkins IV legislation requires every school district to implement at least one POS; this must include, among other requirements, two years of high school linked to two years of postsecondary education leading to an industry-recognized credential, a certificate, or a degree in a career field (Carl D. Perkins Career and Technical Education Act of 2006, P.L. 109-270. Sec. 122(c)(1)). Building on the dual-credit arrangements described by Schmidtke (Chapter 4, this volume), this newest effort to enhance institutional linkages is intended to improve on the rather limited results of Tech Prep.

13.5 Concluding Thoughts

The central tensions affecting American CTE have remained relatively unchanged over the past century or more, and the question of how to create a more coherent national CTE system continues to vex American policymakers at all levels.

Although there is much they can learn from German and other international systems, they most likely won't, despite sporadic efforts to do so. Beginning in the nineteenth century, American educators and industry leaders have looked to Europe for models that might be adapted to improve American CTE. For the many reasons discussed in these chapters, most of these efforts have failed to take hold.

One explanation for this is the fundamental, philosophical differences between the American system of CTE and most of the rest of the world. Education in most countries is a tool of national policy subject to social engineering that meets government objectives (e.g., full employment, youth employment, and the like). In America, CTE is market driven, especially in postsecondary systems. In CTE, as with other consumer products, the marketplace is assumed to be the most efficient allocator of resources. If the market required a more efficient system, the market would create the signals (e.g., higher salaries for some occupations thought to be needed) and American CTE would respond and self-organize. We actually see this play out, to a degree, in the community college systems, both public and for-profit. This tension is well explored by Smith and Barabasch (Chapter 8, this volume).

A second explanation is that American policymakers and indeed the American public will not accept an approach that effects or implies a class-sorting mechanism in its education system. America is the land of second chances, as well as third or more. Individuals are allowed and even encouraged to pursue their dreams, often with little formal support through career counseling. In more structured European systems, early commitment to an occupation is deemed appropriate for a majority of adolescents. Not pursuing a college pathway is socially acceptable in Germany, for example; much less so in America.

The current effort to upgrade the quality and image of secondary CTE—an effort that included relabeling vocational education as CTE—is captured by Klein and Green in their argument for college for all. This approach, supported by the current federal legislation, seeks to use CTE to improve academic outcomes and transition to college (see King, Chapter 2, this volume). This is only the most recent of many efforts seeking to more fully integrate CTE into the mainstream of American public education and overcome its second-class status as coursework that links learning directly to the workplace. This will, in effect, transform CTE into an alternative college preparatory program.

Instead of adapting a more European approach to CTE, American policy is increasingly looking to community college systems to provide such education. Indeed, workforce development has become the *raison d'être* of American community college systems with the current federal administration. There is, unfortunately, little meaningful connection between public education CTE and postsecondary or community college CTE. The most recent federal CTE legislation attempts to address this problem through Programs of Study, the next generation of Tech Prep (Lewis et al., 2008).

Underlying tensions remain, however. The American psyche clings to a strongly held belief that one must go to college in order to get ahead and get a good job, despite evidence that this may not be the best pathway for many young people (e.g., the data showing that many young people will never complete a postsecondary

degree or diploma). As we look ahead, there are at least five key challenges in moving from a non-system to a system of CTE in America:

- The ongoing effort to make secondary CTE more exploratory and less preparatory: rather than efforts to ensure that the completion of high school CTE ensures some level of workforce preparation, high school is assumed to be only preparation for more education, that is, it is introductory rather than preparatory. How well does that serve the very large number of young people who choose, for affordability, academic, or personal reasons, not to participate in college by any definition? Can the new efforts at redefining secondary CTE incorporate what was historically beneficial while adapting to the workplace demands of the twenty-first century?
- Linking secondary CTE to postsecondary CTE to labor-market needs. Current federal policy encourages such linkages through POS, but American cultural reluctance to ask adolescents to make serious career decisions while in high school remains a powerful roadblock to creating a more European style of CTE.
- The lack of a national system of skills standards. More than anything else, the inability to construct an agreed-upon system of standards and assessments challenges the effort to make CTE, secondary or postsecondary, a viable alternative to a college degree as a signal to the labor market of worker readiness.
- Disappearance of traditional CTE teacher preparation programs. The new structures of models of CTE delivery (e.g., career academies, POS) and mandates for secondary CTE (e.g., integration of academics) are coming on line at the same time as traditional CTE teacher preparation programs are all but disappearing from American universities, an issue thoroughly analyzed by Lynch and Kirpal in their chapter ("Teacher Education and Professional Development"). Many states no longer have university-based CTE teacher-preparation programs, which has lead to a dramatic increase in the employment of alternatively certified teachers from business and industry who come to the modern American classroom with minimal preparation for what really happens there.
- The continuing trend toward vocationalizing higher education. It is ironic that the trend toward "academizing" the high school experience is occurring as higher education is increasingly judged only for its ability to prepare young people for jobs. The primary problem this presents is the fact that this is a very expensive system and thus inaccessible to far too many young people if this remains the default workplace qualification.

Career and technical education, the American version of VET, is experiencing a resurgence of interest in America. The current administration, in stark contrast to its predecessor, values the idea of CTE and has spoken positively about its importance. Many communities are investing in new "vocational high schools" or regional career centers, career academies, and other delivery models that build on the past successes of CTE and incorporate new curricula and methods to prepare their students for the emerging workplace. But these are local or regional, not national, in scope.

The open question is what system of American CTE will emerge after nearly a half century of constantly churning CTE reform and flirtations with career education, youth apprenticeships, school-to-work, Tech Prep, and now Programs of Study. It is a time of great hope, opportunity, and great challenge.

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Chapter 14
Conclusion

Antje Barabasch and Felix Rauner

Harold Garfinkel (1986) postulated that in the end every occupation has to be learned practically. This finding is grounded in the principle of duality, the acquisition of occupational knowledge and skills in conjunction with theoretical knowledge taught at schools and colleges on the one side and reflective work experience on the other. The duality between theory and practice also created and still causes a tension among educationalists, policy makers, philosophers and scholars, who either support the idea of an academic education or favour an early career orientation and career and technical education. A number of prominent US scholars have actually developed foundational theories and concepts for occupational learning that have been influential around the world.

The institutionalization of the principle that work and learning need to interplay in order to prepare one for the requirements in a specific occupation was at all times until now confronted with this tension and has rarely been transformed productively into vocational systems and processes. The pole of this tension is represented by *Bildung*, which on the one hand targets the development of an autonomous personality and on the other hand, serves the qualification of the workforce and follows the rules of economic calculus. All attempts to dissolve this tension – the organization of vocational education as a training or as an educational endeavour – entail either economic risks, in which the qualification aspect is disregarded or corrupt the development of the personality and therefore ultimately the democratic development, if *Bildung* as education is constricted to 'human resource development' and qualified personnel are reduced to exchangeable providers of qualifications and skills for the labour market.

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Around the turn of the nineteenth century John Dewey contended that the establishment of vocational education structures in the United States significantly contributed to the development of vocational education as an integral part of the democratic educational system of the United States. From the perspective of European educationalists, such as Georg Kerschensteiner, Dewey, with his work 'Democracy and Education', introduced a 'Copernican turn' for vocational education and training (VET) far beyond the borders of the United States (Gonon, 2009, p. 17). He phrased the philosophical and pedagogical guidelines for vocational education, in which work is always a means or – as Herwig Blankertz (1985) put it – a medium for education and not its purpose. Not least because of these insights and Dewey's work, vocational education was introduced in the emerging high schools at the beginning of the twentieth century and has since then remained a part of the world of education. The high school as a horizontally structured school became a role model for modern democratic school systems. Training in the sense of qualifying the workforce in contrast became part of the world of work and all attempts to combine both worlds in the form of a dual vocational education have either failed or remained exceptions in American schools.

The characterization of vocational education in the United States with the dichotomy 'education versus work' and the attribution of education and work to separate societal spheres have contributed to the leading idea 'Democracy and Education', how John Dewey formulated it, and is deeply embedded in American culture. The idea of establishing work-related education in high schools likely prevented it from becoming the purview of American industry and the economy. At the same time the inclusion of VET in schools paved the way for its stigmatization as a 'second-chance system'.

Economists have pointed out the shortcomings of the American system of vocational education. Michael Porter, for example, in his writings about the 'Competitive Advantage of Nations' outlined the structural weaknesses of the American educational system: 'While education should remain a state and local responsibility a federal role in education is not only legitimate but vital at a time when state and local efforts are incomplete' (Porter, 1989, p. 725). Porter advocated for national standards and resources as well as a stronger participation of enterprises in the qualification of skilled workers. At the same time in 1989 the MIT Commission on Industrial Productivity published the study 'Made in America', an analysis in which the path of deindustrialization and structural change towards a service society were characterized as an erroneous trend. In addition to the lack of industry involvement and research politics, the commission identified the weaknesses in the system of VET education and training as a central reason for the loss of a competitive advantage along the whole spectrum of the industry: 'The American system of "on-the-job" training is called "following Joe around", and it does not work. [...] Although everyone sees the need for a better-skilled workforce, no one is willing to act alone to improve education. [...] Firms fear that they cannot educate their workers, because they would go off to other employers who could pay

higher wages, because they did not have to incur training costs' (Dertouzos et al., 1989, p. 21).[1]

A central cause for the weakness of vocational education in the United States, according to the MIT study and Michael Porter, is the lack of a national governance system: 'Meanwhile the federal government has come to see education more and more as an individual or local responsibility' (Dertouzos et al., 1989, p. 22). This is criticized as a fundamental flaw in the American educational system.

The study further criticizes the flexibilization of the workforce through the development and introduction of 'anybody workplaces' in the economy as a continuation of Taylorist work structures: 'By defining jobs narrowly and making each job relatively easy to learn, American industry pursued flexibility through the interchangeability of workers with limited skills and experience rather than the cultivation of multi-skilled workers' (Dertouzos et al., 1989, p. 83). Twenty years later Paul Volcker, ex-chief executive of the national bank of the United States, in an interview referring to the pathway that the United States has taken in terms of deindustrialization and negligence of the qualification of skilled workers, especially in industry and trades, pointed out, "I wish, we would have less financial engineers and instead more real engineers, for example in manufacturing systems engineering' (Volcker, 2009). He referred to the aftermath of this development and views them as resulting in a dramatic decrease of the export ability of the US industry, the large foreign trade deficit, as well as the resulting high economic and political risks. His explanation for this development aligns with the MIT study in explaining that the dequalification of workers comes with deindustrialization. This analysis refers to protagonists of socio-scientific and economic provenance, e.g. Daniel Bell (1975) composed the model of the postindustrial society. Here, the scientific knowledge becomes the new axial system, where everything else is circling around: the development of technology, the economy, and even culture. Bell's argument, as well as others is the foundation for the 'college for all' policy, which has contributed to the stigmatization of VET education and training.

The thesis of a progressive tertialization of the economy (i.e. the idea that employment shifts from the primary and secondary sectors to the tertiary or service sector) became a mainstream conviction of economists and scientists specialized in social history. They had disregarded the fact that the development of a service sector depends mainly on the development of a prosperous production sector. The corporate- and industry-oriented service sector builds the competitive structure in the service sector. To put it differently, a distinction must be drawn between personal services on the one hand and corporate- and industry (or production)-oriented services on the other. If the employees in the production sector and the production-oriented service sector are viewed together, it turns out that the overall share of production in the employment system is relatively stable, which refutes Fourasier's

[1] This phenomenon characterized workforce markets in which demand exceeds the availability of qualified personnel. For companies that train the opportunity costs of the training cannot be regenerated. Therefore, they opt out of such training provisions. This finally leads to the collapse of vocational education systems.

hypothesis of the shift to the tertiary sector. If the distinction between the different types of services is neglected, as is often the case, this leads to the false impression that the economic relevance of the production sector is declining. In fact, however, the growth in personal services (care, education etc.,) can be financed only if there is a competitive production sector. This is also the message of the MIT study. The economic theory of undocking the service industry from the production sector is based on a blatant misjudgement of technological and economical development (Kalmbach et al., 2003).

The discussion and research about American VET and its historical genesis needs to be embedded in the analysis of the technological and economical development in the United States under the conditions of an international competition about quality. Then requirements concerning a structural change of the qualification system would appear.

(1) There is no way that the dialectical tension between education and qualification can be productively and creatively shaped in order to overcome the impasse of 'Learning by doing' and to conquer the stigmatization of VET education and training. The community colleges could play a central role in this regard, because they are embedded in local innovation structures and at the same time they are part of a system of vocational learning and higher education.
(2) If local innovation structures are more embedded in the educational system this can contribute to strengthening VET education and training if the antipole – a developed national governance structure – has been established. The examples of other federal states, such as Switzerland or Germany, indicate that a national governance system for VET can strengthen its operation at a regional and local level. Effective national and local governance competence are mutually constitutive. For the United States this means that the divided responsibility for VET at the government level between the departments of labour and education needs to be united in one body with a cumulative responsibility for VET. This step had been recommended by economists, such as Porter and Volcker, the MIT commission on 'industrial productivity' and also by experts participating in the debate on the reform of the National Apprenticeship Training Act. At the 'Oversight Hearings on the National Apprenticeship Training Act' on November 15–17, 1983, virtually all of the experts warned of a weakening of the national responsibilities in the field of vocational education. Instead, they advocated a strengthening of the governance and support structures at the national level.

> Additionally, there exists an urgent need to clarify our public apprenticeship policy. This involves the redefinition of federal and state roles so that duplication of efforts is eliminated and programs become stronger and more balanced; federal support to state apprenticeship agencies; [. . .] apprenticeship research; [. . .] increased development and distribution of national standards; revitalization of the Federal Committee on Apprenticeship [. . .] (Hunter, 1984, p. 381).

> The planned action of the Employment and Training Administration to decentralize the National Apprenticeship Program to the States will not provide the quality of skills training requires (Griggs, 1984, p. 382).
>
> My concern of this tie is the diminishing role the Department of Labor is taking in the National Apprenticeship System, therefore weakening the skilled work force in our country (Sowers, 1984, p. 383).

None of the experts held a different view on this topic. A term that is frequently used in this context is 'fragmented governance structure', which is contrasted by the notion of a uniform national policy of apprenticeship.

(3) The innovation system of VET is based, just like any other innovation system, on three pillars: research, politics and practice (Fig. 14.1).

The full potential of an innovation system can only be realized, if

1. the three pillars are developed on a sufficient level and
2. they interact mutually with each other.

A developed VET research plan requires a research infrastructure at universities and colleges. New knowledge is based on primary research which emanates from a research process that evolves in a network of graduate colleges and institutes and their offerings of graduate programmes for the qualification of VET teachers. Educational research in various other subjects indicates that research and teaching in VET should also be differentiated according to vocational subjects.

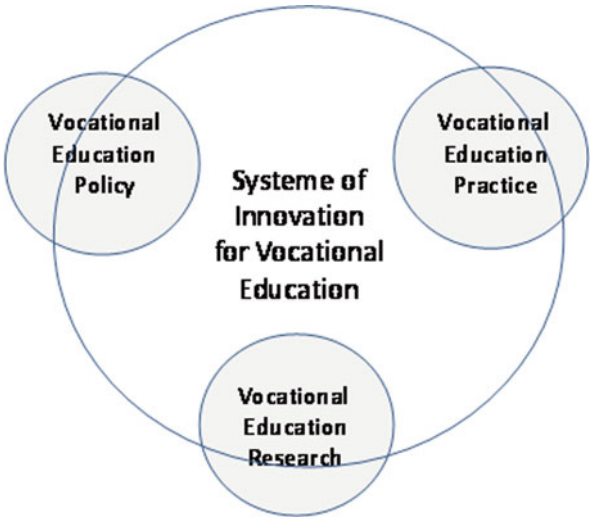

Fig. 14.1 Structure of the innovation system in vocational education and training

Research on competencies as well as 'conceptual change' research depends on a differentiated VET research according to occupational domains or career-technical career clusters. A groundbreaking example is the field of nursing as it was developed for example at the University of California at Berkeley (cf. Benner, Tanner, & Chesla, 1996; Benner, Hooper-Kyriakidis, & Stannard, 1999). At the national level the National Center for VET Education and Training could be a nucleus for the establishment of a national research centre as it exists in Germany. In order to achieve this, an expansion of research and managerial functions of all sectors of VET would be necessary.

The establishment of a VET policy would be possible, if at all, by establishing a comprehensive VET law. This legal framework would control all forms of vocational education and training that are not part of the higher educational system. If the American belief that the government should interfere less rather than more with people's lives would be reexamined, it might allow for the development of a coordinated VET policy based on a modern VET law. This notion needs to be critically examined, considering all the attempts that have been made in US history to create a national VET policy. On the other hand, the health care policy shows that the United States has a creative potential and the eagerness to change, especially when the security of the country or the competitiveness of its economy is threatened. The MIT commission had already referred to these suggestions two decades ago. The contributions in this book show again that the United States seems to have arrived at a turning point in regard to qualifying its workforce for a competitive economy.

(4) The third pillar of the innovation system, the practice of VET education, also reflects the underdeveloped structures of VET. There are some models of VET in the United States that can be regarded as best-practice examples. For instance, the training of skilled workers in the American car service sector since the 1990s is considered as an example of excellent training practice in international comparison, especially by the large manufacturers in the United States (Spöttl, Rauner, & Moritz, 1997). Examples like this point to two messages:

- These examples prove that there is a possibility to realize a groundbreaking VET practice. They challenge us to analyze their success and spread the message.
- The best-practice examples further refer to the exceptions that prove the rule which says that VET practice cannot renew itself. Therefore, examples of best practice sometimes are in the way of structural reforms.

Therefore the ostensible goal is to engage in a national dialogue about VET between politicians, researchers and practitioners in order to set the course for the establishment of an innovation system for VET. This book is our ambitious attempt to describe and critique the effectiveness of VET in the United States from an internal and external perspective by observing the field through the lens of an accentuated sociological and historical perspective. With this approach we intend to offer a rationale for realistic and at the same time necessary reform perspectives for the further development and enhancement of VET in the United States.

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Author Index

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Subject Index