Helping Low Achieving Youth Acquire Work Readiness: The Role of Career and Technical Education

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1. Overview

The issue of low achieving youth has long been debated in the United States, mainly in connection to the perception of poor performance of public schools, and to the perception of a declining availability of skilled workers in the U.S. In the decade of the 1980s and 1990s there was a widespread perception of a declining quality of education in America's schools, and fueled by reports such as *A Nation at Risk* (Gardner, 1983) critics of public education linked the quality of public schools to the perceived economic problems of the day; they argued that improving the quality of schools was critical to future economic competitiveness. The *A Nation at Risk* report and others spurred what has become more than two decades of "education reform" designed at least in part with the goal of improving America's competitiveness in the emergent global economy. 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). More recently, federally supported school reform efforts have assumed all youth should exit high school "college and career" ready with a pronounced focus on moving all students to college.

The role of CTE in the 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) describes 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 consequent place in society). On the one hand, there are those who 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. Those students are usually placed in CTE while in high school. This has resulted, some argue, in a tracking practice that has in itself raised several concerns (Oakes, Gamaron, & Page, 1992) especially as such tracking practice conflicts with the ideals of a democratic society. On the other hand, there are those who argue that in a democratic society all students should be given the opportunity for higher education; this "college for all" policy would mean educating all high school students the same way with one purpose: admission to college.

The question of how low achieving students are supported in their transition to the world of work is compounded by the non-system of public education in the United States. Contrary to what happens in most other countries, education, and public education to help targeted groups of youth, is not centrally coordinated nor organized or directed by a national authority. Rather, public education (elementary through high school or age 5-18) is the domain of state governments.

1.1. Fifty Systems

The debate on low achievement students must be placed in the context of the American educational system. This is a difficult task because there is no national system of education in the United States. Instead, states have been the primary governing body to make and carry out education policy. The Federal government exerts minimal influence on public education, and then only through achievement standards tied to federal grants. Decisions about specific course content and course levels are made at the state and often the local level—by autonomous school districts within states. This means that public education in the United States is not just one system but fifty different systems, each with their own histories and practices.

In place of a national education authority, schools, state governments, and business organizations in partnership with the federal government, continue to try to establish a closer coordination in order to support all youth to successfully transition from public education to further education and/or the workplace in a more efficient manner.

1.2. Tracking

It is important to realize that in every public school there is a distribution of student ability levels, which most schools deal with by placing students in different learning groups, either within or across classrooms. At the high school level, these “ability groups” are known as “tracks” or “concentrations.”

This brings us back to the discussion of the purpose of education: to what end is each track meant to take students? Currently, the highest level or academic track leads students toward college. About 32 percent of U.S. high school students are in the academic track. The “general track” includes the largest group at 43 percent of students; these students take a variety of general courses and may or may not achieve high enough grades and test scores in core academic subjects to enter universities. Finally, the “vocational” track traditionally contains the remaining 25 percent of students, who are not expected to go to university (Levesque, 2003). These students take courses in labor market preparation areas and are expected to enter directly into the workforce, although increasingly the assumption is that some post-secondary education/training will be required for the more desirable jobs. Traditionally, the vocational track has had a stigma because of the low-achieving students who were generally “dumped” here, along with other students with specific learning needs or behavioral problems (“special populations”) who were deemed unfit for the general or academic tracks.

Recent data from the National Center for Education Statistics (NCES, 200) show that youth who are *at risk* of not performing well academically are over-enrolled in high school CTE. According to recent data, 70 percent of youth in schools located in poor communities take three or more CTE credits during their high school career as do 80 percent of youth with disabilities, nearly 70 percent of black and American Indian students. More than 50 percent of second language learners in high school have similar enrollment patterns.

This system is changing some as the vocational track increases the academic and technical rigor of its content. This has been accomplished by integrating more academics (e.g., mathematics, science, reading) into the traditional CTE classes and by aligning CTE curriculum more closely to industry standards and credentials into the vocational CTE track. In an attempt to communicate the different quality of current CTE vis-à-vis historic vocational education, CTE reformers of the 1990s changed the nomenclature from vocational education to “career and technical education,” or CTE.

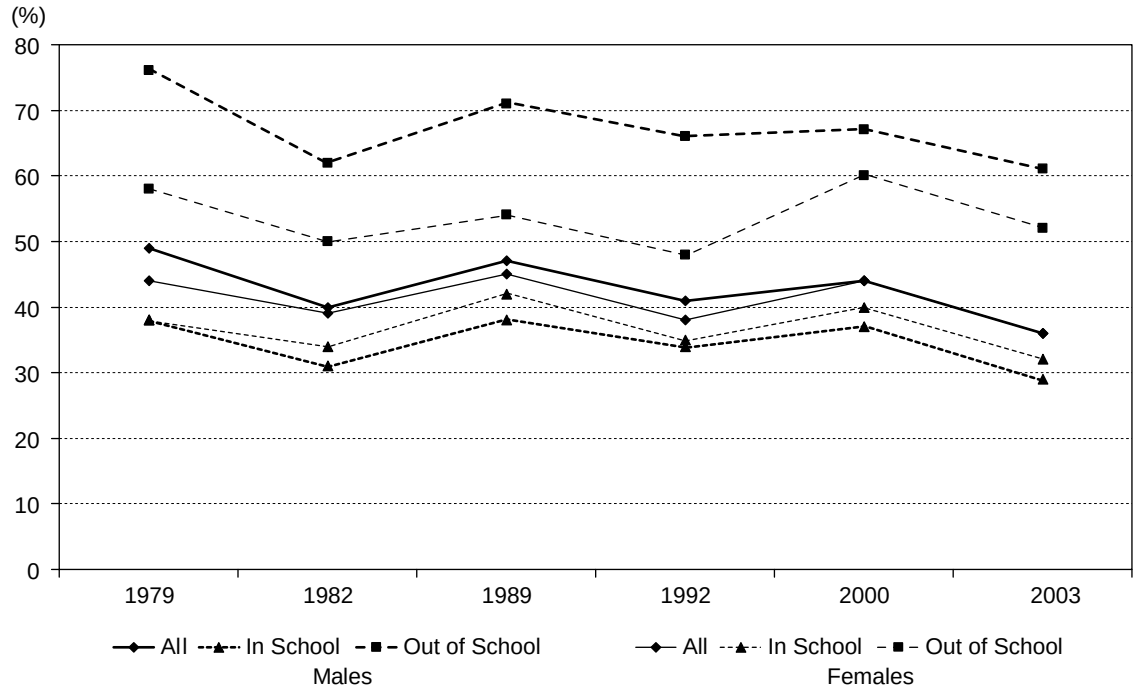
2. Youth and the Labor Market in the United States

Youth unemployment as a focus of public concern is little discussed in contemporary, national policy debates in the United States. As noted above and will be discussed in greater detail later, the prevailing assumption is that if we can get all youth "college ready", employment will take care of itself.

Despite that mindset, it is widely acknowledged that transitioning from school to work in the United States is often difficult, takes a long time, and is sometimes unsuccessful. Most young Americans start working at paid jobs while they are in high school, but these jobs are seldom connected to their studies or career aspirations. The federal government estimates that 60 percent of high school graduates go directly to college (NCES, 2004), where a large majority hold paid jobs while in college—although not directly related to their education. Also, after leaving high school, with or without a diploma, most young people spend a number of years "floundering" from one job to another, often with spells of unemployment in between. This is one of the reasons why the U.S. education system is often criticized for its failure to provide a smooth transition to the labor market (Klerman & Karoly, 1994). There is considerable debate about the effect of this floundering and some suggestions that "job hopping" is not a problem but perhaps an economic asset to the individual (see Stone & Mortimer, 1998).

Regardless, employment rates have experienced a significant decline for male youth in the 16 to 19 age group, from 49 percent in 1979 to 36 percent in 2003. The decline in employment for those youth that were out of school fell from 76 percent in 1979 to 61 percent in 2003 (Congress of the United States, 2004). Although females have followed a similar trend, it is not as severe as in the case of males (see Figure 1). As of mid-1993 the unemployment rate among 18 and 19-year-olds stood at 19 percent nationally. Among 20 to 24-year-olds it was 11 percent, compared to 5.7 percent among job seekers aged 25 to 54 (Department of Labor, 1998). High unemployment rates for young workers in 1993 were still

Figure 1. Employment Rates for 16-to 19-Year-Olds, 1979-2003



Source: Congress of the United States. Congressional Budget Office (2004).

showing the effects of the 199091 recession, but even during the relatively prosperous period from 1985 to 1989 the unemployment rate among teenagers (age 16 to 19) never fell below 15 percent. Even during tight labor markets, the unemployment rate for teenagers has fluctuated between 13 and 16 percent (U.S. Department of Labor, 1998).

Employment and unemployment are common realities for youth soon after they leave high school. The *National Longitudinal Survey of Youth* has revealed that, between the ages of 18 and 27, the average high school graduate who did not enroll in post-secondary education held nearly six different jobs and experienced between four and five spells of unemployment. While spending a total of 387 weeks employed during those years, the average graduate also spent almost 35 weeks unemployed (Veum and Weiss, 1993). Unemployment rates for young workers, especially high rates will necessarily have an effect on those youth's future careers. Evidence shows that teenagers who acquire more work experience earn higher wages in subsequent years (Meyer & Wise, 1982; Ellwood, 1982; D'Amico & Maxwell, 1990; Pergamit, 1995).

These explanations for youth unemployment stress the supply side, as opposed to the demand side, of the labor market. An alternative explanation is that employers offer too few steady jobs with career prospects to young workers. Many employers simply prefer to hire older workers leaving younger workers to mature pursuing a succession of secondary labor market jobs disconnected from any career pathway. As a result, many young people drift from one short-term job to another, quitting or being laid off, staying out of the labor market for a while or searching for work in haphazard fashion, and accepting the next job offer that comes by. Although the U.S. does not always exceed other countries in youth unemployment, the degree of job instability among young people is exceedingly high in the U.S. (Stern, Finkelstein, Stone, Latting, & Dornsife, 1995). More recently, the lack of steady, career jobs in the U.S. is affecting mature workers, too. American workers continue to flounder in the labor market longer than their counter parts in other countries. In the middle years of their working lives, fewer Americans were established in long-term jobs than their age mates elsewhere (Stern et al., 1995).

A major premise for the *School-to-Work Opportunities Act*, an important federal law passed in 1994, was the concern about adolescent labor market churning and lack of workplace learning opportunities. Early job stability was presumed to be a benefit because it leads to later payoffs in terms of economic benefits and employment stability. The evidence supporting this assumption is mixed at best. Heckman (1994) questions the argument that the unskilled "youth labor market" traps young workers who flounder for years before they settle down. Without skills (as measured by years of education), Heckman argues that any low or semi-skilled worker, of any age, faces a deteriorating labor market. Topel and Ward (1992) analyzed social security data files of white males and found that the typical young worker holds seven full-time jobs during his first ten years in the labor market. More than one-third of early wage growth is associated with job changes. This is consistent with the Murphy and Welch (1992) finding that over two-thirds of total life cycle earnings growth occurs during the first ten years of labor market experience. Topel and Ward conclude that the process of job changing among young workers, while apparently haphazard, is a critical phase in workers' movement toward long-term, stable employment. It is a key element in the vocational development process of finding a good person-job match.

Gritz and MaCurdy (1992) found low wage jobs were held for short periods of time and this churning was associated with movement to higher wage jobs. Klerman and Karoly (1994) concluded that labor market floundering in adolescence ended by the early 20s, except for high school dropouts. Thus, they suggested that there may not be much of a problem in need of a solution. Gardecki and Neumark's (1998) analysis of *NLSY* data showed no relation between early job stability and increased wages, if training (on-the-job and off-the-job) is entered into the equation. Nor is there any constant relation between early job stability and full

time employment as an adult. The exception to this finding is for those at risk of leaving school. For this sub sample, early job stability and off-the-job, non-employer provided, training are related to higher wage returns in later employment.

3. High School Reform: Three Key Foci

A large part of the national conversation about youth in the United States today is driven by the belief that a solid academic education is the best solution for all youth in terms of future employment and earnings (ACT, 2006). The National Center on Education and the Economy (NCEE, 2007) highlights this in their call for radical reform of the U.S. education system noting the impact of globalization on the U.S. economy and the challenges now posed by the rising education levels of India and China.

Within this discussion is a focus on strategies that will improve outcomes in three key areas: student engagement, student achievement and successful transition to postsecondary education and employment.

3.1. School Engagement

School engagement is defined here as successful completion of high school within the expected period, usually by 12th grade or age 18.

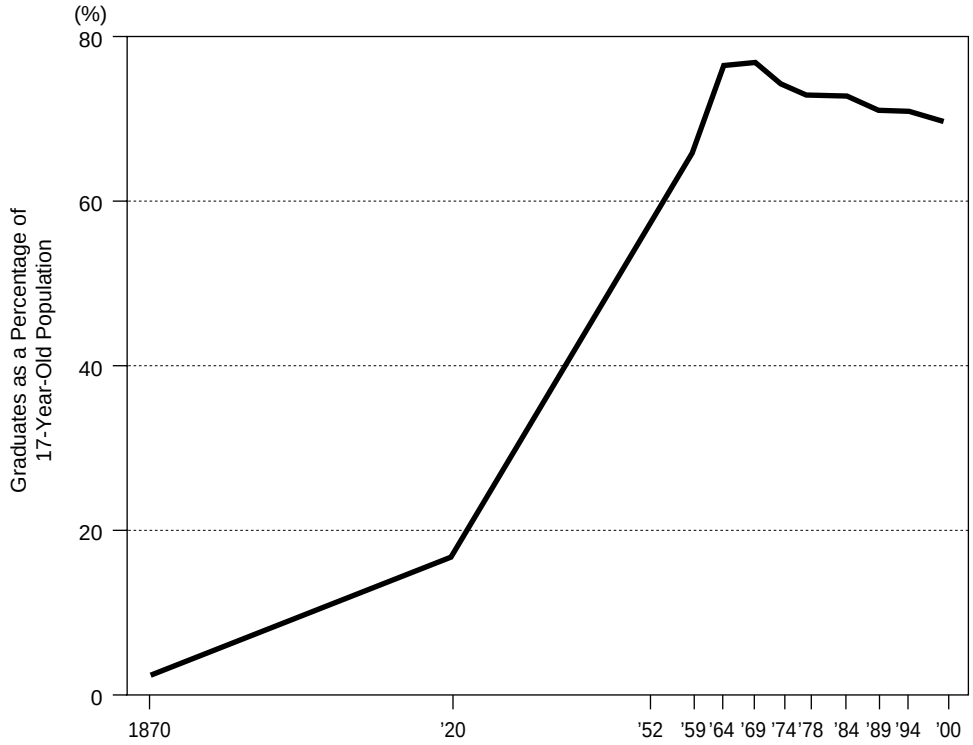
There is a large literature discussing the difficulty in defining the drop out problem as many youth, especially in urban areas, move in and out of school; move from school to school within districts and between districts and states. As well, there are different definitions of drop out or completer based on the point at which one begins to measure the problem. That is, some estimates are based on cohort analyses: how many 9th grade youth graduate in four years based on state or urban student counts of 9th graders. Others measure how many 12th graders complete that year. Although there is no nationally agreed upon system for defining the problem, many estimates abound, based either on estimates from national probability studies of schools; state or local data collected as part of accountability measures. Estimates of drop outs range from 37 percent among young men (Klerman & Karoly, 1994) to 21 percent (Rumberger & Lamb, 1998) to official figures produced by the National Center for Education Statistics (2006a) where the status dropout rate was estimated to be about 10 percent in 2004 (status dropout rate represents youth that was not enrolled in school and had not obtained a high school credential for the age group between 14 and 21). Plank (2005) documented that dropping out of high school occurs at any moment after entering 9th grade—that is, the dropout event does not appear to be associated to any particular grade or age in school.

Although dropout rates do not have an immediate equivalency with the rates for high school completion, it is also important to look at both numbers to explain the phenomenon. The status completion rate has been reported to be at 81 percent in 2003 (NCES, 2006b). Different studies place completion rates at around 70 percent, but in many cases independent reports estimate 66 percent, or 68 percent (see Figure 2). *Education Week* (March 2005) recently summarized the college transition scenario using a hypothetical group of 100 9th graders. They showed that of every 100 students who enter 9th grade, only 68 complete high school. Out of the 100, 38 start college, but only 20 complete college and are awarded a Bachelor of Arts or Bachelor of Science degree within six years or an associate degree within three years.

3.2. Student Achievement

For more than 20 years, there has been a steady criticism of the ability of public schools to improve student academic achievement beginning with a *Nation at Risk* in the early 1980s and culminating more recently with the federal legislation entitled, *No Child Left Behind*. This on-going criticism has prompted a series of school reform movements across the United

Figure 2. Graduation Rate as Percentage of 17-Year-Old Population



Source: U.S. Department of Education, National Center for Education Statistics.
Note: Graduates are of regular day school programs.

States mostly emphasizing academic achievement but occasionally including a focus on education for work.

Common to all of these recommendations is the need to increase the "rigor" of the high school experience. The default measure of rigor is the requirement for students to take more mathematics classes, more sciences classes, more foreign language and the like. The data, however, do not seem to suggest that requiring more mathematics coursework and more courses in the other areas has improved performance of students as expected. Measured math ability for 17-year-old high school students, for example, remained basically at the same level between 1990 and 2004, and the scores for 2004 were not significantly different from those in 1973 (National Assessment of Educational Progress, 2005a). Science scores declined 10 points during this same period. Because the school day and the school year is essentially a zero-sum game, one unfortunate and perhaps unintended consequence of increasing the number of required courses is the reduction of curriculum space for other kinds of coursework such as art, music, or CTE. Thus the very kinds of coursework that might engage students to stay in school and provide skills needed for workforce success are being squeezed out of the high school experience for many youth.

3.3. Student Transition

Other measures of the academic problem are college remediation rates. The NCES (200) has documented that at least 30 percent of high school graduates require some type of remediation in reading, writing or mathematics when they enrolled in postsecondary education. Some studies place that figure at over 40 percent (Rosenbaum, 2002). Twenty-two percent of them require mathematics remediation and 11 percent will require remediation in reading.

While the vast majority of high school students plan to earn a college degree, their realities can be distressingly far from their aspirations. Rosenbaum (2002) wrote that less than 42 percent of high school graduates obtain college degrees within ten years of starting college; further, for students with poor grades, only 14 percent will eventually earn any degree. For the other 86 percent of these students, he argues, college aspirations may be not only misguided, but also harmful. If these college fantasies prevent the student from preparing appropriate back-up plans, such as seeking out education and training for the world of work, then the student who fails in college is left with no resources, skills, or plans on which to fall back.

Levesque et al. (2000) reported that initial college going rates varied amongst the curriculum tracks. Ninety-three percent of college preparatory students enrolled in college within 2 years of high school graduation as did 69 percent of general track students and 55 percent of CTE students. Many other students did enroll in college later in their 20s so that we find that within 8 years of high school graduation, more than 80 percent of CTE students had enrolled in some form of postsecondary education and more than 40 percent had earned a college degree. In fact, when student characteristics are taken into account, CTE seems to have little effect on either attendance or completion of post secondary education, but vocational course taking increases the chance that a student will complete an associate's degree or a certificate program rather than a baccalaureate (Silverberg, Warner, Fong, & Goodwin, 2004).

4. The Role of High School Career and Technical Education

CTE is a major part of the American high school experience. Silverberg (2004) and her colleagues 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 be attractive to employers.

Although rooted historically in preparing young people to move directly into the workforce, CTE's purpose has evolved over the past several decades. Stone (2001) describes the current role of CTE as providing all students with education about work, education for work, or education through work. That is, CTE introduces youth to the workplace and develops generalizable workplace skills. CTE prepares youth with occupation-specific workplace skills and finally, CTE provides a context through which academic skills in math, science and reading can be enhanced. Gray (2002) sees the debate over high school CTE as a set of 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 course work in order to prepare the student 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 is to conceptualize CTE courses as arenas providing for the contextualized teaching and learning of applied academics or education through work. The last alternative Gray envisions is the elimination of CTE entirely as a sacrifice to 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.

4.1. Participation in CTE

Participation in CTE can be measured from different perspectives. They are a) the enrollment in a curriculum while in high school, b) participation in other CTE activities, or c) participation in CTE course taking. For either CTE curriculum or activities, there is also the issue of analyzing participation from a self-reporting perspective, where data are gathered through interview with students, or by identifying trends through transcript reviews. Conclusions about who is a CTE participant and thus the effects of CTE participation are a function of which methodology is employed to examine the question. Using transcript data, Tuma (1996) reported that 24.4 percent of public high school graduates were CTE concentrators in 1992. Plank (2001), using the *NELS* 88 data, calculated that 18.9 percent of 1992 graduates were CTE concentrators. Levesque and her colleagues (2000) tracked enrollments and found that CTE concentrators were almost 21 percent in 1994. The current *National Assessment of Vocational Education* (NAVE) concludes that participation has been fairly steady at about one-quarter of all high school graduates (Silverberg, 2004). Other researchers have used self-classification data in their analysis, as it is more likely to show student intent rather than student placement by counselors or others. For example, the almost 35 percent of youth who self-classified as an academic concentrator is a proportion more closely aligned with current estimates of college enrollment (see Rosenbaum, 2002) than are estimates derived from transcript analysis. This stands in contrast to Roey's estimation of more than 60% using transcript data. Similarly, we might assume that the true number of CTE concentrators is much fewer than identified through transcript analysis.

Current research (Stone & Aliaga, 2007) based on self-report data from the eight years of the *National Longitudinal Survey of Youth 1997*, a federally supported data system, indicates that students last reporting participation in CTE were 6.49 percent, compared to about 37 percent of students participating in the academic track (see Table 1).

As noted earlier, the recent NAVE report indicates that virtually all American students take at least one CTE course in high school (Silverberg et al, 2004). National data show that

Table 1. Participation in Career and Technical Education in High School: Curriculum and Activities. National Longitudinal Survey of Youth 1997 (Percentages and Population Estimates)

	Percentage	Population Estimate
CTE curriculum	6.49	1,191,216
Career Majors	30.79	5,966,750
Tech Prep	12.58	2,437,704
Cooperative Education	13.72	2,658,363
Job Shadowing	20.84	4,038,633
Mentoring	8.68	1,682,218
School-Based Enterprise	11.20	2,171,339
Internship/Apprenticeship	9.00	1,743,536

Source: Stone & Aliaga (2007a). CTE curriculum is last reported for years 1997-2004. CTE activities represent participation at any point. Students can participate in activities and the curriculum. Percentages do not add up because they come from different sources in the survey.

CTE courses or programs are currently offered in 93% of the nation's 15,200 comprehensive high schools (Lynch, 2000). While the average of CTE credits earned by students remained relatively stable recently, there has been a decline in the percentage of graduates completing a sequence of related occupational courses, or CTE concentrators dropped from 34 percent in 1982 to 26 percent in 1992. The issue of defining the CTE student or major remains at the heart of the debate over the outcomes associated with participating in CTE.

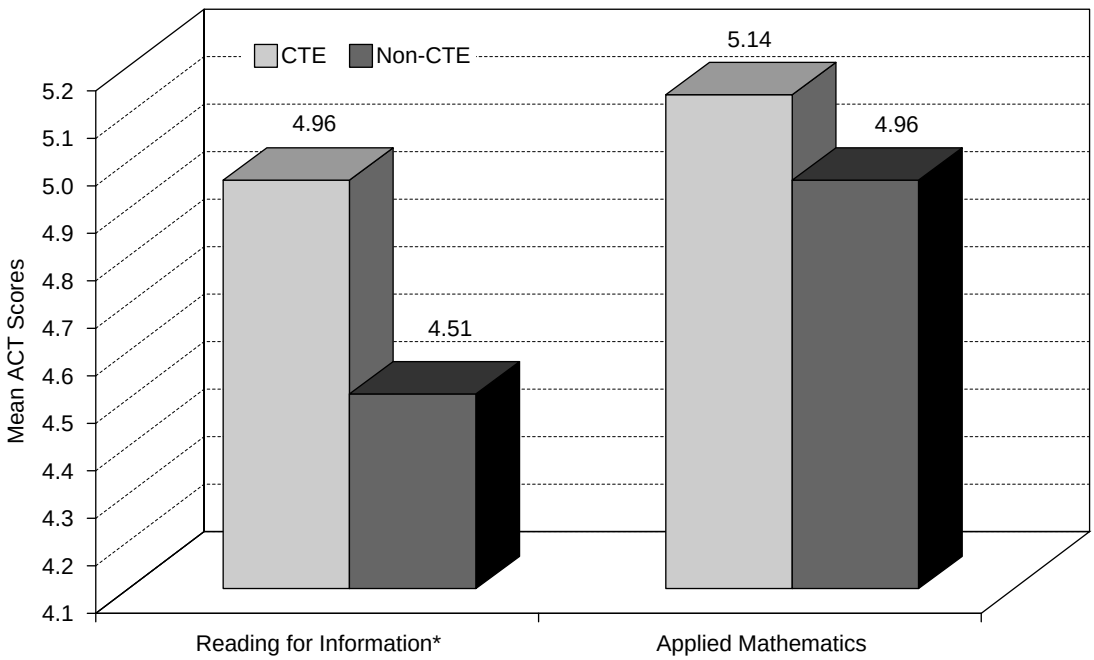
4.2. CTE and Student Outcomes

As indicated above, the relationship between CTE participation and academic achievement has long been the center of controversy. However, more recent research conducted at different levels start to show promising outcomes. Although these results are far from conclusive, they show important trends in that CTE participation is a negative influence in student's academic performance.

The data show that CTE students appear to have reversed a trend in mathematics course taking patterns: that is they take more mathematics, and more difficult mathematics (Stone & Aliaga, 2007b). In a longitudinal study conducted with 4 schools in the United States by Castellano, Stone, Stringfield, Farley, & Wayman (2004), students participating in CTE showed a better growth in achievement for both reading and mathematics than those not participating in CTE (see Figure 3). Castellano, Stringfield, Stone, & Wayman (2003) also showed CTE students exhibited better "soft" skills compared to non-CTE students (see Figure 4).

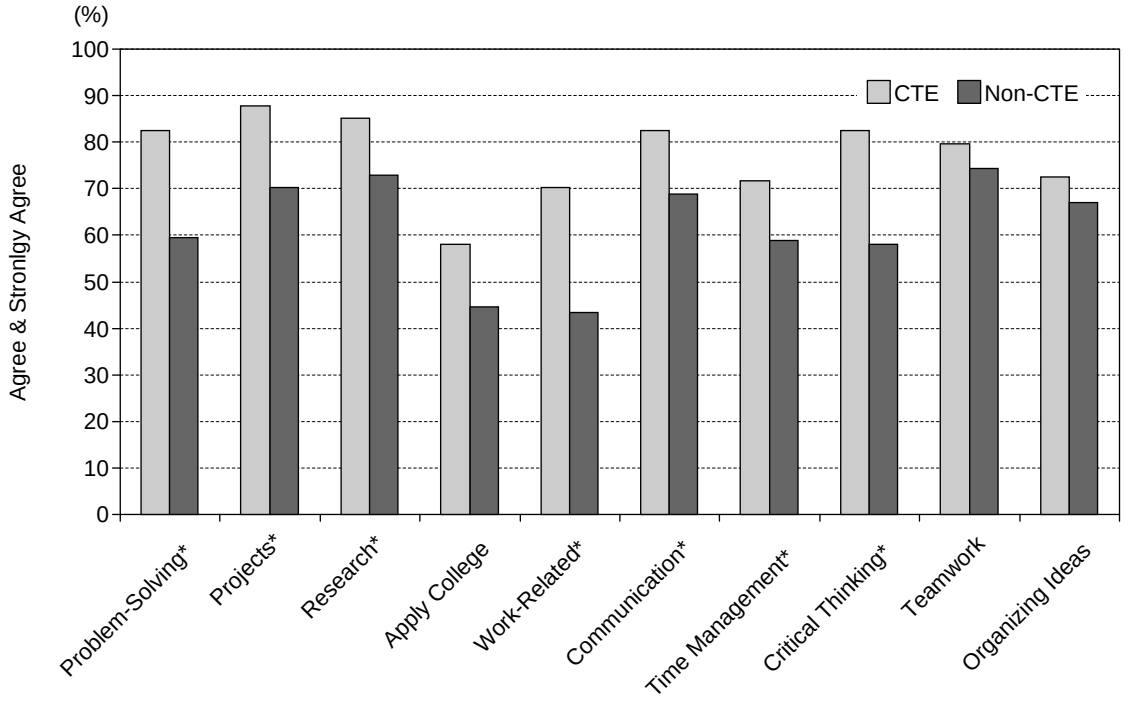
Moreover, according to the NAVE there has been an improvement in college attendance and completion rates of CTE compared to all other students (Silverberg et al, 2004), as well as with credential acquisition (Figure 5).

Figure 3. Achievement by Youth in High School Articulated Programs. ACT Scores (Means)



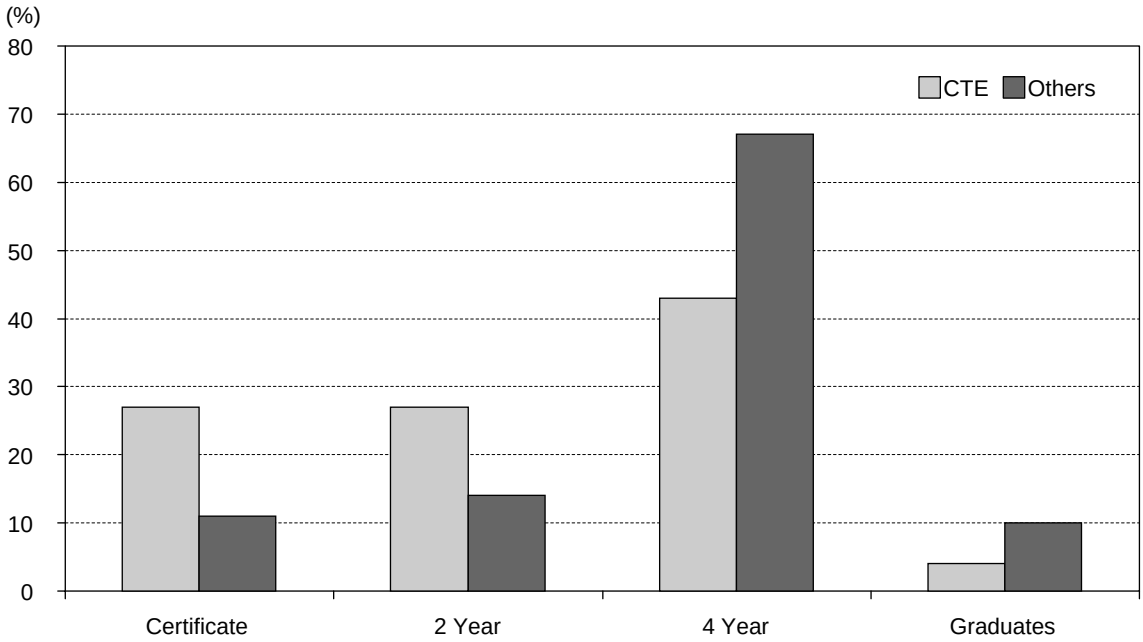
Source: Castellano, Stone, Stringfield, Farley, & Wayman (2004).

Figure 4. CTE Students and Learning the "Soft" Skills



Source: Castellano, Stringfield, Stone, & Wayman (2003).

Figure 5. CTE Students and Credential Acquisition



Source: National Assessment of Vocational Education 2004.

5. The Role and Impact of Postsecondary CTE

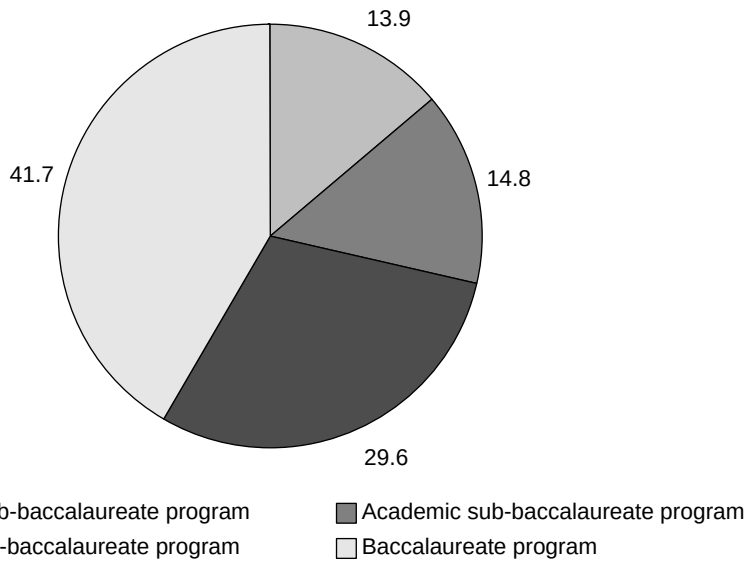
In the United States, postsecondary CTE is considered to be pre-baccalaureate education or training. Many 16 to 24 year olds avail themselves of courses and programs at their local community college—many without ever enrolling in formal programs. Postsecondary CTE includes offerings from 2-year colleges (community and technical colleges), area vocational centers, proprietary schools, adult learning centers as well as professional associations or labor unions, government agencies and the like. According to recent estimates, over 40 percent of the 'for credit' courses are taken at the two-year community colleges in the United States (Silverberg et al, 2004), while another 20 percent that are taken at proprietary 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. Four kinds of degrees or credentials are offered: an associate of arts (AA) that is assumed to be a university transfer degree; an associate of science (AS) degree that is a blend of transfer and occupational credits; and the associate of applied arts (AAS) degree that is heavily vocational in its content. In addition to these three degrees, students often opt for a credential that may require from six to eighteen months to complete (e.g. welding, carpentry). Bailey, Leinbach, Scott, Alfonso, Kienzl, & Kennedy (2004) found that 29 percent of all students enrolled in postsecondary education in 2000 were students in a vocational sub-baccalaureate program (see Figure 6). They also found that 64.5 percent of those students in 2000 earned an Associate of Arts degree, whereas 33.3 percent earned only a certificate.

A study conducted in the 1990s examining the effect of occupational course participation in community colleges found there were significant labor market payoffs (Grubb, 1996). The report noted that:

- Both certificates and Associate degrees increase the earnings of those who receive them—but 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.

Figure 6. Distribution of Postsecondary Students, by Program, 2000



Source: Bailey, Leinbach, Scott, Alfonso, Kienzl, & Kennedy (2004).

- 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 by 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 that placement in a related occupation is crucial.

While 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).

6. The Role and Impact of Government Programs

At the federal or national level, the U.S. Department of Labor provides some support for low achieving youth. The Job Corps is a no-cost education and vocational training program administered by the U.S. Department of Labor since 1964 that focuses on out of school, low income youth aged 16 through 24. More than 70 percent of enrollees are minorities. Job Corps participants enroll to learn a trade but are also supported in earning a high school equivalency diploma or GED and get help finding employment. Enrollees are paid a monthly allowance with increases based on tenure. Job Corps provides career counseling and transition support to its students for up to 12 months after they graduate from the program. A recent study by the independent research firm, Mathematica Policy Research Inc. (2002) found that Job Corps participants:

- Significantly improved literacy skills
- Had significantly higher earnings two years after completing the program
- Reduced the receipt of cash welfare
- Reduced the incidence of criminal arrests
- Produced a $2 return on every $1 invested in the program

Other 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 (http://www.dol.gov/odep). Aside from data on the number of businesses seeking information, there are no studies detailing the impact of this program.

Grubb (1996) found that the vast array of government-sponsored job training programs do not increase earnings substantially. In this analysis, he did not distinguish between youth and adult students but his analysis included youth. He suggested that one explanation is that these programs target and enroll individuals with substantial barriers to employment—low skill levels, a lack of motivation or initiative, drug and alcohol abuse problems, physical disabilities—not otherwise described by this data but apparent to employers.

7. Why the Emphasis on University Degrees

As discussed earlier, the U.S. education system is increasingly emphasizing “college for all” regardless of academic ability or labor market demand (see Rosenbaum, 2002). One line

of logic for this is the presumption of the declining competitiveness of the U.S. labor force in a global market place. Another explanation is that the college degree has become a proxy for employability or work readiness by U.S. employers (Stone & Alfeld, 2006). Absent a national system of industry credentials and a widespread belief that the high school diploma no longer signifies meaningful achievement, employers rely instead on the acquisition of formal credentials beyond high school. Barton (2005) notes that employers do not like to hire workers until they are well into their 20s, irrespective of how well they do in high school.

In general, the idea of a university degree for all persists and recent national data indicate that there have been increases in enrollments and in 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 percent to 67 percent. About half of White high school completers immediately enrolled in college 1972, and 69 percent had done so by 2004. For Black students the rate was stable between 1972 and 1977, but then decreased until 1983, widening the Black-White gap. Thereafter, the rate for Black graduates increased through 2004, narrowing the gap between the two groups. The annual rate has fluctuated over time for Hispanics, resulting in a nearly flat trend between 1972 and 2002, before increasing to 62 percent by 2004. The Hispanic-White gap widened between 1979 and 1997 (NCES).

While more high school completers are entering college, the ramification of these increases is still unclear. For example, several studies have documented the relatively low success rate of college enrollees. Rosenbaum (2002) found that 42 percent of high school graduates in the country complete and graduate from college, and that only 14 percent of low achievement students will obtain college degrees within ten years of leaving high school. Other studies put the success rate much lower, less than 20 percent completing a four year degree within six years (NCPP, 2004). Regardless, these degrees are coming at increased costs to students and their families. The Public Interest Research Group found that more than two-thirds of college graduates leave with debt (up from just less than one-third ten years earlier) and between 23 percent and 55 percent of new graduates leave with loans described as unmanageable debt (Swarthout, 2006).

This is, in part, a function of the labor market into which college graduates are moving. Researchers have observed that a proportion of university-degree holders take high-school jobs, and about 40 percent of graduates earning a Bachelor of Arts degree in 1984 and 1986 thought a university degree was not needed to obtain the job they held a year after graduation (Pryor & Schaffer, 1997; Rosenbaum, 2002). What appears to be clear is that some university-educated workers are engaged in downward occupational mobility, that is, they are taking jobs for which a university degree is not demanded.

Recent projections from the U.S. Department of Labor suggest a bifurcation of the labor market with roughly equal growth in professional and service jobs representing opposite ends of both education requirements and earnings. Yet when specific occupations projected to add the most jobs in the next decade are examined the list is comprised of health, service, sales and office support. Of the “top 30” occupations of the future only 8 require formal post-high school education the rest require no more than on-the-job training (Hecker, 2005). Table 2 illustrates this phenomenon. Summarized another way, by 2014 about 46 percent of the available jobs will require high school with another 29 percent that will require some college (Table 3). Occupations requiring college will represent about 26 percent of available employment. Adelman (cited in the Chronicle of Higher Education, 2006) reported that 28 percent of adults reported earning a baccalaureate degree and another 7 percent reported earning an associates degree. These data suggest a certain kind of balance in labor market demand for education credentials and the available supply.

Table 2. The 10 Fastest Growing Occupations, 2004-2014

Occupation	2014 (thousands)	Percentage of Change 2004-2014	Education Required
Home health aides	974	56	Short-term OJT
Network systems and data communication analysts	357	55	Bachelor's degree
Medical assistants	589	52	Moderate OJT
Physician assistants	93	50	Bachelor's degree
Computer software engineers, applications	682	48	Bachelor's degree
Physical therapist assistants	85	44	Associate degree
Dental hygienists	226	43	Associate degree
Computer software engineers, systems software	486	43	Bachelor's degree
Dental assistants	382	43	Moderate OJT
Personal and home care aides	988	41	Short-term OJT

Source: Bureau of Labor Statistics, 2006. *http://www.bls.gov/oes/home.htm.*

Table 3. Jobs and Education: What is Required

Most Significant Source of Education and Training	Total Jobs 2014 (thousands)	Total Job Change 2004-2014 (thousands)	Percentage of Total Jobs Change 2004-2014	Percentage of Total Jobs 2014
First professional degree	2,202	356	1.9	1.3
Doctoral degree	2,535	594	3.1	1.5
Master's degree	2,552	407	2.2	1.6
Bachelor's or higher +	7,582	1,081	5.7	4.6
Bachelor's degree	20,378	3,335	17.6	12.4
Associate degree	6,770	1,361	7.2	4.1
PS vocational award	9,316	1,398	7.4	5.7
Work related occupation	12,119	1,061	5.6	7.4
Long-term OJT	11,980	954	5.0	7.3
Moderate-term OJT	31,421	2,464	13.0	19.1
Short-term OJT	57,699	5,916	31.3	35.1
Total	*164,554*	*18,927*	*100.0*	*100.0*

Source: Bureau of Labor Statistics, 2006. *http://www.bls.gov/oes/home.htm.*

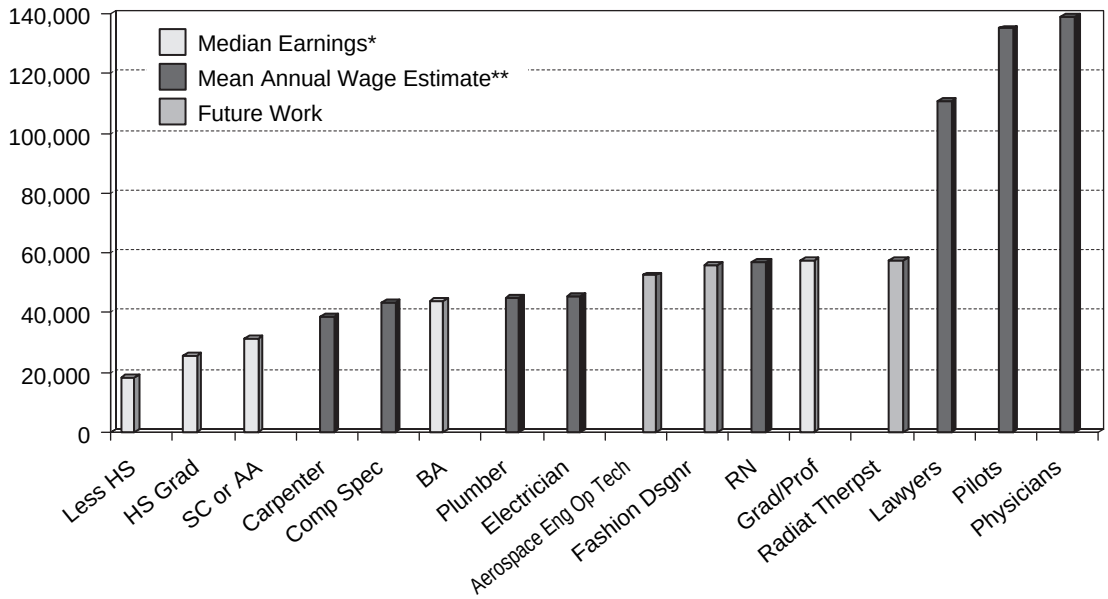
8. The Emerging Workplace and CTE

As one examines trends in the labor market, 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 CTE programs and postsecondary CTE programs both for the degree and certificate programs. This discussion also assumes the young, skilled applicant can get past the natural employer preference for older workers.

Stone & Alfeld (2006) discussed the new basic skills identified as necessary for success in the workplace of the 21st 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 such as word processing. Many of these skills are non-academic and can be developed in CTE and other forms of educational experience. Other reports (Barton, 2005; Mathematica Policy Research Inc., 2002) conclude 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 are often lacking in many out of school and disadvantaged youth; yet are the kinds of skills that are the focus of quality high school CTE programs.

Given the relative decline in value of the baccalaureate degree in the labor market, it is useful to consider what other, non-baccalaureate occupations provide wages and benefits associated with a middle class life style. A partial list would include air traffic controller, trades and construction occupations, radiation therapist, fire fighter, elevator installer, dental hygienist, truck driver, auto technician, and registered nurse (Goldberger, Lessell, & Biswas, 2005). These and others occupations (see Figure 7) appeal to many who are not enamored of traditional schooling and are the focus of secondary and postsecondary CTE programs.

Figure 7. Earnings and Wages



* Past 12 months, in 2005 inflation-adjusted dollars.
Source: U.S. Census Bureau.
** May 2005 estimates.
Source: Bureau of Labor Statistics; *http://www.bls.gov/oes/current/oes_nat.htm.*

9. One Solution: Enhancing CTE to Ensure Access to Quality Jobs for Low Ability Youth

Quality CTE programs include three kinds of activities: classroom instruction, work-based learning, and related student organizations. Each represents an opportunity to engage youth to make learning more interesting and keep them in school, each represents an opportunity to improve the academic and technical skills of youth, and each represents an opportunity to motivate youth to continue education and training beyond high school. Stern and his colleagues reported on characteristics associated with quality school to work programs (Stern, et al, 1995). Some of these characteristics are classroom based, others are part of the work based learning experiences, and still others are focused on ensuring successful transition to continued education beyond high school (Table 4).

9.1. Classroom Learning

Since the late 1980s, there has been an effort to use the CTE classroom as a context to improve the academic skills of participants. This approach has the potential to improve students' learning in academic subjects by placing that learning in a practical context that gives concrete meaning to theories and abstract information (Stern et al, 1995). At the same time, it can deepen the intellectual content of vocational subjects. This effort is important for two reasons. First, the students who populate CTE classrooms bring with them characteristics associated with lower academic ability. Second, the federal legislation supporting CTE mandates it. Recently, the National Research Center for Career and Technical Education (NRCCTE) completed a large scale, experimental study of a pedagogic model of curriculum integration (Stone, Alfeld, Pearson, Lewis, & Jensen, 2005, 2006). In this study, students in the experimental classes significantly increased their scores on mathematics tests compared to students in the traditional CTE classes thus demonstrating the viability of building academic skills along with technical skills.

9.2. Work Based Learning

Using the workplace to enhance youth transition to the meaningful employment may seem plainly obvious. Yet despite the fact that the vast majority of youth in the United States work while in high school and many of them work more than 20 hours per week, very little of that employment is connected to any school based learning (Stone & Mortimer, 1998).

Work based learning takes many forms in the United States. The one most associated with high school CTE is "Coop" often called internship. Apprenticeships, common in many European countries are quite rare for in-school youth. Less intensive workbased learning like job-shadowing involve many more students (see Table 1). Evidence of the impact or effect of participation in any of the forms of work based learning is modest and mixed (Stern et al, 1995). More recent analyses by Neumark and Rothstein (2007) find some benefit of workbased learning, linked to school programs especially for males.

Swail and Kampits (2004) documented an unusual effect of high school work based learning on college achievement. In this study, they found that students who participated in high school work based learning or community service had higher grade point averages than students who did not. This evidence supports what many have argued that working outside of school can enhance youth development in ways traditional classroom learning cannot (Stone & Mortimer, 1998). One measure of this is in academic achievement in the university.

9.3. Transition to Education and Work

Increasingly, the emphasis of the public education system is moving youth to formal postsecondary education. However, secondary CTE programs are held accountable for the workplace success of their graduates as are postsecondary CTE programs. A number of

Table 4. Approximate Relative Frequency of Features in School-to-Work Programs

Program Feature	Co-Op	School-Based Enterprise	Tech Prep	School-to-Appren-ticeship	Youth Appren-ticeship	Career Academies
Structured work- based learning while in school	A	U	R	S	A	R
School curriculum builds on work experience	U	S	R	R	U	S
Work experience is paid	A	R	R	U	A	U
Employers provide financial support	A	R	R	U	A	U
Program arranges student work placement	U	A	R	U	U	U
Employer involvement in curriculum design	S	S	U	S	U	A
Integrated vocational and academic curriculum	R	S	U	S	U	A
Formal link to postsecondary education	R	R	A	S	U	S
Employment/ college counseling	S	R	U	S	S	S
Pre- 11th grade academic preparation	S	R	S	R	R	U
Pre- 11th grade career exploration	U	R	S	R	U	U
Targets at-risk or non-college bound students	U	S	R	S	S	S
Students have mentors from outside school	S	R	R	S	U	U
Occupational certification	R	R	S	A	A	R

(A = always, U = usually, S = sometimes, R = rarely)

strategies have been employed to increase the college going rate of CTE students, most notably Tech Prep (Bragg et al, 2002). Evidence of how CTE participation affects college going is somewhat mixed but the most recent federal government report (Silverberg et al, 2004) suggests that CTE students attend college at a lower rate than other students but over time the difference declines. CTE students are more likely to attend two-year colleges than universities. To an extent this is reasonable given the vocational focus of programs available at two-year colleges.

The economic benefit of high school CTE has been examined often over the years. Bishop and Mane found that those who devoted about one-sixth of their time in high school to occupation-specific vocational courses earned at least 12 percent extra one year after graduating and about 8 percent extra seven years later (holding attitudes and ability in 8th grade, family background and college attendance constant). This was true both for students who did and did not pursue post-secondary education. More recently Hollenbeck Huang (2006) found a positive return on the investment the high school CTE student and to the state.

10. Conclusion

We began this paper by noting that the United States is not one system of education but rather 50 systems, each state designing and largely funding its own approach. Within many of these states, local school districts may operate with near independence. While such diversity of education approaches is often applauded, it makes addressing transcendent issues such as this difficult; it makes finding and implementing solutions even more difficult. As well, we have documented the growing reluctance of employers to hire youth with only a high school diploma regardless of well they performed in high school, preferring older workers instead.

The question of youth transition to work, low skilled or otherwise, is not a major policy focus in the United States except on the margins. The current political climate is such that all youth are expected to move through high school and into postsecondary education. The problem of preparing youth, low achieving and others, for success in the workplace is thus the domain of higher education.

The reality of course does not match up with the rhetoric. Nearly one-third of youth drop out of high school and the majority of those who do graduate and attempt college, do not succeed. Most community colleges in the United States are open entry allowing individuals, regardless of academic ability, to enroll. Most public universities, while not open entry, often are not very selective either. Thus youth who are inadequately prepared academically, none-the-less attempt college and fewer than half ever complete.

The United States does not have a well developed second chance system for either the high school or college drop out. The individual is left alone to muddle through with limited, systematic help from the national government. Individual states vary in the quality and availability of supportive programs.

The public education system cannot create jobs, that is a function of the economic system and related macro-economic policy. The public education system cannot easily transform employers' opinions about youthful workers. There is not the national will to create a national, second chance system to address the needs of disengaged, out of school, and low achieving youth.

This reality argues for one thing the public education system and related government policy can do: improve the availability and quality of high school CTE—a first chance system. Using students' natural interest in the world around them as a tool to first engage them in learning; then using that interest to improve the academic skills necessary to succeed as an adult; and finally to link youth employment to in-school programs is a necessary first strategy to improving the school to adult transition of youth.

References

ACT (2006). *Ready for college and ready for work: Same or different*. Iowa City, IA: author. (http://www.act.org/path/policy/pdf/ReadinessBrief.pdf)

Bailey, T., Leinbach, T., Scott, M., Alfonso, M., Kienzl, G., & Kennedy, B. (2004, August). *The characteristics of occupational students in postsecondary education.* (CCRC Brief). New York: Columbia University. Teachers College.

Barton, P. (2005). *One-third of a nation: Rising dropout rates and declining opportunities*. (Policy Information Report). Princeton, NJ: Educational Testing Services.

Bishop, J. & Mane, F. (2004). "The impacts of career-technical education on high school labor market success." *Economics of Education Review,* 23: 381-402.

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure.* New York: John Wiley & Sons.

Bragg, D. D., Loeb, J. W., Gong, Y., Deng, C.-P., Yoo, J.-s., & Hill, J. L. (2002). *Transition from high school to college and work for tech prep participants in eight selected consortia.* St. Paul, MN: National Research Center for Career and Technical Education.

Bryant, A. N. (2001) The economic outcomes of community college attendance. Los Angeles: ERIC Clearinghouse for Community Colleges (ED467981)

Castellano, M., Stone, J. R., III, Stringfield, S., Farley, E. N., & Wayman, J. C. (2004). *The effect of CTE-enhanced whole-school reform on student course taking and performance in English and science.* St. Paul, MN: National Research Center for Career and Technical Education.

Castellano, M., Stringfield, S., Stone, J. R., III, & Wayman, J. C. (2003). *Early measures of student progress in schools with CTE-enhanced whole-school reform: Math course taking patterns and student progress to graduation*. St. Paul, MN: National Research Center for Career and Technical Education.

Chronicle of Higher Education (2006, April 10). *Government analyst deplores shoddy statistics and claims about higher education.* Washington, DC.

Cohen, M. & Besharov, D. J. (2002). *The role of career and technical education: Implications for the federal government.* U.S. Department of Education, Office of Vocational and Adult Education, ED-99-CO-0160.

Congress of the United States. Congressional Budget Office (2004). *What is happening to youth employment rates?* Washington, DC: Author.

D'Amico, R., & Maxwell, N. (1990). *Black-white employment differences during the school-to-work transition: An explanation for between and within-race differences,* Palo Alto, CA: SRI International.

Ellwood, D. (1982). "Teenage unemployment: Permanent scars or temporary blemishes?" In R. B. Freeman & D. A. Wise (Eds.), *The Youth Labor Market Problem,* Chicago: The University of Chicago Press.

Fine, M. (1991). *Framing dropouts: Notes on the politics of an urban high school.* Albany: State University of New York Press.

Gardecki, R., & Neumark, D. (1998). "Order from chaos? The effects of early labor market experiences on adult labor market outcomes," *Industrial and Labor Relations Review, 51* (2), 299-322.

Gardner, D. P. (1983). *A Nation at Risk: The Imperative for Educational Reform. An Open Letter to the American People. A Report to the Nation and the Secretary of Education.* Washington D. C.: Department of Education.

Gray, K. (2002). "The role of career and technical education in the American high school: A student centered analysis," U.S. Department of Education, Office of Vocational and Adult Education, ED-99-CO-0160.

Gritz, R. M. & MaCurdy, T. (1992). *Participation in low-wage labor markets by young men.* Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics. (Report: NLS 93-16).

Goldberger, S., Lessell, N. & Biswas, R. R. (2005) *The right jobs: Identifying career advancement opportunities for low-skilled workers.* Boston: Jobs for the Future.

Grubb, N. (1996). *The returns to education and training in the sub-baccalaureate labor market: Evidence*

from the survey of income and program participation 1984-1990. Saint Paul, MN: The National Center for Research in Career and Technical Education (MDS-765).

Hauser R., & Sewell, W. H. (1984). *Family effects in simple models of education, occupational status and earnings: Findings from the Wisconsin and Kalamazoo studies.* CDE Working Paper 84-29. Madison, WI: University of Wisconsin. Center for Demography and Ecology.

Hecker, D. E. (2005). *Occupational employment projections to 2014.* United States Department of Labor, Bureau of Labor Market Statistics. Retrieved August 22, 2006 from http://www.bls.gov/opub/mlr/2005/11/art5full.pdf)

Heckman, J. J. (1994). "Is job training oversold." *The Public Interest*, May, 91-115.

Hollenbeck, K. M. & Huang, W. J. (2006). *Net impact and benefit-cost estimates of the workforce development system in Washington state.* Kalamazoo, MI: Upjohn Institute. Technical Report No. TR06-020.

Klerman, J. A., & Karoly, L. A. (1994). "Young men and the transition to stable employment," *Monthly Labor Review, 117*, 31-48.

Levesque, K. (2003). Trends in high school vocational/technical course-taking: 1982-1998. Washington, DC: National Center for Education Statistics.

Levesque, K. A., Lauren, D., Teitelbaum, P., Alt, M., Librera, S., & Nelson, D. (2000). *Vocational education in the United States: toward the year 2000.* Washington, D.C.: U.S. Department of Education, National Center for Education Statistics.

Lewis, M. V. (2000). "Vocational education and the dilemma of education." *Journal of Vocational Education Research, 25*, 575-84.

Lynch, R.L. (2000). "High school career and technical education for the first decade of the 21st century." *Journal of Vocational Education Research, 25*, 155-198.

Mathematica Policy Research Inc. (2002). *Job Corps: An education and training program for disadvantaged youth that works.* Princeton, NJ.

Meyer, R. H. & Wise, D. A. (1982). "High school preparation and early labor force experience." In R. B. Freeman & D. A. Wise, *The Youth Labor Market Problem: Its Nature, Causes and Consequences.* Chicago: University of Chicago Press.

Murphy, K., & Welch, F. (1992). "The structure of wages." *Quarterly Journal of Economics*, 57, 285-326.

National Assessment of Educational Progress (2005a). *The Nation's Report Card Mathematics 2005.* Washington, DC: National Center for Education Statistics.

National Assessment of Educational Progress (2005b). *The Nation's Report Card Reading 2005.* Washington, DC: National Center for Education Statistics.

National Center on Education and the Economy (2007). *Tough choices; tough times.* New York: John Wiley & Sons, Inc.

National Center for Education Statistics [NCES] (2004). *The condition of education 2004. Indicator 18: Remediation and degree completion.* Author.

National Center for Education Statistics [NCES] (2006a). *The condition of education 2006. In brief.* Washington, DC: Author.

National Center for Education Statistics [NCES] (2006b). *Dropout rates in the United States: 2002 and 2003.* Washington, DC: Author.

National Center for Public Policy and Higher Education [NCPP] (2004). *Measuring up.* San Jose, CA: Author.

Neumark, D. & Rothstein, D. (2007). *"Do School to work programs help the 'forgotten half?'"* In D. Neumark (Ed.), *Improving school-to-work transitions.* New York: Russell Sage.

Oakes, J., Gamaron, A., & Page, R. N. (1992). "Curriculum differentiation: Opportunities, outcomes, and meanings." In P. W. Jackson (Ed.), *Handbook of research on curriculum* (pp. 570-608). New York: McMillan.

Orfield, G. (Ed.). (2004). *Dropouts in America: Confronting the graduation rate crisis.* Cambridge, MA: Harvard Education Publishing Group.

Pergamit, M. R. (1995). *Assessing school to work transitions in the United States.* Discussion paper.

Washington, DC: U.S. Bureau of Labor Statistics, (Report: NLS 96-32).

Plank, S. (2001). *Career and technical education in the balance: An analysis of high school persistence, academic achievement, and postsecondary destinations.* St. Paul, MN: National Research Center for Career and Technical Education.

Plank, S., DeLuca, S., & Estacion, A. (2005). *Dropping out of high school and the place of career and technical education: A survival analysis of surviving high school.* Saint Paul, MN: National Research Center for Career and Technical Education.

Pryor, F. L., & Schaffer, D. (1997). "Wages and the university educated: A paradox resolved." *Monthly Labor Review,* July, 3-14.

Roey, S., Caldwell, N., Rust, K., Blumstein, E., Krenzke, T., Legum, S., Kuhn, J., Waksberg, M., & Haynes, J. (2001). *The 1998 high school transcript study tabulations: Comparative data on credits earned and demographics for 1998, 1994, 1990, 1987, and 1982 high school graduates.* Washington, DC: National Center for Education Statistics.

Rosenbaum, J. E. (2002). *Beyond empty promises: Policies to improve transitions into college and jobs.* U.S. Department of Education, Office of Vocational and Adult Education, ED-99-CO-0160.

Rumberger, R. W., & Lamb, S. P. (1998). "The early employment and further education experiences of high school dropouts: A comparative study of the United States and Australia." Paper prepared for the Organisation for Economic Co-operation and Development.

Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). *National Assessment of Vocational Education: Final report to Congress.* Washington, D.C.: U.S. Department of Education.

Stern, D., Finkelstein, N., Stone, J. R., III, Latting, J., and Dornsife, C. (1995). *School to work: Research on programs in the United States.* Washington, DC: Taylor and Francis/Falmer Press.

Stone, J. R. III (2001) *What do we know about career and technical education preliminary findings from 2000 & 2001 NRCCTE projects: A briefing paper.* National CTE Leadership Conference, November 2001. Washington, D.C.: The U.S. Department of Education/Office of Vocational and Adult Education

Stone, J. R., III & Alfeld, C. (2006). "The neglected majority-revisited," *Journal of Career and Technical Education,* 21, 61-74.

Stone, J. R., III, Alfeld, C., Pearson, D., Lewis, M. V., & Jensen, S. (2005; 2006). *Building academic skills in context: Testing the value of enhanced math learning in career and technical education.* St. Paul, MN: National Research Center for Career and Technical Education.

Stone, J. R., III, & Aliaga, O. A. (2003). *Career and technical education, career pathways, and work-based learning: Changes in participation 1997-1999.* St. Paul, MN: National Research Center for Career and Technical Education.

Stone, J. R., III, & Aliaga, O. A. (2007a). *Re-defining career and technical education participation.* Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.

Stone, J. R., III, & Aliaga, O. A. (2007b). "Participation in career and technical education and school-to-work in American high schools." In D. Neumark (Ed.), *Improving school-to-work transitions* (pp. 59-86). New York: Russell Sage.

Stone, J. R., III, & Mortimer, J.T. (1998). "The effect of adolescent employment on vocational development: Public and educational policy implications," *Journal of Vocational Behavior,* 53, 184-214.

Swail, W S., & Kampits, E. (2004). *Work-based learning and higher education: A research perspective.* Washington, DC: Educational Policy Institute, Inc.

Swanson, C. B. (2004). *Graduation rates: Real kids, real numbers.* Washington, DC: The Urban Institute.

Swarthout, L. (2006). *Paying back, not giving back: Student debt's negative impact on public service career opportunities.* Boston: The U.S. Public Interest Research Group.

Topel, R. H., & Ward, M. P. (1992). "Job mobility and the careers of young men," *Quarterly Journal of Economics,* May, 439-479.

Tuma, J. (1996). *Trends in participation in secondary vocational education: 1982-1992.* Washington, DC: National Center for Education Statistics.

U.S. Department of Labor (1994). *Occupational Outlook Quarterly.* Washington, DC: Author, Bureau of

Labor Statistics.
U.S. Department of Labor, (1998). Selected unemployment Indicators: Seasonally adjusted, Table A-5. http://stats.bls.gov.
Veum, J. R., & Weiss, A. B. (1993). “Education and the work histories young adults,” *Monthly Labor Review,* April, 11-20.