THE ASSOCIATION FOR CAREER AND TECHNICAL EDUCATION

REINVENTING

THE AMERICAN HIGH SCHOOL FOR THE 21ST CENTURY

A POSITION PAPER

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THE AMERICAN HIGH SCHOOL FOR THE 21ST CENTURY

Strengthening a New Vision for
the American High School
through the Experiences and Resources
of Career and Technical Education

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EXECUTIVE SUMMARY

The Association for Career and Technical Education (ACTE), on behalf of career and technical education (CTE) professionals in the United States, advocates for clearly focusing American high schools on the goal of preparing EVERY student for full participation in a spectrum of college opportunities, meaningful work, career advancement, and active citizenship. We call upon leaders to make needed changes in school culture, instructional strategies and organizational priorities that will support this new purpose.

CTE is a major enterprise within the United States' P-16 education system. More than 95 percent of high school students take at least one CTE course during their high school career, and about one third of high school students take a concentration of three or more related CTE courses before they graduate. In addition to CTE courses offered within most of the nation's more than 16,000 typical high schools, there are approximately 1,000 regional career technology centers that offer more targeted and technology-intensive CTE programs preparing students, both young people and adults, for further education, and in some cases, for direct entry into the workforce. Further, a large number of high school reform strategies and new small schools employ interest-based programs, including CTE, as a way to increase student motivation and engagement.

Given the magnitude of the CTE enterprise, it is vital that CTE educators and leaders participate in the important discussion about how to redesign American high schools for the needs of the 21st century and bring CTE's resources and areas of expertise to that discussion.

In our discussions about high school redesign, we suggest a number of strengths and resources CTE can bring to the table for overall high school improvement. To provide clarity for the role of CTE, we suggest a three-fold purpose of career and technical education at the secondary school level. CTE should:

- **Support students in the acquisition of rigorous core knowledge, skills, habits and attitudes** needed for success in postsecondary education and the high-skilled workplace;
- **Engage students in specific career-related learning experiences that equip them to make well-informed decisions** about further education and training and employment opportunities; and,
- **Prepare students who may choose to enter the workforce directly after high school** with levels of skill and knowledge in a particular career area that will be valued in the marketplace.

In light of the current and future challenges facing our youth, the members of ACTE believe a new working model for high school is long overdue. We make the following recommendations to help guide the reinvention of the American high school:

RECOMMENDATION 1.
Establish a Clear System Goal of Career and College Readiness for All Students

All students need a strong arsenal of reading, comprehension, reasoning, problem-solving and personal skills to be ready for the world of meaningful postsecondary education and training as well as entry into the high-skilled workplace. Standards should be aligned to the demands of career and college readiness, and all students should be challenged to enroll in a rigorous college and career readiness curriculum. Extra help, including structured transition services, should be provided to support this curriculum, and opportunities for additional advancement across broad areas should be provided. Traditional academic and CTE teachers must share the goal of preparing students for both further education and careers.

RECOMMENDATION 2.
Create a Positive School Culture that Stresses Personalization in Planning and Decision-making

At a minimum, every student should be led through a process of academic and career awareness, exploration, and planning. This should include learning about the economy and career options, self-assessment for areas of interest; deeper exploration of how personal interests relate to career opportunities and gaining education and career decision-making skills; and knowledge and understanding of local, state, and national educational, occupational, and labor market opportunities, needs, and trends. Policies must be in place to ensure that ca-

reer development and postsecondary planning are core activities within the high school as part of a comprehensive guidance program. Each student, and his or her parents/guardians, should develop an individualized plan for graduation and beyond that will guide the high school experience.

RECOMMENDATION 3.
Create a Positive School Culture that Stresses Personalization in Relationships

Schools remain one of the best opportunities for connecting youth and adults in positive ways, giving students the sense that they are valued and cared for, and reinforcing the message that whether they succeed or fail actually matters to someone. A system goal must be to help every youth become involved in structured activity that strengthens positive relationships with peers and adults and encourages the student's sense of confidence and belonging in school. These activities could include advisory periods, smaller learning communities, co-curricular interest-based activities—such as career and technical student organizations (CTSOs)—or other activities that provide a positive adult relationship.

RECOMMENDATION 4.
Dramatically Improve How and Where Academic Content is Taught

Teachers and researchers must work together to identify strategies that show promise for helping all students attain proficiency in high-level courses. As each state refines and clarifies its standards for career and college readiness, it should recognize that "academic" skills can be acquired in a variety of settings, not just the traditional academic classroom. The achievement problem is not just one of low-level course-taking; it is also related to unfocused curriculum and instructional methods that are not reaching all students. Integration of academic competencies into CTE curricula and of real-world content and applied methods and examples into traditional academic classes can raise student achievement levels and increase understanding of rigorous concepts. Flexibility must be in place for delivering academic content across the curriculum.

RECOMMENDATION 5.
Create Incentives for Students to Pursue the Core Curriculum in an Interest-based Context

From across the school reform spectrum, there is ample evidence that connecting rigorous academic expectations with the relevance of an interest-based curriculum can help connect students to learning in powerful ways. Interest-based areas can be organized around various broad themes, such as the fine arts, or more specific themes like biotechnology, pre-engineering, hospitality, and finance. There must be resources and policies in place to support the development, implementation, and review of these interest-based areas.

RECOMMENDATION 6.
Support High Quality Teaching in all Content Areas

The No Child Left Behind Act creates mechanisms for assuring that every teacher in the academic core subjects is highly qualified, meaning the teacher holds a bachelor's degree or higher, grasps content at a deep level and can teach that content effectively. The crux of these standards, deep knowledge of content and skills in effective teaching methods, should apply to CTE teachers as well, including those entering the teaching profession through traditional teacher education programs and those transitioning into teaching from business and industry through alternative certification programs. CTE teachers should be able to demonstrate content mastery through a method appropriate to their areas of expertise, utilizing industry-based credentials or assessments aligned with career clusters where available. An expanded focus must be placed on professional development for all teachers in academic and technical integration and contextual teaching strategies.

RECOMMENDATION 7.
Offer Flexible Learning Opportunities to Encourage Re-entry and Completion

True quality high school reform must include effective strategies to re-engage and reconnect young people who have failed or are in danger of failing to complete high school. These young people have been failed by the current high school system. With a national graduation rate of approximately 71 percent, millions of young people are out of school and grossly ill-equipped to compete in the 21st century workforce and economy. To re-

form high school without a strategy to re-engage these young people who have already dropped out would be to abandon them to, and accept the social costs associated with, bleak futures marked by reduced earning potential, poverty, crime, drug abuse, and early pregnancy. High schools must provide a continuum of flexible interest-based learning opportunities that utilize effective teaching methodologies and are responsive to students' varied needs and life circumstances.

RECOMMENDATION 8.
Create System Incentives and Supports for Connection of CTE and High School Redesign Efforts

In many states and school districts, CTE leaders are providing the major impetus and resources for rethinking the instructional and organizational design of the traditional high school. However, in some locales, superintendents, school leaders and school reform advocates are reportedly overlooking the role of CTE in providing meaning, relevance, and experience in deeply contextualized learning of subject matter. This oversight will limit the effectiveness and impact of the high school redesign agenda. Policymakers at the federal, state and local levels should see academic and interest-based courses as complementary of one another, and create initiatives that support rich, interest-based programs to be built around a core of rigorous academic expectations.

RECOMMENDATION 9.
Move Beyond "Seat-Time" and Narrowly Defined Knowledge and Skills

U.S. high schools operate on a well-established set of expectations for size, time of day and seasons of the year that programs and classes are offered, how instructional material is delivered and what constitutes success in terms of the students' knowledge and skills. In order for our education system to adopt the new goal of getting every student ready for careers and college, we suggest a shift in focus to the underlying principles for what students learn and how we teach it, including what knowledge and skills are measured, how students are asked to demonstrate their knowledge and skills and how school is offered for all young people, particularly for the many students who are currently disengaged and leaving, or have already left, the traditional high school.

Clearly, we believe that CTE courses and instructional methodologies have a place in the high school environment, and that there should not be an artificial split between academic coursework and vocational studies, nor should exposure to CTE-type coursework be delayed until late in high school or college. Rather, we believe that all coursework, with clearly articulated standards and expectations, can help build within students the mix of skills, aptitudes and attitudes they will need for success after high school.

Designing American high schools around the needs of students in the present and the future requires honesty, courage, and a willingness to change familiar structures and practices in the best interests of our young people. Real change, made for the right reasons and toward the right mission, will yield dramatically better results and a more hopeful future for America's young people and for our national economic and cultural well-being.

INTRODUCTION

Career and technical education (CTE) is a major and long-standing enterprise within the United States' P-16 education systems. More than 95 percent of high school students take at least one course during their high school career, and about one-third of high school students take a concentration of three or more related CTE courses before they graduate. In addition to CTE courses offered within most of the nation's more than 16,000 typical high schools, there are approximately 1,000 regional career technology centers that offer more intensive CTE programs preparing students, both youths and adults, for further education, and in some cases for entry into the workforce. In addition, a large number of high school reform strategies and new small schools employ interest-based programs, including CTE, as a way to increase motivation and student engagement. Further, about one-third of all students in undergraduate postsecondary education are considered to be in postsecondary vocational programs, and these students vary widely in age, income, work experience, and previous college activity.[1]

Given the magnitude of the CTE enterprise, it is vital that CTE educators and leaders be active participants in discussions about how to redesign American high schools for the needs of the 21st century. CTE must bring its resources and expertise to the table.

The Association for Career and Technical Education (ACTE), on behalf of career and technical education professionals in the United States, advocates for clearly focusing American high schools on the new purpose of preparing EVERY student for full participation in a spectrum of postsecondary education opportunities, meaningful work, career advancement, and active citizenship. We call upon leaders at all levels of education to carefully consider the full range of knowledge, skills, aptitudes and attitudes our young people need to fulfill this purpose. We call upon leaders to make needed changes in school culture, instructional strategies and organizational priorities that will support this new purpose. We call upon leaders to ask "what do our young people need for the future and how do we design high schools that will meet their needs?"

In the discussion about high school redesign in this report, we suggest a number of strengths and resources CTE brings to the table, such as relevant and engaging curriculum, experience in contextual teaching and learning, development of leadership skills, and strong student-teacher relationships.

Still, given the long history and evolution of CTE (formerly called occupational or vocational education), every reader may bring their own perception about CTE. Based on its origins, many assume the purpose of CTE is still to prepare young people who are "non-college bound" for direct entry into the workplace, usually a low- or medium-skilled workplace, directly after completion of high school.

However, students participate in CTE programs for a variety of reasons. In this paper, we suggest a more complex view—a three-fold purpose of career and technical education at the secondary school level. CTE should:

- Support students in the acquisition of rigorous core knowledge, skills, habits and attitudes needed for success in postsecondary education and the high-skilled workplace;
- Engage students in specific career-related learning experiences that equip them to make well-informed decisions about further education and training and employment opportunities; and,
- Prepare students who may choose to enter the workforce directly after high school with levels of skill and knowledge in a particular career area that will be valued in the marketplace.

We strongly believe that CTE courses and instructional methodologies have an important place in the redesigned high school of the 21st century. In our view, there should no longer be an artificial split between academic coursework and CTE studies, nor should exposure to career- or interest-based coursework be delayed until late in high school or college. Rather, we believe that all coursework, with clearly articulated standards and expectations, can help build in students the mix of skills, aptitudes and attitudes they will need for success after high school.

In this paper, we will review the challenges and current efforts in high school redesign, and offer a number of recommendations about what elements should be included in our mutual efforts to reinvent the American high school for the 21st century.

PART 1. UNDERSTANDING THE CHALLENGE AND CURRENT EFFORTS IN HIGH SCHOOL REDESIGN

The Convergence of Multiple Challenges: Skills, Education and Competition

MUCH HAS BEEN WRITTEN about the many converging challenges facing America, requiring a higher level of achievement and preparation in its emerging workforce. In a very short time, America has evolved from an industrial economy to a knowledge economy. Since the early 1990s, the pace of change in the global economy has accelerated even further, given the "flattening forces" spoken of in recent economic analyses.[2] The globalization of business and industry requires workers to acquire core knowledge and skills that can be applied—and quickly upgraded and adapted—in a wide and rapidly changing variety of work settings.

Related to this change of expectations in the workplace, the demand for workers with postsecondary degrees and certifications has been growing. Jobs that require an associate's degree are growing the fastest during the first decade of the 21st century, and those requiring Ph.D.'s are growing at the second fastest rate.[3]

> *The demand for high skill levels is increasing as many of America's most highly educated and experienced workers, the Baby Boomers, are on the cusp of traditional retirement age. Further, the rate of college-going among younger Americans is not sufficient to fill the growing demand for jobs that require postsecondary education. One estimate finds that, given projected retirements, postsecondary education and job growth, the U.S. could experience a shortage of 12 million too few college-educated workers by 2020.*[4]

By contrast, competitor nations are surging forward. Eight countries, including Canada, Korea and Ireland, now surpass the U.S. in the percentage of young adults enrolled in college, and India and China have respectively increased their college participation rates by 92 percent and 258 percent during the 1990s.[5] Because of their enormous overall size, even if only one quarter of their respective populace is highly educated, that highly educated cohort alone rivals the size of the entire U.S. population!

The Current Performance of U.S. High Schools

Any observer can clearly see serious problems emerging in the educational outcomes of young Americans—high dropout rates, inadequate communications, insufficient math and science skills, high postsecondary remediation rates and large achievement gaps by race and income. These performance indicators suggest a major problem with the American education system, and specifically, the goals and culture of today's American high school. Consider these facts:

- Far too many young people leave high school before earning diplomas. While data are not authoritative, a credible analysis puts the graduation rate for students earning a high school diploma (excluding the GED) at 71 percent.[6] This indicates that many students are not engaged in the high school experience, that they don't consider the curriculum valuable, and that academic programs too often fail to help students who have not mastered academic content to catch up.
- Far too many students earn high school diplomas without possessing the knowledge and skills necessary for success in postsecondary education and the workplace. Only 34 percent of 2002 high school graduates were prepared for postsecondary education, based on satisfactory completion of required courses for college enrollment and demonstration of basic academic skills.[7]

The United States is beset by three education gaps. The first gap is the domestic achievement gap, the disparity in learning among American students, correlated to racial and economic status. The second gap is an international achievement gap between U.S. students and young people from other nations who are more highly educated and, in many cases, able to carry out skilled work for relatively low wages, compared to what skilled U.S. workers command in the marketplace.

What is even more disturbing are aspects of American culture that are devaluing hard work, personal achievement, exerting effort toward reaching future goals and other aspects of strong character. These factors are contributing to an overall lack of focus and purpose among American youth that has recently been coined as "the ambition gap."

Making an Honest Appraisal

In a speech before the nation's governors, business and education leaders in February 2005, Microsoft Corporation founder Bill Gates made a provocative statement about American high schools.

"American high schools are obsolete. By obsolete, I mean that our high schools, even when they are working exactly as designed, cannot teach our kids what they need to know today. Training the workforce of tomorrow with high schools of today is like trying to teach kids about today's computers on a 50-year-old mainframe. It's the wrong tool for the times."

This is a hard-hitting statement but it deserves serious consideration. Is the American high school obsolete?

During the 20th century, education decision-makers worked hard to design schools that were aligned to their aspirations for a healthy society where individuals from differing social classes were satisfied with their standing and were doing work that was appropriate to their abilities and interests.[8] Vocational programs were designed for students who had strong aptitudes for technology, installation and repair of machinery, and entry into the skilled trades. College preparatory programs were designed for the management cadre that would direct the production of the workforce, and to prepare other professionals such as accountants, lawyers, physicians, political leaders, and the clergy. For other students, a general education that taught reading, writing, some math, and "life adjustment" courses was enough to prepare any industrious young person to enter the middle class.

The American high school we know today harkens back to the ideal of the large comprehensive high school endorsed in 1959 by James Conant in the definitive report of its day—"The American High School." In this landmark report that codified much thinking around high schools, Conant claimed that only 15 percent of high school students had the mental ability to take rigorous courses in mathematics, science, and foreign languages. He felt that perhaps another 10 to 20 percent might stretch to take academic programs as well. But the remaining 65 to 75 percent of students should learn general job and living skills.

At the time Conant wrote, midway through the 20th century, many reformers and educators thought the recommendations for the comprehensive American high school were well grounded, but as we look back, biases and stereotypes were lurking just beneath the surface of assumptions about the purpose of high school. Furthermore, education leaders misjudged how quickly the U.S. economy would change in the latter part of the century, and how high-level skills would become needed across a wider spectrum of the workforce.

Given the realities of the 21st century global economy and the continuing demands for increased knowledge and skills it is placing on the American workforce, the model of high school education the United States has known for the past 50 plus years is now obsolete. *It was designed for a different era and a set of core beliefs that are no longer valid in modern American society.*

The Emerging Agenda for High School Redesign

Many of the 20th century assumptions about the comprehensive high school, designed for tracking and sorting, prevailed until dismay with educational outcomes was given voice by the National Commission on Excellence in Education through the "Nation at Risk" report in 1983.

Since that time, federal and state policy design has been based to a greater and greater degree upon the premise that all students need a core set of academic skills and competencies that can help them become lifelong learners and adaptable knowledge workers. Specifically, school reform efforts at the national and state levels focused on identifying specific education standards, creating assessments linked to those standards, and implementing accountability systems that would focus the attention of teachers, administrators and students on developing the knowledge and skills called for in those standards.

This movement of standards-based reform was catalyzed through a series of events, reports and legislation during the 1990s; it was given further momentum through the No Child Left Behind Act of 2001 (NCLB), which created a national framework for how states would measure, report and hold schools accountable for their performance against these standards. While NCLB does not focus extensively on high schools, it does reinforce and promote a level of academic rigor at this level, although most of the actual state assessments are pegged at eighth- and ninth-grade level reading and mathematics.[9] Even prior to NCLB, many states began to undertake efforts to ensure that all students reach minimum levels of academic proficiency by the time they graduate by imposing new requirements, such as end-of-course exams, high-stakes exams required for graduation, and increases in coursework requirements for high school graduation.

The original federal funding for vocational education dates to the Smith-Hughes Act of 1917. Earlier versions of federal law specifically endorsed the notion of vocational education as job preparation for the non-college bound. However, for well over a decade, more recent federal CTE legislation, including the current Carl D. Perkins Vocational and Technical Education Act of 1998, has tasked CTE with the goal of using career-oriented programs to supplement and

support academic skills (as well as other goals such as program completion, advancement to higher levels of education, and career advancement).

An accountability system for CTE, pre-dating the NCLB, was enacted in 1998. While the law did not explicitly require them to do so, many states responded to the 1998 legislation by creating specific standards for CTE programs that closely align with their state academic standards, and also by using valid academic assessments and assessments of CTE skills that are aligned with industry-recognized technical standards.

The renewed focus on high schools in recent years has involved foundations, education advocacy organizations, the federal government, and the nation's education leaders and governors. Here is a small sampling of what has been happening among multiple organizations and levels of education governance:

- Beginning in the 1990s, a movement of schools committed to rigorous academics and career-themed education—the High Schools That Work project, sponsored by the Southern Region Education Board—spread to more than 1,100 high schools and included affiliation with dozens of state departments of education.[10]
- In 1996, the National Association of Secondary School Principals published "Breaking Ranks: Changing an American Institution" and followed up in 2004 with the publication of "Breaking Ranks II," a handbook which outlines seven cornerstone strategies and 31 recommendations for school leaders to implement toward the goal of deeply reforming their high schools.[11]
- Other models of high school redesign were also launched that include elements of career-based programs and have evidence of effectiveness in improving results for students. Models include: First Things First, Talent Development, and America's Choice.[12]
- Federal and foundation funding have supported efforts to create smaller learning communities offering more personalized and focused learning environments within large high schools, establish small independently managed high schools with approximately 400 students, and support technical assistance providers who help schools undertake models of "comprehensive school reform.
- Multiple reports were issued drawing attention to the importance of taking challenging academic coursework in high school, particularly for at-risk students,[13] as well as

Good News About High Schools That Work (HSTW) Key Practices

High Schools That Work has identified a set of key practices that impact student achievement. These key practices provide direction and meaning to comprehensive school improvement and student learning:

High expectations—Motivate more students to meet high expectations by integrating high expectations into classroom practices and giving students frequent feedback.

Program of study—Require each student to complete an upgraded academic core and a concentration.

Academic studies—Teach more students the essential concepts of the college-preparatory curriculum by encouraging them to apply academic content and skills to real-world problems and projects.

Career/technical studies—Provide more students access to intellectually challenging career/technical studies in 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—Enable students and their parents/guardians to choose from programs that integrate challenging high school studies and work-based learning and are planned by educators, employers and students.

Teachers working together—Provide teams of teachers from several disciplines the time and support to work together to help students succeed in challenging academic and career/technical studies. Integrate reading, writing and speaking as strategies for learning into all parts of the curriculum and integrate mathematics into science and career/technical classrooms.

Students actively engaged—Engage students in academic and career/technical classrooms in rigorous and challenging proficient-level assignments using research—based instructional strategies and technology.

Guidance—Involve students and their parents/guardians in a guidance and advisement system that develops positive relationships and ensures completion of an accelerated program of study with an academic or career/technical concentration. Provide each student with the same mentor throughout high school to assist with setting goals, selecting courses, reviewing the student's progress and suggesting appropriate interventions as necessary.

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.

highlighting the "senior slump" phenomenon where many seniors lose momentum and motivation due to very lax senior year requirements in most high schools.[14]

- In 2004, the American Diploma Project (ADP) released the results of an influential study that found there is a very strong convergence between the mathematical reasoning and oral and written communication skills needed for both college-level work and entry into the workplace. In short, "the ADP research found that there is a common core of knowledge and skills, particularly in English and math, which students must master to be prepared for both postsecondary education and well-paying jobs."[15]

The U.S. Department of Education also hosted national and regional high school summits, followed by the 2005 National Education Summit on High Schools (co-sponsored by the National Governors Association,[16] Achieve, Inc. and the American Diploma Project Network of 22 states[17]), which focused on high school reform policy implementation. Among the areas of emphasis for the governors and the ADP Network are to:

- identify 21st century knowledge and skill expectations for college and work readiness;
- map out minimum coursework related to college and work readiness;
- create better assessments that measure career and college readiness rather than just 9th and 10th grade skills; and
- strengthen system linkages between high schools and postsecondary education.

PART 2. RECOMMENDATIONS FOR THE FUTURE

In light of the current and future challenges facing our youth, the members of ACTE believe a new working model for the American high school is long overdue. The new model cannot be created just to fix problems of the past. It must be created with the future in mind, and be designed around the needs of today's and tomorrow's students. We make the following recommendations to help guide the reinvention of the American high school.

RECOMMENDATION 1.
Establish a Clear System Goal of Career and College Readiness for All Students

All students need a strong arsenal of reading, comprehension, reasoning, problem-solving and personal skills to be ready for the world of meaningful postsecondary education and training as well as entry to the high-skilled workplace. The importance of a broad and rigorous preparation for today's students cannot be overstated. For example, analysis of various kinds of written materials indicates that manuals and materials used by front-line technicians are generally more complex than materials used in entry-level college courses.[18] Students are also not simply preparing for education and training related to today's jobs. They must be prepared to continuously learn and innovate to stay competitive in a highly connected international marketplace and to help create new types of jobs that do not yet exist.

While most students will benefit from postsecondary education, it is next to impossible to accurately project the exact mix of education and work preparation (which might include four-year colleges, community and technical college programs, apprenticeships, and other industry-specific training) that students need to be successful as adults. Therefore, it makes sense to establish an objective of having all students graduate from high school fully ready to participate in postsecondary education, and to significantly increase the number of students who not only enter college, but *persist* in college and succeed in earning degrees and/or skill certificates. All students will need to make their own choices about if, when, and how they participate in postsecondary education; but young adults need to be prepared to engage in some type of postsecondary education and training to have viable career options.

Several important areas of action are needed. First, enroll-

ment and course-selection processes should be designed with the presumption that all students will be enrolled in "honors" level coursework upon entering high school. It may be worthwhile to call this course of study the "career and college readiness curriculum" so it communicates that it is the minimum necessary for preparation, not a special, advanced program for the elite. Many states are creating the policy whereby incoming ninth-graders are automatically enrolled in this academic sequence, but are only allowed to "opt out" to less demanding academic classes with their parents/guardians' explicit permission.

Of course, this is a significant shift from the sorting and selecting "multiplex" approach for academic classes that still prevails in most high schools. To make this work, elementary and middle school programs will need to be explicitly directed to align their instructional programs with these expectations in mind, giving students extra help and support on an "as-needed basis" to keep them on grade level as they move toward high school. All components of the P-16 system must be held accountable for helping students make progress toward the end goal of career and college preparedness.

Second, ensuring smooth transitions between eighth grade and ninth grade should be a key priority for educators, regardless of governance structures. Data from eighth grade should be shared from middle schools to students' high schools in order to target special help for incoming ninth-graders who are behind grade level, and when possible, to create summer bridge programs and structured freshman orientation services. In a related manner, as schools eliminate low level courses from the high school curriculum, they will need to create extra help, tutoring and/or new versions of courses that teach to the same academic standards but over an extended instructional period or in an applied setting.

A renewed focus also must be placed on the transition of students from high school into further educational and career opportunities. Students should be given the opportunity while in high school to take postsecondary entrance and skill certification exams, and school districts and states should work to provide dual enrollment opportunities such as the Tech Prep program. Statewide articulation agreements should be developed to ensure that postsecondary education credits earned while in high school will be accepted at a variety of institutions. Students should also be encouraged to enroll in articulated programs that help ease the transition between secondary and postsecondary education opportunities.

Within components of the education system, states and school districts should also enhance accountability so there is shared responsibility in each school among leadership, faculty, and individual students. Shared accountability for results is essential in changing the way teaching and learning happens in tradition-bound high school environments.

RECOMMENDATION 1.
Establish a Clear System Goal of Career and College Readiness for All Students

FEDERAL LEADERSHIP RESPONSE

- Continue to emphasize the integration of academic and technical skills in the Carl D. Perkins Vocational and Technical Education Act to ensure that students are career and college ready.
- Expand this integration within NCLB to create shared responsibility, and provide funding within this program for specific interventions.

STATE LEADERSHIP RESPONSE

- Ensure that core academic standards are embedded across a deep and rich curriculum, and do not create a narrow approach that pushes out engaging and enriching courses like CTE.
- Create assessments to measure career and college readiness

Recommendation 1

Good News
About Smooth Transitions Between High School and Postsecondary Education in Ohio

The Miami Valley Tech Prep Consortium in the Dayton, Ohio, area offers an engineering technology program that begins in high school with a mix of college prep academics and technical coursework. This program is articulated with 14 different engineering degree programs at Sinclair Community College. Several of these programs are, in turn, articulated with baccalaureate degree programs at other public institutions. While in high school, students may earn up to 15 articulated college credits, depending upon the college program they later select. To assess their academic preparation for college, students take Sinclair's COMPASS math and reading placement test during their junior year, giving them more than a year to correct any skill deficits that might cause them to be placed in remedial classes in college. Students who complete the high school portion of the program receive a $3,000 scholarship if they continue on and complete the program at Sinclair.

by 11th grade to allow for extra help prior to high school graduation.
- Require or strongly encourage all students to enroll in career and college readiness courses, including dual enrollment and Tech Prep programs.
- Create accountability processes that hold all stakeholders responsible — students, teachers, and schools.
- Require middle schools to share information on eighth-grade student achievement with receiving high schools.
- Offer funding for schools to offer summer bridge programs and academic intervention programs.

LOCAL LEADERSHIP RESPONSE

- Enroll students in career and college readiness coursework upon entering high school, utilizing structures already in place such as career clusters or career academies.
- Invest in professional development to have an adequate supply of teachers ready to teach higher level academic courses.
- Create incentives for more experienced and knowledgeable teachers to teach classes with previously lower performing students.
- Offer middle school and high school interventions in key learning skills, including providing extra help to students who fall behind grade level in a manner that does not restrict their other course-taking options.
- Align elementary and middle school programs with rigorous high school expectations.
- Offer structured freshman orientation programs to facilitate high school acclimation.
- Design the master schedule in a way that students can take advanced academic and CTE courses, including through dual enrollment and Tech Prep options.

RECOMMENDATION 2.
Create a New School Culture that Stresses Personalization in Planning and Decision-making

Students entering high school today were born around the year 1990. When we think about the pace of change in information technologies, wireless communications and global interconnectedness that have occurred since their birth, it is clear that today's high school students have vastly different and more complex life experiences than the young people of the 1930s, 1940s and 1950s, for whom the prevailing high school model was designed. Students with access to information technology and wireless communications can, in their out-of-school life, access information and learning on an anytime, anywhere basis. They can interact with commercial, learning and gaming resources in ways that are highly individualized and customizable to their particular interests and tastes. Yet our industrial model of education continues to treat students as parts of a mechanistic system, expecting them to fit into the system, rather than investing in them as uniquely gifted individuals.

We recognize that over the years, because of the tracking and sorting design of the traditional comprehensive high school, there were many cases in which minorities and young women were told they were not "college material" and should pursue a low level service job or see themselves only in the role of a homemaker, teacher or administrative support staff. Now, it seems that the pendulum has swung to the other extreme, where students are all directed to four-year colleges, but are given no context for making a wise personal decision, or provided clear awareness of career and income opportunities for careers requiring a two-year degree or industry-based certification.

Most adults, either from personal experience or from discussions with family and friends, know that many colleges still offer few, if any, structured career development activities. Therefore, every year, thousands of young Americans graduate from four-year colleges—highly educated but without a strong sense of how to apply their skills in the marketplace or find a meaningful career.

Career Exploration and College Planning

At a minimum, every student should be led through a process of academic and career awareness, exploration, and planning. This should include learning about the economy and career options, self-assessment for areas of interest; deeper exploration of how personal interests relate to career opportunities; and gaining education, career decision-making skills, and knowledge and understanding of local, state, and national educational, occupational, and labor market opportunities, needs, and trends. These skills are necessary in order to make *informed* educational choices which lead to more educational and career options. As a part of a comprehensive guidance program, each student and their parents/guardians should be led through the development and use of an individual plan for graduation and beyond. The plan should first be developed in eighth grade in preparation for high school, and then reviewed and updated at least semi-annually as the student's interests solidify and college planning becomes more concrete. Such a plan should map out the career and college readiness courses the student is required to take, as well as a mix of interest-based courses, other electives, possibly Advanced

Placement (AP) and/or dual enrollment courses and extra- and co-curricular activities.

Because postsecondary education and training is necessary for long-term career success, all stages of the exploration and planning process should be infused with broad exposure to various postsecondary education and training opportunities, as well as financing options. Under the new model, since all students will be strongly encouraged to take rigorous career and college readiness courses during high school, even if they are also taking a concentration of complementary career-related courses, they will not cut off their options for postsecondary education programs, as often happens today when students assume they are not "college material."

The role of parents/guardians also cannot be overstated, since they already exert the most influence over their child's decisions about the future. Therefore, parents/guardians should be actively invited to participate with the student in these awareness building and planning activities. In fact, parents/guardians should receive direct and ongoing communication from school counselors and other educators so they can be well-informed advocates and advisers on behalf of their children.

We also agree with those who express concern about students making career decisions too early. It would be very detrimental to ask a young person to lock in a career choice during his or her high school experience. While some students may have a strong sense of leading toward a particular career, this tends to be the exception rather than the rule. Later in this paper, we recommend that every student take a "major" in some interest area during the high school years. This does not mean the student has chosen a career. In many cases, students who take these career interest-based classes actually discover that a career area is not a good fit for them, and they opt to pursue a different interest in the latter part of high school or in postsecondary education. The result is money saved and time provided to prepare for another career path.

The benefit to the students in this experience is growth in self-awareness and a way around the aversion to the investment of time and money that would have been spent if college was the only opportunity for serious career planning and experimentation.

Interestingly, over the past five years, a variety of electronic tools have emerged that allow a student to integrate the development of a plan with interest assessments and career exploration tools, linking to vast resources on the Web, and to create a portfolio that can be updated, accessed through the Web, and used as the student progresses through higher education and into the workplace. Some of these tools even allow the student to directly link their career interest with specific college majors at postsecondary institutions within their home state and in other states across the nation.

So, in creating a new culture that spurs every student on to their highest individual potential, the school's comprehensive guidance program needs to strike a delicate balance in how to help students consider postsecondary education. On one hand, the counseling and career development process should encourage students to reach for challenging personal goals and see themselves rising to management and leadership roles within their chosen professions—roles that typically require strong high school academic preparation and higher levels of postsecondary education. At the same time, the system must not prescribe one-size-fits-all solutions (*e.g.* going to four-year college) for each and every student, but guide and support students and their parents/guardians in the decision-making process. In the reinvented American high school, students will be given the structured opportunity to identify their evolving personal interests, and interactively connect those interests to employment opportunities and planning for postsecondary education.

Recommendation 2

Good News About Individualized Planning in South Carolina

In spring 2005, the South Carolina legislature passed the South Carolina Education and Economic Development Act. Under this landmark legislation, the previous college-prep and Tech Prep tracks will be eliminated, and rigorous academic preparation based on the state's academic standards will be delivered in the context of student-selected "career majors." Every student will study "college prep" academics. Every student—with parent and counselor input—will develop an individual plan for graduation that will map out a course sequence for all four years of high school, assisted by electronic tools for career interest assessment and learning about career and related college options. Students will have the opportunity to compress their high school experience into three years and use their senior year for further career exploration and college-level work.

RECOMMENDATION 2.
Create a Positive School Culture that Stresses Personalization in Planning and Decision-Making

FEDERAL LEADERSHIP RESPONSE

- Continue to embed funding across federal departments and programs for career development and college planning.
- Recognize the importance and need for leadership, policy, and resources to implement comprehensive guidance programs in schools across the country.

STATE LEADERSHIP RESPONSE

- Create state policy that places career development and college planning as core high school activities within a comprehensive guidance program.
- Require development and use of an individual plan for graduation and beyond for every student.
- Provide state support for career development activities for students.
- Provide state support for professional development for teachers, counselors and other educational staff who engage in career development activities with students.
- Create statewide career pathways as tools for students to use when planning and making decisions about life beyond high school.

LOCAL LEADERSHIP RESPONSE

- Begin structured career development and postsecondary planning activities in eighth grade (or earlier) and continue in each year of high school.
- Provide electronic tools for career development.
- Provide local support for career development facilitation skills among teachers, counselors, and other educational staff who engage in career development activities with students.
- Offer summer externships in business and industry to build teacher career awareness.
- Offer structured college visit opportunities for students from first generation college-going families.

RECOMMENDATION 3.
Create a Positive School Culture that Stresses Personalization in Relationships

The second aspect of personalization relates to knowing and being known as an individual within the school community. During the second half of the 20th century, as traditional social bonds in communities were weakening, high schools themselves were getting bigger and bigger, due in part, to the recommendations of Conant's "The American High School." For those adolescents who already have weak family and community connections, these enormous schools become places of anonymity that encourage them to withdraw further into the shadows, and make them more vulnerable to the allure of negative peer reinforcements such as drugs, alcohol, sex and crime.

A fair, consistent and challenging code of discipline is an absolute prerequisite to establishing a positive school culture—but discipline is not enough in and of itself. Positive relationships built on the foundation of respect, citizenship and order is the deeper goal for the school culture. Schools remain one of the best opportunities for connecting youth and adults in positive ways, giving students the sense that they are valued and cared for, and reinforcing the

Recommendation 3

Good News

Good News About Career and Technical Student Organizations

The eight national CTSOs that are recognized by the U.S. Department of Education at the secondary level provide unique opportunities for students to gain leadership, citizenship and employability skills in the context of the core CTE curriculum they are pursuing. The organizations include Business Professionals of America (BPA); DECA—An Association of Marketing Students; Future Business Leaders of America (FBLA); Family, Career and Community Leaders of America (FCCLA); Health Occupations Students of America (HOSA); the National FFA Organization; SkillsUSA; and the Technology Student Association (TSA).

These organizations represent more than 1.6 million students annually in more than 45,000 local chapters, and there is a CTSO for every discipline of CTE. Key elements of CTSOs include links to business and industry partners and mentors, activities that support classroom content, competitive skill events, student leadership opportunities, networking and community involvement. CTSOs connect students to each other, and to their instructors, schools and communities, helping to establish critical positive relationships. Early results from a recent study by the National Research Center for Career and Technical Education showed that participation in competitive events sponsored by CTSOs positively affected grades, academic engagement, SCANS-type academic/job skills and career self-efficacy. Also, high levels of extracurricular activity participation common among CTSO members were positively associated with grades and educational aspirations.

message that whether they succeed or fail actually matters to someone.

During the most recent decade, a strong reform movement has developed with the goal of transforming large impersonal middle and high schools into places that feel smaller, safer and more personal to the student. A variety of strategies are being employed, some which are new innovations and others which are re-discovered innovations. They include creating small learning communities and career academies within a school that link a limited number of students and a team of adults together around grade cohorts or interest-based courses. Small high schools of about 400 students have been founded to maximize relationships and connectedness. Daily advisory periods are another strategy that creates a structured environment to connect an adult with a small group of students for personal interaction and activities like character education, career development, and social and study skills. Some schools identify "adult advocates" so that for every student in the school, there is at least one adult specifically assigned to advise, befriend, and generally look out for the youth.

A core component of CTE is the long-standing existence of Career and Technical Student Organizations (CTSOs) that engage students in co-curricular activities that are closely related to CTE classroom programs. Young people involved in these CTSOs number close to 2 million, and each work regularly with an adult advisor to prepare for local, regional and national competitions, take on student leadership roles in the organizations, and develop a range of project management, public speaking and leadership skills. Other traditional strategies, such as involvement in sports, music, academic clubs or other school organizations, student newspapers and yearbooks, religious youth organizations, public service activities, mentorships and work-based internships, all serve to help students engage in a positive way with adults and peers, and build confidence and a sense of belonging.

Creating a culture that stresses relationships will require significant change, particularly among many faculty who believe their job is to only teach subject matter. High schools should establish, as a system, the goal of helping every youth become involved in structured activity—whether it be an advisory period, smaller learning community, or co-curricular, interest-based activity—that strengthens positive relationships and encourages the student's sense of confidence and belonging in school. These activities should be included as part of the student's individual plan for graduation and beyond. In addition, community leaders should be engaged in these educational activities to provide students with additional opportunities for positive adult relationships.

RECOMMENDATION 3.
Create a Positive School Culture that Stresses Personalization in Relationships

FEDERAL LEADERSHIP RESPONSE

- Continue funding the Smaller Learning Communities program to assist in the formation of more personal education environments.

STATE LEADERSHIP RESPONSE

- Provide statewide leadership and sustainability strategies to CTSOs and other student organizations to ensure that students have opportunities to participate in these programs.

LOCAL LEADERSHIP RESPONSE

- Provide structures and activities to promote personalization—advisory periods, smaller learning communities, CTSOs or other organizations, and individual career development and postsecondary planning meetings with students and their parents/guardians.
- Ensure that teachers serving in advisory capacities have adequate professional development for their additional roles.
- Increase the percentage of students involved in extra curricular and co-curricular activities.
- Adopt character education goals and integrate character education throughout the curriculum and extra curricular and co-curricular activities sponsored by the school.
- Involve community leaders in educational activities to provide students with additional opportunities for positive adult relationships.
- Implement a comprehensive guidance program for school counseling that serves all students in a school and further links students to positive adult relationships.

RECOMMENDATION 4.
Dramatically Improve How Academic Content is Taught

Higher levels of knowledge and skills for our young people in academic content are absolutely necessary, but school leaders will make a serious miscalculation if they just add more challenging courses without changing the way courses are taught. Today, many students who take a full complement of college preparatory classes in high school still need college-level remedial classes. Although college preparatory course-taking has risen by 10 percentage points between 1990 and 2000,[19] during that same time period, reading and mathematics performance by 17-year-old students taking the Na-

tional Assessment of Education Progress has remained absolutely flat. We can conclude that the achievement problem is not just one of low-level course-taking; it is also related to unfocused curriculum and weak instructional methods that are not reaching all students.

Teachers and researchers must work together to identify strategies that show promise for helping all students attain proficiency in high-level courses. Some advocates for high expectations promote a notion that makes eminent sense: "Keep expectations constant, but vary time and teaching style."

As each state refines and clarifies its standards for career and college readiness, it should recognize that academic skills can be acquired in a variety of settings, not just the traditional academic classroom. Reading (decoding, vocabulary and comprehension), writing, mathematics and science content can be readily integrated in other curricular opportunities, like career and technical education coursework, and taught in a way that supplements the work of the core academic teacher. For example, a study by the National Research Center for Career and Technical Education discovered that when combining professional development with a pedagogic framework to identify and teach the mathematics that is inherent in CTE curricula, students who received the enhanced instruction scored significantly higher on standardized math tests than students who received their regular curriculum.

In states like Arizona[20] and New York[21], where academic content has been made explicit in CTE courses and CTE teachers understand and teach to each state's academic standards, CTE students have outperformed the general high school population on the state's standardized high school exit exams. Faculty in academic departments should see CTE teachers as their allies in helping students reach high standards, not competitors for students' time and attention.

Academic integration has been required in federal CTE legislation for 15 years but has not been implemented as widely as possible. This can change with explicit state and local leadership. First, every state CTE system should systematically identify places where the state's academic standards can be integrated in each of its CTE programs and create a statewide bank of tested lesson plans that teachers can use to teach to the standards.

Secondly, the requirement of academic integration must not only apply to the CTE teachers, but also to teachers from the academic disciplines. Academic teachers can include new lesson plans that offer examples and projects drawn from real-world contexts to bring deeper meaning and relevance to their instruction. Of course, widespread implementation

Recommendation 4

Good News

About Academic and CTE Integration in Kentucky

Kentucky has developed 10 "interdisciplinary courses" that allow students to meet requirements for academic courses by taking classes that carefully merge academic standards with career-oriented content. Two courses—computer aided drafting/geometry and construction geometry—are structured so they cover all 23 state standards for geometry. Other courses, such as agri-biology, agri-science, medical science, and nutritional and food science, offer credits toward the state's life science requirement. Business economics and consumer economics cover the state's standards for economics.

(Source: Kentucky State Department of Education, http://www.education.ky.gov/KDE/Default.htm)

Kentucky has three specific statewide articulation agreements within its career technical education programs that allow students to earn up to three credits in a specific career occupational area at colleges within the state. Areas covered include: agriculture education, administration support service or information processing services, and child development.

Good News About Integrating Academic Standards into CTE Courses in Arizona

During 2003–2005, Arizona conducted a comprehensive adaptation and update of its 36 CTE programs. Through this process, all programs were reviewed, specific program standards were written, and programs were updated to include specific reinforcement of state academic standards. For example, one of the Allied Health Science standards is to "Practice Efficient Problem-solving." Under this standard are several competencies that align with the state's math standards, such as "Construct and draw inferences, including measures of central tendency, from charts, tables, graphs and data plots that summarize data from real-world situations," "Represent and analyze finite graphs using matrices;" and "Develop and analyze algorithms." Most recently, the state writing standards and science standards have been added to all CTE programs.

In 2004, CTE high school graduates who took two or more Carnegie units in an occupational program area outperformed the general high school student population taking all three of Arizona's high stakes academic tests (AIMS).

(Source: Career and Technical Education 2004 Data Snapshot, compiled by the Career and Technical Division, Arizona Department of Education, 2/9/2005.)

of new programs requires intensive and ongoing professional development for all teachers, academic and CTE, in how to implement new instructional strategies. Teachers will also need to improve and update their actual content knowledge so they can teach at a level that helps students reach for rigor and relevance.

In the new American high school, the entire school must own the mission of academic proficiency, and teachers should be required to collaborate across the disciplines to help students reach these proficiencies. CTE teachers will need to explicitly integrate academic standards into their CTE classes, and academic teachers will also need to learn ways of demonstrating real-world content and application from coursework that is more contextual than traditional teaching methods. As will be discussed in the section on Highly Qualified Teaching (Recommendation 6), a process for collaboration between CTE and core academic teachers can validate the quality of teaching and learning of academic standards.

RECOMMENDATION 4.
Dramatically Improve How and Where Academic Content is Taught

FEDERAL LEADERSHIP RESPONSE

- Provide funding for a state- and professional organization-led initiative for gathering, organizing, and disseminating integrated lesson plans and curriculum frameworks.
- Invest in research on curriculum structure and teaching methodology.
- Provide continued funding for professional development for content and teaching skills.

STATE LEADERSHIP RESPONSE

- Use policy language that focuses on standards for knowledge and skills, rather than just on course-taking requirements.
- Allow for flexible ways of delivering academic content across the curriculum.
- Incorporate academic standards in both core academic and CTE courses.
- Create model hybrid academic/CTE courses that allow students to fulfill graduation requirements in core academic skills such as English/language arts, mathematics and science; and ensure that the state's higher education system will accept these courses as meeting admission requirements, and for credit when they are offered as dual enrollment courses.
- Monitor the effectiveness of different curricular pathways as a quality control tool.

LOCAL LEADERSHIP RESPONSE

- Encourage collaboration among core academic and CTE teachers to:
  —develop contextualized lesson plans for the academic classes, and
  —ensure explicit coverage of key academic standards in CTE courses.
- Engage all faculty within a school to be involved in:
  —reviewing school wide student performance results,
  —analyzing how students fared in core academic assessments, and
  —creating improvement plans.

RECOMMENDATION 5.
Create Incentives for Students to Pursue the Core Curriculum in an Interest-based Context

Many students are bored and disengaged with today's schools. In their personal lives, they often pursue various forms of on-demand learning related to hobbies and interests. However, during the school day, the knowledge to which they are exposed is usually disembodied from its real-world context. They learn science facts and theories, but don't understand the work of a chemist or biotechnologist. Students are asked to improve their writing structure and grammar, but don't see how effective writing is employed in developing persuasive business proposals, creating government policy documents, conducting research, writing articles or books, or simply engaging in day-to-day workplace communications. They don't see relevance of the school curriculum to their current or future lives.

Relevance is an essential motivator for individual effort, for both youth and adults. From across the school reform spectrum, there is ample evidence that connecting rigorous academic expectations with the relevance of an interest-based curriculum, often related to a career theme, can help connect students to learning in powerful ways. There are various ways and names for structuring these learning environments, including career pathways, smaller learning communities, and career academies. They can be organized around various broad themes such as the fine arts, or more specific themes like biotechnology, pre-engineering, hospitality, and finance. The States Career Clusters Initiative[22] has created knowledge and skills statements for 87 career pathways that fall within 16 Career Clusters, representing broad sectors of the U.S. workforce. Each state using the Clusters Framework has modified and adapted it to address the state's priorities for CTE pro-

gram improvement. These Career Clusters and related career pathways can provide the basis for helping youth develop core academic skills in the context of a personal interest.

Interest-based education, when offered around a career-theme, is not education for the "non-college bound" (a term that should be avoided). The notion of career-themed education only for young people planning to directly enter the workforce and avoid college is a notion from the past. It does not compute with today's reality, where 65 percent of students who take a concentration of career-themed classes go on to college immediately after high school. In today's world, we should assume every student will want further education beyond high school at some point; as mentioned earlier, the question is not if—just when.

Interest-based programs are an important strategy to increase motivation and deep learning for every student. The quality of interest-based programs should be measured by six outcomes: 1) the depth of academic learning in high school; 2) the depth of learning career-related content; 3) high school completion; 4) enrollment in postsecondary education; 5) persistence in postsecondary education and training; and 6) success in the workplace.

There is clear evidence from studies of CTE and career academies that young people benefit from these programs in

Recommendation 5

Good News

About Using Robotics to Engage Student Interest and Build Mathematics, Science, Teamwork and Problem-solving Skills in Pennsylvania

Robotics programs appeal to a diverse range of students and help provide experiences in design, construction, and problem-solving. Creating robots involves the practical application of physics, computer science, engineering and mathematics. By studying robotics, students can gain a deeper understanding of a variety of complex topics and apply the knowledge from these disciplines. Robotics can be incorporated into programs such as electronics, computer maintenance/repair, and pre-engineering, or offered as stand alone courses or enrichment activities.

Estimates are that, in 2005, nearly one million robots were used worldwide in such trades as the automotive industry, electronics and medicine. A new educational program in Pennsylvania will offer high school students a career pathway into robotics to meet increasing demands of the state's bourgeoning robotics industry. This partnership will offer seamless transitions from a high school robotics program at A.W. Beattie Career Center to associate and baccalaureate degree programs at the California University of Pennsylvania.

"Our goal is to open doors for our students to follow a career path that would lead to work in the robotics field," said Kathryn E. Bamberger, director, A.W. Beattie Career Center. "Because this program will work to meet training needs for robots used in civilian markets and by the armed forces, which is indeed a noble goal, we are committed to working with California University to produce the most highly skilled robotics workforce in the country."

The new program will train students to use, manufacture, evaluate and repair commercial and military robots. Students who successfully complete the program will receive 15 credits of advanced placement into an engineering technology associate degree program at California University.

Good News About Building the Engineering Workforce

Project Lead the Way (PLTW) is a four-year pre-engineering curriculum that was developed by industry and educators to address the shortage of engineers and engineer technicians and the high rate of attrition in associate and baccalaureate engineering programs. Through a sequence of courses offered each year of high school, students are introduced to engineering and challenged to apply their math and science skills to solve real-world engineering problems. Participants must also complete four credits each in English, mathematics, and laboratory science, and three credits in social students. All academic courses must be at the college preparatory level. Community colleges and universities play an active role in training teachers and supporting the curriculum, linking students to postsecondary opportunities. Educators at more than 500 high schools in 24 states are now implementing PLTW. For more information, visit www.pltw.org.

Good News About Academic and CTE Integration in Arizona

The Arizona Agribusiness and Equine Center is a charter school housed on the campuses of two Phoenix-area community colleges. Students take a college preparatory curriculum that is integrated with technical coursework in biotechnology, animal science, natural resources, horticulture, veterinary technology and equine science. The school draws heavily on the resources of the community colleges, sharing their laboratory facilities, technology and faculty. Juniors and seniors are encouraged to enroll in college-level courses as well, and several students have graduated with both a high school diploma and an associate's degree in hand. Along with their regular coursework, all students are required to complete an annual agricultural science project. Past projects have included genetic transformation, the use of methanol as a supplemental fertilizer and the screening of desert plants as potential antibiotics.

terms of increased earnings after high school, with significant impacts specifically for African-American males (MDRC). The earnings impact is a critical issue because a large number of college-going youth either choose to work or are forced to work to help make ends meet while they pursue postsecondary education. Students with strong career-specific skills will be much better equipped to work their way through college than students with only general skills. Again, college-going and preparation for skilled work are not mutually exclusive, but can actually be complementary activities.

During the past decade, there have been innovative programs such as Tech Prep, Tech Prep Demos, Early College High Schools, the College and Careers Transitions Initiative,[23] and the Comprehensive School Reform Demonstration Program's high school reform models, all focused on the idea of integrating challenging academics and interest-based programs to ease the transition from high school to further education and learning. Based on the accumulated experiences of these efforts, we suggest that robust interest-based programs contain the following essential elements:[24]

1. Require or strongly encourage a **rigorous career and college readiness academic program** for all students;
2. **Provide research-based literacy and mathematics interventions** for all ninth grade students who have mastered grade-level content, based on data from eighth grade assessments and grades;
3. Provide every student with sophisticated **career exploration and career development services** (Web-based where possible), and make it completely integrated with college awareness and college counseling services;
4. Allow students to **pursue interest-based programs beginning in ninth grade**, even for students who are also receiving academic remediation, to strengthen learning skills and motivation;
5. Encourage qualified students to take **advanced placement and dual enrollment coursework** in the upper grades;
6. Emphasize the use of **challenging projects that integrate learning and leadership development** and encourage seniors to undertake capstone projects that integrate learning and skills from several disciplines;
7. **Encourage internships and work-based learning** to help students grow in maturity, gain exposure to the adult world of work, and develop strong social skills; and
8. Require career-themed programs to be **directly linked to industry-recognized standards and certifications**, and to use **curriculum frameworks jointly developed between secondary, postsecondary, apprenticeship councils, and business.**

RECOMMENDATION 5.
Create Incentives for Students to Pursue the Core Curriculum in an Interest-based Context

FEDERAL LEADERSHIP RESPONSE

- Support development and implementation of technical skills assessments for use in interest-based CTE programs built around the Career Clusters framework.
- Provide support for multi state collaborative effort to
  —gather existing curriculum frameworks for interest-based programs,
  —create new model frameworks based on knowledge and skills statements from the States Career Clusters Initiative, and
  —disseminate these resources among states.

STATE LEADERSHIP RESPONSE

- Conduct a statewide review of existing CTE and other interest-based programs to determine how closely they adhere to the 8 key elements of interest-based programs and are linked to the core curriculum.
- Create and implement clear criteria for program upgrading, creation and elimination, which should include current and future labor market needs, program rigor, and student interest.
- Update and create CTE curriculum frameworks to ensure close alignment with standards established by industry, ensure close secondary to postsecondary alignment and non-duplication, and allow for statewide consistency.

LOCAL LEADERSHIP RESPONSE

- Conduct a district-wide review of existing CTE and other interest-based programs to determine how closely they adhere to the eight elements of interest-based programs and are linked to the core curriculum.
- Create and implement clear criteria for program upgrading, creation and elimination.
- Engage business advisory committees and postsecondary education partners to upgrade and restructure interest-based programs, ensuring alignment to industry-based expectations and strong alignment with postsecondary education expectations.
- Provide professional development to academic and CTE teachers working in interest-based programs.

RECOMMENDATION 6.
Support High Quality Teaching in all Content Areas

NCLB creates mechanisms for assuring that every teacher in the academic core subjects is highly qualified, meaning the teacher holds a bachelor's degree or higher, grasps content at a deep level and can teach that content effectively. There is concern, however, that while the intent of the Highly Qualified Teacher requirement is sound, the compromises made during passage of NCLB allowed most current teachers to be considered highly qualified simply by counting their years of experience and possessing a teaching certificate, rather than objectively measuring their content knowledge and teaching skills. Standards for measuring content and teaching expertise need to be effectively applied to veteran teachers as well as new teachers.

The crux of these standards, deep knowledge of content and skills in effective teaching methods, should apply to CTE teachers as well—those entering the teaching profession through traditional teacher education programs and those transitioning into teaching from business and industry through alternative certification programs. In most CTE programs, there is one relatively straightforward way to determine a teacher's content expertise. In every program where an industry-based credential exists, CTE faculty providing instruction in that field can be required to obtain that credential (which could be a certification, license, or combination of work experience). Holding the current credential or certification ensures that the teacher is competent in state-of-the-art knowledge and skills. If the teacher doesn't hold the related industry-based credential after a reasonable phase-in period, it simply doesn't make sense for the teacher to be instructing students in that content area.

Many states are currently revising their CTE programs to focus on Career Clusters as the first phase of a career-based program. In states that are using the Career Clusters approach, it is not feasible for a teacher to hold credentials in all the pathways or occupationally-specific areas that fall within the cluster. In this case, the states should develop a method for objectively certifying a teacher's broad competence within the cluster, but still require specific expertise to be demonstrated within one pathway of the cluster. Unfortunately, the movement from traditional vocational education to new career clusters is early, and assessments correlated to the clusters do not yet exist. This is an area worthy of state focus and national investment.

If a CTE teacher is also teaching classes that provide academic credit, such as a health sciences teacher who offers an anatomy class, that teacher should, as NCLB now requires, be able to demonstrate that they have the requisite academic knowledge of the subject at hand, or alternatives should be arranged. Workable policies should be created to fit the unique situations in states across the country, such as having an academic teacher that meets the NCLB definition of "highly qualified" in core academic subjects to validate whether the student has acquired the academic knowledge and skills, using a team teaching approach, or using a virtual high school or distance education program to enhance efforts.

RECOMMENDATION 6.
Support High Quality Teaching in all Content Areas

FEDERAL LEADERSHIP RESPONSE

- Ensure that federal professional development funding can support integrated academics and contextual teaching strategies for academic teachers and CTE teachers.
- Ensure that federal professional development funding specifical-

Recommendation 6

Good News

Good News About Teacher Credentialing in CTE programs

Automotive Youth Educational Systems (AYES) is a partnership among participating automotive manufacturers, participating dealers, and selected high schools/tech prep schools. It is designed to encourage young people to consider satisfying careers in retail automotive service, and prepare them for entry-level career positions or advanced studies in automotive technology. AYES currently has more than 380 schools on its roster and approximately 3,800 dealers supporting the initiative in 45 states.

According to data from the Bureau of Labor Statistics, the automotive field will need 35,000 new auto technicians annually through the year 2010, due to growth and to replacing those retiring.

The high schools and vocational-technical schools selected for AYES have ASE-certified automotive programs and have active chapters of SkillsUSA. Some also have certified collision/refinish programs. All instructors in AYES programs must maintain current industry-certifications in order to teach in the program. For more information about AYES, visit www.ayes.org.

ly focuses on supporting principals in their role as educational leaders and creating an environment where rigor and relevance spans across all course offerings.
- Expand rigorous evaluation of integrated academics and contextual teaching strategies to focus on reading comprehension, writing, science, and technology, and model after the enhanced math CTE program, conducted by the University of Minnesota in 2004 and 2005.

STATE LEADERSHIP RESPONSE

- Create processes so that incoming and current CTE teachers, school counselors, and administrators possess knowledge of content and skill in effective teaching methods.
- Require CTE teachers to demonstrate content mastery through either industry-based credentials or assessments aligned to career clusters, where such credentials and assessments exist, and provide payment for such credentialing exams if necessary.
- Support efforts to develop additional measures of technical skills aligned to career clusters in areas where none exist.
- Provide payment for additional professional development costs related to new expectations.
- Create state policies that facilitate collaboration between core academic teachers and CTE teachers that impacts CTE coursework and academic classes.
- Focus on professional development for principals as the educational leader of the high school.

LOCAL LEADERSHIP RESPONSE

- Strong direction for local professional development must include:
  —Effective teaching methods for all CTE teachers, particularly new teachers coming from business and industry.
  —Content knowledge "refreshers" for CTE teachers so they can receive industry-certification or career cluster certification.
  —Professional development for core academic teachers in contextual teaching and learning and in workplace realities, including externships for academic teachers in business and industry.
- Encourage and support participation of educators in related professional organizations.

RECOMMENDATION 7.
Offer Flexible Learning Opportunities to Encourage Re-entry and Completion

True quality high school reform must include effective strategies to re-engage and reconnect young people who are in danger of failing or who have failed to complete high school. These young people have been failed by the current high school system. With a national graduation rate of approximately 71 percent, and areas where the high school completion rate ranges around 50 percent, millions of young people are out of school and grossly ill equipped to compete in the 21st century workforce and economy.[25] To reform high school without a strategy to reengage these young people who have already dropped out would be to abandon them to, and accept the social costs associated with, bleak futures marked by reduced earning potential, poverty, crime, drug abuse, and early pregnancy.

Developing flexible education programs requires that education leaders broaden their responsibility—from responsibility for students who are enrolled to responsibility for ALL youth in the community, in addition to dependable and equitable sources of funding for staff, curriculum, technology, facilities, and professional development. All students—including young people who have dropped out of school—need a continuum of flexible interest-based learning opportunities that utilize effective teaching methodologies and are responsive to their varied needs and life circumstances. Dropout recovery efforts should not only focus on helping dropouts to return to traditional high schools, but also connecting them to a range

Recommendation 7

Good News
About Flexible Re-entry and High School Graduation in Massachusetts

The Diploma Plus program developed by the Center for Youth Development and Education in Boston enables dropouts and at-risk students to earn a regular high school diploma, earn college credit and receive real-life experience in the workplace or through community service. The program's curriculum integrates state core academic standards with life skills and career development activities. Contextual and project-based learning activities are emphasized. Students progress at their own pace, advancing through the curriculum as they demonstrate proficiency at each level.

In the final "plus" year of the program, students must successfully complete several projects, a structured internship, and one or more credit-level college courses in order to earn their high school diploma. The program now serves 700 youth at seven sites across Massachusetts and even one in Maryland. Program sites include charter schools, community-based organizations, and schools-within-a-school. Although the program is still being evaluated, 71 percent of its graduates have enrolled in postsecondary education, and 75 percent of these students earned a C or better in at least one postsecondary course.

of options and activities—including dual high school and college credit, leadership development opportunities, and work-readiness credentials—that lead to high school diplomas and employment opportunities. In addition, students who fulfill their high school graduation requirements in alternative high school programs, including programs run by or in partnership with community colleges, community-based organizations, and charter schools, need access to guidance and supports to ensure their academic success and link them to employers.

Recovering the nearly 30 percent of young people who fail to graduate high school every year also requires education leaders and policymakers to shift their thinking about "alternative" (*i.e.* second-class) schools and education. National high school reform efforts should embrace the notion that all secondary education programs—whether traditional or "alternative"—belong to one education system that meets a range of student needs and offers a continuum of learning opportunities that helps secondary students to quickly and efficiently prepare to succeed in postsecondary education and the workforce. In doing so, all students—traditional and "alternative"—would benefit from access to a range of educational pathways and learning options that prepare them to succeed in careers and postsecondary education, and increase their potential to contribute the value of their labor back to the communities in which they live.

Particularly for students who have dropped out, interest-based career courses—those that have a clear employment connection—may be the most likely to motivate the student to re-engage in education. In order to meet returning students' expressed interests and needs, education programs that re-engage dropouts should use career-based classes, credit-recovery programs, technology supports that address specific academic needs, and flexible schedules of evening, morning and weekend programs.

While it may be feasible for some students to return to a traditional high school setting, we should expect such cases to be the exception rather than the norm. Many students who re-engage in school will do so under real-life circumstances that prevent them from transitioning back to high school. Moreover, it does not make sense to expect students who are experiencing academic success in "alternative" environments, to return to the traditional high school setting where they initially became disconnected and lost interest. It makes more sense to create multiple points of access for students to re-engage in alternative programs that can meet the students' real-life needs while helping them to earn their high school diplomas and credentials that employers value.

RECOMMENDATION 7.
Offer Flexible Learning Opportunities to Encourage Re-entry and Completion

FEDERAL LEADERSHIP RESPONSE

- Ensure federal flexibility for reporting on-time and "extended-time" graduation rates.
- Support research and development for flexible re-entry and completion programs, including those that employ career development and CTE strategies.

STATE LEADERSHIP RESPONSE

- Create better systems and methods for collecting, analyzing and reporting graduation and dropout rates, beginning with the National Governors Association's recommendation to adopt and implement a standard four-year adjusted cohort graduation rate that makes allowances for students who will need extra time to complete high school diploma requirements.
- Conduct a statewide survey to assess the availability of high school re-entry and completion programs.
- Provide competitive grant support to schools, districts and regional consortia for creating new re-entry and completion programs:
  —Give priority to programs that form partnerships with regional technology centers and community colleges.
  —Require application of career and college readiness expectations.

LOCAL LEADERSHIP RESPONSE

- Develop dropout prevention and re-entry initiatives with help of community-based organizations, regional technology centers and community colleges.

RECOMMENDATION 8.
Create System Incentives and Supports for Connection of CTE and High School Redesign Efforts

In many states and school districts, CTE leaders are providing the major impetus and resources for rethinking the instructional and organizational design of the traditional high school. As noted before, there are more than 1,100 schools involved in the HSTW networks and dozens of states involved in the effort. Additionally, hundreds of other high schools offer some mix of career-themed programs such as career academies, charter schools and small public schools with a career theme, and smaller learning communities with career themes within larger high schools. Among the approximately 16,000 U.S. high schools, this trend of CTE involvement in high school redesign is commendable and encouraging.

However, in some locales, superintendents, school leaders and school reform advocates are reportedly overlooking the role of CTE in providing meaning, relevance, and experience in deeply contextualized learning of subject matter. This oversight will limit the effectiveness of and impact of the high school redesign agenda.

Policymakers at the federal, state and local levels should see academic and interest-based courses as complementary of one another, and create initiatives that support rich, interest-based programs to be built around a core of rigorous academic expectations.

At the federal level, Congress and the Administration should continue to examine strategies for furthering the high school agenda while also supporting the Perkins Act through consistent appropriations and implementation of its reauthorization legislation. Congress and the U.S. Department of Education could also take action to help states and consortia of states focus on high school redesign. A relatively modest program of incentive grants for states could be developed to encourage broader implementation of innovative models for a new high school. These state grants could encourage collaboration between the state, district and school levels to create stronger and richer accountability for high school performance, create assessments of career and college readiness, and support local innovations in curriculum, instructional delivery and professional development that are essential for improved student achievement. These grants should explicitly encourage the widespread development of interest-based programs built around a strong academic core.

At all levels of discussion about high school redesign, teachers and leaders representing the resources and expertise of CTE should be involved. For example, at the state level, the State CTE director (*e.g.* the programmatic liaison for the Perkins Act) should be fully engaged in the state's internal task force working on high school redesign issues. Further, each school district with high schools should organize a high school task force, at which CTE administrators and faculty, as well as business and other community leaders, should be at the table.

RECOMMENDATION 8.
Create System Incentives and Supports for Connection of CTE and High School Redesign Efforts

FEDERAL LEADERSHIP RESPONSE

- Complete reauthorization of the Carll D. Perkins Vocational and Technical Education Act and encourage new state plans to have close integration with State high school redesign efforts.
- Offer consistent support for Perkins Act funding to complement, not compete with, other high school initiatives.
- Create incentive grants for states and state consortia to focus on multi pronged high school redesign strategies and promote close linkages at the state and local levels with CTE strategies.

STATE LEADERSHIP RESPONSE

- Invite the state CTE director (e.g. the programmatic liaison for the Perkins Act) and other influential CTE leaders to be involved in the state's internal task force working on high school redesign issues.

LOCAL LEADERSHIP RESPONSE

- Create or re-energize a district-level working group on high school redesign.
- Ensure that key CTE administrators and faculty, as well as business and other community leaders, are active participants in the working group.

Recommendation 8

Good News About Integrating Academics and Career-Related Coursework in Maine

Located in a sea fishing village in rural Maine, the Lubec Consolidated School offers high school students a strong academic program and an opportunity to participate in an innovative technical education program in aquaculture. Housed in a former water treatment plant converted into a lab, the aquaculture program is designed to build the science, technical and entrepreneurial skills of participants. Students operate a commercial fish farm and hydroponics garden. Experiments suggested by local businesses and postsecondary educators are performed by students in the lab and on the bay aboard the program's experimental mussel raft.

To support the area's ailing clamming industry, students have taken over the regular water testing that local fisherman could no longer afford to conduct. Academics continue to be a primary focus at the school, however. Test scores in 11th grade academics, including science, reading, writing, social studies and math, have improved dramatically over a multi-year period.

RECOMMENDATION 9.
Move Beyond "Seat-Time" and Narrowly Defined Knowledge and Skills

U.S. high schools operate on a well-established set of expectations for size, time of day and seasons-of-the-year that programs and classes are offered, how instructional material is delivered, and what constitutes success in terms of the students' knowledge and skills. If our education system adopts the new system goals of getting every student ready for careers and college, and changing the way teachers teach, it will create a degree of conflict with these accepted norms of how schools currently operate and the policies that sustain this environment. We suggest seriously focusing on the underlying principles for what students learn and how we teach it:

- what knowledge and skills are measured;
- how students are asked to demonstrate their knowledge and skills; and
- how "school" is offered for all young people, particularly for the many students who are currently disengaged and leaving, or have already left, the traditional high school.

Standards-based education reform is based on the notion of clearly identifying the knowledge and skills students need to have upon school completion, and creating an accountability program to ensure each student gains that knowledge and those skills. In contrast to measuring real student learning, much of the current discussion around high school reform focuses on increasing course-taking requirements. Time-bound course-taking is a crude proxy for knowing whether a student is gaining knowledge and skills. Furthermore, placing the emphasis on imparting academic knowledge and skills only through narrowly defined courses could actually impede innovations in the way content can be accessed by students, particularly when the academic content could be integrated into CTE coursework.

As discussed earlier, when academic content is explicitly integrated into a CTE course, there should be a mechanism for granting full or partial academic credit for participation in that CTE course. Ultimately, a true standards-based approach to education requires moving away from the time-based Carnegie Unit approach that measures inputs to one that measures outputs—what the student has learned and can do. Until reliable assessments of knowledge and skills are in place, it will be difficult to let go of the seat-time approach. A first step toward the new vision is to continue using existing standardized assessments for accountability and exit requirements, while also developing and implementing performance-based demonstrations of skills and knowledge that can give a richer picture of the student's skills. This is a pre-requisite for moving to a rigorous competency-based education system.

Another important consideration involves reviewing the state's funding formulas to see if they push schools into maintaining traditional course structures instead of allowing more flexible and innovative approaches to teaching and learning.

School reform advocates generally agree that preparation for further education and the workplace requires more than traditional core academic skills like reading and mathematics. These skills are essential, but they are not sufficient in and of themselves. Often, however, accountability systems are largely focused only on these narrowly defined and assessed "academic" skills.

In the upcoming reauthorization of NCLB (scheduled for the 2007 timeframe), states should be given the responsibility of developing school performance measures that include other ways of measuring student competencies and using these measures to give a fuller picture of student preparation. Admittedly, these soft skills of reasoning, problem-solving, teamwork, leadership, and social maturity are difficult to quantify. Still, the adage of "what gets measured gets taught" is very real, so there must be a clear incentive for schools to also focus on the development of soft skills and aptitudes for students.

Achieve, Inc., in its "Ready or Not" report on the high school diploma [26], recommended that schools create a challenging set of academic standards for English that fall into eight strands including language, communication, writing, research, logic, informational text, media, and literature. Within these strands are specific benchmarks that go beyond a narrow notion of English standards. Examples include: making oral presentations; participating productively in self-directed teams, taking notes and incorporating reader's comments on working drafts, presenting written material using basic software programs; and producing work-related texts such as memos, e-mails, project plans and work orders. Many of these "English" benchmarks bear a striking resemblance to the knowledge and skills statements developed by the States Career Clusters Initiative, and can certainly be imbedded in CTE courses and other disciplines, not only in English classes. These standards are definitely rigorous, but they are also broad and inclusive.

Achieve also recommends that states develop alternative assessments to supplement large-scale standardized as-

sessments to measure the degree to which students acquire higher-level organizational, research and leadership skills that graduating seniors need as they move forward. There may be performance-based assessments that can be designed to recognize the acquisition of these types of skills. Many CTE courses have already developed high-level performance-based assessments that are in use and can be made part of the student's graduation portfolio, especially those that confer an industry-recognized credential. Further, the eight CTSOs utilize a variety of projects and competitions to build student skills in ways that supplement the CTE and general curricula.

RECOMMENDATION 9.
Move Beyond "Seat-Time" and Narrowly Defined Knowledge and Skills

FEDERAL LEADERSHIP RESPONSE

- Provide funds to a limited number of states to begin pilot testing ways to integrate rigorous and inclusive standards into school accountability systems.
- Invest in pilot projects by states and organizations working to develop rigorous and inclusive academic standards, assessment approaches, and related lessons plans and activities.

STATE LEADERSHIP RESPONSE

- Create high-quality assessments to measure career and college readiness levels—a prerequisite for moving toward a competency-based approach.
- Develop state standards that are rigorous and inclusive and create a process to imbed them into curriculum frameworks for specific classes, not limited to traditional academic courses.
- Create pilot projects for reporting rigorous and inclusive skills on a student and school-by-school basis to demonstrate how skills might be incorporated into school accountability systems.

LOCAL LEADERSHIP RESPONSE

- Lead school-level efforts to discuss alternative means to measure student acquisition of competencies that are rigorous and inclusive.
- Working in collaboration with the state when possible, pilot test new measurement approaches and strategies for imbedding rigorous and inclusive academic skills across the curriculum.

Recommendation 9

Good News

About Flexible Graduation Plans in New York

The Pathways to High School Success program by the Rochester, New York, public schools offers students the option of completing high school in three, four, or five years. The five-year program spreads the traditional curriculum over an additional year, enabling students to get extra instructional time in the academic areas in which they have the greatest weaknesses. In their fifth year, students can continue to catch up in areas where they need help and take additional courses in the career and college areas that interest them. The three-year program gives students the option to complete their coursework a year early. At the completion of their high school studies, students can choose to graduate early or remain in high school to take AP, dual credit, and college credit courses. To accommodate students pursuing the 5- and 3-year pathway, Rochester offers summer courses.

Good News About the Partnership for 21st Century Skills

The Partnership for 21st Century Skills has emerged as an important advocacy organization focused on infusing 21st century skills into education. In an effort that complements the work of the American Diploma Project Network, the Partnership brings together the business community, education leaders, and policymakers to define a powerful vision for 21st century education to ensure every child's success as citizens and workers in the 21st century.

The Partnership's framework for learning in the 21st century is based on the essential skills that our children need to succeed as citizens and workers in the 21st century. The Partnership has identified the following key elements of a 21st century education:

- Emphasize core subjects.
- Emphasize learning skills.
- Use 21st century tools to develop learning skills.
- Teach and learn in a 21st century context.
- Teach and learn 21st century content.
- Use 21st century assessments that measure 21st century skills.

In discussing learning skills, the Partnership says that "as much as students need knowledge in core subjects, they also need to know how to keep learning continually throughout their lives. Learning skills comprise three broad categories of skills:

- Information and communication skills;
- Thinking and problem-solving skills; and
- Interpersonal and self-directional skills."

The Partnership is currently conducting a survey of all assessments that currently exist that can be used to measure student acquisition of these learning skills and information technology skills. For more information, visit www.21stcenturyskils.org.

CONCLUSION

Reinventing American high schools to meet the needs of students in the present and the future requires honesty, courage, and a willingness to change familiar structures and practices in the best interests of our young people. It does not mean abandoning all current practices or resources—it means identifying those practices that are working and restructuring the policy and support systems to make these options accessible to each student. It will require a mix of approaches—jettisoning negative culture and outdated practices, thoughtfully realigning and adjusting current resources, and making new investments to build faculty and program capacities. Real change will not be comfortable nor protect the status quo for any member of the school environment, whether it be a teacher, administrator, policymaker, or for that matter, the student and parents/guardians.

In all these recommendations about redesigning the American high school, three points must be re-emphasized.

First, it will be a tragic miscalculation to pit academic course-taking against access to rigorous career-oriented and interest-based programs. Students need to be taught in a way that is rigorous, relevant to their areas of personal interest and career aspirations, and that creates a supportive environment of relationships.

Second, none of the proposed redesign functions will work unless there is a sense of shared accountability at the school level for raising the performance of every student. Without external accountability and a notion of what is promising and what works, there will not be enough impetus to overcome traditional teaching methods and organizational isolation.

Third, creating a positive high school environment that emphasizes rigor, relevance, and relationships requires a talented and committed leadership team. States and districts must ensure that school leaders who embrace the new mission of the American high school are recruited, developed, and strongly supported in their efforts on behalf of students, staff and faculty.

In this paper, the Association for Career and Technical Education (ACTE), as the national organization representing teachers, school counselors, administrators, and other professionals in CTE, offers a constructive, coherent position on the role CTE should play in discussions about high school redesign. We are hopeful that it will support and expand a meaningful dialogue at the federal, state and local levels about the value and role of many practices and resources within career and technical education, and how they can be utilized in shaping the future of American high schools centered on a new mission—preparing EVERY young person for meaningful work, lifelong learning and career advancement, and active citizenship.

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ABOUT THE ASSOCIATION FOR CAREER AND TECHNICAL EDUCATION

Founded in 1926, the Association for Career and Technical Education is the largest national education association dedicated to the advancement of education that prepares youth and adults for successful careers. ACTE's core purpose is to provide leadership in developing an educated, prepared, and competitive workforce.

The strength of ACTE is reflected in its diverse membership composed of 30,000 career and technical educators, administrators, researchers, guidance counselors and others involved in planning and conducting career and technical education programs at the secondary, postsecondary and adult levels.

ACTE is committed to enhancing the job performance and satisfaction of its members; to increasing public awareness and appreciation for career and technical programs; and to assuring growth in local, state and federal funding for these programs by communicating and working with legislators and government leaders.

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