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# Next-Generation Career and Technical Education in New York City

*Final Report and Recommendations  
of the Mayoral Task Force on  
Career and Technical Education Innovation*

*July 2008*

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## Executive Summary

In his January 2008 State of the City address, Mayor Michael Bloomberg made career and technical education (CTE) innovation a citywide priority, announcing his commitment to improve student achievement in CTE and charging a Mayoral Task Force to report findings and recommendations on ways to improve CTE.

The New York State Department of Education (NYSED) has demonstrated leadership and interest in CTE work, focused on improving CTE across the State, and recently committed to review New York State Learning Standards in the context of rising expectations in the 21st century. Creating rigorous and relevant 21st-century CTE experiences and increased graduation rates will require ongoing innovation and collaboration among the State, local school districts, postsecondary institutions, and industry partners.

This report recommends policy and actions to expand CTE's role in school reform efforts and to ensure that CTE provides a range of pathways that lead students directly into postsecondary education and/or workforce opportunities. Innovation must ensure CTE is a desirable, respected, and accessible option for all high school students.

CTE schools educate a sizeable portion of secondary school students in New York City. Overall, approximately 110,000 students are enrolled in 282 CTE programs of study and in individual CTE elective courses. Twenty-one designated CTE schools enroll approximately 30,000 of these students; the rest of the students attend comprehensive high schools around the city.

### Emerging opportunities

Both increased attention on making high school engaging and relevant for all youth and rapid changes in the global economy are increasing the wage gap between those with and without postsecondary education. In addition, the need for more complex skills is creating the opportunity and rationale for high-quality CTE programs built on enhanced academics and applied learning. It includes opportunities to benefit from connections and exposure to career pathways and the labor market to develop 21st-century and employability skills, mentoring from employers, and opportunities to connect to postsecondary education. These key CTE elements have been shown to be effective for students throughout the United States. To improve and expand high-quality CTE to help more students be successful, the City should leverage emerging opportunities, including:

- A strong coalition is embracing a bold vision for CTE;

- The New York State Education Department (NYSED) ongoing review of New York State Learning Standards;
- Enhanced CTE program quality;
- Public support for CTE programs;
- Employer commitment to CTE; and
- Promising models of best practice across New York State, nationally, and internationally.

## Challenges

CTE's real-world approach to education is helping many students succeed. Despite several notable accomplishments, however, the promise of CTE nationally and in New York City has not yet been fully realized. Efforts to spark innovation in CTE in the City must begin with an understanding of the major challenges and opportunities in developing and sustaining quality programs.

### **The challenges for CTE in New York City schools include:**

- Tradition and negative perception in the City;
- Uneven performance across the City's CTE schools;
- Limited access and opportunity to enroll in innovative programs in the City;
- Insufficient preparation for postsecondary success;
- Inadequate integration in classroom instruction;
- Seat time versus competency-based pathways to graduation;
- Definitions of student success;
- Disjointed management of industry engagement;
- Disproportionate distribution of resources; and
- Limited opportunity for CTE innovation.

The Mayoral Task Force on Career and Technical Education Innovation envisions unprecedented numbers of students graduating from CTE schools and programs in New York City well-prepared for postsecondary success in college, work, and life. This vision begins in middle school, improves transitions to high school, and leverages integrated teaching and learning and industry experience toward high school graduation and postsecondary success.

## Major goals

Five major goals should drive the City's efforts toward realizing this vision for high-quality CTE opportunities for students at all schools:

- **Meet 21st-century standards.** Prepare New York City students to meet academic and industry-based skills and competencies through rigorous and relevant coursework, supported by strong public-private partnerships.

- **Expand paths to graduation.** Create and support career pathways that integrate coursework, work-based learning experiences and hands-on experiences so that students develop competencies, skills, and attitudes for success beyond high school and in the workforce, and ensure that these paths and success are made available to more City students.
- **Engage and empower industry leadership.** Reach beyond the educational sector and develop a coherent structure for engaging, organizing, and accounting for industry support to ensure the continued relevancy of CTE programs, and build pipelines of skilled workers into sector labor markets.
- **Prepare graduates for postsecondary success.** Prepare more New York City students for postsecondary education and work and training options, emphasizing integration and articulation with postsecondary degree options.
- **Increase opportunity and access.** Equip students and families to make informed choices about education and work, and ensure that all students—regardless of race, gender, disability, or national origin—have access to desirable options that expand rather than limit their postsecondary choices.

### Key recommendations to achieve goals

The effort to achieve these goals and graduate students ready to choose and succeed in the range of postsecondary pathways requires the involvement and commitment of the NYSED, the New York City Department of Education (NYCDOE), industry, and higher education. Recommendations and resource implications to advance these goals follow.

**Recommendations for meeting 21st-century standards:** Preparing students for success in the 21st century requires that students have the skills and competencies to meet the challenges of an increasingly technological and global world. To do so, the Task Force recommends efforts to:

- Support State efforts to define rigorous 21st-century standards;
- Define core competencies all students need to succeed;
- Expand beyond core competencies to skills and knowledge needed for successful postsecondary transitions;
- Empower industry to define sector-specific skills;
- Create innovative courses and programs of study; and
- Put more students on a path to success.

**Recommendations for expanding paths to graduation:** Supporting more students to meet 21st-century competencies will require continued innovation in school programs, including the ways that instruction is delivered and student learning is encouraged, monitored, and measured. Equally important is the continuing effort to improve the performance of existing New York City

CTE schools and programs to accomplish these same goals. The Mayoral Task Force is recommending significant steps in two strategic areas:

- *Build CTE demonstration sites to pilot CTE innovations:* Through the creation of CTE demonstration sites, the NYCDOE will model the opportunities, challenges, and outcomes deriving from intense industry partnerships and state policy innovation in the implementation of pioneering CTE school designs. Demonstration sites will serve the explicit purpose of piloting innovative state graduation requirements and documenting and disseminating promising practices toward the improvement of the overall CTE portfolio.

Without compromising or lowering standards, the State should:

- Extend prior State efforts to encourage innovation in seat-time requirements;
- Maintain commitment to the English language arts and mathematics Regents exams as a foundational requirement for all students and strong measurements of core 21st-century competencies;
- Explore rigorous State-approved alternatives to current graduation assessments to expand assessment options. This work is critical and must acknowledge that creation of rigorous new assessments is a major undertaking; and
- *Improve and expand success of existing CTE schools and programs:* Recognizing the wide range in performance of existing CTE schools in New York City, a concerted effort is needed to deliver more consistent high-quality CTE offerings and to ensure that the existing portfolio of schools are aligned to the Task Force's vision.

**Recommendations for engaging and empowering industry leadership:** A proven element in the success of CTE programs is an active and well-integrated connection to the world of work. Properly managed partnerships between educators and industry can ensure the continued relevance of CTE programs, help recruit and develop a well-motivated and prepared corps of CTE teachers, and provide work-based learning opportunities and resources for students and their schools. The CTE effort should reach beyond the educational sector to identify allies and supporters so that the ownership for results is shared more broadly. The Task Force recommends significant steps to:

- Target growth industries;
- Clarify industry leadership and organization;
- Expand and strengthen support for work-based learning opportunities;
- Sustain progress and track results toward greater accountability; and
- Encourage gender balance in nontraditional sectors.

**Recommendations for postsecondary success:** With changing labor market demands and increased expectations for students to pursue postsecondary education, CTE programs need to create connections with and pathways to postsecondary education—including two- and four-year college degree programs, certificated programs, and apprenticeship programs—and pathways to master’s degrees and beyond. The Task Force recommends efforts to:

- Increase emphasis on successful student transitions;
- Strengthen the academic achievement of more students in CTE programs;
- Develop new programs and align with CTE pathways;
- Strengthen formal articulations between the NYCDOE and the City University of New York; and
- Track student transitions into postsecondary studies.

**Recommendations for increasing access and opportunity:** Students who pursue CTE in high school and make an informed choice to pursue work opportunities related to what they have learned should enjoy the full support of peers, teachers, and everyone in the system. The Task Force recommends steps to:

- Promote CTE as an equally rigorous path for City high school students;
- Add career awareness component to middle school curriculum;
- Expand mechanisms for students to demonstrate interest in CTE options;
- Ensure equity of access in student selection;
- Create transfer options and limit new enrollment in upper grades; and
- Monitor CTE admissions and enrollment data over time.

### **Resource implications**

The meaningful integration of CTE programs, as recommended in this report, has resource implications that must be balanced within the larger system and among the needs of all students. Alignment and equitable distribution of resources must consider the impact on CTE programs of both industry-defined standards and unique equipment needs. When taking into account the effect of potential flexibility in the use of student time, and the ability to effectively leverage industry partnerships, new models for how resources are identified and deployed should be explored to ensure comparable investment in student success. To address these issues in a consistent and sustainable way, the Task Force recommends the following:

- Evaluate the NYCDOE’s Fair Student Funding formulas with respect to CTE;
- Plan capital investments for long-term CTE alignment; and
- Leverage private resources.

## **Preface: A Citywide Priority—Improving Career and Technical Education for the 21st Century**

In his January 2008 State of the City address, Mayor Bloomberg made career and technical education (CTE) innovation a citywide priority, announcing his commitment to improve student achievement in this area and charging a mayoral task force to report findings and recommendations on ways to improve CTE and contribute to continuing gains in the City's overall high school graduation rate.

To make this vision a reality, the mayor's office convened a task force, with support from the New York City Department of Education (NYCDOE) and the New York State Board of Regents, to recommend how to strengthen career and technical pathways in New York City. Mayor Bloomberg charged the Mayoral Task Force on Career and Technical Education Innovation to recommend policy changes and actions to ensure that CTE:

- Is rigorous and relevant and prepares New York City students to meet academic and industry-based standards;
- Prepares City students for postsecondary education, work, and training options, emphasizing integration and articulation with postsecondary degree programs;
- Integrates coursework, work-based learning experiences and hands-on experience so that students develop competencies, skills, and attitudes for success beyond high school and in the workforce; and
- Is accessible to all students and equips students and their families to make informed choices about education and work.

The Task Force first met March 25, 2008. Its second meeting was open to the public on April 30 at the United Federation of Teachers (UFT). The Task Force met again June 12 at Food and Finance High School to hear public comment on the preliminary recommendations.

Over the past year, the NYCDOE has documented and incorporated input from a range of constituents, agencies, and advocates about the need to expand further the range of secondary school offerings, a critical component of *Children First*.

The NYCDOE seeks to expand on the gains of the past five years by strengthening CTE to attract more students by enhancing the range of pathways and options that lead directly into meaningful postsecondary educational and/or workforce opportunities for our students. The overarching objective is to transform CTE into a rigorous program that directly aligns to

the needs and demands of industry and equips students with the relevant skills and competencies to compete successfully in the 21st-century economy.

The New York State Board of Regents has demonstrated leadership and interest in CTE work over recent years—signaled most recently in January 2008 with a committee meeting focused on improving CTE across the State—and a commitment to review New York State Learning Standards in the context of rising expectations in the 21st century. Creating rigorous and relevant 21st-century CTE experiences and increased graduation rates will require ongoing collaboration with the State to affect innovation in key State policy areas.

The City University of New York (CUNY) has partnered in this effort, as part of its efforts to improve outcomes at its two- and four-year colleges. CUNY has made a deep commitment toward CTE work as an extension of its core mission to maintain and expand its commitment to academic excellence at its two- and four-year colleges and to provide equal access and opportunity for students, faculty, and staff from all ethnic and racial groups and from both sexes.

With the additional engagement of industry representatives through labor leaders and the Partnership for New York City, a strong coalition is being established to improve CTE to meet the demands of the 21st century.

## I. Introduction

The central purpose of education is to ensure that we have a skilled workforce and engaged citizenry to keep our nation, economy, communities, and families healthy and productive. This broader mission is often lost in the debates on education and school reform that focus too myopically on getting students to pass a certain test or gain entrance into Ivy League colleges (Brand, 2008).

The benefits of college degree attainment in terms of lifetime earnings, health, and civic participation are clear. Yet success in our economy and society is more complex. Every level of education and skills acquisition post-high school appears to bring a wage premium. Changes in the labor market are presenting challenges to today's young people unlike those faced by previous generations or even by students from a decade ago. Specifically, wages for high school graduates who do not attain any form of postsecondary education have been sharply declining since 2000. At the same time, many well-paying careers do not require a traditional bachelor's degree.

These realities raise two concerns: First, too many students in New York City (and across the country) are not yet meeting the key first milestone for success—high school graduation. The City's graduation rate has been rising steadily since 2004. Yet, analysis by the NYCDOE and the Parthenon Group has demonstrated that approximately 70,000 City public school students at any given time are in danger of not meeting graduation standards. Similarly, both in New York City and across the nation, large numbers of high school graduates who enter community colleges must take remedial courses in mathematics and English. And, research indicates that those who require two or more remedial courses in college are unlikely to attain any degree within six years. Developing high schools and high school programs that successfully

In a society where everyone is supposed to go to college, the problems facing high school graduates who do not continue their education are often forgotten. Many cannot find jobs, and those who do are often stuck in low-wage, dead-end positions. Meanwhile, employers complain that high school graduates lack the necessary skills for today's workplace.

Studies of the interaction between employers and high schools in the United States conclude that each fails to communicate its needs to the other, leading to a predictable array of problems for young people in the years after graduation. High schools caught up in college-for-all goals, provide little job advice or preparation, leading students to make unrealistic plans and hampering both students who do not go to college and those who start college but do not finish.

*From Beyond College for All: Career Paths for the Forgotten Half (Rosenbaum, 2001)*

educate many more students to succeed in high school and beyond requires both more rigor and increased innovation.

Second, a narrow interpretation of “college for all,” focusing attention solely on the four-year bachelor’s degree, may have limited our ability to engage students in building the strong academic and career-focused competencies that are necessary for higher education and good careers in the future. Interest in CTE is growing throughout the country among business leaders, policymakers, and educators who have discovered, and in some cases rediscovered, the benefits of embedding rigorous learning into relevant career pathways. Embedded learning can enhance the education of students of all levels and ensure that whether they go to a four-year college, a two-year college, or straight to work, they are equipped with the competencies and attitudes to be successful in their postsecondary trajectory.

To be successful in our complex world and workplaces, students must develop sophisticated reading, writing, and mathematical knowledge and skills. But students need other skills, too. They need to be fluent in the use of information technologies, know how to apply knowledge to solve problems, and possess what are commonly referred to as 21st-century competencies. High schools, for the most part, however, are not currently structured to help students learn these types of competencies.

Student engagement is key to ensuring that all students meet high standards, not only those who enter high school with strong academic skills and high motivation. Too many students see little purpose in high school: Any connection between what they are being asked to learn and their futures is obscured.

Nationally, CTE, while still embracing traditional careers in the skilled trades (from auto mechanics to welders), has transformed itself through innovative program designs and is now preparing high school students for employment, postsecondary learning, and careers in diverse areas ranging from arts and communication to finance, health sciences, information technology, and engineering.

In New York City, CTE programs are a part of a portfolio of program options available to students of all abilities and career interests who wish to pursue a career-focused pathway to postsecondary learning and work. Despite the widespread presence of CTE in most high schools, many policymakers have limited knowledge about the next generation of CTE offerings. As a result, policymakers have been unsure about how CTE fits into redesigned high schools and the City’s vision of expanded learning options for youth.

In response, this report recommends policies and actions to support a greater role for CTE in reform efforts and to ensure that CTE provides a range of pathways that lead students directly into postsecondary educational and/or workforce opportunities. From the start, it must be plainly acknowledged that this work will not be easy. It will require partners to invest time, expertise, and resources to realize such seamless pathways. Innovation in CTE must ensure that the next generation of CTE is a desirable, respected, and accessible option for *all* high school students.

## II. Where We Are: Current CTE Efforts, Opportunities, and Challenges

Career and technical education (CTE) programs educate a sizeable portion of secondary school students in New York City. Overall, approximately 110,000 students are enrolled in 282 CTE programs of study and in individual CTE elective courses. Twenty-one designated CTE schools enroll approximately 30,000 of these students; the rest of the students are enrolled in comprehensive high schools around the City. Overall, the CTE performance picture is mixed—reflecting both promise in advancing larger system goals and persistent challenges in fulfilling its role as part of the City’s portfolio of high school options.

CTE’s real-world approach to education is helping many students succeed. Attendance at a number of the CTE schools is well above citywide averages. Several CTE schools exceed the citywide average for helping struggling freshmen achieve postsecondary readiness. Some of the schools are national models, and many are deemed effective by the City. Half of the 18 CTE high schools that received grades under the NYCDOE School Progress Reports released in fall 2007 received As or Bs.<sup>1</sup> Further, individual programs of study at comprehensive high schools continue to attract students to relevant career-pathway sequences and programs with meaningful work-based experiences and postsecondary opportunities.

Despite several notable accomplishments, however, the promise of CTE in New York City has not yet been fully realized. Analysis indicates that CTE schools overall are underperforming key achievement measures in many important areas. Nearly half (47 percent) earned progress report grades of C or below, and three schools earned Fs. Only about 60 percent of students in New York City CTE schools earned 10 or more credits in the first year, and less than 6 in 10 students graduated high school within four years. Seven schools have attendance rates below 80 percent, compared to the citywide average of 84.7 percent. Further, insufficient hard data are available about the achievement of students at comprehensive high schools who participate in CTE programs of study or individual elective courses. For too long, anecdotal data have been relied on to identify relevant CTE programs of study leading to postsecondary success.

Many students enter CTE schools with minimal academic skills and little expectation of enrolling in postsecondary education. It is precisely those realities, as well as the often-heard warning that the majority of tomorrow’s workers will need to engage in postsecondary learning throughout their careers, that make the

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<sup>1</sup> NYCDOE, 2006–07 School Progress Reports and School Quality Reviews. *See appendix for CTE school performance indicators.*

reform of CTE education an urgent priority for New York City, whose economy is especially dependent on high-skills occupations across multiple sectors.<sup>2</sup>

Efforts to spark innovation in New York City must begin with an understanding of the major opportunities and challenges in developing and sustaining quality programs.

### Opportunities

Increased attention on making high school engaging and relevant for all youth and rapid changes in the global economy are increasing the future earnings potential of those with some postsecondary education. In addition, the need for more complex skills is creating both the opportunity and rationale for high-quality CTE programs built on enhanced academics and applied learning. Students can benefit from connections and exposure to career pathways and the labor market to develop 21st-century and employability skills, mentoring from employers, and opportunities to connect to postsecondary education. These key CTE elements have been shown to be effective for students throughout the country. The City has a chance to improve and expand high-quality CTE to help more students to be successful.

**Ongoing review of New York State Learning Standards:** The New York State Board of Regents has established a solid foundation from which to build pathways to postsecondary success. Current New York State Learning Standards reflect a blend of competency and content-based standards, measured through a combination of seat-time requirements and standardized tests in the areas of: English language arts; mathematics, science and technology; career development and occupational studies; social studies; the arts; foreign language; and health, physical education, and family and consumer sciences. [See *Appendix*.]

The Board of Regents *P-16 Education: A Plan for Action* calls for all New Yorkers to be prepared for “citizenship, work, and continued learning throughout their lives.” To achieve this goal, gaps must be closed in student academic achievement along the lines of income, race, ethnicity, language, and disability so that our students can keep up with the growing demands for still more knowledge and skill in the face of increasing competition in a changing economy. The Regents and the NYSED have embraced the ongoing review and strengthening of the New York State Learning Standards as a key strategy to address these two challenges. As the process of standards review

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<sup>2</sup> Achieve, Inc., estimates that 67 percent of new jobs require some postsecondary education and projects that the figure will rise. Achieve, Inc., American Diploma Project Network (2007), *Closing the Expectations Gap 2007: An Annual 50-State Progress Report on the Alignment of High School Policies with the Demands of College and Work*, [www.achieve.org/files/50-state-07-Final.pdf](http://www.achieve.org/files/50-state-07-Final.pdf).

moves ahead in 2008, it presents an important opportunity to begin moving toward a framework for 21st-century competency.

**Enhanced CTE program quality:** In 2001, the NYSED introduced a CTE program approval process to foster high-quality CTE programs. Sixty-eight programs in New York City are currently approved by the State and reflect elements of enhanced quality and student achievement. The City now can expand local use of the program approval process to build capacity in existing programs and signal the improving quality of CTE offerings.

**Public support for CTE programs:** According to the Community Service Society's 2007 *Unheard Third* survey of low-income New Yorkers, more than 9 of 10 respondents support vocational programs in high schools. CTE redesign efforts can create new models of integrated secondary education in which students master rigorous academic material through real-world, career-related course work and experiential education. Such rigor can propel CTE to move beyond the City's historical negative stigma of "vocational" education and, in the public mind, begin to associate CTE with changes in the labor market and valuable pathways to future success.

**Employer commitment to CTE:** In business today, no challenge is tougher than the global race for talent. In every industry, every job sector, and every part of the world, employers are asking the same question: How are we going to find, train, and retain highly skilled workers? By increasing student engagement, building positive relationships, and providing innovative delivery methods, high-quality CTE can help more students persist in and complete high school by preparing them for the postsecondary education and training that will be critical to their future economic successes.

**Promising models of best practice:** Recent developments across New York State and in national and international experience can provide useful insight and inform the direction of New York City's CTE innovation efforts. Promising practices are emerging here in New York State from places like Tech Valley High School in the Capital Region Board of Cooperative Educational Services, Saunders Trades and Technical High School in Yonkers, and International Baccalaureate Career-related Certificate Pilot in Binghamton. At the national level, career academy models like the National Academy Foundation continue to show significant labor market gains for students, and both the New Tech and Diploma Plus models were recently granted significant freedom to innovate by the Indiana Board of Education. Internationally, Singapore's Institute for Technical Education is recognized locally and internationally for providing a unique brand of secondary and postsecondary education, pioneering new approaches in teaching and learning and developing successful graduates.

**A strong coalition is embracing a bold vision for CTE:** A strong coalition of the interested parties—including the mayor’s office, the NYSED, industry, advocates, the NYCDOE, the UFT, and CUNY—has momentum and is willing to embrace a bold, long-term vision for the next generation of CTE in New York City. Capitalizing on this momentum, the opportunity exists to break new ground, lay a solid foundation for the future and plan for sustainability over the long term.

## Challenges

Despite these emerging opportunities, the promise of CTE in New York City cannot be fully realized without understanding and addressing several significant challenges.

**Traditional fragmentation of curriculum:** “Vocational” education originated in 1917 when the Smith-Hughes Act structurally separated the vocational curriculum and the academic curriculum. Since then, most curricula and instruction in high schools have been designed to focus on theory and conceptual knowledge within a single disciplinary content area, tending not to show how the knowledge is applied or used. Also, curricula and instruction too often are focused on a single discipline, with limited instances of cross-disciplinary or integrated curriculum, which help learners make connections. Not surprisingly, too many students ask, “Why do I have to learn this?”

**Negative perception:** The weight of this traditional separation is reinforced in the lingering negative perception of CTE; many still refer disparagingly to vocational education as it existed decades ago. From the start, vocational education students typically have been characterized as not being on a cognitive par with their academic peers. They are “hand minded,” for example, versus “abstract minded,” which include students who study an academic curriculum and are bound for college. This distinction reflects both cultural biases that still permeate policy discussions today and a history of student tracking that limited the potential of too many young people, especially students of color and those from low-income families.

**Limited access and opportunity:** The perception of CTE as a lesser “track” from traditional college-preparatory pathways is a major challenge to informing students and families of the potential value of new, innovative CTE pathways. The impact of this stigma has limited the opportunity to capitalize on the relevancy and rigor of current CTE programs for an even broader population of students. This stigma is often reinforced by the range of inconsistently applied screening mechanisms in the high school selection process.

In the past, CTE was viewed as an option of last resort for student populations with the most need, including special education and English

language learners. It was a “not college material” track. This is neither the CTE envisioned by this Task Force nor the CTE present in the most promising programs. Other prevailing perceptions also influence access based on race, ethnicity, or gender, particularly in the under-representation of girls in nontraditional career paths. These longstanding biases have implications for guidance and advisory structures from middle school through graduation.

**Insufficient preparation for postsecondary success:** Even among students who graduate high school, too few are prepared for the level of intellectual work and independence needed in their postsecondary experience, whether at college or elsewhere. High remediation rates among entering students at CUNY colleges is one indication of a disconnect between simply earning a high school diploma and being ready for postsecondary success in further education or the workplace or both. The high school experience must adequately prepare students for all aspects of their postsecondary education or work without the need for remediation.

**Inadequate integration in classroom instruction:** Insufficient integration of the academic and technical skills limits students’ attainment of rigorous, relevant competencies for postsecondary success. CTE students typically take one set of academic courses and a separate set of technical courses. The relevancy of CTE often falls in the gap between these two disciplines, undermining the full potential of both. Further, teacher education programs and ongoing professional development typically focus on either academic or vocational areas, not a combination. Teachers are trained to become subject-matter specialists, rather than being prepared to think across disciplinary divides. Federal Perkins Grant-inspired attempts at improving teacher quality and integrating curriculum have had little success at blending vocational and the academic courses of study. Even in more developed integrated programs, the teachers were educated in quite different subject areas. The teachers were prepared quite differently and struggled to routinely provide integrated and relevant learning experiences for students.

**Seat time versus competency-based pathways to graduation:** Currently all New York students must accumulate 44 credits to graduate high school. Graduates seeking a technical endorsement (CTE) on their diploma must take up to 10 additional credits, secure required internships, and pass industry certifications. In New York City, this structure reinforces the challenge of curricular integration and serves as a barrier to students who could benefit from a CTE sequence. Tracking seat time in this way impedes the ability of schools and industry in New York City to be creative about how student time is used, in ways that would reinforce their education and allow for the development and demonstration of mastery of the range of competencies required for 21st-century readiness.

**Definitions of student success:** The standards-based accountability movement has adopted a definition of student success based on academic proficiency in certain core academic subjects. Graduation in New York requires passage of five Regents examinations (English Language Arts, Mathematics, Science, Global Studies, and U.S. History). The focus on academics is crucial but needs to consider other important knowledge and skills consistent with 21st-century competencies and standards, as well as State-approved alternatives to the current cohort of standardized tests.

**Disjointed management of industry engagement in New York City:** The City lacks a coherent structure for engaging and organizing industry support to ensure the continued relevancy of CTE programs, assist in the recruitment and development of a well-motivated and prepared corps of CTE teachers, and provide work-based learning opportunities and resources for students and their schools. The current CTE Advisory Council and associated industry commissions provide a range of supports targeted to CTE schools and programs. Yet many industry partners in the City feel disengaged from the schools—put off by NYCDOE’s red tape—and lack opportunities to exert leadership on the development of school programs or to provide targeted supports tied to accountability for results.

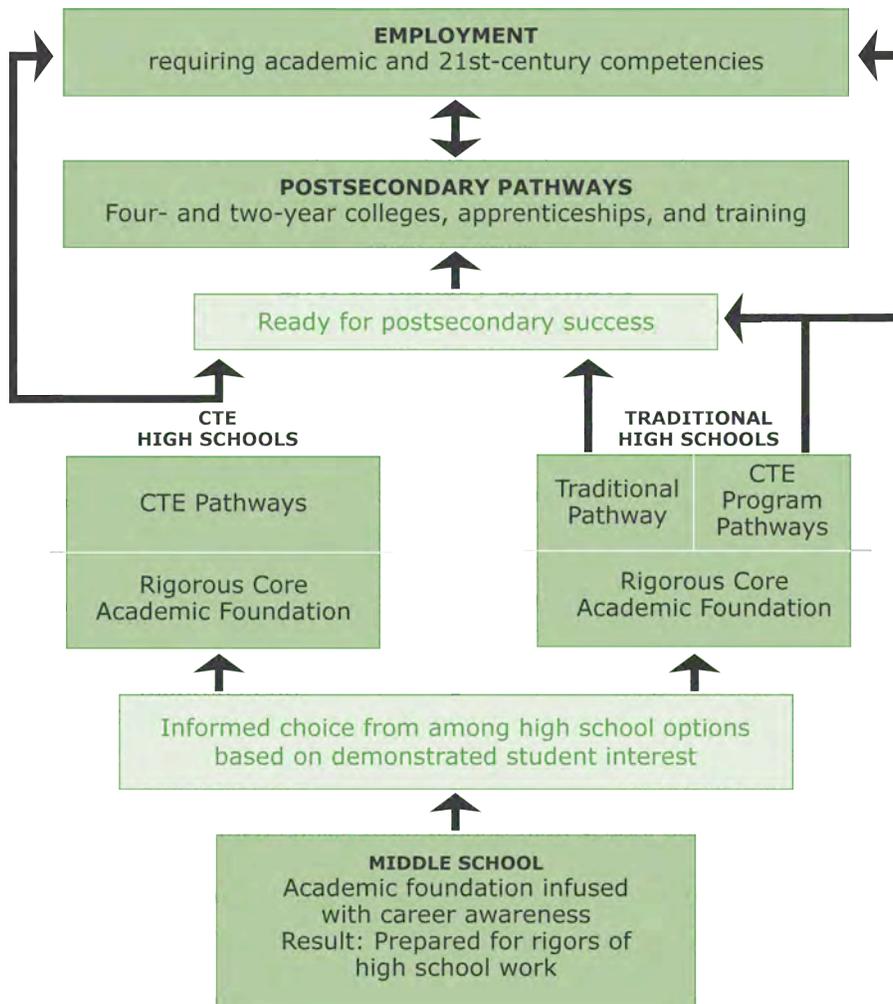
**Disproportionate distribution of resources:** While the NYCDOE’s Fair Student Funding formula provides additional weighting for CTE schools, CTE programs of study at non-CTE high schools are not eligible for these additional funds. Further, the true costs required to adequately operate a successful and integrated CTE program have been distorted by the requirement of additional credits and have been insufficiently resolved within the overall school funding system. As a result, schools have become overly reliant on supplemental State funding (such as Vocational and Technical Education Act [VTEA] grants) for CTE equipment needs and infrastructure improvements since they have not been adequately addressed in other parts of the budget. Additionally, longstanding inequities in the City’s distribution of VTEA funding for CTE have not yet been fully remediated by the allocation of these supplemental resources.

**Limited opportunity for CTE innovation:** Efforts to improve the quality of CTE programs are often isolated from larger school reform efforts and have increasingly been perceived as compliance exercises. Without providing increased flexibility in program design and service delivery, schools will find it difficult to develop effective and innovative 21st-century educational offerings designed to meet the unique needs of various youth populations. Developing innovative models to meet these challenges will be difficult and must draw on expertise and resources from a range of providers and funding sources.

### III. Where We Are Going: The Vision

The Mayoral Task Force on Career and Technical Education Innovation envisions CTE schools and programs that will accelerate achievement and result in unprecedented rates of students graduating well-prepared for postsecondary success in college, work, and life.

**Beginning in middle school:** This work begins in the middle grades, where the primary focus is on helping students achieve a strong academic foundation in literacy and numeracy: The academic rigor of that foundation is sustained and increased. Career awareness is a mechanism for making students' academic studies more relevant in the middle grades, serving to motivate students toward higher academic achievement.



As young people of all backgrounds and prior preparation begin to prepare to meet the challenges of adolescence and adulthood, a coordinated, progressive series of opportunities that includes supportive adult relationships (both through school programming and out-of-school activities) helps youth develop a strong sense of identity and purpose. As students successfully meet this foundational threshold, demonstrating their readiness for rigorous high school-level work, they are presented with a portfolio of high-quality secondary school options, including CTE, that put them on a path to realize their educational and life goals.

**Transitioning to high school:** Before selecting a high school option, young students and their parents are fully aware of the competencies and course work that will be needed for successful entry into postsecondary experiences. Choices are not limited and allow students to select from a wide range of college and career pathways.

In 9th and 10th grades, the curriculum is structured so that courses lead to strong core competencies and so that students can explore and change their postsecondary trajectories without severe consequences early in their high school experiences. All students in high school must demonstrate the ability to master rigorous standards of achievement but follow different pathways to graduation. These pathways integrate coursework, work-based learning experiences, and hands-on experiences so that students develop competencies, skills, and attitudes for success beyond high school and in college and the workforce.

Some students are ready to commit to a pathway as early as the end of 8th grade while others wait until later in high school. No pathway should limit a student's ability to pursue postsecondary education. Rather, all should promote mastery of core standards and the development of core skills and competencies.

Next-generation CTE program designs appeal to students of all abilities. The diverse career pathways do not constitute separate tracks. All programs prepare students for postsecondary learning using seamless connections and pathways to community colleges, four-year colleges, and the workplace.

**Integrating classroom instruction:** As students progress through high school and choose career paths, the academic and career coursework is integrated, centered in a common understanding of competencies students need to be successful after high school. This focus on the integration of academic content with career content through new instructional practices and experiential learning both motivates and engages students to tackle challenging and rigorous material and to develop cognitive, creative, and occupational

competencies. Access to this varied coursework is available to all students. Curriculum and instruction evolve to promote excellence in core subjects but connect to make learning more relevant for students.

Pedagogy balances teacher-led instruction with more opportunities for students to engage in challenging class work, as well as to use their academic skills to solve career-related problems. Teachers will engage in ongoing and collaborative professional development to stay current with industry trends and to improve their practices. Technology serves to facilitate better teaching and learning and to link to the world beyond school.

**Expanding industry experience:** Strong and sustained industry partnerships connect students to adult role models and signal to students the eventual return on the investment of time and effort in their high school studies. Work-based learning experiences extend learning beyond the classroom, allowing students to understand the demands of the workplace and see how their academic coursework relates to their future goals and opportunities.

By expanding learning opportunities within authentic workplace settings, next-generation CTE programs better respond to shifts in demand for specific work, thereby ensuring that graduates are prepared not just for the work they are learning to do, but to learn again and again for jobs and careers that have not yet been created. Moving more learning into the workplace also has the complementary benefit of sharply reducing the need for maintaining and updating expensive equipment and materials in the schools.

**Ensuring graduation and postsecondary readiness:** A focus on student success shapes accountability for schools, partners, and students alike. Regents exams in English Language Arts and Mathematics ensure that all students meet standards in literacy and numeracy. New York State Board of Regents standards continue to serve as a foundation to ensure equity in that *all* students are expected to achieve at high levels of rigor. CTE redesign offers the opportunity for the State and the City to facilitate educational entrepreneurship and innovation in program design and assessment, with the expectation of equity and rigorous expectations for all students.

As a desirable, respected, and accessible option for all high school students, CTE prepares students to be successful in the range of pathways that lead to success in the workplace and/or postsecondary education, both immediately after high school and as students' careers and industries evolve.

**Toward next-generation CTE:** This vision conveys the strong potential of CTE programs to achieve measurable gains in graduation and skill attainment rates for New York City students. As a result of innovations to support the integration of academic skills and work-based learning and strong partnerships with industry, completion of CTE programs and high school graduation allow students to establish a strong foundation for success in life.

This vision also recognizes the power of imparting academic skills through real-world applications by providing context and relevance for students who otherwise might opt out of school. And the vision recognizes the essential role of industry in providing career and technical experience that translates into attainment of in-demand skills.

High-quality CTE programs directly engage students to meet Regents graduation standards through a contextualized program of study that links rigorous academic content with industry requirements and workforce experience.

CTE innovation must produce a rigorous program that directly aligns to the needs and demands of industry and equips students with the relevant competencies and skills to successfully compete in the 21st century.

This vision is echoed across the country in discussions of 21st-century skills, global competition, and secondary school reform. Nationally, educators, industry, government, and civic leaders are searching for ways to organize and enrich middle and high school education to meet the challenge of educating all of our students to substantially higher academic standards than in past generations and to equip students to solve problems in real-world contexts in which they continuously will need to improve their knowledge and skills.

## IV. Major Goals

Five major goals should drive the City's efforts toward realizing this vision for high-quality career and technical education (CTE) opportunities for students at all schools:

- 1. Meet 21st-century standards.** Prepare New York City students to meet academic and industry-based skills and competencies through rigorous and relevant coursework supported by strong public-private partnerships.
- 2. Expand paths to graduation.** Create and support career pathways that integrate coursework, work-based learning experiences, and hands-on experiences so that students develop competencies, skills, and attitudes for success beyond high school and in the workforce. Ensure that these paths and success are made available to more City students.
- 3. Engage and empower industry leadership.** Reach beyond the educational sector and develop a coherent structure for engaging, organizing, and accounting for industry support to ensure the continued relevancy of CTE programs, and build pipelines of skilled workers into sector labor markets.
- 4. Prepare graduates for postsecondary success.** Prepare more City students for postsecondary education and work and training options, emphasizing integration and articulation with postsecondary degree options.
- 5. Increase opportunity and access.** Equip students and families to make informed choices about education and work and ensure that all students, regardless of race, gender, disability, or national origin, have access to desirable options that expand rather than limit their postsecondary choices.

## V. Key Recommendations To Achieve Goals

The effort to achieve these goals for career and technical education (CTE) and graduate students prepared for a range of postsecondary pathways has implications for State policy, the City's Department of Education (NYCDOE), industry, and higher education. Recommendations and resource implications to advance these goals follow.

**1. Meet 21st-century standards. Prepare New York City students to meet academic and industry-based skills and competencies through rigorous and relevant coursework supported by strong public-private partnerships.**

### Recommendations for meeting 21st-century standards

Preparing students for success in the 21st century requires that students have the skills and competencies that address the challenges of an increasingly technological and global world. (*See sample competencies in appendix and summarized below.*)

**Support State efforts to define rigorous 21st-century standards:** Academic standards provide a foundation for decisions on curriculum, instruction, and assessment, and they communicate core learning goals to teachers, parents, and students. Beginning with the review of English language arts standards earlier in 2008 and moving this summer to the career development standards, the New York State Board of Regents and the State Education Department (NYSED) have created an unprecedented opportunity to move beyond existing standards to a 21st-century system that can prepare all students for postsecondary success. New York City and its partners must embrace these efforts and help ensure that core academic standards are embedded across a deep and rich curriculum.

New York State Regents standards were established and have served as a foundation to ensure that all students are expected to achieve at high levels of rigor. By requiring that all students pass Regents exams in English Language Arts, Mathematics, Science, U.S. History, and Global Studies, schools were required to raise expectations and offer every student access to academically rigorous courses. These course standards can only be adjusted when alternatives are developed and piloted that ensure equivalently rigorous standards, demonstrating comparable and context-specific competencies. CTE redesign offers the opportunity to develop such rigorous alternatives to measure knowledge and competencies beyond the core areas of English and mathematics.

**Define core competencies all students need to succeed:** All students need strong 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. Students must be prepared to learn continuously and innovate to stay competitive in a highly connected international marketplace and to help create jobs that do not yet exist.

**Expand beyond core competencies to skills and knowledge needed for successful postsecondary transitions:** All graduates must be prepared to do what they need to do to be successful in the initial responsibilities of a first job or in required introductory-level courses in a postsecondary institution. Beyond core competencies, the specific skills and knowledge needed for work and further education will vary depending on the type of job and the type of postsecondary institution, but all will continue to be dramatically altered by technology. As a result, the use of digital technology, communication tools, and/or networks appropriately to access, manage, integrate, evaluate, and create information in order to function in a knowledge economy is an additional core competency all students need to succeed, with implications across industry sectors and job titles.

**Empower industry to define sector-specific skills:** Core competencies are just the foundation on which students can pursue opportunities for work, further education, and/or training. Although these underlying competencies may be similar because the nature of jobs across industry sectors varies so much, the specifics of the necessary skills and knowledge for both entry-level jobs and advanced pathways will vary as well. Industry should be more deeply engaged in the specification of those skills through extensive consultations and agreements with knowledgeable representatives of the actual employers. Policymakers should target specific industries (*outlined in No. 3 below*) and develop curriculum and certifications to address identified competencies.

**Create innovative courses and programs of study:** Students need opportunities to learn and build academic and career skills through integrated curriculum, teaching, and learning. The basic purpose of curriculum integration is to help students make connections between academic and technical information—to help them discover the answer to “Why do I have to learn this?” Integration helps CTE teachers recognize the significant amount of academic knowledge and skills “embedded” in their technical content, while providing academic teachers with real-life problem-based activities in which students can apply academics in relevant ways.

The NYCDOE should work with industry and higher education partners to develop innovative instructional practices based on competency-based

curriculum and experiences that provide evidence of academic and technical integration, including:

- Supporting principals and teachers to redesign and create new courses and adapt new teaching methods based on mastery of key ideas and concepts, core facts, and procedures, and on the capacity for creativity and innovation; and
- Providing appropriate, ongoing, and embedded professional development to facilitate collaboration among teachers toward effective implementation of an integrated curriculum.

**Put more students on a path to success:** Efforts should be made to strengthen middle school curriculum and counseling to promote career awareness and ensure that families have information about high school pathway options. Many more students should be engaged in setting goals and working to master the knowledge, skills, and personal competencies needed for success in college and careers and for contributions as citizens in a democracy.

**2. Expand paths to graduation. Create and support career pathways that integrate coursework, work-based learning experiences, and hands-on experiences so that students develop competencies, skills, and attitudes for success beyond high school and in the workforce.**

### **Recommendations for expanding paths to graduation**

Supporting more students to meet 21st-century competencies will require continued innovation in school programs, including the ways that instruction is delivered and student learning is encouraged, monitored, and measured. Equally important is the continuing effort to improve the performance of existing New York City CTE schools and programs to accomplish these same goals. The Mayor's Task Force is recommending significant steps in two strategic areas:

- Build CTE demonstration sites to pilot CTE innovations.
- Improve and expand success of existing CTE schools and programs in comprehensive high schools.

**Build CTE demonstration sites to pilot CTE innovations:** Through the creation of CTE demonstration sites, the NYCDOE will model the opportunities, challenges, and outcomes deriving from intense industry partnerships and State policy innovation in the implementation of pioneering CTE school designs. Demonstration sites will serve the explicit purpose of piloting innovative State graduation requirements and documenting and disseminating

promising practices toward the improvement of the overall CTE portfolio. Specifically:

- The establishment of up to five CTE demonstration sites to model the opportunities, challenges, and outcomes deriving from State policy innovation and the implementation of innovative CTE school designs; and build on the NYCDOE’s Design Characteristics of Effective Schools (*see Appendix*).
- The elements tested in these models must be used to establish a dashboard of criteria and indicators toward ongoing evaluation and improvement of the existing portfolio of CTE pathways.
- Dependent on proposals submitted by school design teams CTE demonstration sites may include the following models:
  - New NYCDOE public school
  - New joint NYCDOE/CUNY public school with deliberate postsecondary integration (i.e. 9–14 grade structure), implemented as a career-focused early college school that enables high school students to earn substantial numbers of college credits after they have demonstrated their readiness for college-level work
  - An existing large comprehensive high school working in Small Learning Communities with CTE pathways. This may include intervention strategies to “turn-around” schools showing promise but achieving performance goals
  - New or restructured middle schools aligned with emerging efforts of the NYCDOE’s Middle School Task Force
  - New charter public school

***Innovation in graduation threshold:*** The expansion and rethinking of CTE pathways should include new ways of evaluating the threshold between secondary education and postsecondary options. The NYSED has provided national leadership in firmly establishing the principle that all students need to be held to the same rigorous standards for graduation. New York State’s outcome and standards-driven graduation system provides an ideal platform for innovation to determine alternate measures of achievement consistent with the revised CTE pathways.

This work is critical, and must acknowledge that creation of rigorous new assessments is a major undertaking. Creating rigorous alternatives to some of the current Regents examinations is a challenge of invention, which very few across the country have so far been able to meet. To get it right, without compromising standards, will take talent and substantial resources. Finding the right people, who understand standards and assessment construction, who have imagination and who come with an understanding of experiential and competency-based education, is critical to meeting this challenge.

Encouraging such innovation would require waivers from the State for specific aspects of graduation requirements, albeit with careful controls to ensure the rigor of standards. Without compromising or lowering standards, the State should consider the following:

- Extend prior State efforts to encourage innovation in seat-time requirements by allowing up to 15 integrated units of academic and CTE courses. A waiver should be granted in the use of time for up to 22 of the 44 credits required for graduation to reach students through integrated coursework early in high school when many are most at risk of disengaging.
- Maintain commitment to the English Language Arts and Mathematics Regents exams as a foundational requirement for all students and strong measurements of core 21st-century competencies.
- Explore rigorous State-approved alternatives to other current graduation assessments, expanding assessment options with the following components:
  - A waiver for New York City, in conjunction with the State, to develop and pilot assessments that are equally rigorous as the traditional Regents assessments, measuring the attainment of core competencies and enhanced competencies through content related to industry pathways and meet the requirements for State-approved alternative assessments
  - Ongoing State-City collaboration in the development of those CTE assessments to ensure alignment in ultimate measures of postsecondary readiness
  - Joint advocacy at the national level for leadership and support for and the development of alternative assessments
- In the event that rigorous alternative assessments cannot be developed by 2012, students in New York City demonstration sites will still be expected to meet existing Regents graduation and testing standards.
- Waivers should only be considered with appropriate controls and monitoring by the State, including limitation to demonstration sites during the pilot phase, and when moving beyond demonstrations, only to those CTE pathways that are State approved.

**Improve and expand success of existing CTE schools and programs.**

Recognizing the wide range in performance of existing CTE schools in New York City, a concerted effort is needed to deliver more consistent high-quality CTE offerings and ensure that the existing portfolio of schools are aligned to the Task Force's vision.

**NYCDOE accountability measures:** The NYCDOE's accountability structures for portfolio analysis (closure, restructuring, and replacement) and the State Program Approval Process are among the methodologies for improving

performance and quality, including closing CTE schools and programs that are not aligned with new and sustainable industry opportunities in CTE.

- Annual Progress Report and School Quality Reviews should be reflective of CTE outcomes, specifically:
  - NYCDOE School Progress Reports should recognize and weigh Regents Diplomas with the Technical Endorsement; and
  - NYCDOE School Quality Reviews should be enhanced to include mechanisms for assessing data-based decisionmaking on the quality of CTE elements within the school program, including the efficacy of partnership efforts and teacher collaboration around competencies.
- Postsecondary transitions should be tracked and integrated into overall accountability efforts, including students transitioning to college, work, or training programs. This will require strong collaboration with higher education and industry. This is a significant challenge, but it is critical to hold the system and schools accountable to prepare students for postsecondary success.
- Accountability metrics should reflect the measures developed to evaluate student readiness for postsecondary success and the specific metrics of each pathway.
- Department accountability structures should support ongoing portfolio analysis (closure, restructuring, and replacement). The NYCDOE should use ongoing assessment of industry-sector needs and wages as a factor in portfolio management of CTE programs and schools.

***Build capacity among existing schools and programs:*** Effective CTE pathways should embody the following attributes and design characteristics as they are conceived and executed:

- CTE schools should be built on the existing NYCDOE Characteristics of Effective Schools that have resulted in substantially higher graduation rates in the new small schools than in the schools they replaced. Designs should include structures for a high degree of personalization and should embrace various configurations and sizes of schools. These should include programs within the existing and emerging portfolio of options, including two-, four- and six-year programs, as well as “pre-academy” programs for middle schools, and integration and articulation into community colleges.
- CTE programs of study will differ from industry to industry but should share common elements, including:
  - Rigorous and Regents-approved standards for graduation, reflecting 21st-century competencies;

- A cohesive sequence of academic courses paired with CTE courses and integrated content as appropriate, building to both basic and enhanced competencies;
  - Specific mechanisms that connect the entire high school program to a related industry and postsecondary pathway; and
  - Culmination with a recognized industry credential or certificate and explicit postsecondary opportunities.
- The NYCDOE should continue ongoing collaboration with the State to leverage the Program Approval Process to build capacity and improve existing programs within CTE and comprehensive high schools.
    - Currently, 68 programs of study are State approved, with 27 pending approval with the State and 83 more in development throughout the City. Performance targets should be established to increase dramatically the number of State-approved programs over each of the next three years and to certify all existing programs that meet eligible criteria in that timeframe.
    - The NYC DOE should enhance coaching and general capacity to support groups of schools as they move through the approval process.

***Recuperative strategies in CTE:*** The NYCDOE’s ongoing “recuperative” efforts to improve academic outcomes for students who already have become over-age and under-credited should include development of a high school CTE program focusing on disconnected youth and drop out recovery. The NYCDOE should do the following:

- Identify an existing program or school setting to develop or enhance offerings providing CTE programming toward diploma granting and GED preparation. This would give students real opportunities to complete an academic program based on contextualized training from among the construction trades, health careers, hospitality, and food service.
- Evaluate current programs in the context of current labor market demands to determine necessary adjustments.
- Build on lessons learned in the design and implementation of the Multiple Pathways program in re-engaging students who are “over-age and under-credited.”

***Teacher recruitment and certification:***

- NYCDOE human resource efforts must ensure an adequate supply of qualified professionals. Beyond recruiting recent college graduates, the NYCDOE should recruit, prepare, and support individuals with significant industry experience in target areas and who represent diverse backgrounds in which workforce shortages are imminent.

- The NYCDOE should review current titles for career education teacher licenses to assure continued alignment with updated State titles that qualify for State program approval.
- To facilitate the recruitment of individuals with significant industry experience in target areas, State licensing procedures for CTE licenses should establish a general foundational license for CTE teachers at the cluster level, and recognize and support the need for ongoing industry specific training and experiences to qualify or maintain standing in specific industry areas.
- All CTE teachers with general and foundational qualifications in career education should be encouraged to enhance their knowledge and skills at regular intervals through applied practice, particularly in fields that reflect dynamic technological advances.

**3. Engage and empower industry leadership. Reach beyond the educational sector and develop a coherent structure for engaging, organizing, and accounting for industry support to ensure the continued relevancy of CTE programs, and build pipelines of skilled workers into sector labor markets.**

### **Recommendations for engaging and empowering industry leadership**

A proven element in the success of CTE programs is an active and well-integrated connection between school and work. Properly managed partnerships between educators and industry can ensure the continued relevancy of CTE programs, help recruit and develop a well-motivated and prepared corps of CTE teachers, and provide work-based learning opportunities and resources for students and their schools. The CTE effort should reach beyond the educational sector to identify allies and supporters so that the ownership for results is shared more broadly.

**Target growth industries:** The priority of CTE programs should continue to be preparing students for careers that offer a good starting salary and provide advancement opportunities. Industry should guide the NYCDOE in identifying current and future growth industries and careers. To that end, industry has identified, and the task force recommends, that immediate efforts should give priority consideration to sector opportunities in health, finance, and information technology; hospitality and tourism; and a range of new “green collar” jobs in areas such as energy efficiency and renewable energy, green construction, improved environmental conditions, and clean technologies. Cross-sector collaboration—particularly among education, industry, labor, and workforce development systems—will be essential to align future economic needs to program development.

**Clarify industry leadership and organization:** Without exception, every CTE school and program should partner with industry. Industry partnerships are essential to program success and enhanced student motivation and achievement.

- Industry partnerships should be organized by sector at the citywide level around major industry associations, key employers and labor organizations, and other industry leaders. Each industry sector should identify a lead association or organization to convene the interests, resources, and opportunities of the industry toward supporting CTE pathways. The NYCDOE should build on the existing established network of industry partnerships. A model could be the automotive industry, which has demonstrated sector-based leadership by convening industry resources and efforts in support of school-level initiatives to meet emergent automotive industry workforce needs.
- The current CTE Advisory Council and associated industry commissions should be restructured to enhance their capacities to deal effectively with the reforms and innovations recommended in the Task Force report. A restructured CTE Advisory Council should coordinate and align existing supports and resources across agencies and sectors. This requires permanent liaisons to CTE among local chambers and industry associations and representation on the city Workforce Investment Board and Youth Council.
- School-based partnerships should continue to be developed and better coordinated with overall citywide sector-based efforts, creating two-way links between schools and workplaces across the five boroughs.
- Efforts to reorganize and focus citywide CTE industry-sector partnerships should address ongoing needs and support existing schools, as well as demonstration projects.
- An inventory of existing partnerships linked to CTE schools should be developed to provide a baseline from which to gauge the effectiveness of new efforts.

**Expand and strengthen support for work-based learning opportunities:**

Quality internship opportunities are critical to student engagement. Public-private partnerships to create and expand opportunities will be important.

- Improve the quality and management of existing internship programs, including the LEARN program (a NYCDOE program providing supplemental stipends for student work-based learning experiences).
- Adopt and consistently apply the principles of high-quality work-based learning experiences. The NYCDOE should monitor and endorse work-based learning programs and providers that demonstrate capacity to meet these high standards using consistent standards approved by both industry and the NYSED.

- Define quantifiable annual targets for internship development across schools/programs to ensure alignment of students and internship opportunities.
- Define a systematic approach for measuring the demand/need for work-based experiences (internships) and industry’s capacity to meet demand throughout the system. Systems to track industry results relative to expressed need provide the opportunity to recognize outstanding contributions while also identifying and addressing gaps in capacity to support specific pathways.
- Commit to participating in meaningful student review as part of internships to signal the importance of relevant competencies and skills.

**Sustain effort and track results toward greater accountability:** CTE has great potential to serve the job needs of City employers and to build pipelines of skilled workers within multiple labor markets. The NYCDOE and industry partners should track ongoing program needs and outcomes relative to overall industry needs for skilled employees.

- The NYCDOE should aggregate and articulate projections of school needs potentially met by industry engagement, including student internship needs, teacher externship demand, and schools requiring external validation in the State program approval process.
- The City and industry leadership should develop metrics to assess partnership and industry contributions in meeting short- and longer-term goals, as well as to plan for future involvement.

**Encourage gender balance in nontraditional sectors:** Communications and recruitment efforts should reflect and promote opportunities for women across industry sectors in an effort to attract more young women to nontraditional careers. CTE recruitment plans should include a component that specifically targets middle school girls and their families.

**4. Prepare graduates for postsecondary success. Prepare New York City students for postsecondary education, work, and training options, emphasizing integration and articulation with postsecondary degree options.**

**Recommendations for preparing graduates for postsecondary success**

With changing labor market demands and increased expectations for students to pursue postsecondary education, CTE programs need to create connections with and pathways to postsecondary education—including to two- and four-year

college degree programs, certificated programs, apprenticeship programs—and pathways to master’s degrees and beyond.

**Increase emphasis on successful student transitions:** CTE programs in high schools should be carefully aligned with all of the academic demands of programs at the associate degree level. Graduates of CTE programs must be prepared to succeed without remediation in college-level academic, occupational, and general education courses that are required for degree completion. CUNY and the NYCDOE should collaborate to ensure an adequate understanding of the form and content of college-level work.

**Develop new programs and align with CTE pathways:** CUNY should consider developing new programs of study aligned with new CTE pathways in high schools. As CUNY plans for its new community college, its precollege components should be deeply embedded in CTE programs and schools, just as high school CTE courses and programs should be oriented to those being offered in the new college. Joint efforts should be undertaken to increase the enrollment of CTE students in College Now courses.

**Strengthen formal articulations between the NYCDOE and CUNY:** CUNY and the NYCDOE should cooperate in strengthening articulation agreements between CTE schools and programs and next-step programs at the college level.

**Track student transitions into postsecondary studies:** CUNY and the NYCDOE should cooperate in developing sophisticated tracking processes to ensure that high schools know how well their graduates perform and are able to use data on postsecondary readiness and achievement to inform curriculum and instruction.

**5. Increase opportunity and access. Equip students and families to make informed choices about education and work and ensure that all students, regardless of race, gender, disability, or national origin, have access to desirable options that expand rather than limit their postsecondary choices.**

### **Recommendations for increasing opportunity and access**

Students who pursue CTE in high school, and make an informed choice to avail themselves of work opportunities related to what they have learned after graduating, should enjoy the full support of peers, teachers, and every aspect of the system.

**Promote CTE as an equally rigorous path for high school students.** A public education campaign should promote the benefits and respectability of the full range of technical careers. A targeted communications effort should promote CTE options to students, families, and middle school counselors to grow the

pool of interested CTE applicants. Efforts should leverage existing industry events and communications channels to promote specific opportunities in targeted industries and schools that assure parents that their children will not be steered to a lower track, limiting their opportunities to attend college if they choose to do so upon graduation.

**Infuse middle school curriculum with career awareness:** The middle school curriculum should promote career exploration and awareness to help students make informed choices about education and career planning and, in particular, should help 8th graders select high school options. This approach should not be a return to the old models of separate career skills courses, but rather a re-imagining of how career awareness can be infused throughout the middle school years.

**Expand mechanisms for students to demonstrate interest in CTE options:** Students should have multiple ways to demonstrate interest in particular CTE schools during the high school admissions process and student selection process. To avoid the potential for tracking students, the NYCDOE must continue to improve its efforts to honor students' preferences in the high school admissions process and to ensure that every CTE student has demonstrated interest in a program of study prior to enrollment.

**Ensure equity of access in student selection:** CTE school populations should reflect overall system demographics including ethnicity, academic skill level, gender, and learning and language needs. The NYCDOE should diminish the reliance of some CTE high schools on selective admissions screens.

**Create transfer options:** While high school pathway decisionmaking is supported by enhanced middle school efforts, students should still be able to exit CTE high schools or pathways when their interest has waned or enter CTE schools in 9th or 10th grade when their interest emerges following initial enrollment in another school. Such choices should not affect on-time graduation (or the requirement that all students master the academic core), they but may have consequences for completing the specific requirements of some CTE pathways.

**Limit new enrollment in upper grades:** In CTE programs, limit enrollment after the start of 11th grade to protect the program's coherence and to ensure that students can meet technical requirements before on-time graduation. Systems must be in place to refer late-decision students instead to the sets of courses that will prepare them broadly for careers in their areas of interest and provide guidance, counseling, and opportunities for internships.

**Monitor CTE admissions and enrollment data over time:** As part of its plan to track data related to CTE programs, the NYCDOE should regularly review CTE

school and program admissions and enrollment data to ensure that the applicant pool and student population reflects citywide demographics for gender, race, English language learner and special education status, and academic performance level.

## VI. Resource Implications

The meaningful integration of CTE programs, as recommended in this report, has resource implications that must be balanced within the larger system and among the needs of all students. Alignment and equitable distribution of resources must consider the impact on CTE programs of both industry-defined standards and unique equipment needs. When taking into account the effect of potential flexibility in the use of student time, and the ability to effectively leverage industry partnerships, new models for how resources are identified and deployed should be developed to ensure comparable investment in student success across program types.

To address these issues in a consistent and sustainable way, the following should be addressed:

### **Evaluate the NYCDOE's Fair Student Funding formulas with respect to CTE to:**

- Ensure appropriate alignment of relevant CTE cost factors including program of study, specialized equipment and materials, and industry-specific training and resources to program tiers and eligible portfolio weighting; and
- Consider expanding the weighting given to CTE high schools to include CTE programs of study in comprehensive high schools not designated as CTE but that meet quality standards.

**Plan capital investments for long-term CTE alignment:** Ongoing CTE equipment needs and facility resources required to meet evolving industry standards associated with CTE programs must be accounted for both in the NYCDOE's five-year Capital Plan and in the context of public-private partnerships. The NYCDOE capital investments should be thoughtful about the risk of obsolescence, ensuring adequate flexibility over time from investments, and should ensure that industry partnerships support the most technical capital requirements.

**Establish a five-year "Innovation Fund":** Beyond necessary public investments, leverage private resources to support the development of new CTE schools and the transformation of existing schools to align with the Task Force's expectations and the evolving demands of industry. Priorities will include defining and seeking commitments to support curriculum and assessment development, work-based learning opportunities, teacher recruitment and training, facilities design and development, and support for demonstration site planning and launch.

## **VII. Next Steps Following Task Force Report**

- 1.** Submit the Task Force's final report and recommendations to Mayor Bloomberg for consideration.
- 2.** Following the mayor's review and consideration, the Task Force's final report should be submitted to the State to accept and consider.
- 3.** Based on the mayor's determination, the mayor's office will seek appropriate commitments from City agencies, the State, the private sector, and higher education to advance recommendations through a defined implementation strategy.
- 4.** The Task Force may convene periodically to advocate for and assess progress in the implementation of these recommendations.

## References

Achieve, Inc., American Diploma Project Network (2007), *Closing the Expectations Gap 2007: An Annual 50-State Progress Report on the Alignment of High School Policies with the Demands of College and Work*, [www.achieve.org/files/50-state-07-Final.pdf](http://www.achieve.org/files/50-state-07-Final.pdf).

Adelman, C. (2006). *The toolbox revisited: paths to degree completion from high school through college*. Washington, DC: U.S. Department of Education.

Advocates for Children of New York, Inc. (2007). *Transitioning to Nowhere: An Analysis of the Planning and Provision of Transition Services to Students with Disabilities in New York City*. New York, NY. Retrieved on March 1, 2008, from [www.advocatesforchildren.org/pubs/Transitioning\\_to\\_nowhere\\_final\\_report.pdf](http://www.advocatesforchildren.org/pubs/Transitioning_to_nowhere_final_report.pdf). Additional reports discussing the need for access to new, small high schools and multiple pathways programs for students with disabilities and English language learners: [www.advocatesforchildren.org/pubs/2005/ellsmallschools06.pdf](http://www.advocatesforchildren.org/pubs/2005/ellsmallschools06.pdf); [www.advocatesforchildren.org/pubs/dead\\_ends.pdf](http://www.advocatesforchildren.org/pubs/dead_ends.pdf); and [www.nyfpi.org/pub/High\\_School\\_Report.pdf](http://www.nyfpi.org/pub/High_School_Report.pdf).

Allensworth, E., Correa, M., & Ponisciak, S. (2008). *From high school to the future: ACT preparation—Too much, too late*. Consortium on Chicago School Research (CCSR). Retrieved July 2, 2008, from University of Chicago, CCSR Web site: [http://ccsr.uchicago.edu/content/publications.php?pub\\_id=122](http://ccsr.uchicago.edu/content/publications.php?pub_id=122).

Bailey, T. & Karp, M. (2003). *Promoting college access and success: A review of credit-based transition programs*. Washington, DC: U.S. Department of Education, Office of Adult and Vocational Education.

Bailey, T., & Alfonso, M. (2005). Paths to persistence: An analysis of research on program effectiveness at community colleges. *New Agenda Series*, 6(1). *Lumina Foundation for Education*. Retrieved July 8, 2008, from Teachers College, Columbia University. Community College Research Center Web site: <http://ccrc.tc.columbia.edu/>.

Bailey, T. (2008). Rethinking the distinction between developmental and “college-ready” students in the community college. Teachers College, Columbia University. Community College Research Center and the National Center for Postsecondary Research.

Baker, D.B., Clay, J.N. & Gratama, C.A. (2005). *The essence of college readiness: Implications for students, parents, schools, and researchers*. The BERC Group. Retrieved July 2, 2008, from [www.bercgroup.com/publications.php](http://www.bercgroup.com/publications.php).

Bean, J. C. (2001). *Engaging ideas: The professor’s guide to integrating writing, critical thinking, and active learning in the classroom*. San Francisco: Jossey-Bass.

Bottoms, G, and M. Young (2008). *Lost in Transition: Building a Better Path from School to College and Careers*. High Schools That Work, Atlanta, GA. Retrieved May 15, 2008, from [www.sreb.org/publications/2008/08V01\\_LostInTransition.pdf](http://www.sreb.org/publications/2008/08V01_LostInTransition.pdf).

Brand, B. (2003). *Essentials of High School Reform: New Forms of Assessment and Contextual Teaching and Learning*. Washington, DC: American Youth Policy Forum. Retrieved July 2, 2008, from [www.aypf.org/publications/EssentialsofHighSchoolReform.pdf](http://www.aypf.org/publications/EssentialsofHighSchoolReform.pdf).

Brand, B. (2008). *Supporting High-Quality Career and Technical Education through Federal and State Policy*. Washington, DC: American Youth Policy Forum. Retrieved July 2, 2008, from [www.aypf.org/documents/CTEMeetingPaper.pdf](http://www.aypf.org/documents/CTEMeetingPaper.pdf).

- Carnegie Foundation for the Advancement of Teaching. (2008). *Faculty learning about learning: Reclaiming faculty development*. Retrieved July 8, 2008, from [www.carnegiefoundation.org/index.asp](http://www.carnegiefoundation.org/index.asp).
- Center for Student Success. (2007). *Basic skills as a foundation for student success in California community colleges*. Research and Planning Group for California Community Colleges. Retrieved July 8, 2008, from [www.cccbsi.org/publications](http://www.cccbsi.org/publications).
- Collins, A. et al. (1987). Cognitive apprenticeship: Teaching the craft of reading, writing and mathematics. *Technical Report No. 403*. Cambridge: BBN Laboratories.
- Conley, D. T. (2005). *College knowledge: What it really takes for students to succeed and what we can do to get them ready*. San Francisco: Jossey-Bass.
- Conley, D. T. (2007). *The challenge of college readiness*. Educational Policy & Improvement Center. Retrieved July 2, 2008, from [https://www.epiconline.org/publications/college\\_readiness](https://www.epiconline.org/publications/college_readiness)
- Conley, D. T. (2007). *Toward a more comprehensive conception of college readiness*. Educational Policy & Improvement Center. Retrieved July 2, 2008, from [https://www.epiconline.org/publications/college\\_readiness](https://www.epiconline.org/publications/college_readiness)
- ConnectEd. (2007, February 21). *Connecting college and career: A high school exhibition and hands-on classroom experience*. The California Center for College & Career. Retrieved July 8, 2008, from [www.connectedcalifornia.org/archive.php](http://www.connectedcalifornia.org/archive.php)
- ConnectEd. (2008). *Expanding pathways: Transforming high school education in California*. The California Center for College & Career. Retrieved July 8, 2008, from [www.connectedcalifornia.org/publications.php](http://www.connectedcalifornia.org/publications.php).
- Fischer, D. (2008). *Schools that work*. Center for an Urban Future: New York. Retrieved May 30, 2008 from [www.nycfuture.org/images\\_pdfs/pdfs/SchoolsThatWork.pdf](http://www.nycfuture.org/images_pdfs/pdfs/SchoolsThatWork.pdf).
- Friedel, J.N. (2008). The effect of the community college workforce development mission on governance. *New Directions for Community Colleges, 141 (Spring), 45–55*.
- Gándara, P. (2007) *Multiple Pathways for Immigrant and English Learner Students*. University of California, Los Angeles. Retrieved February 15, 2008, from: [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).
- Gee, J. P. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave Macmillan.
- Gee, J. P. (2004). *Situated language and learning: A critique of traditional schooling*. New York: Routledge.
- Grubb, W.N. (2006). "Like, what do I do now? The dilemmas of guidance counseling." In T. Bailey, & V.S. Morest (Eds.), *Defending the Community College Equity Agenda* (chap. 8). Baltimore, MD: The Johns Hopkins UP.
- Grubb, W. N., & Oakes, J. (2007). "Restoring value" to the high school diploma: *The rhetoric and practice of higher standards*. Retrieved July 2, 2008, from the University of Colorado at Boulder. Education & the Public Interest Center Web site: <http://epicpolicy.org/publications>.
- Grubb, W. Norton (2007). *What Educational Resources Do Students Need to Meet California's Educational Content Standards?* University of California, Berkeley. Retrieved February 15, 2008, from: [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).
- Hilliard, T. (2007). *Working to learn, learning to work: Unlocking the potential of New York's adult college students*. Schulyer Center for Analysis & Advocacy and Center for an Urban Future (CUF). Retrieved July 2, 2008, from CUF Web site, [www.nycfuture.org/content/articles/article\\_view.cfm?article\\_type=0](http://www.nycfuture.org/content/articles/article_view.cfm?article_type=0).

- Hoffman, N., Vargas, J., & Santos, J. (2008). *On ramp to college: A state policymaker's guide to dual enrollment*. Retrieved July 2, 2008, from Jobs for the Future Web site, [www.jff.org/KnowledgeCenter.php](http://www.jff.org/KnowledgeCenter.php).
- Hoffman, N., Vargas, J., Venezia, A., & Miller, M. (Eds.). (2008). *Minding the gap: Why integrating high school with college makes sense and how to do it*. Cambridge, MA: Harvard Education P.
- Hunter Quartz, K. (UCLA) and Elliot Washor (The Big Picture Company) (2007). *Small Schools as Multiple Pathways to College, Career, and Civic Participation: Can they Balance the Individual and Collective Aims of Schooling?* University of California, Los Angeles. Retrieved February 15, 2008, from: [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).
- Jenkins, D. (2008). *A short guide to "tipping point" analyses of community college student labor market outcomes (CCRC Research Tools No. 3)*. Retrieved July 2, 2008, from Teachers College, Columbia University. Community College Research Center Web site, <http://ccrc.tc.columbia.edu/Publication.asp?uid=600>.
- Jerald, C. D. (2006). *Identifying Potential Dropouts: Key Lessons for Building an Early Warning Data System*, Achieve, Inc., American Diploma Project Network & Jobs for the Future Report. Retrieved July 2, 2008, from Jobs for the Future Web site, [www.jff.org/KnowledgeCenter.php](http://www.jff.org/KnowledgeCenter.php).
- Jones, David. Plight of disconnected youth in his bimonthly column in the New York Amsterdam News: [www.cssny.org/pubs/urbanagenda/2005\\_01\\_27.html](http://www.cssny.org/pubs/urbanagenda/2005_01_27.html).
- Jones, David. The dropout crisis in New York City public schools in his bimonthly column in the New York Amsterdam News: [www.cssny.org/pubs/urbanagenda/2005\\_02\\_24.html](http://www.cssny.org/pubs/urbanagenda/2005_02_24.html).
- Jones, David. Reinvestment in Career and Technical Education in his bimonthly column in the New York Amsterdam News: [www.cssny.org/pubs/urbanagenda/2007\\_08\\_23.html](http://www.cssny.org/pubs/urbanagenda/2007_08_23.html).
- Jones, David. Greater investment in disconnected youth in his bimonthly column in the New York Amsterdam News: [www.cssny.org/pubs/urbanagenda/2007\\_10\\_18.html](http://www.cssny.org/pubs/urbanagenda/2007_10_18.html).
- Karp, M.M., Calcagno, J.C., Hughes, K.L., Jeong, D.W., & Bailey, T.R. (2007). *The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states*. A National Research Center for Career & Technical Education Report. Retrieved July 2, 2008, from Teachers College, Columbia University. Community College Research Center Web site: <http://ccrc.tc.columbia.edu/>.
- Kazis, R., with commentary by Gene Bottoms et al. (2005). *Remaking Career and Technical Education for the 21st Century: What Role for High School Programs*, Jobs for the Future and The Aspen Institute, [www.jff.org/Documents/RemakingCTE.pdf](http://www.jff.org/Documents/RemakingCTE.pdf).
- Labor Market Profiles and Projections for the New York City metropolitan area, prepared by for the Mayor's Task Force by Workforce Strategies, Inc.: Rhinebeck, NY.
- Legal Momentum (2008). *Gender Equity in NYC CTE Schools*. Prepared for the Mayor's Task Force on Career and Technical Education. New York, NY.
- Legal Momentum (2006). *Reading Between the Lines, Women's Poverty in the United States*. New York. Retrieved March 1, 2008, from [www.legalmomentum.org/site/DocServer/Im\\_povertyreport2006.pdf?docID=721](http://www.legalmomentum.org/site/DocServer/Im_povertyreport2006.pdf?docID=721).
- Legal Momentum (2007). *Women: Now Learning More, But Still Earning Less*. Retrieved March 1, 2008, from [www.legalmomentum.org/site/DocServer/Census\\_Education.pdf?docID=961](http://www.legalmomentum.org/site/DocServer/Census_Education.pdf?docID=961) and [www.legalmomentum.org/site/DocServer/LMGenderPayGapReportfinal.pdf?docID=881](http://www.legalmomentum.org/site/DocServer/LMGenderPayGapReportfinal.pdf?docID=881).

Lerner, J.B., & Brand, B. (2006). *The college ladder: Linking secondary & postsecondary education for success for all students*. Washington, DC: American Youth Policy Forum.

Levitan, M. (2005). Out of School, Out of Work, Out of Luck? New York City's Disconnected Youth. New York. Retrieved May 1, 2008, from [www.cssny.org/pubs/special/2005\\_01\\_disconnectedyouth/2005\\_01\\_disconnectedyouth.pdf](http://www.cssny.org/pubs/special/2005_01_disconnectedyouth/2005_01_disconnectedyouth.pdf).

Lucas, S. (2007). *Constructing Multiple Pathways to College and Career in an Effectively Maintained Inequality Regime: Paradigmatic Questions and Provisional Replies*. University of California, Berkeley. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Meeder, H. (2006). *Reinventing the American High School for the 21st Century*. The Association of Career and Technical Education, Washington, DC. Retrieved March 1, 2008, from [www.acteonline.org/policy/legislative\\_issues/upload/ACTEHSReform\\_Full.pdf](http://www.acteonline.org/policy/legislative_issues/upload/ACTEHSReform_Full.pdf).

Mehan, H. (2007). *Restructuring and Reculturing Schools to Provide Students with Multiple Pathways to College and Career*. University of California, San Diego. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Mojkowski C. (2007). *Career and Technical Education in Rhode Island: Delivery System Design*. Cranston, RI: Prepared for the Rhode Island Department of Education Office of Middle and High School Reform by Technology Applications Associates.

Mazzeo, C., Rab, S., & Allssid, J. (2003). *Building bridges to colleges and careers: Contextualized basic skills programs at community colleges*. Workforce Strategy Center. Retrieved July 2, 2008, from <http://workforcestrategy.org/publications/bysection/all>.

Mellow, G. O. (2008). Each and all: Creating a sustainable American higher education system. Robert H. Atwell Lecture. The American Council on Education Annual Meeting, San Diego, CA, February 11. Retrieved July 8, 2008, from LaGuardia Community College Web site, [www.lagcc.cuny.edu/atwell/](http://www.lagcc.cuny.edu/atwell/).

National Center on Education and the Economy (2007). *Tough Choices or Tough Times: The Report of the New Commission on the Skills of the American Workforce*, [www.skillscommission.org/pdf/exec\\_sum/ToughChoices\\_EXECSUM.pdf](http://www.skillscommission.org/pdf/exec_sum/ToughChoices_EXECSUM.pdf).

National Commission on Community Colleges. (2008). *Winning the skills race and strengthening America's middle class: An action agenda for community colleges*. Retrieved July 2, 2008, from The College Board Web site, [www.collegeboard.com/](http://www.collegeboard.com/).

New York City Department of Education, 2006–07 School Progress Reports and School Quality Reviews, <http://schools.nyc.gov/default.htm>.

New York State Education Department. (2001). Regents Policy on CTE. Retrieved February 1, 2008, from [www.emsc.nysed.gov/cte/ctepolicy/ctepolicy.html](http://www.emsc.nysed.gov/cte/ctepolicy/ctepolicy.html).

New York State Education Department. (2008). NYS Transition Plan — Perkins 4. Retrieved June 1, 2008, from [www.emsc.nysed.gov/cte/perkins4/docs/nys-transition-plan-perkins4.htm](http://www.emsc.nysed.gov/cte/perkins4/docs/nys-transition-plan-perkins4.htm).

Oakes, J., et al (2007). *Multiple Perspectives on Multiple Pathways: Preparing California's Youth for College, Career, and Civic Responsibility*. The UCLA Institute for Democracy, Education, and Access. University of California, Los Angeles. Retrieved February 15, 2008 from: [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Oakes, J., and M. Saunders (2007). *Overview: College Prep for All? Reinvigorated Career and Technical Education? Or Multiple Pathways to Both?* University of California, Los Angeles. Retrieved February 15, 2008, from: [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Oakes, J., and M. Saunders (2007). *Multiple Pathways: High School Reform that Promises to Prepare All Students for College, Career, and Civic Responsibility*. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Office of the New York City Controller, Office of Policy Management. (2007). *The Future is Now: Addressing the Skills Gap through Career and Technical Education in New York City High Schools*. Retrieved February 1, 2008, from [www.comptroller.nyc.gov/press/pdfs/CTE-report%2010-22-07.pdf](http://www.comptroller.nyc.gov/press/pdfs/CTE-report%2010-22-07.pdf).

Office of the New York City Public Advocate (2008). *Public Advocate Report, Blue School, Pink School*. New York, NY. Retrieved May 1, 2008, from <http://pubadvocate.nyc.gov/news/documents/CTEgirlsreport.pdf>.

Ong, P. and Veronica Terriquez (2007). *High School Student Employment and the Urban Spatial Structure*. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Pastor, M. (2007). *A State United or a State Divided: Can Multiple Pathways Bring Together Multiple Californias?* University of California, Santa Cruz. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Perin, D. (2001). Academic-occupational integration as a reform strategy for the community college: Classroom perspectives. *Teachers College Record* 103 (2), 303–335. Retrieved July 2, 2008, from Teachers College Record Web site, [www.tcrecord.org](http://www.tcrecord.org).

Perin, D. (2006). Can community colleges protect both access and standards? The problem of remediation. *Teachers College Record* 108(3), 339–373. Retrieved July 2, 2008, from Teachers College Record Web site, [www.tcrecord.org](http://www.tcrecord.org).

Pink, Daniel, (2005). *A Whole New Mind: Moving from the Information Age to the Conceptual Age*. City: Riverhead Hardcover.

Pulley, J. L. (2008, April 8). In need of remediation: The challenge of remediating ill-prepared students continues to confront community colleges. *Community College Week*, 20(6), 6–12. Retrieved July 2, 2008, from [www.ccweek.com](http://www.ccweek.com).

Rattray, D. (2007). *Theme-Based, Small Learning Communities Increase Academic Achievement, Workforce Resiliency, and Lifelong Success for Students in a "Flat World"*. UNITE-LA, Inc: Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Ravitch, R., & Brown, H., Co-Chairs. (2007). Engaging, recognizing, and developing the MTA workforce. Blue Ribbon Panel on Workforce Development. Metropolitan Transportation Authority. Retrieved July 8, 2008, from <http://mta.info/>.

Roderick, M. (2003). What's happening to the boys? Early high school experiences and school outcomes among African American male adolescents in Chicago. *Urban Education* 38(5), 538–607. Retrieved July 2, 2008, from <http://uex.sagepub.com/cgi/content/abstract/38/5/538>.

Roderick, M., Nagaoka, J., Coca, V., Moeller, E. et al. (2008). *From High School to the Future: Potholes on the Road to College*. Consortium on Chicago School Research (CCSR). Retrieved July 2, 2008, from University of Chicago, CCSR Web site, [http://ccsr.uchicago.edu/content/publications.php?pub\\_id=122](http://ccsr.uchicago.edu/content/publications.php?pub_id=122).

Rogers, J., Joseph Kahne and Ellen Middaugh (2007). *Multiple Pathways, Vocational Education and the "Future of Democracy"*. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Rose, M. (2007). *A Reflection on Career and Technical Education, Multiple Pathways, and the Academic-Vocational Divide*. University of California, Los Angeles. University of

California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Rosenbaum, J. (2001). *Beyond College for All: Career Paths for the Forgotten Half*. New York, NY: Russell Sage Foundation.

Scales, P. C., & Roehlkepartain, E. C. (2003). Boosting student achievement: new research on the power of developmental assets. *Search Institute Insights & Evidence, 1 (1), 1–10*. Retrieved July 8, 2008, from Search Institute Web site, [www.search-institute.org/research/insights-evidence](http://www.search-institute.org/research/insights-evidence).

Schoenbach, R., Greenleaf, C., Cziko, C. & Hurwitz, L. (1999). *Reading for understanding: A guide to improving reading in middle and high school classrooms*. San Francisco: Jossey-Bass.

Stern, D. (UC Berkeley) and Roman Stearns (ConnectEd: The California Center for College and Career) (2007). *Combining Academic and Career-Technical Courses to Make College an Option for More Students: Evidence and Challenges*. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Sternberg, R. J. (2008). Interdisciplinary problem-based learning: An alternative to traditional majors and minors. *Liberal Education, 94(1)*, 12–17. Retrieved July 2, 2008, from Association of American Colleges & Universities Web site, [www.aacu.org/liberaleducation/le-wi08/le-wi08\\_inter\\_prob.cfm](http://www.aacu.org/liberaleducation/le-wi08/le-wi08_inter_prob.cfm).

Stiles, J. and Henry Brady (2007) *Pipelines, Pathways, and Payoffs: Economic Challenges and Returns to Changing Demographics in California*. University of California, Berkeley. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Stoll, M. (2007). *The Changing Workplace and Schooling: Implications for High School Reform*. University of California, Los Angeles. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Treschan Lazar, testimony as part of *Campaign for Tomorrow's Workforce* before the City Council in New York City in November 2007 on restructuring the NYCDOE's Alternative High School Programs, [www.cssny.org/pdfs/CouncilTestimonyDistrict79\\_2007.09.14.pdf](http://www.cssny.org/pdfs/CouncilTestimonyDistrict79_2007.09.14.pdf).

Upcraft, M.L., Gardner, J.N., & Barefoot, B.O. (2004). *Challenging and supporting the first-year student: A handbook for improving the first year of college*. San Francisco: Jossey-Bass.

Venezia A. (2007). *Developing Multiple Curricular Pathways in California's High Schools: Possible Opportunities for Postsecondary Involvement*. West Ed. Retrieved February 15, 2008, from [www.idea.gseis.ucla.edu/publications/mp/index.html](http://www.idea.gseis.ucla.edu/publications/mp/index.html).

Venezia, A., Kirst, M. & Antonio, A. *Betraying the College Dream: How Disconnected K–12 and Postsecondary Education Systems Undermine Student Aspiration*. Final Policy Report from Stanford University's Bridge Project. Retrieved July 2, 2008, from [www.stanford.edu/group/bridgeproject/](http://www.stanford.edu/group/bridgeproject/).

Visher, M. G., Wathington, H., Richburg-Hayes, L., & Schneider, E. et al. (2008). *The learning communities demonstration: Rationale, sites, and research design*. NCPRE Working Paper. Retrieved July 2, 2008, from Teachers College, Columbia University. National Center for Postsecondary Research Web site, [www.postsecondaryresearch.org/](http://www.postsecondaryresearch.org/).

## **IX. Appendices**

- Guiding Principles of CTE Task Force
- Data Sheet on CTE Schools
- Current New York State Standards
- Sample 21st-Century Competencies
- Design Characteristics of Effective Schools
- Criteria for Evaluating Demonstration Site Design Proposals
- Model Work-Based Learning Support Materials
- Task Force Engagement Activities
- Meetings of the Mayoral Task Force on CTE Innovation
- Mayoral Task Force on CTE Innovation: Membership List

## Guiding Principles of the CTE Task Force

The Task Force believes that New York City must embrace a bold, long-term vision for CTE with discrete and sequenced short-term deliverables. This effort must be sustainable in the long term and lay a foundation for future growth. In pursuit of that vision, the Task Force established a context for innovation in CTE based on a set of guiding principles and aspirations:

- An unwavering commitment to continue to increase graduation rates at highly demanding levels;
- Elevated expectations that ensure that graduates are ready for postsecondary success, with consistent rigor and relevancy within all pathways—whether leading to four-year college, two-year career and technical degree programs, apprenticeships, technical training, or directly into the workforce;
- In defining postsecondary readiness, our goals are to:
  - Focus schools and students on the competencies required for postsecondary success—in the workplace, in further education, or both; and
  - Validate a rigorous pathway to graduation that ensures postsecondary success for students whose chosen career path does not necessarily lead to four-year college.
- Pathways that meet the needs of all students in the system—from highest-achieving students to students at risk of dropping out to English language learners to students with special needs:
  - Primarily target the needs of students before they are disengaged from the system (preventative);
  - Links between CTE pathway strategies and NYCDOE’s recuperative strategies also should be considered. Building on NYCDOE’s Learning-to-Work program, CTE could be a lever to engage “disconnected youth” (defined as students ages 16–21 who are overage and undercredited, i.e., students who are either dropouts or are at substantial risk of dropping out);
  - Strategies that recognize middle school as a key point of disengagement for many students and therefore expose students and create clear paths to realistic postsecondary opportunities early in their educational careers; and
  - Equitable access to male and female students.
- Recognition of the essential need for strong public-private partnerships is essential to create and expand student opportunities;
- Quality internship opportunities as critical levers both to engagement and to exposure to the rigorous competencies necessary for success in the workplace; and
- Ongoing collaboration with New York State to effect innovation and flexibility in key State policy areas.

## Current Enrollment and Demographic Information for 21 CTE Schools (3/14/08 data)

DBN	School Name	# of Students	% F	% M	% Black	% Hispanic	% Asian	% White & Other	% SpEd	% ELL
02M2 88	Food and Finance	446	58.1%	41.9%	49.3%	43.9%	2.0%	4.7%	15.9%	5.2%
02M6 00	Fashion Industries	1762	91.1%	8.9%	39.1%	50.8%	4.3%	5.8%	9.7%	4.3%
02M6 15	Chelsea HS	1141	40.4%	59.6%	38.1%	57.2%	2.5%	2.1%	13.8%	7.5%
02M6 25	Graphics & Communication Arts	2220	48.5%	51.5%	37.3%	58.6%	1.5%	2.7%	15.9%	11.4%
02M6 30	Art & Design	1449	46.4%	53.6%	31.6%	52.0%	6.1%	10.3%	11.0%	3.5%
07X6 00	Alfred E Smith	1373	12.9%	87.1%	34.7%	62.3%	2.2%	0.9%	19.5%	12.0%
07X6 55	Samuel Gompers	1698	24.0%	76.0%	28.6%	68.3%	1.4%	1.8%	18.8%	15.7%
08X6 50	Jane Addams	1926	67.8%	32.2%	35.1%	62.5%	1.5%	1.0%	18.2%	11.4%
10X6 60	Grace H. Dodge	2042	62.2%	37.8%	33.5%	63.0%	1.1%	2.4%	16.1%	16.4%
11X2 75	Computers & Technology	495	21.4%	78.6%	41.2%	51.5%	3.6%	3.6%	12.5%	8.7%
13K6 05	George Westinghouse	1004	38.1%	61.9%	76.4%	18.8%	1.7%	3.1%	14.5%	2.0%
14K6 10	Automotive	1291	5.3%	94.7%	60.7%	34.5%	1.5%	3.2%	17.4%	7.3%
17K6 00	Clara Barton	2556	74.2%	25.8%	87.9%	8.9%	1.3%	2.0%	10.8%	5.7%
19K6 15	ENY Transit Tech	1835	20.3%	79.7%	68.6%	25.1%	4.4%	2.0%	12.6%	1.6%
19K6 60	William Maxwell	1301	68.1%	31.9%	68.5%	28.1%	1.4%	2.1%	20.0%	6.4%
21K6 20	William E Grady	1680	19.5%	80.5%	73.6%	18.5%	2.3%	5.6%	17.8%	3.6%
24Q60 0	Queens Vocational	1359	40.0%	60.0%	13.9%	66.4%	8.5%	11.3%	14.9%	7.6%
24Q61 0	Aviation	2155	15.1%	84.9%	13.4%	54.0%	21.8%	10.8%	4.8%	3.7%
27Q65 0	Construction Trades, Engineering & Architecture	400	32.8%	67.3%	19.3%	37.8%	27.5%	15.5%	4.5%	0.5%
28Q62 0	Thomas Edison	2877	32.0%	68.0%	29.5%	25.1%	39.3%	6.0%	7.1%	1.8%
31R60 0	Ralph McKee	845	34.4%	65.6%	42.6%	29.3%	4.5%	23.6%	25.0%	3.8%
<b>Totals</b>		<b>31855</b>	<b>42.3%</b>	<b>57.7%</b>	<b>44.3%</b>	<b>43.1%</b>	<b>7.6%</b>	<b>5.0%</b>	<b>13.9%</b>	<b>7.0%</b>

## CTE School Performance

Performance indicators from 2006–07 School Quality Reviews and Progress Reports, 21 New York City CTE high schools.

ID	School	Progress Report Grade	SQR 06–07	Attendance			Four-Year Grad Rate			% Earning 10+ Credits in the First Year			Peer index
				S	PH	CH	S	PH	CH	S	PH	CH	
X660	Grace Dodge	C	P	80.7%	53.4%	36.9%	47.7%	44.2%	25.8%	52.8%	56.7%	40.2%	2.4
X650	Jane Addams	C	P	78.6%	42.4%	30.0%	50.7%	40.9%	30.1%	36.5%	32.6%	19.5%	2.43
X275	HS of Computers and Tech	N/A	P	89.2%	66.2%	64.7%	-	-	-	80.0%	76.1%	74.7%	2.63
Q620	Thomas Edison	B	P	92.0%	49.6%	73.8%	82.6%	28.9%	75.3%	77.0%	47.4%	70.9%	3.15
Q610	Aviation	A	W	91.5%	65.0%	72.1%	69.9%	22.7%	57.3%	75.2%	55.1%	68.6%	2.97
Q600	Queens Vocational	C	P	82.1%	41.7%	41.5%	58.3%	33.1%	40.9%	66.4%	57.7%	57.4%	2.65
K615	ENY-Transit	B	P	85.7%	42.8%	53.2%	68.4%	51.2%	55.2%	69.0%	59.9%	60.7%	2.74
K660	W. H. Maxwell	F	P	69.6%	4.4%	0.5%	43.0%	32.1%	19.1%	49.4%	49.4%	35.9%	2.4
K600	Clara Barton	B	P	85.1%	33.9%	51.3%	66.6%	45.6%	52.6%	64.9%	54.8%	55.5%	2.76
K620	William Grady	C	P	82.1%	48.4%	41.4%	43.7%	24.4%	20.1%	29.1%	15.6%	10.2%	2.48
R600	Ralph McKee	B	W	89.8%	83.0%	66.6%	70.3%	73.1%	57.9%	61.6%	58.0%	51.3%	2.46
K610	Automotive	F	P	71.2%	13.3%	5.9%	50.5%	46.6%	29.8%	52.9%	54.2%	40.3%	2.41
K605	George Westinghouse	C	P	84.4%	60.4%	49.0%	65.2%	63.8%	50.6%	74.2%	77.2%	67.3%	2.53
X600	Alfred Smith	C	P	75.1%	21.2%	18.5%	45.2%	41.3%	22.3%	29.8%	22.7%	11.0%	2.34
M625	Graphic Communication Arts	C	P	72.5%	19.7%	10.0%	32.3%	11.3%	4.0%	28.2%	23.9%	9.1%	2.41
M600	Fashion Industries	A	W	88.4%	47.6%	62.0%	78.4%	60.4%	69.4%	92.2%	87.5%	90.1%	2.87
X655	Samuel Gompers	B	P	77.4%	37.9%	26.1%	55.1%	63.5%	36.3%	48.7%	53.0%	35.0%	2.38
M615	Chelsea CTE	F	U	76.1%	18.5%	21.8%	31.5%	-6.6%	2.8%	39.8%	34.0%	23.7%	2.51
M630	Art and Design	B	P	88.7%	53.1%	63.0%	59.9%	17.0%	43.1%	68.1%	51.7%	59.6%	2.86
M288	Food and Finance	N/A	P	86.8%	49.8%	56.8%	-	-	-	88.8%	85.6%	85.8%	2.73
Q650	HS for Construction Trades, Engineering & Architecture	N/A	P	94.3%	93.4%	81.4%	-	-	-	88.0%	80.2%	84.8%	2.94

**S** = School      **PH** = Peer Horizon      **CH** = City Horizon

# Current New York State Learning Standards

## English Language Arts

### **Standard 1: Language for Information and Understanding**

- Students will listen, speak, read, and write for information and understanding. As listeners and readers, students will collect data, facts, and ideas; discover relationships, concepts, and generalizations; and use knowledge generated from oral, written, and electronically produced texts. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to acquire, interpret, apply, and transmit information.

### **Standard 2: Language for Literary Response and Expression**

- Students will read and listen to oral, written, and electronically produced texts and performances from American and world literature; relate texts and performances to their own lives; and develop an understanding of the diverse social, historical, and cultural dimensions the texts and performances represent. As speakers and writers, students will use oral and written language that follows the accepted conventions of the English language for self-expression and artistic creation.

### **Standard 3: Language for Critical Analysis and Evaluation**

- Students will listen, speak, read, and write for critical analysis and evaluation. As listeners and readers, students will analyze experiences, ideas, information, and issues presented by others using a variety of established criteria. As speakers and writers, they will use oral and written language that follows the accepted conventions of the English language to present, from a variety of perspectives, their opinions and judgments on experiences, ideas, information and issues.

### **Standard 4: Language for Social Interaction**

- Students will listen, speak, read, and write for social interaction. Students will use oral and written language that follows the accepted conventions of the English language for effective social communication with a wide variety of people. As readers and listeners, they will use the social communications of others to enrich their understanding of people and their views.

## Mathematics, Science, and Technology

### **Standard 1: Analysis, Inquiry, and Design**

- Students will use mathematical analysis, scientific inquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.

**Standard 2: Information Systems**

- Students will access, generate, process, and transfer information using appropriate technologies.

**Standard 3: Mathematics**

- Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra, data analysis, probability, and trigonometry.

**Standard 4: Science**

- Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.

**Standard 5: Technology**

- Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.

**Standard 6: Interconnectedness: Common Themes**

- Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.

**Standard 7: Interdisciplinary Problem Solving**

- Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.

**Career Development and Occupational Studies****Standard 1: Career Development**

- Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

**Standard 2: Integrated Learning**

- Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

**Standard 3a: Universal Foundation Skills**

- Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.

**Standard 3b: Career Majors**

- Students who choose a career major will acquire the career-specific technical knowledge/skills necessary to progress toward gainful employment, career advancement, and success in postsecondary programs.

**Social Studies****Standard 1: History of the United States and New York**

- Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in the history of the United States and New York.

**Standard 2: World History**

- Students will use a variety of intellectual skills to demonstrate their understanding of major ideas, eras, themes, developments, and turning points in world history and examine the broad sweep of history from a variety of perspectives.

**Standard 3: Geography**

- Students will use a variety of intellectual skills to demonstrate their understanding of the geography of the interdependent world in which we live—local, national, and global—including the distribution of people, places, and environments over the Earth’s surface.

**Standard 4: Economics**

- Students will use a variety of intellectual skills to demonstrate their understanding of how the United States and other societies develop economic systems and associated institutions to allocate scarce resources, how major decision-making units function in the United States and other national economies, and how an economy solves the scarcity problem through market and nonmarket mechanisms.

**Standard 5: Civics, Citizenship, and Government**

- Students will use a variety of intellectual skills to demonstrate their understanding of the necessity for establishing governments; the governmental system of the United States and other nations; the United States Constitution; the basic civic values of American constitutional democracy; and the roles, rights, and responsibilities of citizenship, including avenues of participation.

## The Arts

### **Standard 1: Creating, Performing, and Participating in the Arts**

- Students will actively engage in the processes that constitute creation and performance in the arts (dance, music, theatre, and visual arts) and participate in various roles in the arts.

### **Standard 2: Knowing and Using Arts Materials and Resources**

- Students will be knowledgeable about and make use of the materials and resources available for participation in the arts in various roles.

### **Standard 3: Responding to and Analyzing Works of Art**

- Students will respond critically to a variety of works in the arts, connecting the individual work to other works and to other aspects of human endeavor and thought.

### **Standard 4: Understanding the Cultural Contributions of the Arts**

- Students will develop an understanding of the personal and cultural forces that shape artistic communication and how the arts in turn shape the diverse cultures of past and present society.

## Languages Other Than English

### **Standard 1: Communication Skills**

- Students will be able to use a language other than English for communication.

### **Standard 2: Cultural Understanding**

- Students will develop cross-cultural skills and understandings.

## Health, Physical Education, and Family and Consumer Sciences

### **Standard 1: Personal Health and Fitness**

- Students will have the necessary knowledge and skills to establish and maintain physical fitness, participate in physical activity, and maintain personal health.

### **Standard 2: A Safe and Healthy Environment**

- Students will acquire the knowledge and ability necessary to create and maintain a safe and healthy environment.

### **Standard 3: Resource Management**

- Students will understand and be able to manage their personal and community resources.

## Sample 21st-Century Competencies

### Core competencies

All graduates should be able to:

- Perform mathematical operations well enough to use both arithmetic operations and logic and symbols to solve problems.
- Read complex material with fluency and comprehension, and communicate effectively in writing and orally.
- Utilize and be familiar with modern technologies to retrieve information, to analyze data, and to communicate formally and informally.
- Evaluate evidence and the logic of an interpretation or argument; make inferences and judgments in real-world contexts.
- Organize themselves for learning.
- Plan for what's coming next in education or work.
- Work effectively on teams with a collaborative attitude.
- Demonstrate leadership skills.
- Improvise.
- Synthesize and analyze information to develop solutions and action plans.
- Determine what's good enough when it comes to their effort and the quality of their work and have high expectations for themselves.
- Take responsibility for and assess the ethical implications of their actions.

With additional experience and maturity, all graduates should be prepared to expand and strengthen these core competencies as they go on to work or further education. All students should have the level of core competencies that allow them to continuously learn. Graduates today can anticipate that they will need to change jobs several times over their careers and that any entry-level job also will have changing and more challenging requirements over time. Therefore, core competencies are just the foundation on which students can pursue opportunities for work, further education, and/or training.

All graduates must be prepared to do what they need to do to be successful in the initial responsibilities of a first job or in required introductory-level courses in a postsecondary institution. The specific skills and knowledge needed for work and further education vary depending on the type of job and the type of postsecondary institution. Students will have to make choices about the pathways they choose.

Pathways must adapt standard courses of study to reflect the particular demands of possible next steps. To the extent that the demands on graduates vary, it will be necessary to ensure that graduates have the particular kinds of competencies that are most appropriate for what they intend to do after

graduation and that are relevant to their own self-conception of their future. These enhanced competencies for each pathway are described below.

### **Enhanced competencies: Work**

- Some graduates will seek employment immediately after high school graduation. Because the nature of jobs varies so much, the specifics of the necessary skills and knowledge beyond the core graduation requirements will vary as well. The specification of those competencies will require extensive and ongoing consultations and agreements with knowledgeable representatives of the actual employers as a starting point for implementation efforts.
- However, in general, graduates should possess the skills needed so that they can efficiently and independently perform routine tasks and so that they can perform nonroutine tasks satisfactorily when they are provided guidance and assistance. They also should be competent enough to receive a satisfactory evaluation of their performance prior to the end of their first year on the job.

### **Enhanced competencies: Education**

- The demands of various programs typically vary according to the nature of the coursework required for completion. By way of example, programs that have a significant engineering component will require greater proficiency and more extensive course taking in mathematics than programs in human services. The specification of the necessary competencies will therefore have to be made at the level of the program of study rather than the institution. This will require extensive consultations and agreements with knowledgeable representatives of the actual institutions as a starting point for implementation efforts.
- However, in general, graduates who enter a program at the certificate, associate degree, or bachelor's degree levels should be prepared to enter into fully credited coursework with no need for remediation in reading, writing, or math. Graduates also should be sufficiently well prepared so that they are able to complete an associate degree in no more than three years or a bachelor's degree in no more than six years.

## Design Characteristics of Effective Schools

- Strong leadership and a mission that teachers, administrators, and students know and support.
- A structure, including elements such as reduced teacher load, which ensures that students will be known well by their teachers and other school staff.
- A small team of qualified teachers responsible for a manageable number of students for at least a full school year that has the autonomy necessary to determine what students learn and how and what they need to make regular progress toward graduation.
- High expectations for all students and a standards-based, academically rigorous curriculum that connects what students learn with postsecondary education and career goals.
- A structure that fosters the development of authentic, sustained, caring, and respectful relationships between teachers and students and among staff members. Advisories of 10–15 students are one strategy to achieve this goal.
- Alternative assessments for students and teachers and a culture of continuous improvement and accountability for student success.
- A school schedule that promotes interdisciplinary work, teacher collaboration, and reduced teacher loads. This schedule should provide collaborative team planning and professional development time within the regular school schedule so that teachers can form a professional learning community. At the high school level, the schedule should maximize credit accumulation and provide opportunities for students falling behind to recuperate credits.
- A well-defined plan to service the learning needs of the full range of students in the community, including special education students and English language learners.
- Connections between what students learn in school to their lives and communities through internships, mentoring experiences, and service-learning opportunities.
- Partnerships with students, parents, and community organizations and institutions as key collaborators and stakeholders.
- Ability to direct fiscal resources toward the creation of conditions for effective teaching and learning.

## Criteria for Evaluating Demonstration Site Design Proposals

The following should be applied to the selection of demonstration sites from among school proposals:

### Capacity

The school planning team must demonstrate:

- Evidence of the NYCDOE-established Design Characteristics of Effective Schools (see above).
- Capacity to establish and sustain a professional culture that promotes a rigorous pathway for students to attain the core competencies.
- A plan for the development of a set of authentic, rigorous, alternative assessments that will determine mastery of core competencies.
- A plan for curriculum offerings that reflect authentic industry need.

### Teaching and learning

- The proposed educational plan must outline the curriculum and experiences that will lead to the attainment of competency-based standards as demonstrated by associated alternative assessments when developed.
- The proposal must provide a plan for contribution to the State and City's efforts to develop rigorous, alternative assessments toward the attainment of other core competencies and relevant content-specific knowledge and skills.
- The curriculum must provide evidence of academic and technical integration including:
  - Rigorous out-of school, work-based learning experiences that yield credit.
  - The use of dual-credit classes—Regents/career.
  - The use of alternative assessments to determine mastery of relevant competencies.
- The curriculum must differentiate among core competencies, content, and skills to be mastered during the secondary experience and those to be mastered at the postsecondary level or in the workplace. Assessments must be aligned appropriately.
- The curriculum must address the needs of all students including English language learners, special education students, and students who are academically struggling.
- The educational plan must provide a technical pathway(s) that is validated and recognized as relevant by the particular industry sector and yields meaningful employment and/or postsecondary opportunities.

## **Partnerships**

- The school proposal must identify the points of integration with and articulation to the relevant postsecondary partner(s).
- The planning team must demonstrate capacity to establish deep and meaningful engagement with industry including:
  - Coordinating districtwide relationships within industry sectors;
  - Development of a sustainable school-based industry advisory council;
  - Defining the right win/win for industry and educators while recognizing shared and different goals; and
  - Continuously assessing the wage dimensions of career opportunities.

## **Student selection**

- Student selection criteria should select for demonstrated interest and deliberate choice by students but should not select based on prior academic record. Adequate support structures should be in place to help students reach their full potential.
- Other student selection screens should be used only in the case that a program sufficiently justifies the need for specific competencies aligned with industry expectations prior to enrollment for ongoing student success.

## **Research, evaluation, and portfolio planning**

- The proposed school model must identify the methods, tools, and resources—and demonstrate capacity—to be used for ongoing research and evaluation of the model and its elements.

## Model Work-Based Learning Support Materials

### Dear Business Leader:

Congratulations on joining our network of PENCIL Business Mentors. By participating in the PENCIL Fellows Program, you gain enthusiastic, full-time help while also playing an important role in developing New York City's future workforce. As a Business Mentor, you and your colleagues have the opportunity to serve as role models for a dynamic group of young people selected from among the best New York City public school students.

You are important to the young people you supervise, and your impact can be significant. As a Business Mentor, you have the opportunity to help them:

- Develop strong work habits;
- Learn useful skills;
- Understand the nature of work;
- Feel comfortable working in an adult environment; and
- Experience the satisfaction of doing a good job.

Our program staff will monitor the progress of PENCIL Fellows and their internship experiences throughout the summer, maintaining regular contact and making periodic visits to the workplace to observe students and discuss their performance and development. Should a problem arise involving a student, please bring it to the attention of our program administration immediately by contacting PENCIL at (212) 524-2397.

Thank you for your commitment to provide a unique and powerful opportunity to our City's public school students.

Sincerely,

Michael Haberman

*President, PENCIL*

**The PENCIL Fellows Program** is designed to provide successful, career-minded juniors and seniors in New York City public high schools with dynamic, experiential learning experiences through full-time paid summer internships. The PENCIL Fellows Program is run in partnership with the NYCDOE's Virtual Enterprises program, a curriculum based on simulated businesses that are created and run by high school students. PENCIL Fellows are a select group of high-achieving Virtual Enterprises students who are eager to bring the skills they have learned in the "virtual" business world to the real workplace.

PENCIL Fellows go through a rigorous screening process before being selected for the program and are interviewed by the potential employer before being placed in a job. PENCIL and Virtual Enterprises provide ongoing support to students and business partners over the course of the internship through workshops, workplace visits, and supervisory assistance.

### **The power of a meaningful work experience...**

Through the PENCIL Fellows Program, students gain new skills, perspectives, and a context for their education. They develop a sense of responsibility, job readiness, and self-confidence.

Research shows that by offering a context for the application of academics, internships contribute to overall student achievement and to increased high school graduation rates. In turn, higher graduation rates lead to increased quality of life and increased earning potential. The PENCIL Fellows Program recognizes that young people need to put into practice specific skills to prepare them for the demands of the workplace. Ultimately, such challenges and experiences can change the course of their lives.

PENCIL Fellows will:

- Apply classroom learning to real-life work situations;
- Hone written and oral communication skills;
- Fine-tune strengths, interests, and aptitudes;
- Become acclimated to the professional workplace; and
- Expand their knowledge base of potential careers.

### **... and the benefit to your business**

The PENCIL Fellows Program offers area businesses the unique opportunity to hire and mentor New York City public high school students.

By hiring one or more PENCIL Fellows, you will join an extensive network of leading New York City businesses that have committed to becoming Business Mentors. As a Business Mentor, you gain enthusiastic, well-trained, full-time assistance, help public high school students develop invaluable workplace

competencies, play a proactive role in developing our City's future workforce, and have opportunities to network with other leading businesses. Business Mentors also are able to provide internal leadership opportunities to employees who supervise and serve as role models for PENCIL Fellows.

### **How it works ...**

- All PENCIL Fellows go through a rigorous screening process, including job readiness training.
- Participating businesses are required to complete the Business Mentor Application before being presented with a selection of candidates for consideration. Businesses then have the opportunity to interview and offer a position to candidates of their choice.
- Internships are full-time, six-week positions taking place during July and August.
- PENCIL Fellows are paid directly by employers. The rate of pay is determined by the employer but may not be lower than the prevailing minimum wage. Nonprofit employers may be eligible for a subsidy paid by NYCDOE.
- PENCIL and Virtual Enterprises continually monitor the progress of Fellows over the course of the internship through worksite visits and individual communication.
- PENCIL Fellows are required to attend career and college preparatory workshops during the summer.
- Participating students also are required to complete written reflective exercises. At the end of the internship, employer site supervisors complete a Student Fellow Evaluation and students complete a self-evaluation.

# **Supervising Youth in the Workplace: Business Mentor Manual**

## **The First Day: Workplace Orientation**

Set aside time to meet with your PENCIL Fellow(s) to get them acclimated:

- Establish goals and expectations of the workplace.
- Give a tour of your company.
- Make introductions to all relevant staff.
- Explain company policy, rules, and regulations, especially those relevant to dress, security, attendance, and acceptable workplace behaviors; distribute any necessary handbooks or company information.
- Discuss the procedure for tracking hours.
- Introduce and explain any relevant office equipment.

## **The Power of a Meaningful Work Experience**

Your PENCIL Fellow comes to you with unique experiences and skills. Feel free to be creative and expansive in the assignments you identify. Our goal is to have students benefit from a meaningful work experience while serving as productive members of your staff.

Examples of some of the types of tasks or projects that might be assigned include:

- Publishing and editing a "summer gazette" or other materials for your company or department;
- Web site monitoring and/or maintenance;
- Updating of database systems;
- Researching projects;
- Designing a relevant survey of client or employee trends and proclivities, using tools such as [www.surveymonkey.com](http://www.surveymonkey.com);
- Creating a company handbook for new procedures or future interns;
- Preparing for conferences and presentations; and
- Organizing a student-led focus group.

... and of course, general office work, including:

- Telephone coverage;
- Word processing and database applications;
- Filing;
- Photocopying; and
- Faxing.

## Tips for Working with Youth

**Model the behaviors you want students to demonstrate in your workplace.** As you know, young people learn more through observation than by dictation.

**Be open to young people's insights and suggestions.** Let students know that their input is important. Take advantage of the unique expertise and perspective that students have to offer, and support their input with positive guidance.

**Allow students to participate in the workflow of your office in meaningful ways.** Young people may be involved in diverse aspects of a project from beginning to end.

**Be clear about your expectations.** Do not expect more from an intern than you would from an adult worker. Keep expectations realistic, but hold young people accountable.

**Be supportive.** Although your PENCIL Fellow has received job readiness training and experience through their coursework, your guidance is needed in order to put these skills to best use in your workplace. Allow time for training and instruction.

**Try to make the work interactive, fun, and valuable.** Like adults, youth are more likely to get involved and remain active in projects that are interesting and fulfilling.

## About PENCIL

PENCIL builds and supports customized relationships between business leaders and principals to inspire innovation and transform public schools. By bringing together the best ideas, resources, and talent across sectors, we develop strong leaders, build school capacity, enhance student learning, and inspire greater community and corporate support, to create real change in our City's schools. Since our founding in 1995, PENCIL has successfully mobilized thousands of business leaders to strengthen New York City's public schools.

## Task Force Engagement Activities

The Office of Portfolio Development, Career and Technical Education Division, and the Office of the Mayor have coordinated engagement with the following groups to invite their participation in the Mayoral Task Force.

### External partners

#### *Industry Partners*

- Carpenter's Union Technical College
- Cisco Networking Academies
- Individual Industry Commissions (i.e., the automotive commission)
- Legal Momentum
- Morgan Stanley Diversity Exchange
- MOUSE
- NY Urban League
- NYCJobsFirst
- Sloan-Kettering Radiology
- Small Business Services
- USA Today

#### *Postsecondary and Other Educational Partners*

- Bank Street College
- CCAP (Culinary)
- CUNY (including associated colleges)
- Junior Achievement
- Justice Resource Center
- National Academies Foundation
- National Foundation for Teaching Entrepreneurship
- New Visions
- Urban Assembly
- Virtual Enterprise

#### *External Advisors and Special Interest Groups*

- Association for Career and Technical Education
- David Stern at UC Berkeley and Career Academy Support Network
- Gail Mellow, LaGuardia Community College
- Gary Hoachlander, MPR Associates
- Girls Inc.
- International Center for Education in Leadership
- Jeanne Oakes, UCLA
- National High School Alliance
- New Ways to Work
- New York City Advocates for Children
- Roscoe Brown, CUNY
- James Rosenbaum at Northwestern
- South Korean delegation reviewing CTE
- The Women's Commission
- The Workforce Investment Board
- X Prize Foundation

## NYCDOE

### *Special Education*

- District 75 at NYCDOE
- District 75 Superintendent's Student Advisory Group
- The Office of Special Education at NYCDOE and associated programs (i.e., STEP at Canarsie High School)
- The Special Education Parent Advisory Council
- VESID at NYSED

### *Other DOE Divisions*

- District 79, Alternative High Schools
- Empowerment Schools Network
- Human Resources
- The Division of Facilities and the School Construction Authority
- The Division of Instructional Technology
- The Fund for Public Schools
- The Integrated Service Center
- The Office of Accountability

- The Office of Management and Budget
- The Office of Multiple Pathways
- The Office of Student Enrollment, Planning and Operations
- The Office of Teaching and Learning

### *Community and Parent Engagement via DOE*

- Advisory Council for Career and Technical Education
- All CTE High School Principals and Program Leads
- Bronx Leadership Academy Student Forum
- Principals of Program Leads at High Schools with CTE Programs of Study
- The Citywide Council on High Schools
- The Community and High School Superintendents

## **Meetings of the Mayoral Task Force on CTE Innovation**

### **Organizational Meeting, March 25, 2008**

Location: City Hall

*Summary:* The meeting served to establish the Task Force and its charge. The Task Force organized moving forward into three general work streams, including industry analysis, education analysis, and demonstration site planning. General discussion focused on guiding principles for the work, as well as underlying concerns about CTE voiced by Task Force members from their diverse perspectives. The meeting concluded with commitments to convene in smaller working groups aligned with three work streams.

### **Public Meeting 1, April 30, 2008**

Location: United Federation of Teachers, 52 Broadway

*Summary:* This public meeting included review of the emerging efforts of each of three Task Force working groups. Areas of emerging consensus were memorialized, and questions requiring further discussion and analysis were raised. Approximately 75 people were in attendance.

### **Public Meeting 2, June 12, 2008**

Location: Food and Finance High School, 525 W. 50th Street

*Summary:* The Mayoral Task Force on Career and Technical Innovation met Thursday, June 12, 2008, to hear public comment in response to the release of the preliminary recommendations. The meeting began with welcome remarks from Deputy Mayor Walcott and Task Force co-chairs, Mr. Sy Sternberg and former New York City Mayor David Dinkins. Following brief comments from Task Force members, Gregg Betheil of NYCDOE, reviewed the preliminary set of recommendations.

Most of the meeting was intended for and was devoted to hearing public comment in response to the preliminary recommendations. Every member of the public at large that signed up to speak was given the opportunity to do so. Eighteen representatives offered comment representing the following constituencies:

- Industry sectors: cosmetology, graphics arts, health care
- Special interest constituencies: Advocates for Children, Legal Momentum
- New Visions for Public Schools

- Postsecondary Institutions: Proprietary Schools, CUNY, Bank Street College, Teachers College, City Tech
- Representatives of New York City CTE schools
- Other not-for-profits: Learning Leaders, Career Access, Campaign for Tomorrow's Work Force, Center for the Urban Future

Comments were thoughtful and relevant to the preliminary recommendations. To accommodate those that could not attend the meeting or did not have adequate time to review the preliminary recommendations, public comments were accepted until June 19 via e-mail at [CTEinfo@schools.nyc.gov](mailto:CTEinfo@schools.nyc.gov).

## **Mayoral Task Force on CTE Innovation: Membership List**

### **Task Force co-chairs:**

David Dinkins, Former Mayor of New York City  
Sy Sternberg, Chairman and CEO, New York Life

### **Task Force membership:**

Dennis Walcott  
Deputy Mayor for Education and Community Development

Joel Klein  
Chancellor, New York City Department of Education

Merryl Tisch  
Vice Chancellor, New York State Board of Regents

Matthew Goldstein  
Chancellor, City University of New York  
Represented by John Garvey, Associate Dean for Collaborative Programs

Kathryn Wyldé  
President and CEO, Partnership for New York City

Charles R. Bendit  
Regent, New York State Board of Regents  
Co-Chief Executive Officer, Taconic Investment Partners LLC.

Michele Cahill  
Vice President, National Programs, and  
Director of Urban Education Program, Carnegie Corporation

Cristobal Conde  
President and CEO, SunGard Data Systems Inc.

Miguel Fuentes  
President, Bronx-Lebanon Hospital Center  
Represented by Selena Griffin-Mahon,  
Assistant Vice President, Human Resources

Denis Hughes  
President, New York State AFL-CIO

David Jones  
President and CEO, Community Service Society of New York

William McDonald  
Chair, Chancellor's Parent Advisory Committee

Michael Mulgrew  
Vice President of Career and Technical High Schools  
United Federation of Teachers

Stanley Schair  
Chair, New York City Advisory Council on Career and Technical Education

Susan Hayes  
President and CEO, Cauldwell Wingate Company

Andrew L. Shapiro  
Founder and CEO, GreenOrder, Inc.

Eileen Taylor  
Principal, Aviation High School

Office of the Mayor

Alan Gartner  
Chief of Staff

Dina Paul-Parks  
Senior Policy Advisor

Department of Education

Garth Harries  
Chief Executive Officer, Office of Portfolio Development

Gregg Betheil  
Senior Executive for Career and Technical Education