CAREER & TECHNICAL EDUCATION 2014

UNLOCKING NEW FUTURES

FOR NEW YORK'S HIGH SCHOOL GRADUATES

Key recommendations for decision-makers

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A Union of Professionals

Catalina R. Fortino

PREFACE

Career and Technical Education (CTE) is an essential and too often undervalued pathway for New York state students. In this report, NYSUT identifies key recommendations on CTE for decision-makers, including strategies to strengthen CTE standards and program development; ensure equity and access for all students; expand CTE teacher recruitment, credentialing and professional learning; improve data-driven decision-making; increase state and federal funding for CTE; and better communicate and enhance the reputation of CTE.

The report, "*Career and Technical Education 2014: Unlocking New Futures for New York's High School Graduates*," is informed by national research and the experience and expertise of CTE practitioners from across New York State. Our members working in CTE are dedicated to providing the best possible education for their students, preparing young adults for multiple paths, including the work force, industry-based certification and credentialing programs, and continuing education and college. It is essential that the voice of practitioners is heard as New York State decision-makers consider policy changes to strengthen and advance CTE.

Catalina R. Fortino
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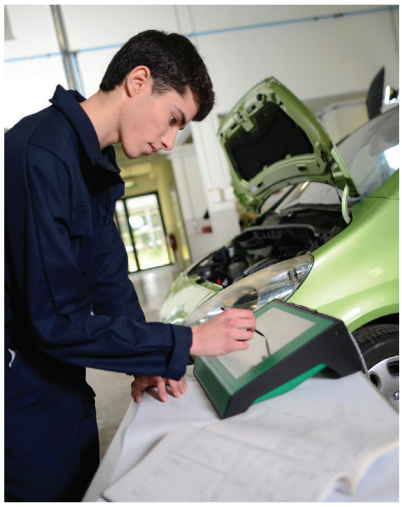

Executive Summary

Career and Technical Education (CTE) must be a high priority as our rapidly evolving global economy demands practical, relevant and multiple pathways for preparing young people for their roles in society. CTE provides a learning environment that can lead to a rigorous career-aligned contextualized learning experience. High quality CTE promotes college and career readiness in the development of academic, technical and employability skills such as communication, reasoning, problem solving, the ability to work in teams and other behaviors and skills vital to employers.

In November 2013, NYSUT convened a workgroup of New York state CTE practitioners to craft a statewide perspective on CTE issues. The group recommended six principal tasks:

1. **Update CTE's Program Identity and its Benefits for All Students and the Workforce**
   Today's CTE is more than job training. One of the highest graduation certificates a student can achieve is a Regents Diploma enhanced with a CTE technical endorsement.
2. **Strengthen Comprehensive Standards Development and Implementation**
   In collaboration with industry and higher education partners, review, update and align Career Development Occupational Studies (CDOS) standards to Common Core Standards and Common Career Technical Standards to focus students, teachers and parents on career goals.
3. **Extend CTE Program Development and Ensure Equity and Access for All Students**
   Begin discussions about career exploration and education pathways with elementary and middle school students and strategically focus program development on work force needs and job growth so that students acquire skills with labor market value and postsecondary readiness.
4. **Expand the Teacher Pipeline, Credentialing and Professional Learning**
   Recruit, certify and retain CTE teachers with up-to-date industry skills and knowledge and robust professional development to keep their skills dynamic and current.
5. **Improve Data-Driven Decision-Making**
   Develop an integrated data management system to link comprehensive CTE program statistics with workforce and economic trends, program capacity, geographical data and teacher certification requirements.
6. **Provide Sustainable Federal and State funding for CTE**
   Support Perkins Act reauthorization, fully fund state CTE initiatives and align data collecting and reporting with other federal programs.

The purpose of this document is to provide an overview of CTE issues in an accessible framework that can support decision-making. The framework helps policy makers understand the significance of the central challenge in each issue, explores a set of research-based discussion points, and considers a set of strategic recommendations developed by a workgroup composed of CTE practitioners.

Career and Technical Education is a powerful, student-centered strategy that equips learners with choices.

Introduction

It is critical for decision-makers in New York State to recognize that an integrated view of P-12 schooling must account not just for traditional classrooms and coursework, but also for Career and Technical Education (CTE) — equally as essential to prepare students for their futures in a global economy.

Career and Technical Education is a powerful, student-centered strategy that has the potential to equip all learners with post-secondary choices: With a Regents diploma — obtained through a CTE pathway — in hand, a student may opt for immediate entry into the workforce (including employer-based training and apprenticeships), two-year technical or community college, four-year baccalaureate programs, or other industry-based certification and credentialing programs.

In the coming months, New York state decision-makers will be focusing on CTE, which is also high on the national education agenda. Issues that are integral to CTE development in New York's school districts and BOCES are not only CTE "pathways," curricula, and programs, but also the infrastructural supports and administrative concerns regarding educational equity and access to CTE programs for all students, staff development, funding, teacher credentialing and evaluation, and data collection.

According to the Association for Career and Technical Education (ACTE):

- **High school students involved in CTE are more engaged, perform better and graduate at higher rates.**
- **Over 180,000 students in NY were enrolled in CTE programs in 2010-11.**
- **85% of CTE students graduated in 2010-11.**
- **More than 70% of secondary CTE students pursued post-secondary education shortly after high school.**
- **CTE enrollees are taking more rigorous math, English and science courses than in the past.**
- **CTE certificate programs in occupational areas generate positive earnings gains.**

CTE Defined

For purposes of this paper, the term career and technical education relies on an adaptation of the definition of CTE under the Carl D. Perkins Career and Technical Act. High quality career and technology education (CTE) means organized comprehensive educational activities that including the following components:

- A curriculum based on integrated rigorous academic standards, relevant technical knowledge and skills, and strong employability skills needed to prepare students for further postsecondary school education and careers;
- Work-based learning opportunities that enable students to connect what they are learning to real-life career scenarios and choices;
- Postsecondary articulation agreements constructed to provide students with direct benefits, such as college credit or advanced standings;
- Rigorous, blended college-preparatory and career-oriented instruction to produce strong results in their students.

This sounds like the ultimate definition of what college and career readiness should be.

Benefits of CTE: For All Students and the Workforce

Over the past several years, CTE programs have been transformed not only to provide students with a course of study that marries academic content with workplace and technical skills development, but also to respond to the economy's increasing demand for diverse and technically prepared workers.

The benefits for students are clear. Research and evidence on student participation in CTE programs suggest that when students see the relevance of what they learn connected to the world of work, student engagement increases.

Meaningful engagement of students, English Language Learners (ELL) and students pursuing non-traditional careers, including those with disabilities, can increase persistence, academic achievement and postsecondary engagement, improve employment opportunities and earning power, and provide opportunities to participate in careers that have been underrepresented by certain populations of students.

A 2013 report issued by the Massachusetts Department of Elementary and Secondary Education found that students with disabilities who attended Massachusetts regional CTE high school programs were nearly 70 percent more likely to graduate from high school in four years than their peers who enrolled in traditional comprehensive high schools.

Additionally, in a February 2014 report by the Community Services Society, New York City public high school students were more likely to graduate if they attended a CTE school. In fact, the study found that those students just below the average proficiency standards in eighth grade English language arts and mathematics had the strongest graduation gains in CTE schools.

The importance of aligning education and workforce needs leading to better job opportunities and better wages cannot be overstated. Career and Technical Education doesn't just prepare students for a particular career path, but provides skills that can be applicable to many occupational avenues.

In addition to providing the skilled, knowledgeable workers that the economy demands, CTE drives other benefits to the community and workplace. Students who complete CTE contribute to tax revenues, address the needs of high-growth industries and help close the skills gap, and return investment dollars to their state's economies.

ACTE also reports that "middle-skills jobs, jobs that require education and training beyond high school (but less than a bachelor's degree)…are a significant part of the economy. Of the 46.8 million job openings created by 2018, 30 percent will require some college or a two-year associate degree."

What follows are recommendations for ensuring a strong system of Career and Technical Education in New York state.

Career and Technical Education provides students with a rigorous and viable pathway to college and careers.

#1: Update CTE's Program Identity and its Benefit for All Students and the Workforce

***The challenge**: Despite the more than apparent need for ever more adequately prepared high school graduates to enter the workforce, enrollment in the Career and Technical Education (CTE) course work and programs continues to be inconsistent throughout the state.*

***The solution**: In order to meet New York's continuous and emergent demands for technically prepared workers, it is critical to arrest and reverse this decline, and alternatively, to re-invigorate support for and enrollments in CTE.*

Career and Technical Education provides students with a rigorous and viable pathway to college and careers.

Discussion points:

First, the idea that CTE programs represent a "second class" education is a legacy from a generation ago (before 2001), when low-performing students were "tracked" into often low-skill vocational education programs that emphasized "hands-on" training at the expense of other academically rigorous coursework.

In fact, today, no graduation certificate carries as much academic power as *a Regents diploma embossed by a CTE technical endorsement* [i], signifying that the student has not only met all requirements for a Regents diploma, but also demonstrated a high level of proficiency in a CTE program. Thus, many students graduating with both Regents diplomas and the CTE technical endorsement are ready for gainful, entry-level positions in high-demand fields.

Second, there is a persistent belief that CTE graduates are not prepared for college. On the contrary, many CTE students find themselves at a distinct advantage regarding a college experience. A Regents diploma alone can open the door to college admission, but with the addition of CTE skill sets, CTE-prepared college applicants often find themselves with advanced academic and technical knowledge for their course work. Too, CTE graduates are more prepared to support themselves as they pursue higher education. "Because CTE is career-focused, it has a unique advantage for working learners… students with relevant knowledge and skills can secure positions that pay more than routine low level jobs…" [ii]

Third, CTE has often been characterized as leading to low-level and blue-collar work that offers little opportunity for professional growth, advancement or independence. Quite the reverse is true: CTE students not only acquire the knowledge of the tools, and often the emerging technologies and techniques of their career fields, but many CTE programs support career development through courses that teach business and financial management, technological literacy, accounting, marketing and entrepreneurship. CTE graduates often are prepared to consider the development of small businesses, a key driver of a healthy economy.

We must "stress the importance of being prepared for both college and a career, not college or a career…" [iii] Participating in a CTE pathway leads to a Regents Diploma and serves to advance a student's education and career. The appendix includes an example of one state's approach to a CTE pathway as an alternative to New York State's current high school diploma requirements.

Strategic recommendations:

- Repurpose the narrative about CTE. Re-conceptualize and market CTE programs that stress CTE as a high-quality, first-tier pathway to college and careers to both students and parents.
- Showcase model CTE programs from across the state and country that have potential to be replicated or adapted in New York state.
- Develop and share data that point to the connections between graduation rates in CTE and employment, and CTE and college enrollment.
- Encourage testimonials from business and industry partners endorsing CTE programs.
- The State Education Department, in collaboration with BOCES, business and industry and the field, needs to design a broad-based communication system (campaign) to provide greater public awareness about the benefits of CTE.
- Develop a CTE network with CTE Business Advisory Councils and examine different arenas for partners (such as the chamber of commerce, association of counties, association of mayors, central labor councils, Urban League, etc.) with special knowledge and interest in each area of the state's occupational growth and development.

#2: Strengthen Comprehensive Standards Development and Implementation

The challenge: *In order to ensure consistent and coherent CTE instructional programming statewide, and to fortify program identity, implementation, assessment and evaluation, standards guiding these program elements should be developed for all CTE programs.*

The solution: *Comprehensively review and align existing standards sets. Establish a process for adopting industry-based standards, standards for evaluation and implementation, or other processes. Establish mechanisms to measure alignment; study impact.*

Career and Technical Education is a viable, practical pathway to prosperity.

Discussion points:

No matter the career for which a student is prepared, statewide CTE standards can be used to establish uniform expectations across the learning community and beyond. Instructional programs driven by appropriately endorsed standards ensure that all preparation is characterized by rigor. Transient students moving from one district to another should have the reasonable expectation that similar programs possess common structures.

1. The New York State Learning Standards for Career Development and Occupational Studies (CDOS) are intended to serve as a bridge connecting school and work, including career awareness, exploration, and planning, employer presentations, job shadowing, internships and workplace visits.
2. CDOS standards are the foundation standards for CTE majors and reflect the essential knowledge and skills students are expected to master to be successful in a career pathway.

3. CDOS standards also prescribe a career plan intended to promote exploration and research into broad career areas of interest to individual students, grades K-12. Basic principles of career planning such as decision-making, self-evaluation, and goal setting are intended to be integrated and implemented across all New York State Learning Standards.

Strategic recommendations:

- Establish state standards for quality CTE programs that ensure equitable access to all students. NY state should adopt the national Common Career Technical Core Standards. The Common Career Technical Core (CCTC) is a state-led initiative to establish a set of rigorous, high-quality standards for CTE.[iv]
- Review and align the Career Development Occupational Studies (CDOS) standards to Common Core State Standards and the Common Career Technical Core Standards in the context of the recognized 16 career clusters. Develop an implementation strategy to include clear goals and targets that will ensure that both CDOS standards and career plans are implemented.
- Standards should guide the development of authentic work-based learning experiences through partnerships with business and industry.

Career and Technical Education is an essential economic strategy for meeting workforce demands.

#3: Extend Program Development and Ensure Equity and Access for All Students

The challenge: *In order to engage students and families in ways that allow them to see CTE as a viable and attractive pathway to college and careers, consistent messages and relevant work-based experiences that stretch across students' schooling experience must be developed and delivered. To ensure that CTE programs or pathways are made available to all students and that each student is provided with the supports necessary for participation.*

The solution: *Craft and implement strategic communications and curriculum plans that meaningfully account for CDOS goals and objectives at all grade levels. Expand CTE opportunities to admit 9th and 10th graders, and to open career exploration and awareness programs for all students.*

Discussion points:

Students need comprehensive career exploration and guidance and counseling throughout their schooling. Students and parents need access to information about careers throughout their elementary and middle school years to make informed decisions about choosing a high school pathway.

We must ensure an adequate counselor-to-student ratio necessary to support a comprehensive guidance program that assures attention to and planning for a student's career plan. We must increase recognition of the key role guidance and counseling plays for all students.

Growth in CTE relies on strong relationships between program developers and institutions of higher education and labor market entities, including employers, industry professionals and economic development councils, which may serve as powerful partners.

Relationships are also strengthened through CTE youth leadership organizations. These organizations, at the state and national level, foster personal growth and leadership opportunities for students. Students are empowered to integrate skills and concepts through co-curricular activities, competitive events and related programs.

Access to CTE is most effectively addressed by ensuring that all students receive the same encouragement, messaging, resources, supports and preparation to consider CTE as a viable pathway to graduation, college and careers. To address issues of equity (such as the low numbers of females and students with disabilities in higher-paying technical programs), states and districts must undertake targeted strategies to support "special populations" –including women enrolled in nontraditional occupational training, students with disabilities, English language learners, and others, whose participation in CTE is inhibited by several likely factors: [v]

1. Lack of early exposure to nontraditional occupations and role models
2. Student attitudes
3. Biased career guidance and practices
4. Lack of encouragement to participate in science, math and technology
5. Stereotyped instructional practice and curriculum materials
6. A chilly school/classroom climate that results in student isolation
7. Lack of self-efficacy
8. Limited support services

Strategic recommendations:

- Study the feasibility of developing regional 9-12 full-day technical high schools in New York state. Since its inception in the late 40's, the CTE system operated by BOCES has focused on eleventh and twelfth grade students receiving a half-day of academics at the student's "home" school and half-day CTE programming at BOCES.
- Early and equitable access to quality CTE programs for all students is critical. Exposure to career education ideally begins in elementary school, when research suggests ideas about work are established.
- Increase collaboration between local middle and high school programs and those at BOCES to increase CTE opportunities for students.
- Develop crucial support strategies for instructors that encourage equitable participation and improve outcomes for all students.
- Foster collaboration between local and state workforce development agencies and organizations including educational institutions, business, industry and the community to ensure that education and training are relevant to a global economy and workplace.
- Provide internships and work-based learning experiences for students and teachers; serve as mentors; share information on emerging technology and careers; donate equipment and other material and promote and expand industry-based competitions.

JOBS. JOBS. JOBS.
Taken together, two OECD reports provide compelling evidence that CTE which integrates work and learning is a superior way to learn. And not surprisingly, young people who have been in programs teaching them about "working life" and giving them soft skills as well as training and experience in a career area do better at finding jobs.

William C. Symonds, Robert B. Schwartz and Ronald Ferguson, February 2011. Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century. Report issued by the Pathways to Prosperity Project, Harvard Graduate School of Education.

- Promote, support and engage youth leadership organizations as well as increase participation in career exploratory activities.
- Expand the CTE program approval process to focus on the employment needs of the community, city and/or state. CTE programs should be developed and reviewed strategically so that students acquire skills with labor market value and postsecondary/training readiness.
- Engage educators, parents and the entire school community in meaningful career planning activities for students. Provide opportunities for students, families and the community to attend programs to meet CTE graduates, teachers and business leaders involved in CTE and offer tours and practical advice about CTE programs and the links between school and the world of work.

#4: Expand Teacher Pipeline, Credentialing & Professional Learning

The challenge: *Expanding access to quality CTE programs and to meet emergent workforce demands for agile, responsive and diverse workers requires that more CTE teachers are recruited, certified, motivated and retained.*

Solution: *Build a competent, diverse, distributed and credentialed workforce of CTE teachers.*

Engage educators, parents and the entire school community in meaningful career planning activities for students.

Discussion points:

At present, New York state's CTE teachers may enter the profession through three distinct avenues: through traditional teacher preparation focused on CTE (Oswego, Buffalo State, and NYC College of Technology); or using the state certification approaches.

CTE programs must be prepared to respond to workforce needs with teachers with emergent knowledge bases for which few CTE certificates exist, or none at all. Thus, "increased flexibility in certification will be necessary to assure that students have appropriate [academic and industry-based] instruction and the opportunity to earn technical endorsements..."[vi]

Strategic recommendations:

- Develop a statewide recruitment and preparation plan and ensure adequate funding to promote entry into CTE teaching fields beginning in middle or high school. [vii] Study all pathways to CTE teacher certification. Ascertain the relationship between career clusters and certification pathways. Engage higher education administrators and faculty in discussions with CTE educators and business and industry about possible pathways to CTE teacher certification.
- Provide professional development for guidance counselors and other school staff in developing pathways and access to CTE for all students. Provide professional learning opportunities for CTE teachers to remain current in their occupational area and to maintain industry skills and knowledge. Create incentives for summer internships in industry for teachers.
- Create a shared model of curriculum and resource development, especially for special education teachers, teachers of special populations and CTE teachers. Provide

appropriate supports and professional learning opportunities for CTE teachers, especially for those serving students with diverse learning needs.

- Provide teachers with access to curricula, teaching resources and time to plan and to work with other teachers, with assistance integrating career-oriented lessons and opportunities with business/industry and higher education to collaborate.
- Provide professional development for both K-12 teachers and higher education faculty to ensure effective implementation of CDOS standards.
- Create a teacher certification endorsement that recognizes and rewards teachers with business and industry experience.
- Create a CTE national industry certification which recognizes and rewards teachers for enhanced credentials in their related field.

#5: Improve Data-Driven Decision-Making

The challenge: *Data-driven decision-making should guide CTE development. However, data about CTE has, over the years, been difficult to locate, unregulated, uneven, and in some cases, not collected at all.*

The solution: *Fund, build and implement a CTE data collection system that routinely and comprehensively gathers information to inform decision-makers about CTE programs and student performance, teachers, graduation rates, assessments, results and certification, postsecondary outcomes, as well as information about CTE teacher preparation and certification and other dimensions of CTE programs.*

Create a teacher certification endorsement that recognizes and rewards teachers with business and industry experience.

Discussion points:
Existing New York State CTE student data is difficult to interpret, appears inconsistent and varies year-to-year. States receiving Perkins funds are asked to report on specific indicators. The State Education Department does not require specific reporting data on CTE students in New York State; there is no consequence for not reporting.

Strategic recommendations:

- The State Education Department should develop an accurate and reliable data collection system that should demonstrate the performance of CTE programs and students. SED, in partnership with SUNY and CUNY and other statewide organizations and agencies, should develop a longitudinal data system that would follow students who participate in CTE programs, as well as their long-term career and employment outcomes and postsecondary success. CTE data should be used to make program improvements and to promote CTE to students, parents, educators and the community.
- The New York State Education Department should report data on the number of students attaining a Local Diploma, Regents Diploma and Regents Diploma with Advanced Designation with a CTE technical endorsement.
- An integrated data management system could be designed to link workforce needs with economic trends, program capacity, CTE development planning, geographic data, and teacher certification and distribution data. Many other elements might be considered.

#6: Provide Sustainable Federal & State Funding Supporting CTE as a Viable Pathway

The challenge: *Adequate, sustained, formula-based federal and state funding must be appropriated to support the ongoing growth and development of accessible and equitable quality CTE programs.*

The solution: *Federal and state monies, and other legislative initiatives that equitably direct non-competitive monies to district CTE programs and BOCES, should be supported. The federal Perkins Act must be reauthorized.*

A community invested in student learning - and workforce development
The Onondaga-Cortland-Madison (OCM) BOCES has partnered with a local car dealership to co-locate an automotive CTE program. The dealer-partner has classroom space and encourages the use of garage bays and multiple models of cars.

A similar CTE partnership has paired OCM's CTE physical therapy program with a sports complex.

NYC has an active citywide CTE Advisory Council that is charged with facilitating work-based learning and leadership opportunities for students, ongoing professional development for educators, and planning, preparing and providing the forum for industry-based competition.

Discussion points:

Federal investment in CTE is authorized by the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins).

Motivate CTE programs to work collaboratively with the federal and state departments of labor to ensure the relevance of CTE programs with the needs of the labor market.

Expanding CTE programs that take place in nontraditional settings such as industry sites equipped with the materials, tools and facilities to effectively engage students with a hands-on experience is worth exploration. Often, upgrading or purchasing state-of-the-art equipment is costly for CTE programs.

Strategic recommendations:

- Reauthorization of Perkins needs to continue to provide increased formula funding to states, districts and BOCES, not competitive grants.
- New York state needs to provide adequate funding to support and sustain quality CTE programs beyond Perkins funding. Currently the state only aids the first $30,000 in salary for BOCES. The aidable salary has not been increased since 1991. The state must change the BOCES aid formula by increasing the aidable salary to the state average salary.
- Special Services aid, which provides state support for career education programs in the Big 5 cities, should be updated to use the foundation aid per student to calculate the aidable amount per student. Currently, school districts receive only $3,900 per student.
- The federal and state government should invest more in CTE programs of study which form connections between secondary and postsecondary education and the workplace.
- Federal funding and data reporting and collecting for CTE must be aligned with the Elementary and Secondary Education Act (ESEA), Higher Education Act (HEA), Workforce Investment Act (WIA) and Individuals with Disabilities Education Act (IDEA) and other programs that affect special needs populations to strengthen the national commitment to students enrolled in high-quality CTE programs and the educators who serve them.

In Conclusion

This paper presents recommendations to frame and advance the Career and Technical Education (CTE) agenda. Career and Technical Education is a viable educational pathway that provides students with the readiness to successfully participate in an array of post-high school activities including, but not limited to postsecondary two- and four-year education programs, employer-based training and employment. The recommendations described here serve as a guide and framework for policy makers in planning and development as they relate to career and technical education. However, to make these changes a reality, the federal government, SED, school districts, BOCES and industry partners should work in collaboration to ensure a systemic approach to support these initiatives.

Appendix: CTE in New York State

CTE has evolved over the last century in response to changes in society, technology, education and the workplace to a program that integrates academics with skills that are applicable and transferable to many occupations and postsecondary pathways.

New York state students participate in secondary CTE programs in a variety of settings, including public high schools, BOCES and distinct technical/vocational high schools.

Current New York state regulations require that students seeking a Regents diploma pass the following five Regents exams with a score of 65 or better: English Language Arts, one Mathematics, one Science, Global History and Geography, and United States History and Government. A local diploma is available to students with disabilities using the same examinations with a passing score of 55-64. *The state of Virginia requires students to take six End of Course assessments to receive a high school diploma: two English, one Math, one Lab Science, one History and Social Science and one Student-Selected test. New York state should consider a pathway to a diploma that requires passing five exams from among: English Language Arts Regents, one Mathematics Regents, one Science Regents, Global History and Geography Regents, U.S. History and Government Regents or a CTE industry-recognized assessment. By including a CTE assessment as an alternative to a Regents exam, NYS would indicate that it values CTE as highly as traditional academic subjects. This would also allow students to choose a fifth Regents exam or CTE assessment aligned with their own area of interest: science, social studies, mathematics or CTE.*

Endnotes

[i] A technical assessment is an industry-developed assessment consisting of written examination(s), student project(s) and student demonstration(s) of technical skills to measure proficiency in a specific technical field through the application of national standards in such technical field. http://www.p12.nysed.gov/cte/ctepolicy/qanda.tm

[ii] Carnevale, Anthony P., Tamara Jayasundera and Andrew R. Hanson. *Career and Technical Education: Five Ways That Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce. Washington, D.C. (2012) http://cew.georgetown.edu/ctefiveways/

[iii] http://www.publicadvocates.org/education/college-career-readiness

[iv] The CCTC is a set of voluntary standards for each of the 16 CTE career clusters and their corresponding pathways, as well as 12 overarching practices to ensure students are career-ready. The CTE Program Approval Process should require that the Common Career Technical Core standards be used in the development of CTE curriculum.

v Adapted from Lufkin, Mary E., and Mary M. Wiberg. "Gender equity in career and technical education." *Handbook for achieving gender equity through educatio*n (2007): 420-442.

[vi] Adapted from "Recommendations for Developing College and Career Ready Students" produced by the NYS Association for Career and Technical Education, 2013.

[vii] The United Federation of Teachers (UFT) begins by getting high school students involved in the Success Via Apprenticeship (SVA) program. This internship program is designed to support the pipeline of teachers for CTE programs in New York City. Participating students work with mentors, work in industry for three years and teach for two years in return for an annual salary from the NYC Department of Education, and pledge to teach for five years in NYC schools after completing training. These teachers are selected for their knowledge of the content area.

References

1. Advocates for Children of N.Y. (2013) *Rethinking Pathways to High School Graduation in New York State: Forging new ways for students to show their achievement of standards*. New York, N.Y.

2. Association of Career and Technical Education (ACTE): http://www.acteonline.org

3. Brand, B. (2003). *Rigor and Relevance: A New Vision for Career and Technical Education. A White Paper.* Washington, DC: American Youth Policy Forum.

4. Brand, B., Valent, A. & Browning, A. (2013). *How Career and Technical Education Can Help Students be College and Career Ready: A Primer.* College & Career Readiness & Success Center at American Institutes for Research. Washington, D.C.

5. Carnevale, A. P., Jayasundera, T. &. Hanson, A. R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* Georgetown University Center on Education and the Workforce. Washington, D.C.

6. Career Readiness Partner Council: http://www.careerreadynow.org/

7. Clark, R. W., Threeton, M. D. & Ewing, J. C. (2010). The Potential of Experiential Learning Models and Practices in Career and Technical Education & Career and Technical Teacher Education. *Journal of Career and Technical Education,* 25(2), 46-62.

8. Cullen, J. B., Levitt, S.D., Robertson, E. & Sadoff, S. (2013). What can be done to Improve Struggling High Schools? *Journal of Economic Perspectives*, 27(2), 133-152.

9. Dougherty, S. M. (2013). Editor's Review of Preparing Today's Students for Tomorrow's Jobs in Metropolitan America. Perna, Laura W. (Ed). *Harvard Educational Review,* 83(4), 644-654.

10. Hehir, T., Dougherty, S. & Grindal, T. (2013). Report on Career and Technical Education and Students with Disabilities. Commissioned by Massachusetts Department of Education. www.doe.mass.edu/sped/2013/cte.docx

11. Holzer, H., J., Linn, D. & Monthey, W. (2013). *The Promise of High-Quality Career and Technical Education: Improving Outcomes for Students, Firms and the Economy*. The College Board and The Georgetown Law Center on Poverty, Inequality, and Public Policy

12. *Investing in America's Future: A Blueprint for Transforming Career and Technology Education*. (2012). United States Department of Education Office of Vocational and Adult Education. Retrieved from http://www.p12.nysed.gov/cte/docs/PerkinblueprintFull2013.pdf

References

13. Lufkin, Mary E., & Wiberg, M. M. (2007). Gender Equity in Career and Technical Education. In S. S. Kelin (ed.), *Handbook for achieving gender equity through education* (2nd ed.), (pp. 421-443). Mahwah, NJ: Lawrence Erlbaum Associates, Publisher.

14. National Association of State Directors of CTE consortium (NASDCTEc) http://www.careertech.org/career-technical-education.

15. National Center for College and Career Transitions (NC3T). (2013). T*he Future of College and Career Pathways.* http://www.NC3T.com

16. New York State Education Department (2012). *ESEA* flexibility request. Retrieved from http://www.p12.nysed.gov/accountability/ESEAFlexibilityWaiver.html.

17. New York State Education Department General Education and Diploma Requirements: http://www.p12.nysed.gov/ciai/gradreq/intro.html

18. New York State Education Department, Part 100 Requirements: http://www.p12.nysed.gov/part100/pages/1005.html

19. NRCCTE Curriculum Integration Workgroup (2010). Capitalizing on Context: Curriculum Integration in Career and Technical Education. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville.

20. Perkins Act 2006: http://www.gpo.gov/fdsys/pkg/BILLS-109s250enr/pdf/BILLS-109s250enr.pdf

21. "Schools That Work," Center for an Urban Future http://nycfuture.org/images_pdfs/pdfs/SchoolsThatWork.pdf

22. Symonds, W. C., Schwartz, R. B., & Ferguson, R. (2011). *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century.* Report issued by the Pathways to Prosperity Project, Harvard Graduate School of Education.

23. Treschan, L. & Mehrotra, A. (2014). *Challenging Traditional Expectations: How New York City's CTE High Schools Are Helping Students Graduate.* Community Service Society. New York, N.Y.

24. Virginia Department of Education Graduation Requirements: http://www.doe.virginia.gov/instruction/graduation/index.shtml

25. U.S. Department of Education: http://www2.ed.gov/about/overview/budget/news.html?src=rt

26. Wonacott, Michael E. (2001) *Students with Disabilities in Career and Technical Education*. ERIC Digest No. 230

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