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REVIEW OF
UPDATING CAREER AND TECHNICAL EDUCATION FOR THE 21ST CENTURY

Reviewed By

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Summary of Review

Updating Career and Technical Education for the 21st Century makes the claim that schools are failing to unleash the potential of Career and Technical Education (CTE). According to the report, CTE enables students to graduate from high school with the skills, knowledge and abilities required to meet the needs of a rapidly changing economy and the demands of the workplace. While the report claims to highlight the "most effective models underway across the United States" and discuss program elements best suited for replication, the showcased program descriptions provide limited evidence regarding effectiveness, and the report neglects to identify how programs and practices could be replicated. Further, while the report makes reference to programs that have the potential of bridging CTE and academic curricula, it fails to detail the importance of this strategy or to describe these efforts or their potential impact. Rather, the report reinforces the harmful existing mindset that views CTE and college preparatory curricula as being on different sides of the educational spectrum.

GREAT LAKES CENTER
FOR EDUCATION RESEARCH & PRACTICE

REVIEW OF

UPDATING CAREER AND TECHNICAL EDUCATION FOR THE 21ST CENTURY

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I. Introduction

The Lexington Institute recently published *Updating Career and Technical Education for the 21st Century*, authored by Kristen Nye Larson.[1] The report claims that too many CTE programs offered by today's high schools are outdated and fail to provide students with the skills and training they need for success in the 21st century workplace. The report showcases effective CTE models underway across the United States and discusses "program elements best suited for replication" (Executive Summary). Through the presentation of these CTE exemplars, the report identifies three replicable strategies: partnerships with businesses, improved accountability measures, and innovative curriculum options. The report does not detail how or why these practices are key to improving CTE experiences and opportunities for students.

II. Findings and Conclusions of the Report

As noted, the report identifies three elements that can benefit schools and districts in their efforts to improve and increase CTE opportunities: 1) develop meaningful and ongoing relationships with businesses; 2) improve accountability by monitoring post-graduation outcome measures, and 3) identify and develop innovative curriculum options including integrative practices. These elements are then exemplified in the program descriptions provided.

Regarding the first element, the report emphasizes the key role business-school relationships play in the success of CTE programs. In particular, the report discusses the importance of industry partners for accessing up-to-date information on the "types of workers" needed by industry, job projections, and the "current, specific qualifications for those jobs" (p. 15). Citing the example of Pathways in Technology Early College High School ("P-Tech"), a new and high-profile school in Brooklyn, New York, the report

identifies the potential of business-school collaborations. P-Tech partners with IBM, the Department of Education, and City University of New York (CUNY) to provide a STEM (Science, Technology, Engineering, and Math)-oriented, six-year (grades 9-14) integrated curriculum that includes work-based experiences. As a result of the partnership, "graduates will be the first in line for a job at IBM and while in school, each student has an IBM mentor who shares academic support and career guidance" (p. 3). The evidence for the success of this program seems to be its rapid expansion (Governor Cuomo announced plans to replicate this model), and initial signs of academic gains. The author reports that 87% of students who entered as ninth-graders in 2011 have completed at least one college-level course, including those who entered the ninth grade at elementary school reading levels. P-Tech's inaugural class will graduate in 2017.

Pickens County School District, located in South Carolina's Appalachia region, is cited as another example of a positive business/school-system partnership. The goal of the partnership is to stimulate economic development. The focus is on attracting and retaining business to the community and on increasing the number of jobs (and the tax base) in the region.

The report misses an opportunity to present CTE as a viable alternative pathway **to** *postsecondary education, rather than* **instead of** *postsecondary education.*

Businesses "tap into a ready and willing workforce that is being trained by the school system" (p. 3). Since the program began, the number of companies participating in the apprenticeship program has increased, as has the number of actual apprenticeships. According to the report, the partnership creates "a proven program that prepares students for real workplace opportunities" (p. 4).

Regarding the second element, the report contends that monitoring students' postsecondary trajectories is essential to establishing and understanding the success of CTE programs. The report was clear that this is an area that must be developed—there are few existing measures of career readiness, and postsecondary data (data that sheds light on college and career progress and attainment) are largely unavailable. The report highlights the Career/College Readiness Measures developed by the District of Columbia's citywide, independent Public Charter School Board (PCSB). The measures the PCSB (hopes to) employ attempt to track the percentage of learners who have entered and retained employment, postsecondary education, or both. The report also shares strategies used by the Metropolitan Regional Career and Technical Center ("The Met") in Providence, Rhode Island, to collect data on graduates. The Met created an alumni coordinator staff position to monitor the progress of and keep in touch with alumni. Another strategy used by the Met involves connecting with the students' high school mentor (versus surveying alumni directly) to gather information on postsecondary experiences. Using this strategy, a longitudinal study of the Met conducted by researchers at Boston College has yielded a

96% response rate. The report suggests reallocating resources to support data collection efforts such as these.

Finally, the report challenges CTE programs to explore various methods of content delivery, including blended "flex" models that allow students to tailor their schedule to accommodate their career training. It cites the example of Career Path High, a charter school in Kaysville, Utah, where students take their comprehensive high school classes online and their career-technical courses on the campus. Students are encouraged to "find their passion" within two career choices: information technology or architectural and engineering design. The school encourages hands-on learning, externships, and clinical experiences. The goal is for every student to graduate with a high school diploma and a CTE certificate. With students enrolling in Career Path High for the first time in September 2013, it is too early to report its outcomes. While the report recognizes that CTE certificates can enable students to gain employment and attend college if they so choose, it does not identify preparing students for postsecondary learning as a goal of the Career Path High program.

III. The Report's Rationale for Its Findings and Conclusions

The report makes the claim that too many high school CTE programs are outdated and are graduating students whose skills and abilities do not match the needs of the current workforce. In particular, it claims that the current push for students to pursue a 2- or 4-year college degree is misguided. This argument is based on research conducted by Andrew Sum from the Center for Labor Market Studies at Northeastern University, who claims that 36% of recent college graduates take jobs that do not require a college degree (which is also said to have a negative impact on high school degree holders who might otherwise fill these jobs). According to the report, greater alignment between high school CTE programs and industry could better serve the needs of both students and industry. The report claims that "outdated instructional models" prevent this alignment. It includes brief descriptions of "effective" CTE models and identifies the above-discussed three particular practices used by these models—school/business partnerships, new accountability measures, and innovative curricular strategies—as the fix to high school CTE.

IV. The Report's Use of Research Literature

As noted, the report cites the research of economist Andrew Sum to establish the potential economic benefits of CTE and to address the current "mismatch" between U.S. college graduates and industry demands. According to Sum, recent college graduates are filling jobs that do not require a college degree. Yet how the research assigns "college" and "non-college" degree jobs raises concerns. According to other economists, people with college degrees in non-college occupations are not necessarily overeducated if there is a return for their educational investments.[2] Further, these distinctions miss the shift toward increased

postsecondary requirements within occupations that have not traditionally between labeled "college jobs."[3] The argument also skirts a key equity concern: while the economy may not have high-paying jobs for all college-educated students, an equitable system would avoid intergenerational inequality. We should not be able to predict at birth which students will be given meaningful opportunities to choose college.

The report also cites the strong, oft-cited work of Anthony Carnevale to suggest that high school CTE offerings can address the current gap by preparing career-ready students. The report does not make clear, however, that the research literature—including the work of Carnevale—identifies some level of postsecondary education and training as the gateway to middle class jobs and earnings; it also ignores that fact that jobs requiring *only* a high school diploma or less have largely disappeared.[4] The research of Carnevale not only supports the pursuit of higher education, but also notes that youth from middle- and upper-class households will continue to pursue higher education despite the stories of high unemployment, underemployment or mal-employment among college graduates.[5]

Brief reference is also made to research identifying the benefits of an integrated CTE and academic curriculum. The report cites the work of Clark, Stern, and Tidyman to provide evidence that supports combining an academic and career-oriented curriculum. This work also supports preparing students for a range of options when they graduate from high school, including readiness for both college and careers. Though not included in the report, additional research supports the benefits of this strategy. For example, Stern and Stearns provide further evidence in a review of empirical studies of programs blending CTE with academic coursework.[6]

Overall, the report does not rely heavily on the research literature. Rather, it relies primarily on a range of newspaper and magazine articles, press releases, interviews, and testimony to provide background information on each of the models presented.

V. Review of the Report's Methods

The report opens with a section extolling the need and virtues of CTE. It then employs a set of school descriptions to present "many of the most effective models underway across the United States" (Executive Summary). After an examination of different CTE programs nationwide, and "seeing what programs are successful" (p. 15), the report identifies the above-described three key elements or practices. It is not disclosed: 1) how these programs/models were identified; 2) how data were gathered regarding the strategies and practices used by each of the models; or 3) how the three primary replicable elements were identified. Furthermore, how a program is deemed "successful" is not offered.

It appears that information was gathered from interviews (either conducted by the author or made available to the author), school or district websites, news articles, press releases, and public testimony. It is unclear whether any unique data were collected for the sole purpose of the report. Based primarily on existing data sources, the report provides

cursory overviews of each of the programs presented and does not offer a clear understanding of the "effective" elements it deems are replicable.

VI. Review of the Validity of the Findings and Conclusions

There is widespread agreement that updating CTE for the 21st century means that students who graduate from a high school CTE program must be prepared for both college *and* today's workplace—not one or the other.[7] In order to access middle-class jobs and wages, students need some level of postsecondary education; workers with an associates' degree will earn 73% more than those with only a high school diploma.[8] Unfortunately, while the report includes language consistent with this goal, it does not recognize or emphasize this as an essential element of successful high school CTE programs aimed at preparing students for the 21st century workforce. Nor does the report lift up the high level of academic rigor that is characteristic of today's successful CTE programs, or the secondary and postsecondary alignment strategies that assist students in pursuing further education and training beyond high school graduation. By failing to capture these elements and strategies, the report misses an opportunity to present CTE as a viable alternative pathway *to* postsecondary education, rather than *instead of* postsecondary education.[9]

Given that readiness for higher education and the workforce must be a priority in any CTE reform effort, the three elements introduced in the report are too narrowly constructed to achieve desired changes. In order for these elements to serve the needs of students, families, and the workplace, they must be broadened in the following ways.

First, private/public partnerships must extend beyond the two goals listed: the provision of information on workforce needs and the stimulation of economic development. Unfortunately, the report does not underscore the range of partnerships that allow schools to meet students' academic and social needs and ensure they graduate with the skills, knowledge, and abilities they need to be successful in the adult world. Partnerships, including those with business, industry, postsecondary institutions, and community-based organizations, align school and community resources, expertise, and accountability to ensure students can meet expected outcomes. The partnership with the City University of New York, for example, is key in enabling P-Tech to provide students with a six-year experience culminating in an associate's degree, thus providing greater alignment between the needs of students and business. Work-based learning experiences provided by partners (e.g., internships and mentorships) not only establish a possible "in" for graduates, but provide students with a set of skills, including non-cognitive or "soft skills", that can be applied in a range of work settings.[10] P-Tech has yet to graduate its inaugural class, so we do not know the nature or extent of its job-placement success; nonetheless, its private/public partnerships must aim to do more than ensure IBM fills its needs. The success of P-Tech will be determined by its ability to graduate students with the skills and knowledge they need to pursue the careers of their choosing.

Second, as highlighted in the report, shared accountability and measures aligned to expected student outcomes is vital to improvement efforts. While "looking at models where children are graduating with meaningful and useful certifications and actual job opportunities is vital to a school district's career and technical program" (p. 14), job placements are not a sufficient measure of CTE effectiveness. CTE programs for the 21st century must gauge their ability to prepare students to transition between work, on-the-job training, and higher education as the changing economy and shifts in the job market require.[11] It is necessary to assess career-relevant knowledge and skill proficiencies, non-cognitive skills essential to a student's overall readiness for the workforce, *and* student's overall readiness for postsecondary learning.

Effective CTE programs work to disrupt patterns of social inequality by broadening the educational and employment opportunities of **all** *students.*

Third, the report claims to prioritize strategies that integrate and align academic and CTE requirements. By bridging the best practices of CTE and rigorous academics, schools can provide a flow of knowledge, relationships, and experiences that will sustain students' interests and efforts, increase the likelihood of graduation, and promote readiness for their next steps in life.[12] Indeed, the report states that educators have been "trending more towards providing an integrated educational experience, so that students are able to graduate with both an academic baseline and technical skills and have a choice of pursuing a career or college" (p. 11). Unfortunately, there is very little discussion of these practices in the report. Path High, a new charter school located in Kaysville, Utah, and located on the campus of a job training college, is the exemplar. Emphasis is placed on work readiness, and there is no discussion of curricular strategies to ensure graduating students are prepared for the full range of postsecondary opportunities, including direct entry into a four-year college. An opportunity is missed by not highlighting the integrative practices of P-Tech and The Met or including examples like Linked Learning in California, where students must meet college preparatory requirements, complete a sequence of CTE courses, and participate in a work-based experience.[13]

The report's most damaging flaw, however, is not in these descriptive shortcomings but in its conceptualization of academic integration. As many others have done, the report holds up Germany's "dual system" as a model:

> In Germany more than half of its students participate in a 3-year apprenticeship program where students have a weekly schedule that includes more than half of their time in an actual workplace environment and the remainder of their week in CTE and/or general education courses. Germany has approximately 350 apprenticeship programs for students to choose from in high school. Most often [sic] than not, this internship experience results in a certification or diploma that gives the student an advantage to working in that field (p. 12).

The German "dual system" is part of a larger system that leads students to either higher education *or* work readiness, not both. After elementary school, students are sorted into three distinct tracks based on interests and aptitudes. Those students identified as university-bound enter one track; the "dual system" provides a path to the technical trades and occupations; and a third track, for those with the lowest grades, prepares students for mid-to lower-level vocational training. These distinct tracks do not offer students equal access to knowledge, learning, and postsecondary outcomes.[14] Students in the academic track demonstrated a larger increase in intelligence gains between 7th and 10th grade compared with their peers in the non-academic track, and a higher propensity to attend school.[15] Further, access is not equitable: students' educational track is most often determined by the family's socioeconomic status, with the university-bound track favoring youth from higher SES backgrounds.[16]

Although not discussed in the report, effective high school CTE models consider issues of equity and access. In particular, effective high school CTE programs must appeal to a broad range of students and have safeguards in place to ensure they are not set aside for only high- or low-achieving students. Effective CTE programs work to disrupt patterns of social inequality by broadening the educational and employment opportunities of *all* students.

VII. Usefulness of the Report for Guidance of Policy and Practice

This report is limited in its usefulness, both in practice and policy. It both over-reaches and under-reaches.

It over-reaches by using a few poorly developed examples to make broad claims about key attributes of successful programs. While the report provides interesting examples of various high school CTE programs available across the country, the program descriptions are superficial, inconsistent, and lacking coherency. Further, while the report highlights a few key areas requiring attention as educators and policymakers work to revamp existing CTE programs or create new ones, these areas are unfortunately not explored sufficiently to be useful for policymakers or practitioners. The report falls short of identifying the practices and policies that can ensure these programs are not "one-offs" but sustainable and replicable efforts.

The report, ironically, under-reaches in that it does not fully capture the potential of high school CTE. Its emphasis on fulfilling the needs of the workplace misses the need to ensure students graduate with the range of skills and knowledge they need for the 21st century—with a readiness to move between higher education, on-the-job training, and work. Specifically, the report's myopic focus on meeting workforce needs does not clearly identify postsecondary readiness as a critical component of effective CTE programs. Rather, the report reinforces the existing paradigm that views CTE and a college prep curriculum as being on different sides of the educational spectrum.

Notes and References

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6   Stern, D., and Stearns, R.(2008). Will multiple pathways improve student outcomes? In Oakes, J., and Saunders, M. (Eds). *Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation* (37-54). Cambridge, MA: Harvard Ed Press.

7   Carnevale, A.P, Jayasundera, T., and Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.*, Georgetown University. Retrieved March 14, 2014, from http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/cte.fiveways.fullreport.pdf;

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Oakes, J., and Saunders, M. Eds. (2008). *Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation*. Cambridge, MA: Harvard Ed Press.

8   Strategies must be highlighted that can provide students with coherent and rigorous content that aligns secondary and postsecondary education. See, for example:

Carnevale, A.P, Jayasundera, T., and Hanson, A.R. (2012). *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.*, Georgetown University. Retrieved March 14, 2014, from http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/cte.fiveways.fullreport.pdf.

9   Interestingly, a few of the CTE programs or models described in the report demonstrate secondary and postsecondary alignment strategies that allow students to leave high school ready for higher education and with an associate's degree or certificate. For example, P-Tech graduates obtain a postsecondary degree through a six-year program of study, Career Path High students can graduate with a certificate, and all Met students graduate ready for college-level work.

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