Opportunities and Challenges in Secondary Career and Technical Education

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Introduction: Why This Study Now

The past several years have seen a renewed interest in the potential of career and technical education (CTE) to enhance high school students' engagement, increase graduation rates, and ensure college and career readiness. In 2011, Harvard University published a report, *Pathways to Prosperity*, which urged a new look at European-style apprenticeship and other programs that connect academic learning to the world of work. The Common Core State Standards (Common Core), issued in 2010 and adopted by 45 states, included an emphasis on career as well as college readiness. In 2012, the Obama administration proposed a new blueprint for Perkins reauthorization, which would distribute funding competitively to consortia of secondary and postsecondary institutions and require private-sector match to encourage participation of employers, rather than continue appropriating funding by formula. Although CTE advocates agreed with the blueprint's themes, many voiced concerns that the competitive focus could "result in decreased, inequitable student access to high-quality CTE programs" (National Association of State Directors of Career Technical Education Consortium & Association for Career and Technical Education, 2012).

In 2013, the administration advocated a high school redesign initiative that encouraged use of models that are "rigorous, relevant, and better focused on real-world experiences" (U.S. Department of Education, 2013). Among other provisions, the high school redesign initiative called for high-quality college and career exploration and counseling, opportunities for high school students to earn postsecondary credit, and career-related experiences, including internships and mentoring as well as project-based learning and other work-based learning experiences. The high school redesign effort, though not supported by congressional budget action, became a $100 million Youth CareerConnect funding opportunity from the U.S. Department of Labor, issued in November 2013.

This changed context for CTE policy and practice prompted Education Development Center, Inc. (EDC) to conduct a national survey of CTE educators and a series of interviews with state CTE leaders in the fall of 2013. The main objectives of the survey and interviews were as follows:

- To determine what CTE administrators and educators, as well as state CTE leaders, see as the major opportunities and key challenges in the field over the next several years

- To assess the extent to which trends in the field align with recent policy recommendations to strengthen the role of high schools in preparing young people for success in both college and careers

Approximately 20,000 secondary CTE educators from across the country received the survey in September 2013. A response rate of 4.2% yielded data from 850 educators, two thirds of whom are responsible for CTE programs in their school or district. The geographical distribution of respondents—40% from the South, 27% from the Midwest, 21% from the West, and 12% from the Northeast—was consistent with geographical distribution of 2010–2011 K–12 public school student enrollments reported by the National Center for Education Statistics (NCES) (U.S. Department of Education, 2012).

In addition, interviews were conducted with state-level K–12 CTE leaders from 11 states to gain insight into state trends.[1] The interviews focused on three areas:

- State-level perspective on national CTE issues

- Top K–12 CTE priorities over the next one to two years

- Key challenges facing K–12 CTE leaders in the next one to two years

This white paper, the first in an EDC series, draws upon the survey and interview results—as well as recent literature—to map the current and future CTE landscape. The paper focuses on two broad themes of importance in the CTE field, issues that are illustrated with findings from the survey and interviews: (1) the increased interest in career preparation that is fueling exciting opportunities for growth in CTE; and (2) the need to strengthen partnerships among secondary CTE programs, postsecondary institutions, and industry.

Greater National Focus on Preparation for Careers as Well as College

This is an exciting time to be part of CTE. CTE educators and state CTE leaders see the advent of the Common Core and the increased interest in career readiness as an opportunity to infuse academic programs with the strengths of CTE, increase the stature of CTE, and leverage investments to enhance CTE. Yet increased demand for CTE is straining the resources of the current system.

As Enrollments Rise, Resources Lag Behind

A steady stream of headlines, from the *Chronicle of Higher Education* (Gonzalez, 2012) to the *Washington Post* (Phillips, 2012) to *Time* magazine (Klein, 2012), spotlights the fact that interest in CTE is increasing. In the 2010–2011 school year, over 7 million secondary students took at least one credit of CTE, and over 3 million took multiple CTE credits in one career pathway (ACTE, 2014). As shown in Figure 1, most survey respondents indicated that their enrollments have been growing over the past five years and anticipate continuing increases over the next year.

> "CTE is a rich American tradition that is distinct in its applied learning method and teaching field- and occupation-specific skills…While other industrialized nations have adopted hardline educational tracks that are set at early ages, the U.S. system is flexible and dynamic—characteristics that allow it to respond well to changes in labor markets and promote educational and career mobility."
>
> —Carnevale, Jayasundera, & Hanson, 2012

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1   State leaders interviewed were from Colorado, Illinois, Kentucky, Maryland, Nebraska, New Jersey, North Carolina, North Dakota, Ohio, Oklahoma, and Texas.

Figure 1: Recent and Anticipated CTE Enrollment
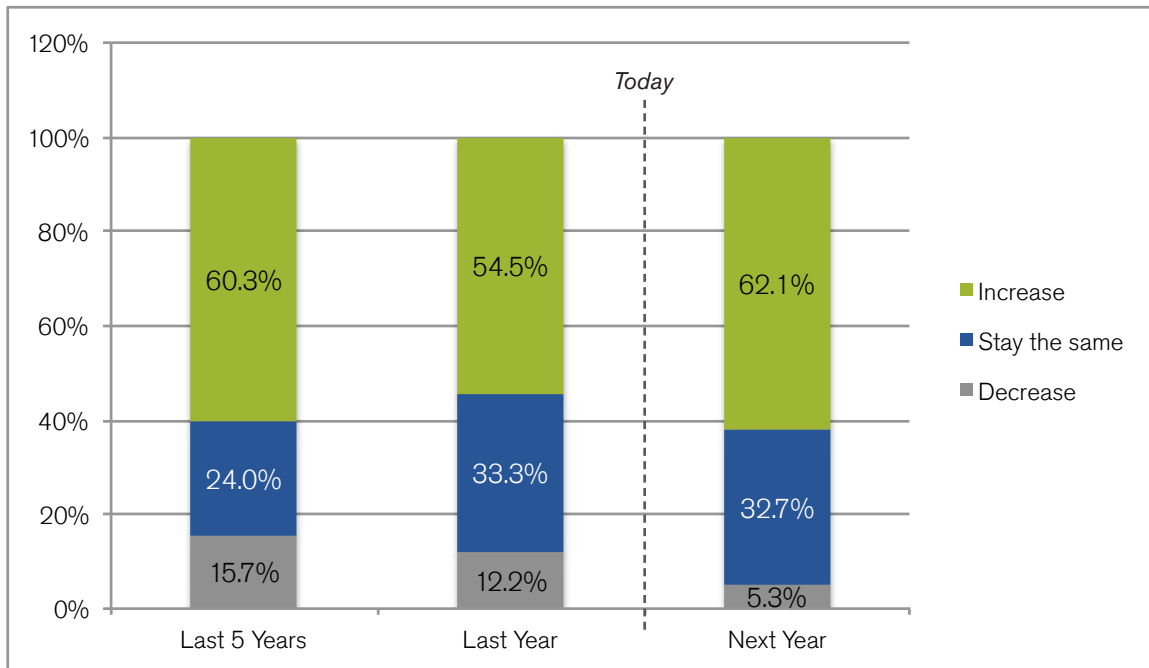
Nearly all of the state-level CTE leaders interviewed noted that more stakeholders within the K–20 education arena, including legislators, are recognizing the importance and value of CTE. This recognition comes after concerted efforts to strengthen secondary CTE over the past decade through efforts such as the state-led initiative to develop rigorous CTE standards (National Association of State Directors of Career Technical Education Consortium, 2014). The field is also working to integrate the Common Core into CTE programs. Most interviewees agreed that CTE is well aligned with the Common Core and can help advance the Common Core's career readiness objectives. One state leader commented on how well CTE fits with the Common Core "[b]ecause [the Common Core] is about 'learn by doing' and students having an inquisitive nature," which have always been at the heart of CTE.

CTE resources are not expanding in proportion to this increase in interest and demand, however, as documented in a recently published history of CTE (Gordon, 2014). Survey findings serve to underscore the trend of decreases in CTE resources. As shown in Figure 2, approximately 73% of respondents reported flat or declining budgets over the past five years. Current CTE budgets are remaining stable or increasing only modestly. Only about a fifth of the 25% of respondents anticipating budget increases for the coming year reported them to be greater than 5%. One commented, "The budgets for CTE funding are diminishing at the school level each year. CTE dollars are not reaching the classroom teacher as in the past. Teachers are doing more with less."

Figure 2: CTE Program Budget Growth
Select the option that best describes budget growth in your organization's CTE program
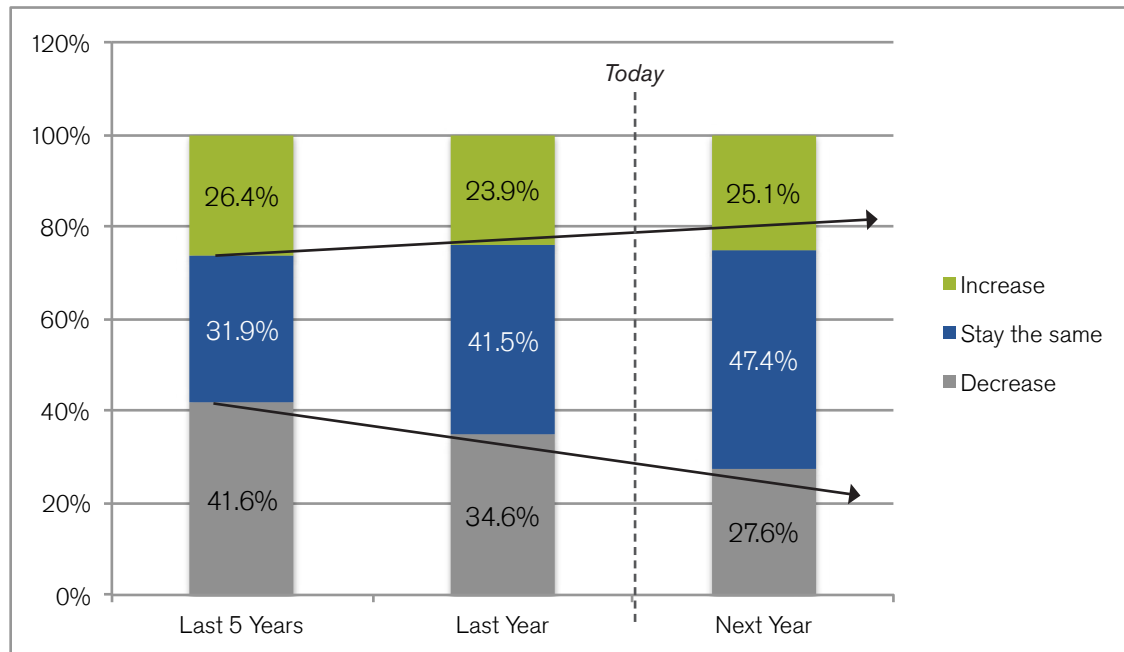
Moreover, survey findings indicate that the investments CTE educators anticipate making in the next year will go mainly toward shoring up four components of their programs that have been hardest hit by cuts in recent years:

1. Equipment
2. Professional development
3. Technology
4. Curriculum and instructional materials

In EDC's CTE initiatives—for example, in rigorous professional development to support teachers in using EDC's Common Core-aligned *Law & Justice* and *Digital Media Arts* curricula—we have found that CTE educators are eager for professional learning focused on integrating academic and career education. Survey respondents and interviewees identified professional development, the second of the hardest-hit elements of their CTE programs, as a top priority for investment. Nearly all survey respondents (91%) noted that professional development was a "Very Important" or "Important" component of CTE programs, but only 60% expressed being "Very Satisfied" or "Satisfied" with the current state of their CTE professional development. Interviewees pointed to provision of professional development—along with teacher availability, recruitment, and preparation—as a key area of challenge. Survey respondents and interviewees alike identified supporting CTE educators in aligning their instruction with the Common Core and integrating academic and career education as key priorities for professional development.

Challenges of Integrating Academic and Career Education

In commenting on the draft version of the Common Core to *Education Week*, Gary Hoachlander, a prominent supporter and proponent of integrating academic and career technical education, noted that the draft standards were: "'. . . an impressive piece of work' that defines desirable skills and knowledge, [yet] they contain little articulation of skills applicable to the marketplace. . . . It's difficult to see how career readiness significantly influenced the content here, . . . There is little attention or mention of examples that link more directly to the world of work, to the kinds of problems students will encounter out there, like examples of good technical writing. It's a glass half full'" (Gewertz, 2010). The final version of the Common Core did not substantially move it further in the direction for which Hoachlander advocated.

It is, therefore, unsurprising that state leaders moderated their excitement about the potential of the Common Core to enhance the prospects of CTE with some concerns. Several interviewees worried that the emphasis on the Common Core will reduce the "bandwidth available for CTE." These state leaders felt that there is a risk that non-CTE educators will interpret the Common Core as simply requiring more rigorous academic content—and forgo CTE's vital connections to real-world situations—rather than seeing CTE as an important part of implementing the Common Core. Interviewees also expressed skepticism about policymakers' degree of commitment to the "career" portion of "college and career readiness." One state leader commented, "Early on, the concept of 'or' got slipped into college and career readiness. So, I appreciate the return of the concept of 'and.' However, the emphasis is still on going to college."

Survey findings indicate that CTE educators recognize the importance of integrating academic and career education. As required by the Perkins Act, the majority of survey respondents reported that they have been actively working to ensure that their programs have a strong academic component. As shown in Figure 3, nearly 60% percent report that academics are integrated into CTE courses in their programs. As noted, survey respondents also saw the need to assist teachers with integration: results indicated that alignment of CTE with Common Core and academic/CTE integration were the two most important drivers for professional development for CTE teachers.

It was beyond the scope of the survey to assess the quality or rigor of the academic instruction in CTE courses. But the fairly large percentage of respondents who report integrating academic learning with CTE and their professional development priorities suggest that CTE educators are taking this mandate seriously (see Figure 3). One interviewee noted, "CTE itself is shifting. Programs are being updated and the field is bringing in new programs that advance the relevance and rigor of CTE." Another observed, "We need to ensure that policymakers are not focused on 'old' voc. tech. models but fully understand 'new' voc. tech." This shift is also one that needs to be communicated to the larger population.

While CTE educators have worked to infuse more academic rigor into their programs, most teachers of academic courses are not taking advantage of CTE contexts to enhance students' learning. Asked how CTE students experience academics, fewer than 18% of survey respondents reported that their students take academic courses where CTE is an integral part of instruction, in comparison with nearly 60% of CTE courses that integrate academics. Less than a quarter of respondents also

reported a middle ground—in which students take courses that meet both sets of requirements and/or where students engage in interdisciplinary projects. And nearly 70% of respondents indicated that academic courses are independent of CTE courses, pointing to their perception that academic courses typically do not connect to CTE. As one survey respondent observed, "CTE should be more fully integrated with the 'standard' curriculum areas at all levels."

Figure 3: CTE and Academic Instruction
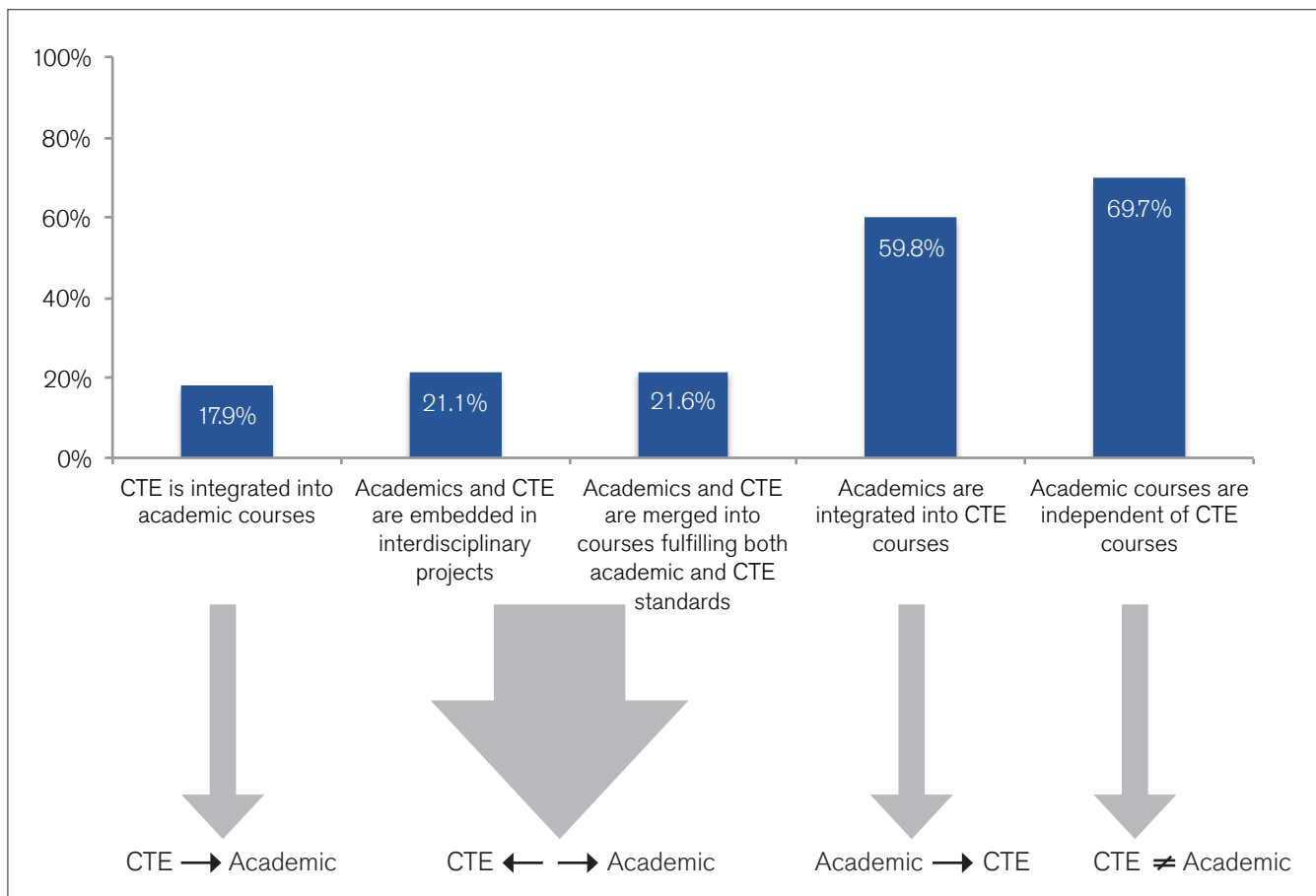
The rarity of integration outside of CTE courses seems to confirm interviewees' concern that few outside the CTE field truly understand the role that CTE courses can play in developing the knowledge and skills students need to succeed in careers and college. If so, this lack of understanding could lead non-CTE educators to overlook the role of CTE in effective implementation of the Common Core. While the standards are explicitly aimed to address both college and career readiness, it would be quite easy to interpret them in solely academic terms.

In an era in which the priority of college over career is likely to persist, interviewees appear to be aware that their continued funding and public support hinge on their capacity to achieve results. CTE programs must show that they can deliver greater numbers of high school graduates prepared to succeed in postsecondary education that leads to high-wage, high-skill careers. More students need

to graduate with both college credit *and* credible industry certifications (i.e., industry certifications that confer benefit to students and that employers and/or post-secondary education recognize as signals of competency).

The capacity of CTE educators to achieve these results depends, to a significant extent, on closer collaboration with their academic colleagues—and the resources to engage in collaborative work, such as time for joint planning. Stone et al. (2006) observed that even successful integration of academics into CTE courses requires collaboration between CTE and academic teachers. Yet there is currently little information about how academic and CTE teachers are working together to infuse more CTE focus in academics. Further, achieving more widespread collaboration will require a better understanding on the part of academic teachers and administrators, as well as policymakers and the broader public, of the meaning of career readiness and the contributions of CTE to preparing students for both college and careers.

Promise of New Models of CTE

Several new models for CTE have sought to address the challenge of building academic/CTE collaborations that are likely to improve both students' academic outcomes and preparation for careers. These models serve as existence proofs for programs seeking to provide educational opportunities for students that are both rigorous and relevant to college *and* careers. Two models that have received particular attention are career academies and early college high schools, both of which are structured to promote integration of academic and career education.

Career academies organize students into cohorts who take their academic and CTE classes together (National Career Academy Coalition, 2013), which facilitates integration of academic and career education. In their most successful incarnations, career academies combine the high expectations and academic rigor of college preparatory academic programs with the real-world relevance of CTE. Academy students are encouraged and supported to graduate with both college credits and industry certifications. The effectiveness of the academy model is backed up by research showing that academies improve academic outcomes, including earned credits, grade point averages, graduation rates, and college attendance rates, and also have a positive effect on labor market outcomes (Brand, 2009; Dayton, Hester, & Stern, 2011; Kemple, 2008).

Another promising model is early college high schools. Though not all focused on CTE, these schools combine rigorous high school courses with two years of tuition-free college credit often leading to an associate's degree. North Carolina, which began an early college high school initiative in 2004, has seen increased graduation rates, improved college preparation, and a reduction in the achievement gaps between white and minority students and advantaged and disadvantaged students (North Carolina New Schools, 2014). One prominent example of an early college high school is P-TECH (Pathways in Technology Early College High School), a grades 9–14 high school established by IBM and its postsecondary partners in Brooklyn, New York. P-TECH students are matched with an industry mentor, take college courses, gain workplace experience, and earn an associate's degree. President Obama singled out the P-TECH model as a promising educational approach in his 2013 State of the Union address; it is currently being replicated across New York State and in Chicago.

Despite the promise of these new approaches, they are not yet widespread. Only about 13% of the CTE programs identified by survey respondents were career academies, and "other" models, which would include CTE-focused early college high schools, only account for 3% of programs. However, survey results also reveal that anticipated growth in CTE programs is higher for models other than the traditional "CTE within a broader school setting" or "standalone vocational technical school or center." Over the past five years, enrollment growth in these alternative models exceeded that of traditional programs by nearly 10%, and respondents reported that they expected this differential to continue into the future. The survey did not allow us to assess to what extent features of these alternative models—such as cohort scheduling and common planning for academic and CTE teachers or enabling high school students to obtain college credits—are being adopted in more traditional CTE models. Growth in these practices, however, whether in alternative or traditional CTE programs, may accelerate the achievement of the kinds of results that will garner greater political support and promote funding for more fully integrated preparation for college and careers.

Strengthening Postsecondary and Industry Partnerships

To prepare students for needed jobs in their communities, CTE programs must expand and strengthen pathways to and partnerships with postsecondary programs, as well as expand industry partnerships and work-based learning opportunities. Investing in program areas aligned with state- and regional-based economic development opportunities is another important direction for CTE programs.

Postsecondary Pathways

The success of early college high schools underlines the value of providing students with opportunities to earn college credits while still enrolled in high school. Interviewees cited dual credit and concurrent enrollment—two options that enable students to graduate from high school with college credit—as important outcomes for students' participation in CTE. The majority of survey respondents (93%) also identified "Programs of study/connection to postsecondary education" as "Very Important" or "Important."

Industry Partners

Both survey respondents and interviewees identified access to industry partners and mentors as an important part of their CTE programs. Yet 49% of survey respondents indicated that they are "Not Satisfied" with this aspect of their programs. In fact, survey responses indicated that the biggest gap between importance of program components and satisfaction levels was in access to industry partners and mentors. One respondent saw strengthening quality industry partnerships as critical to building support for CTE programs: "Truly involved business/industry partners add to the curriculum and positioning of the school and program within the educational community."

A Tradition of Work-Based Learning

A key driver of CTE programs' focus on building industry partnerships is the importance of providing students with a variety of work-based learning experiences. CTE programs have a long history of

promoting work-based learning—from cooperative education, in which students get course credit for structured work experience, to the promotion of internships, job shadowing, and other strategies to enable students to learn on the job (Castellano, Stringfield, & Stone, 2002; Gordon, 2014; Reese, 2011; Stipanovic, Lewis, & Stringfield, S., 2012; Stone, & Aliaga, 2003). Work-based learning experience that is closely tied to the curriculum has been identified as a crucial part of effective CTE programs (Darche, Nayar, & Bracco, 2009). The authors of *Pathways to Prosperity* say that, "done well, work-based learning appears to be the best way for the majority of young people to prepare for the world of work" (Symonds, Schwartz, & Ferguson, 2011, p. 19). The Youth CareerConnect initiative acknowledges this importance by requiring student internships and other strategies for work-based learning and mentoring, as well as industry partner participation in high school programming (U.S. Department of Labor, 2013). One of the major benefits of work-based learning experiences is the social capital developed through establishing relationships between CTE students and industry mentors. Such relationships provide young people access to social networks and lifelong connections that provide support as they pursue further education and careers.

Alignment of CTE with Economic and Workforce Development

Another factor motivating CTE educators' interest in strengthening both industry and postsecondary partnerships is assuring that their programs respond to workforce needs in their communities. Given the changes in the American economy over the past several decades, and the growth in so-called middle-skill occupations (Achieve, 2012), it is essential to align CTE programs with more demanding workplace requirements. As one state leader commented, "The political climate in our state gives significant attention to workforce development and meeting [the] middle skills gap."

Eighty-three percent of survey respondents identified "development of new programs and course offerings" as a "Very Important" or "Important" component of their CTE programs. Nearly 10% of respondents indicated that they anticipate making significant investments in program expansion in the near term, and the top five areas in which survey respondents anticipate expanding their programs—STEM, Health Science, Information Technology, Manufacturing, and Agriculture, Food, and Natural Resources—all offer career pathways in science, technology, engineering, and other high-demand occupations. Fully 97% of survey respondents rated "Alignment with industry standards and expectations" as a "Very Important" or "Important" component of their CTE programs.

Interviewees also linked updating CTE curriculum standards, as well as evaluating and upgrading existing programs and creating and effectively implementing new programs, to successful economic and workforce development. One interviewee reported, "We are building public/private partnerships through Race to the Top grants. We have created eight STEM learning exchanges with business and industry." Another noted, "We are identifying 14 key industries important to our state, and ultimately each of the local regions will adopt three industries to support."

Beyond question, CTE administrators are planning investments in new programs aligned with workforce and economic development trends, and state leaders stress the importance of such investments. Yet survey respondents placed these investments lower in priority than investing in the four program areas that have experienced significant cutbacks in recent years—equipment,

professional development, technology, and curriculum and instructional materials. Understandably, the focus is on strengthening existing programs rather than expanding into new areas. The funding constraints lamented by both survey respondents and state leaders likely account for the gap between perceived needs and anticipated spending. Faced with limited resources, acute material and infrastructure needs, and less pressing demands for expanding partnerships, CTE programs opt to address their more immediately urgent needs.

New Approaches to Building and Sustaining Industry and Postsecondary Partnerships

One possible solution to the dilemma of increased demand colliding with constraints on resources lies in positioning CTE programs as part of community-wide strategies that mobilize both public and private sector resources and make career education a central strategy for improving student outcomes. The merits of this strategy have been highlighted by Donald Clark of the American Association for Career Education (1996), who suggested that employers in a community should work together to coordinate the resources they channel into schools in a sustained, systemic effort to bring about significant change. A 2003 survey of businesses gave credence to Clark's proposal. Findings from that survey revealed that businesses that reported successful partnerships cited greater commitment on the part of business leaders, greater coordination with school reform initiatives, more focus on evaluation, and more attention to labor market needs (Watt, 2003).

Such a comprehensive, coordinated community-wide effort, which includes postsecondary and civic partners, as well as employers, has come to be known as "collective impact." It is being used to support a range of social and educational reforms; the Strive initiative, which began in Cincinnati, may be the best known (Kania & Kramer, 2011). Another is Alignment Nashville, which has worked closely with the Ford Next Generation Learning (Ford NGL) high school redesign initiative.[2]

Ford NGL takes a comprehensive approach to transforming secondary education. The initiative builds strong business and community partnerships to support and sustain redesigned high schools, using the career academy model. To transform teaching and learning, Ford NGL promotes intensive professional development to support educators in integrating academic and CTE learning throughout the curriculum. Ford NGL engages communities in an extensive planning process in which high-level business, community, school, and postsecondary leaders lay out their vision for high school transformation and construct a master plan for implementing that vision. Ongoing professional development and coaching to build local capacity facilitate implementation of the plan, while committed community and business partners ensure the sustainability of the changes and continually monitor results. The Alignment structure augments Ford NGL by ensuring that "all the services children need are provided to them in an effective and efficient way that complements their education, health and well-being, and the goals of the public schools" (Alignment Nashville, 2013).

Since 2006, all of Nashville's high schools have been transformed into career academies. Business partners ranging from Country Music Television to the US Community Credit Union develop ongoing relationships with Nashville academies and provide students with real-world experiences directly tied

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2   EDC has been a design and implementation partner in this initiative for over a decade.

to the curriculum. Nashville business partners also provide academy teachers with externships in which they see firsthand the kinds of knowledge and skills their students need to develop in order to succeed in the workplace. Business partners then collaborate with teachers as they develop projects for use with students that draw on their externship experiences. Since the establishment of the academies, Nashville high schools have significantly improved attendance and increased graduation rates over five years from 69% to 83% (Alignment Nashville, 2012).

Collective impact approaches such as those implemented by Alignment Nashville and Ford NGL have the potential to make robust career education a central strategy for both high school improvement and workforce and economic development.

Conclusion

If our country is to replace the "or" in "college or career readiness" with "and," changes will need to occur on a two-way street. Significant efforts to increase the workplace relevance of academic learning will need to accompany efforts to increase the academic rigor of CTE. States, districts, and schools will need new structures that support broad-based community-education-business partnerships in working toward common goals to better serve students and prepare them for the workforce. Such structures will help enlist additional resources and ensure more efficient use of existing resources for effective "college *and* career" models. Policymakers will also need to think through how best to allocate resources for CTE, and how to provide the support needed to expand CTE opportunities.

The results presented in this white paper indicate that the K–12 CTE community is eager to join forces with others and contribute its expertise to advancing strategies to ensure the college and career readiness of all Americans. As the public dialogue about the future of CTE and high school education continues, EDC plans to release additional white papers based on findings from our survey and interviews with state CTE leaders. Topics of future white papers may include the implications for CTE of a rapid shift to digital curriculum and instructional resources and the professional development needs of CTE educators.

Acknowledgments

Author

Ilene Kantrov, Ph.D., directs the Pathways to College and Careers program in LTD. Her work focuses on preparing high school students for academic and career success through innovative programs that use project- and inquiry-based approaches to develop academic, technical, and 21st century knowledge and skills and that promote partnerships between schools, industry, higher education, and communities.

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