An Evaluation of the Outcomes of Career and Technical Education in San Diego Unified School District (SDUSD): A Descriptive Case Study

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EXECUTIVE SUMMARY

The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) requires the U.S. Department of Education (ED) to conduct a National Assessment of Career and Technical Education (NACTE) in order to examine the status and effectiveness of career and technical education (CTE) in the United States. To broaden this national evaluation, the ED has commissioned a number of district-level studies aimed at determining factors that lead high school students to enroll in, and successfully complete, CTE coursework.

An ongoing ED-commissioned research project at the University of California, San Diego (UCSD) addresses (1) the CTE course offerings in San Diego Unified School District (SDUSD), (2) the students enrolled in this CTE coursework, and (3) the relationship between CTE course taking and a variety of outcomes, including gains in test scores, grade promotion, on-time graduation, completion of college preparatory coursework, and postsecondary outcomes.

This study extends the analysis of student outcomes described above to include a descriptive case study of the CTE programs at seven SDUSD high schools. Specifically, the study uses qualitative and quantitative data to examine the programmatic, organizational, and institutional elements associated with particularly effective vs. less-than-effective CTE programs at study schools, examine the extent to which each factor contributes to the success of the CTE programs at study schools and in the district, describe changes made, and changes anticipated, by study schools and the district, identify barriers to success or improvement, describe the ways in which staff characterize their CTE programs, and determine how students (i.e., concentrators, participants, non-participants) at one high school characterize the CTE program at their school.

The selection of case study high schools was based primarily upon schools' classification as "effective" vs. "less-than-effective" using two CTE and two academic outcome measures. Schools were identified as effective if they demonstrated higher performance than other San Diego high schools in both CTE outcomes (i.e., higher than average percentages of CTE two-course concentrators in 2007-08 and higher than average CTE course enrollment in Fall 2009) *and* both academic achievement outcomes (i.e., higher than average statewide or similar schools ranks based on the 2008 Academic Performance Index and higher than average 2008 graduation rates relative to the state average). Conversely, schools in the below average range for all CTE and academic outcomes were considered less than effective. Ultimately, seven schools (four effective, one "on the move," and two less-than-effective) were selected for participation in the study.

The primary data collection methods employed in the case study were interviews with district office College Career and Technical Education (CCTE) Department staff, principals, counselors, CTE teachers, and Employer Outreach Specialists, and focus groups with Grade 12 students who were – or who were on-track to becoming – two-course CTE concentrators, students who were CTE participants, and students who were non-participants. In-depth interviews with 39 site-based and district office CTE staff were

conducted in May and June 2010 at study high schools and the SDUSD CCTE Department offices. The three student focus groups discussions were conducted in May 2010.

Questions related to the programmatic, organizational, and institutional elements of CTE programs at study sites were informed by the California Department of Education's (CDE) *2008-12 California State Plan for Career Technical Education: A Guide for High-Quality Programs* and ConnectEd: California Center for College and Career's *Capacity and Needs Assessment Tool*. Programmatic elements were High Quality Curriculum and Instruction, Skilled Faculty and Professional Development, Student Support and Student Leadership, Career Exploration and Guidance, Middle School Orientation and Preparation, and Industry Partnerships. Organizational elements were System Alignment and Coherence, Confluence of Efforts, Effective Organizational Design, Postsecondary Articulation, Facilities and Equipment, and CCTE Promotion, Outreach, and Communication. Institutional elements were Leadership at All Levels, System Responsiveness to Changing Economic Demands, Evaluation, Accountability, and Continuous Improvement, and Funding.

The two primary goals of this descriptive case study are (1) to examine the programmatic, organizational, and institutional elements associated with particularly effective vs. less-than-effective CTE programs in selected SDUSD high schools and (2) to describe the ways in which career technical education is structured and managed in a large, urban school district. Differences in response patterns were explored by gender, role (i.e., principal, CTE teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office experience (i.e., 0-2 years, 3 or more years), district experience (i.e., 0-5 years, 6-15 years, 16 or more years), school performance (i.e., effective, less-than-effective, "on the move"), school/office type (i.e., small high school, comprehensive high school, district office), and location type (i.e., school site, district office).

Characteristics of the CTE Program at "Effective" vs. "Less-than-Effective" Schools
Surprisingly few differences were observed, by school performance (i.e., less-than-effective, "on the move," effective), in interviewees' responses to questions about the implementation level of each CTE program element at their schools, the impact/importance of each element to the success of their CTE program, or in their descriptions of the CTE program elements at their schools.

Significant differences in implementation ratings and impact/importance ratings for the 16 CTE program elements studied were found most often by role and school/office type. No significant differences were found, by gender, for any implementation or impact/importance rating.

Overall, statistically significant differences were found in interviewees' implementation ratings in 9 of 112 cases (i.e., 16 elements X 7 groups) – five related to programmatic elements, three to organizational elements, and one to institutional elements. Statistically significant differences in impact/importance ratings were found in 13 of 112 cases – four related to programmatic elements, five to organizational elements, and four to institutional elements. Given that we might expect differences in interviewees' ratings to be due to chance in five percent of cases, this finding allows us to reject our null hypothesis that no

significant differences existed across groups for implementation and impact/importance ratings.

Implementation and Impact/Importance Ratings of CTE Program Elements. When asked to rate the implementation of each of the 16 CTE program elements at their school/in the district, interviewees gave highest ratings to High Quality Curriculum and Instruction, Skilled Faculty and Professional Development, Effective Organizational Design, and System Responsiveness to Changing Economic Demands. Interviewees gave lowest implementation ratings to Middle School Preparation and Orientation and CTE Promotion, Outreach, and Communication.

When asked to rate (via a Spend-a-Dot activity[1]) the impact/importance of each CTE program element to the overall success of the CTE program at their site/in the district, interviewees gave highest ratings to High Quality Curriculum and Instruction, Skilled Faculty and Professional Development, Industry Partnerships, and Funding. Interviewees gave lowest impact/importance ratings to Middle School Preparation and Orientation, System Responsiveness to Changing Economic Demands, CTE Promotion, Outreach, and Communication, and Effective Organizational Design.

Interestingly, "High Quality Curriculum and Instruction" and "Skilled Faculty and Professional Development" received highest implementation *and* the highest impact/importance ratings from interviewees.

Modifications to CTE Programs. A majority of interviewees reported that changes had been made to the CTE program at their school or in the district over the last five years. Most often, modifications were described as changes to the CTE program or coursework, changes in site CTE staff, increasing numbers of CTE courses or students, or new facilities. Reasons mentioned most often for making changes to the CTE program included principal or site staff initiative, a desire to build or improve the CTE program, and the availability of new funding. Interviewees reported a number of outcomes associated with changes made to the CTE program, including a higher quality program, increased numbers of highly qualified teachers, increased teacher enthusiasm and motivation, and better support for students.

Nearly half of interviewees reported that changes to the CTE program at their school or in the district would be made in 2010-2011. Most often, interviewees said that it was likely that there would be fewer teachers, fewer Employer Outreach Specialists, and fewer CTE classes in 2010-11 – largely due to anticipated budget cuts affecting the CTE program. On a more positive note, interviewees said that the reasons for making changes to the CTE program in 2010-2011 included a desire to increase student engagement, motivation, and outcomes. In equal numbers, interviewees believe that the outcomes associated with

[1] The Spend-a-Dot activity was used to capture interviewees' opinions about the relative importance of each program element. Each interviewee was given 32 adhesive dots and asked to distribute ("spend") them among the 16 elements of an effective program, based upon the perceived importance/impact of each element on the CTE program at the school/in the district. Interviewees were told that a maximum of eight dots could be spent on any one element, and that assigning zero dots to one or more elements was permitted.

making these changes are a stronger CTE program, a weaker CTE program, and improved outcomes for students.

Barriers to Program and Student Success. A majority of interviewees believe that there are barriers to the success of the CTE program at their school/in the district. Barriers to CTE program success mentioned most often include insufficient funding, master scheduling challenges, and lack of University of California 'a-g' designation for CTE coursework. A majority of interviewees also believe that there are barriers to student success at their school/in the district. Barriers to student success listed by interviewees include insufficient workplace skills/motivation for students, community issues, and lack of adequate facilities, equipment, and supplies.

Staff Encouragement for CTE Participation. More than half of interviewees said that staff encourages students to participate in the CTE program. Most often, interviewees reported that high achievers are the students likely not to be encouraged to participate in CTE.

Benefits of CTE Program Participation. Benefits of CTE program participation mentioned most often by interviewees include career awareness and exploration, acquisition of job skills, acquisition of life skills, real-world relevance/application in coursework, and engaging/motivating coursework.

Who benefits from CTE Program participation? More than three-quarters of interviewees said that some groups of students benefit more from CTE program participation. Interviewees said that students who benefit most tend to be those who struggle in core academic coursework, are "active"/prefer hands-on learning, or have poor study skills/motivation.

Is there a "typical" CTE student at the school/in the district? Not one interviewee said that there is a "typical" CTE student at the school/in the district.

Student Perceptions of CTE. When asked to describe the CTE program at their high school, students in all three groups (non-participants, participants, and concentrators) had difficulty describing the CTE pathways or the range of CTE coursework offered. They characterized the CTE program as "very good" – giving high marks for CTE course quality. However, they differed in their opinions of the workload and level of rigor of CTE coursework – with non-participants characterizing CTE coursework as less demanding than did participants and concentrators. CTE teachers were characterized as less formal – but more knowledgeable and personable – than teachers of core academic subjects.

Most often, students in the non-participant group reported that they did not enroll in CTE coursework because there was no room in their schedules. Students who did enroll did so to fulfill district graduation requirements, because they heard about the coursework from fellow students, or because counselors suggested enrollment to them. Students in all three groups suggested that students who do not enroll in CTE coursework do so because they might not have room in their schedules or that they might not find value in CTE because "they don't know what it has to offer."

Those who do complete CTE coursework/pathways were characterized as "a step ahead," "more prepared," and more experienced than their peers. Like staff, students in all three focus groups remarked that there is "no such thing" as a typical CTE student. The benefits of taking CTE coursework listed by students included acquiring useful skills, making contacts, discovering career options, hands-on experience, getting a jump start, clarifying college plans, and acquiring job experience.

Conclusions

Although few statistically significant differences were found in interviewees' responses to questions about the implementation levels and the impact/importance of the elements of their CTE program, important insight into the challenges associated with implementing a comprehensive, high quality CTE program in a large, urban school district was gained during the course of staff interviews. The conclusions and observations below are drawn from staff interviews, student focus groups, and document review.

1. There was clear evidence of a structured, comprehensive, and robust CTE program in San Diego Unified School District, at both the district and site levels. Interviewees' descriptions of the program, its successes, and its challenges were remarkably similar.

2. School site staff characterized the district's CCTE Department as respected (both within the district and beyond), well-organized, and "present" – and viewed district office CCTE staff (at all levels) as accessible, knowledgeable, and supportive.

3. The quality of the professional development provided by the CCTE Department – especially for CTE teachers new to the teaching profession – was widely acknowledged by principals and teachers.

4. Although interviewees gave high marks to the CCTE Department's vision, leadership, and support, they were frustrated by the relatively low levels of awareness of, and support for, the district's CTE program by the Board of Education and senior leadership.

5. Surprisingly few site-based staff (regardless of role) and students (whether non-participants, participants, or concentrators) were able to describe their school's CTE program (e.g., list the career pathways offered at the school, describe the progression of coursework in a given pathway).

6. A majority of interviewees gave low implementation and impact/importance ratings to CTE Promotion, Outreach, and Communication – and, at the same time, voiced dissatisfaction with the lack of awareness and support of the CTE program at their school/in the district.

7. Even though interviewees reported – almost universally – that all 16 CTE program elements were a part of the CTE programs at their schools, it was apparent that effective implementation and coordination of those elements was a challenge for site-based staff.

8. There was clear agreement that principals' understanding of, and advocacy for, the CTE program is critical to its success.

9. The establishment of complete career pathways at case study high schools – as well as maintaining those pathways, once established – is a significant challenge.

10. While interviewees provided rich descriptions of the student leadership development component of Student Support and Student Leadership Development program element, their descriptions of student support were weak.

11. Responses by staff based at small schools (or at a smaller learning community within a comprehensive high school) – where all students are expected to complete one of a limited number of career pathways – indicate that the small school environment allows more effective integration of CTE and core academic coursework (and common planning time for CTE and non-CTE teachers), features more active, project-based learning, builds and protects career pathways, and produces higher percentages of CTE concentrators.

12. Staff members at the "on the move" school (regardless of role or tenure) were universally committed to building and maintaining a high-quality CTE program at their school and optimistic about succeeding in that endeavor.

13. Although differences in implementation ratings, by district experience, for the 16 CTE program elements were *statistically* significant for only one element (High Quality Curriculum and Instruction), it is important to note that interviewees with more district experience gave lower implementation ratings to 15 of 16 the elements, and gave the same implementation rating to the remaining element.

14. At all seven case study schools, there was evidence of substantial involvement by business and industry partners – more than 350 districtwide.

15. There was widespread concern about the budget for the 2010-2011 academic year, and the negative impact expected budget cutbacks would have on the CTE program at the district and site levels.

16. Districtwide budget directives – especially those related to procurement – adversely affected the CTE program at case study high schools.

17. Staff and students had remarkably similar opinions about the benefits of CTE program participation for students.

18. When asked if there was such a thing as a "typical CTE student" at their school/in the district, not one staff member or student said yes.

1.0 INTRODUCTION

The Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) requires the U.S. Department of Education (ED) to conduct a National Assessment of Career and Technical Education (NACTE) in order to examine the status and effectiveness of career and technical education (CTE) in the United States. To broaden this national evaluation, the ED has commissioned a number of district-level studies aimed at determining factors that lead high school students to enroll in, and successfully complete, CTE coursework.

An ongoing ED-commissioned research project at the University of California, San Diego (UCSD) addresses (1) the CTE course offerings in San Diego Unified School District (SDUSD), (2) the students enrolled in this CTE coursework, and (3) the relationship between CTE course taking and a variety of high school outcomes, including gains in test scores, grade promotion, on-time graduation, completion of college preparatory coursework, and postsecondary outcomes. This study extends the analysis of student outcomes described above to include a descriptive case study of the CTE programs at seven SDUSD high schools. Specifically, the case study examines the programmatic, organizational, and institutional elements associated with particularly effective vs. less-than-effective CTE programs in selected SDUSD high schools in order to:

- determine which SDUSD high schools are "particularly effective"/"less-than-effective" (higher/lower than average CTE outcomes and higher/lower than average academic achievement),
- identify the programmatic, organizational, and institutional factors are associated with the CTE programs at selected schools and in the district,
- examine the extent to which each programmatic, organizational, and institutional factor contributes to the success of the CTE programs at case study schools and in the district,
- describe any programmatic, organizational, and/or institutional changes made by study schools and the district over the last decade, as well as changes anticipated for the 2010-2011 academic year,
- identify barriers to success or improvement at case study schools and in the district,
- describe the ways in which staff at each case study school and in the district office characterize the CTE program at their site, and
- determine how students (i.e., concentrators, participants, non-participants) at one high school characterize the CTE program at their school.

This paper is presented in six sections, including this introduction (Section 1.0). Section 2.0 (Background) provides national, state, and district context related to Career Technical Education (CTE). Section 3.0 (Descriptive Case Study) outlines the questions guiding the study, the selection of cast study schools, and case study methodology. Section 4.0 (Findings) presents findings from the staff interviews and student focus groups. Section 5.0 contains the Summary of Findings and Section 6.0 contains Conclusions.

2.0 BACKGROUND

2.1 National Context

The purpose of the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) is to develop the academic and career and technical skills of secondary and postsecondary education students enrolled in career and technical education (CTE) programs by –

- supporting state and local efforts to develop challenging academic and technical standards – and to assist students in meeting those standards – so that students are prepared for high skill, high wage, or high demand occupations in current or emerging professions;
- promoting the integration of rigorous academic and career and technical instruction that links secondary education and postsecondary education;
- increasing state and local flexibility to develop, implement, and improve CTE programs;
- conducting and disseminating national research and disseminating information on best practices that improve CTE programs;
- providing technical assistance that promotes leadership, initial preparation, and professional development at state and local levels; and improves the quality of CTE teachers, faculty, administrators, and counselors;
- supporting partnerships among secondary schools and postsecondary institutions, local workforce investment boards, business and industry; and
- providing individuals with opportunities throughout their lifetimes to develop, in conjunction with other education and training programs, the knowledge and skills to keep the United States competitive.[2]

Like the Carl D. Perkins Vocational and Technical Education Act of 1998 (Perkins III), the legislative intent of Perkins IV is focused on improving secondary and postsecondary CTE programs in order to ensure that students acquire the knowledge, skills, attitudes, and experiences necessary to enter and succeed in the workforce. However, Perkins IV expands on the previous authorization by calling for increased accountability for results, improved coordination among CTE programs, effective integration of accountability systems related to academic and technical (CTE) programs, collaboration of secondary and postsecondary institutions in the development of programs of study, and strong relationships with business and community.

2.2 State Context

Perkins IV requires "each eligible agency desiring assistance under the Act to prepare and submit a six-year State plan to the Secretary."[3] California's Perkins plan – *2008-1012 California State Plan for Career Technical Education: A Guide for High-Quality Programs* – was approved by the California State Board of Education and the Board of Governors of the California Community Colleges in March 2008, and by the U.S. Department of Education in July 2008.

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[2] Carl D. Perkins Career and Technical Education Improvement Act of 2006 (PL 109-270).

[3] Program Memorandum: Submission of Five-Year State Plans under the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV), U.S. Department of Education, Office of Vocational and Adult Education, October 30, 2007.

The *2008-1012 California State Plan for Career Technical Education* (the California Perkins Plan) addresses the priorities mandated in Perkins IV, and goes on to identify a number of expanded state priorities for CTE, including:

- ensuring that CTE is "woven into the fabric of education in California,"
- responding to workforce development needs and labor market priorities when developing curriculum, professional development, use of data, and links with business and industry,
- providing all students with access to CTE courses and pathways, skilled instructors, facilities, and technology,
- promoting career awareness across the K-12 continuum,
- applying the elements of high school reform in California (rigor, relevance, relationships, and results) to CTE as a means of engaging students, and
- promoting continuous improvement of CTE through better alignment of standards, curriculum, assessment, and professional development to support attainment of core academic and technical skill goals.[4]

The California Perkins Plan was designed to result in "an overall statewide CTE system that can engage and prepare students…for fulfilling careers and lifelong learning, while addressing the workforce needs of the new economy,"[5] and it provides local education agencies (LEAs) with a blueprint for developing and delivering comprehensive, rigorous, and integrated CTE programs aligned with the mandates of Perkins IV and consistent with California's priorities for CTE. Key elements in the California Perkins Plan are (1) the description of the delivery structure of CTE in California and (2) the articulation of the elements of a high-quality CTE system. These elements are described in some detail below. The complete plan can be found at (http://cte.ed.gov/docs/stateplan/CA5YearStatePlan.pdf).

2.2.1 *Delivery Structure*

The California Perkins Plan calls for CTE programs across the state to be clustered around 15 industry sectors (grouped under six career areas), which were selected to address California's economic needs and the educational needs of its K-12 students. K-12 model curriculum standards (foundation standards and pathway standards[6]) have been developed for each industry sector. Additionally, two to seven career pathways have been identified for each industry sector. The career areas (with associated industry sectors) are provided in the following table.

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4 California Department of Education (2008), *2008-12 California State Plan for Career and Technical Education*, page 1.

5 California Department of Education (2008), *2008-12 California State Plan for Career and Technical Education*, page 51.

6 "Foundation standards define the base knowledge that students must acquire to be successful across the entire industry sector; pathway standards describe the technical knowledge and skills students must acquire to enter postsecondary education or employment in that specific pathway." California Department of Education (2008), *2008-12 California State Plan for Career and Technical Education*, page 13.

Career Areas	Industry Sectors
Agriculture Education	Agriculture and Natural Resources
Business and Marketing Education	Finance and Business Information Technology Marketing, Sales, and Service
Health and Human Services Education	Health Science and Medical Technology Public Services
Home Economics Careers and Technology Education	Fashion and Interior Design Hospitality, Tourism, and Recreation Education, Child Development, and Family Services
Industrial and Technology Education	Building Trades and Construction Energy and Utilities Engineering and Design Manufacturing and Product Development Transportation
Arts, Media, and Entertainment Education	Arts, Media, and Entertainment

2.2.2 *High-Quality CTE System*

The 11 elements of a high quality CTE system described in the California Perkins Plan have guided the development and implementation of CTE programs in school districts across California. The 11 elements are:[7]

1. Leadership at all levels
2. High-quality curriculum and instruction
3. Career exploration and guidance
4. Student support and student leadership development
5. Industry partnerships
6. System alignment and coherence
7. Effective organizational design
8. System responsiveness to changing economic demands
9. Skilled faculty and professional development
10. Evaluation, accountability, and continuous improvement
11. CTE promotion, outreach, and communication

CTE in California has also been shaped and supported by ConnectEd: The California Center for College and Career.[8] Established in 2006 by the James Irvine Foundation, ConnectEd is an independent non-profit organization dedicated to expanding linked learning (formerly called multiple pathways) in high schools across California. The linked learning approach features comprehensive programs of study (pathways) that link learning in the classroom with real-world application outside of school to prepare students for both postsecondary education and career. ConnectEd's design calls for each pathway to be organized around one of the major industry sectors and to contain four essential ingredients: a challenging academic component, a demanding technical component, a work-based learning component, and support services for students.[9] ConnectEd's Linked Learning Alliance, a

[7] California Department of Education (2008), *2008-12 California State Plan for Career and Technical Education*, page 54.

[8] http://www.connectedcalifornia.org/index.php

[9] http://www.connectedcalifornia.org/pathways/components.php

statewide coalition of more than 140 organizations and individuals, is dedicated improving California's high schools and preparing students for postsecondary education and career.[10]

To assist schools and districts as they plan, develop, and launch new pathways, ConnectEd has developed the *Capacity and Needs Assessment Tool,*[11] which identifies the 12 critical elements of a high-quality CTE system. These elements, which are similar in terms of content and intent to the quality indicators contained in the California Perkins Plan, include:

1. Pathway formation
2. Academic core curriculum
3. Technical core curriculum
4. Work-based learning
5. Support services
6. Scheduling and use of instructional time
7. Middle school orientation and preparation
8. Postsecondary articulation
9. Facilities and equipment
10. Funding
11. Data collection, evaluation, and accountability
12. Confluence of efforts

Together, the California Perkins Plan and ConnectEd provide schools and school districts in California with a comprehensive roadmap for developing and implementing high-quality CTE programs for high school students in California.

2.3 District Context

San Diego Unified School District (SDUSD), the second largest school district in California, serves an ethnically and linguistically diverse population of just over 131,000 K-12 students in 189 district-managed schools/programs and 37 charter schools. In 2009-10, the 117,282 students enrolled in district-managed schools were quite diverse – 0.4 percent were Native American, 3.5 percent were Asian, 5.4 percent were Indochinese, 0.8 percent were Pacific Islander, 6.3 percent were Filipino, 45.2 percent were Hispanic, 11.3 percent were African American, 23.9 percent were White, and 3.3 percent were Multi-Ethnic; 62.2 percent of students qualified for free or reduced priced meal assistance, 28.2 percent were English Learners, and 11.9 percent qualified for Special Education services.

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[10] Examples of ConnectEd Linked Learning Alliance member organizations/agencies: state agencies (e.g., California Department of Education, University of California) business, industry and trade organizations (e.g., California Workforce Association, State Building and Construction Trades Council), community and advocacy organizations (e.g., Urban Education Partnership, Californians for Justice), education organizations (e.g., California Federation of Teachers, California Parent Teacher Association, California School Boards Association), public agencies (e.g., Los Angeles Unified School District), research and policy organizations (e.g., Policy Analysis for California Education, School Redesign Network/LEADS at Stanford University).

[11] http://www.connectedcalifornia.org/alliance/pdf/PathwayDevelopment.pdf

2.3.1 *The CTE Program in SDUSD*

During the 2009-10 academic year, the College, Career, and Technical Education (CCTE) program in SDUSD served approximately 26,000 middle and high school students in SDUSD. In Fall 2009, enrollment in CTE coursework was approximately 16,000 in the 28 high schools considered for participation in this case study – resulting in a CTE course-taking rate (i.e., total courses taken/total student enrollment) for those schools of .48. The number of distinct CTE courses (as opposed to sections of courses) offered by the 28 high schools ranged from five to 30; enrollment in those courses ranged from 164 (in a small high school) to 1,251 (in a large, comprehensive high school). Career pathways (e.g., Architectural and Structural Engineering) were offered in all 15 industry sectors (e.g., Engineering and Design); articulation agreements with area community colleges and universities allowed students to earn dual credit for qualifying CTE/ROP (Regional Occupational Program) coursework.

In 2009-10, the CCTE Department Director was responsible for managing the district's CCTE program, in collaboration with three Program Managers – one taking the lead for all activities associated with state-funded programs (e.g., Regional Occupational Program, California Partnership Academies, Proposition 1D CTE Facilities Grants), one for federally funded programs (e.g., Perkins, 21st Century Learning Communities), and one for department operations.[12] Also based at the district office were six resource teachers, who provided direct support to schools and programs. In addition, the CCTE Department supported more than 20 Employer Outreach Specialists (paid for a portion of the day by the CCTE Department and for a portion of the day by school sites) who were responsible for establishing and maintaining community connections, supporting Advisory Boards at their sites, and coordinating student internships.[13]

3.0 DESCRIPTIVE CASE STUDY

The purpose of conducting this descriptive case study in SDUSD high schools is to discover the programmatic, organizational, and institutional factors associated with effective vs. less-than-effective CTE programs in those schools.

3.1 Questions Guiding the Study

The core study questions below informed the selection of case study schools, and guided examination of the characteristics of the CTE programs at study schools and across the district, modifications made to CTE programs at the school and district levels, and staff and student perceptions of CTE. Specific study questions linked to each core question can be found in Appendix A.

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[12] During 2010-2011 academic year, the CCTE Department structure has been modified and the three Program Managers will now be responsible for Community Outreach and Professional Development (e.g., industry partnerships, classified and certificated professional development), Curriculum, Instruction, and Program Development, and Operations.

[13] The number of Employer Outreach Specialist positions has been significantly reduced for the 2010-2011 academic year, due to budget cutbacks.

3.1.1 *Selection of Case Study Schools*

1. Which SDUSD high schools are "particularly effective"/"less-than-effective" (higher/lower than average CTE outcomes and higher/lower than average academic achievement)?

3.1.2 *Characteristics of Case Study Schools*

2. What programmatic, organizational, and institutional factors are associated with the CTE programs at case study schools and in the district?
3. To what extent does each programmatic, organizational, and institutional factor contribute to the success of the CTE programs at case study schools and in the district?

3.1.3 *Modifications to Practice*

4. Have/has case study schools or the district made programmatic, organizational, and/or institutional changes over the last decade? Are any changes anticipated for the 2010-2011 academic year? What precipitated/motivated these changes?

3.1.4 *Staff Perceptions of CTE*

5. What barriers to success or improvement exist at case study schools and in the district?
6. How does staff at each case study school and in the district office characterize the CTE program at their site?

3.1.5 *Student Perceptions of CTE*

7. How do students (i.e., concentrators, participants, non-participants) characterize the CTE program at their school?

3.2 Selection of Case Study Schools

During the 2009-10 academic year, 34 district-managed schools (i.e., non-charter schools) and programs served students in Grades 9 through 12 in SDUSD. Even though most of these 34 schools and programs offered some CTE coursework, six schools and programs enrolling high school age students were not considered for inclusion as case study sites because they served atypical student populations (e.g., home schooled students, pregnant and parenting minors, non-diploma bound students) and/or offered limited or program-specific coursework (e.g., Big Picture,[14] independent study). Therefore, 28 district-managed high schools were considered potential case study sites; no charter schools were considered for inclusion in the case study.

The final selection of case study sites was based primarily upon schools' classification as "effective" vs. "less-than-effective" using the following CTE and academic outcome measures. CTE and academic outcome data for the 28 potential case study sites can be found in Appendix B (*2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools*).

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[14] Big Picture Learning, established in 1995 by Dennis Littky and Elliot Washor with the opening of the Metropolitan Regional Career and Technical Center (the Met) in Providence, Rhode Island, now includes more than 60 schools in 14 states and Australia, Israel, and the Netherlands. Big Picture schools feature project-based curriculum, significant real world work experience supervised by business/community mentors, and performance based assessment.

3.2.1 *CTE Outcome Measure 1 – Percentage of CTE Concentrators*

One indicator of effective CTE programs is a higher than average percentage of students who become CTE concentrators by the end of high school. The *First Interim Report for Task 9.3: Evaluation of the Outcomes of Career and Technical Education in the San Diego CA School District*, dated July 2009, presents a number of definitions for CTE concentrator used in the field. For the purpose of selecting case study schools, the completion of one or more two-course CTE concentrations in a given field during high school was used as the working definition of CTE concentrator.

Districtwide data for the 2007-08 academic year show that 9.91 percent of high school students who were enrolled in SDUSD for at least four years completed one or more two-course CTE concentrations. Using comparable school-level data, schools with higher/lower than average percentages of two-course concentrators were identified. Appendix B (*2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools*) provides the percentage of CTE concentrators in 2007-2008 for each SDUSD high school.

3.2.2 *CTE Outcome Measure 2 – CTE Enrollment Rates*

A second indicator of an effective CTE programs is a higher than average enrollment rate in CTE coursework. In November 2009, 33,105 students were enrolled in SDUSD high schools (excluding atypical schools); CTE course enrollments in those schools totaled 15,918. Therefore, the districtwide CTE course enrollment rate (CTE course enrollment/total enrollment) was .48. Using comparable school-level data, schools with higher/lower than average CTE course enrollment rates were identified. Appendix B (*2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools*) provides November 2009 CTE enrollment rates for SDUSD high schools.

3.2.3 *Academic Achievement Outcome Measure 1 – API Rank*

The California Public Schools Accountability Act of 1999 (PSAA) mandates the development of an Academic Performance Index (API) for the purpose of annually reporting the academic status and progress of schools across the state. At the high school level, the API is based on student performance on the following: California Standards Tests (CSTs) and California Alternate Performance Assessment (CAPA) in English language arts, mathematics, science, and history/social science, and the California High School Exit Examination (CAHSEE).[15]

Each spring, the California Department of Education (CDE) releases an API Base Report that includes statewide ranks (SWRs) and similar schools ranks (SSRs) for most California schools. SWRs rank schools of a similar type (e.g., high schools) into ten groups of equal size (deciles) from ten (highest) to one (lowest). For example, a high school with a SWR of 10 is performing in the top decile (top ten percent) of high schools in the state, based on

[15] Each of these assessments is assigned a different weight when calculating the API. CST/CAPA in English Language Arts (ELA) accounts for 27.1 percent of the high school API, CST/CAPA Mathematics for 18.1 percent, CST Science for 22.9 percent, CST History/Social Science for 13.9 percent, CAHSEE ELA for 9 percent, and CAHSEE Mathematics for 9 percent.

the range of statewide assessments detailed above.

While SWRs compare all schools of a similar type across the state (e.g., high schools), SSRs compare each school to the 100 schools most like it in demographic terms, based on each school's School Characteristics Index (SCI). The SCI uses information such as pupil mobility, ethnicity, socioeconomic status, special education status, gifted and talented status, English learner status, class size, teacher credential status, and grade span enrollment to assign an SCI score between 100 and 200. Schools with similar SCIs tend to face similar educational challenges and are considered similar schools for API SSR purposes.

The CDE considers schools with SWRs/SSRs of seven or eight to be performing above average; schools with SWRs/SSRs of nine or ten are considered well above average. Conversely, schools with SWRs/SSRs of one or two are considered to be performing well below average; schools with SWRs/SSRs of three or four are considered below average. A detailed description of SWRs/SSRs can be found in the *2008-09 Academic Performance Index Information Guide* at http://www.cde.ca.gov/ta/ac/ap/documents/infoguide08.pdf . *Descriptive Statistics and Correlation Tables for California's 2008 SCI and Similar Schools Rank*s can be found at http://www.cde.ca.gov/ta/ac/ap/documents/tdgreport0809.pdf .

Using information contained in the 2008 Academic Performance Index Base Report (the most recent report available), high schools with SWRs or SSRs of seven through ten were identified as having higher than average academic achievement and schools with SWRs or SSRs of one through four were identified as having lower than average academic achievement. Appendix B (*2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools*) provides 2008 API SWRs/SSRs for SDUSD high schools.

3.2.4 *Academic Measure 2 – Graduation Rate*

A second indicator of academic achievement is a higher than average graduation rate. California uses the National Center for Education Statistics (NCES) formula for calculating graduation rate.

Number of Graduates (Year 4)
divided by
Number of Graduates (Year 4) + Grade 9 Dropouts (Year 1) + Grade 10 Dropouts (Year 2) + Grade 11 Dropouts (Year 3) + Grade 12 Dropouts (Year 4)

California's statewide graduation rate for 2007-08 (the most recent data available) was 80.2. Using comparable school-level data, schools with graduation rates higher than/lower than the state graduation rate were identified. Appendix B (*2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools*) provides 2007-08 graduation rates for SDUSD high schools.

As mentioned above, the case study design calls for the identification of seven SDUSD high schools (five effective and two less-than-effective) for participation in the study. Schools

were identified as effective if they demonstrated higher performance than other San Diego high schools in both CTE outcomes (i.e., higher than average percentages of CTE two-course concentrators in 2007-08 and higher than average CTE course enrollment in Fall 2009) *and* both academic achievement outcomes (i.e., higher than average statewide or similar schools ranks based on the 2008 Academic Performance Index and higher than average 2008 graduation rates relative to the state average). Conversely, schools in the below average range for all CTE and academic outcomes were considered less than effective.

Seven SDUSD high schools had above average ratings on all four outcome measures and were considered effective, for the purpose of the study. Six of the seven effective high schools are "small schools" (small, themed high schools grouped together under the umbrella of a larger educational complex); one effective high school is a large, comprehensive high school. Two high schools had below average ratings on all four outcome measures and are considered less-than-effective. One of these is a small school and the other is a large, comprehensive high school.

In order to ensure balance in the size, type, and location of schools selected for the study – and to take advantage of SDUSD staff knowledge about the CTE programs, course offerings, leadership, and staffing at district high schools – the following seven SDUSD high schools were selected for inclusion in the study:

1. Two effective small schools within a high school complex where all schools in the complex met the "effective" criteria,
   - School A – Effective
   - School B – Effective
2. One effective and one less-than-effective small school within a high school complex where only one school in the complex met the "effective" criteria,
   - School C – Effective
   - School D – Less-than-Effective, and
3. Three large, comprehensive high schools
   - School E – Effective
   - School F – "On the Move" (i.e., met both academic effectiveness criteria and in the mid-range on CTE effectiveness criteria),[16] and
   - School G – Less-than-Effective

Appendix C (*San Diego Unified School District Descriptive Case Study School Characteristics*) provides demographic and programmatic information about the seven case study sites.

[16] This high school's 2008 API Statewide Rank, Similar Schools Rank, and 2008 graduation rate placed it well above average with respect to academic outcomes. In addition, the school's Fall 2009 CTE course-taking rate was only slightly below the district average. Even though the percentage of two-course concentrators in 2007-08 was lower than the district average, the school's strong academic outcomes and improving CTE outcomes (they offered the highest number of distinct CTE courses in the district) supported their inclusion in the study.

Note: Three additional high schools were selected as alternative case study sites, including two effective small schools and one less-than-effective comprehensive high school. Because all seven case study sites agreed to participate, alternative sites were not used.

3.3 Case Study Methodology

The primary data collection methods employed in the case study were interviews with district office College Career and Technical Education (CCTE) Department staff, principals, counselors, CTE teachers, and Employer Outreach Specialists[17] (EOSs), and focus groups with students who were – or who were on-track to becoming – two-course CTE concentrators, students who were CTE participants (i.e., had taken one or more CTE course, but were not two-course concentrators), and students who were non-participants (i.e., had never taken a CTE course). Additional information about each school's CTE program offerings was obtained via document review (e.g., course catalogs, program materials).

3.3.1 *Staff Interviews*

Staff interviews were conducted in May and June 2010 at study high schools and the SDUSD CCTE Department offices. Each interview lasted approximately 50-60 minutes, and was conducted individually. As mentioned above, interview questions were designed to (1) gather descriptions of the programmatic, organizational, and institutional characteristics of the CTE program at each case study school and across the district, (2) measure the relative importance assigned to each of these characteristics by interviewees, (3) identify barriers to the success/improvement of the CTE program and students, (4) determine staff perceptions of the impact of the CTE on students, and (5) elicit staff characterizations of students who participate in the CTE program. Information about staff role, gender, and length of service at the school and in the district was also collected during the interview sessions. Each interviewee signed a formal consent to participate in the study; all interviews were recorded. A copy of the staff interview protocol can be found in Appendix D.

***Questions Related to the Elements and Quality of CTE Programs*.** The California Department of Education (CDE) (*2008-12 California State Plan for Career Technical Education: A Guide for High-Quality Programs*[18]) and ConnectEd: California Center for College and Career (*Capacity and Needs Assessment Tool*[19]) have established "Program Quality Indicators" (CDE)/"Critical Elements" (ConnectEd) of high-quality CTE programs. Not surprisingly, the CDE and ConnectEd indicators/elements are very similar, though they vary somewhat in the labels and descriptors used for each construct, and in the grouping of

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17 During the 2009-10 academic year, the CCTE Department provided an Employer Outreach Specialist (EOS) to most SDUSD high schools for the purpose of establishing and maintaining community connections, organizing and supporting Advisory Boards at their sites, and coordinating student internships. One-half of the funding for these positions was covered by the CCTE Department (for CCTE-related work) and the other half by school sites (most typically, for work related to senior exhibitions, field trip and after-school program coordination, and other CTE teacher support).

18 http://www.schoolsmovingup.net/cs/ctep/print/htdocs/ctep/home.htm

19 http://www.connectedcalifornia.org/coalition/pdf/PathwayDevelopment.pdf

those constructs. For the purpose of the San Diego case study, a meld of the CDE and ConnectEd source materials was used to craft research questions related to the programmatic, organizational, and institutional characteristics of case study schools.

The table below provides a summary of the indicators/elements identified by the CDE and ConnectEd, grouped under programmatic, organizational, and institutional headings.

Program Quality Indicators/Critical Elements of High-Quality CTE Programs
California Department of Education and ConnectEd

California Department of Education *2008-12 California State Plan for Career Technical Education*	**ConnectEd** *Capacity and Needs Assessment Tool*
Programmatic Factors	
• High-quality curriculum and instruction • Skilled faculty and professional development • Career exploration and guidance • Industry partnerships • Student support and student leadership development	• Academic core curriculum • Technical core curriculum • Pathway formation • Work-based learning • Middle school orientation and preparation • Support services
Organizational Factors	
• System alignment and coherence • Effective organizational design • CTE promotion, outreach, and communication	• Confluence of efforts • Postsecondary articulation • Scheduling and use of instructional time • Facilities and equipment
Institutional Factors	
• Leadership at all levels • System responsiveness to changing economic demands • Evaluation, accountability, and continuous improvement	• Leadership • Funding • Data, collection, evaluation, and accountability

Using CDE's 11 Program Quality Indicators and ConnectEd's 13 Critical Elements, we identified the following 16 characteristics of high-quality CTE programs for use in building the case study interview protocol. A brief description of each characteristic is provided in Appendix E.

Programmatic Factors

1. High Quality Curriculum and Instruction
2. Skilled Faculty and Professional Development
3. Student Support and Student Leadership
4. Career Exploration and Guidance
5. Middle School Orientation and Preparation
6. Industry Partnerships

Organizational Factors

7. System Alignment and Coherence
8. Confluence of Efforts
9. Effective Organizational Design
10. Postsecondary Articulation
11. Facilities and Equipment
12. CTE Promotion, Outreach, and Communication

Institutional Factors

13. Leadership at All Levels
14. System Responsiveness to Changing Economic Demands
15. Evaluation, Accountability, and Continuous Improvement
16. Funding

For each program element, interviewees were asked to indicate whether that element was a component of the CTE program at the school/in the district, to rate the implementation of that element as high, medium, or low, and to describe the characteristics of that element.

***Questions Related to the Relative Importance of Various Program Elements*.** The Spend-a-Dot activity was used to capture interviewees' opinions about the relative importance of each program element. Each interviewee was given 32 adhesive dots and asked to distribute ("spend") them among the 16 elements of an effective program, based upon the perceived importance/impact of each element on the CTE program at the school/in the district. Interviewees were told that a maximum of eight dots could be spent on any one element, and that assigning zero dots to one or more elements was permitted.

3.3.2 *Student Focus Groups*

Approximately 30 Grade 12 students participated in one of three student focus groups in late May 2010 – one group for CTE Concentrators, one for CTE Participants, and one for non-CTE Participants. Focus groups were conducted at one large, comprehensive high school and lasted approximately 45 minutes. Focus group questions were designed to determine students' awareness and assessment of the CTE coursework/program at their school, their rationale for enrolling in CTE coursework, and their perceptions of the benefits associated with CTE program participation. Each student had a signed consent form on file prior to focus group participation; students under 18 years of age had signed parent/guardian consent forms on file. In addition, each student signed an assent to participate form at the beginning of the focus group session. All focus groups were recorded. A copy of the student focus group protocol can be found in Appendix F.

3.3.3 *Document Review*

The CCTE Department provided detailed information about each high school's CTE pathways and coursework, as well as information about graduation requirements. Additional information (e.g., promotional materials, four-year planning guides, *My Dream*[20]) was gathered from site and district office staff during the interview process.

3.3.4 *Data Analysis and Reporting*

Participant responses gathered from interviews were recorded, summarized, and coded. Individual responses to questions about the specific elements of each school's CTE program (e.g., career exploration and guidance) included a yes/no value (i.e., is an element/is not an element of the school's CTE program), a 1-5 value (i.e., low to high rating of that element's level of implementation[21]), as well as a description of the featured element provided by the interviewee. Individual responses to the question about the relative impact of each element on the success of the school's CTE program (Spend-a-Dot activity) were assigned a numerical value from 0 to 8. Responses to questions about modifications to practice and barriers to success/improvement were summarized and coded. Summary data from interviews are included as Appendix G to this report; summary data for the Spend-a-Dot activity are included as Appendix H.

Participant responses gathered from student focus groups were recorded and summarized. Discussion of each group's responses to questions related to awareness of CTE coursework/pathways, the rigor of CTE coursework, ratings of the overall CTE program at their school, factors leading to enrollment in CTE coursework, and benefits of CTE coursework is included in the Findings section under Student Focus Groups.

4.0 FINDINGS

4.1 Staff Interviews

Thirty-nine staff members from seven district high schools and the CCTE Department participated in staff interviews. They included seven principals, 18 CTE teachers, three counselors, five Employer Outreach Specialists, and six CCTE Department staff. Of these, 15 were male and 24 were female. Thirty-three interviewees were based at school sites, six were based in the district's CCTE Department. Twenty were on staff at effective schools, six were on staff at an "on the move" school, and seven were at less-than-effective schools. Seventeen interviewees had been at their school site/in their district office position for two years or less, and 22 had been at their current location for three years or more. Thirteen

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[20] A web-based version of the *My Dream* booklet can be found at http://mydream.sdccte.org/stcdo_school_profile.php

[21] Note: Interviewees were asked to rate the implementation of each element (e.g., High-Quality Curriculum and Instruction) at their school/in the district as high, medium, or low (which would have been coded as 1, 2, 3). Some interviewees, however, elected to assign ratings of medium high or medium low to some elements, and so a scale of 1 to 5 was used instead. If an interviewee responded "don't know" or declined to rate a specific element, his/her responses were not included in analyses.

interviewees had five years or less experience in the district, 15 had six to 15 years experience, and 11 had worked in the district for 16 or more years.

Initial interview questions focused on the programmatic, organizational, and institutional elements associated with high quality CTE programs described above (e.g., High Quality Curriculum and Instruction, Skilled Faculty and Professional Development). Interviewees were asked to indicate whether a given element was an important component of the CTE program at their school/in the district, to rate the implementation of that element at their school/in the district, and then to provide a description of that element.

Virtually all interviewees said that all programmatic, organizational, and institutional elements were an important component of the CTE program at their school/in the district. Differences were noted, however, in the implementation rating given to each element. Highest implementation ratings (i.e., high or medium high) were given to High Quality Curriculum and Instruction – with 84.4 percent of interviewees rating implementation of this element as high or very high, Skilled Faculty and Professional Development (80.7 percent), Effective Organizational Design (80.7 percent), and System Responsiveness to Changing Economic Demands (75.0 percent). Lowest ratings were given to Middle School Orientation and Preparation (10.7 percent), CTE Promotion, Outreach, and Communication (18.5 percent), Confluence of Efforts (38.9 percent), and Facilities and Equipment (38.9 percent). Additional information about implementation ratings (i.e., overall ratings, ratings by group) can be found in Appendix G.

4.1.1 *Which programmatic elements are associated with the CTE programs at case study schools?*

This section of the report addresses the programmatic elements of the CTE programs at case study schools/in the district.

High Quality Curriculum and Instruction. All 39 interviewees reported that High Quality Curriculum and Instruction is an important element of the CTE program at their school/in the district, with 84.4 percent of interviewees rating the implementation of this element as high or medium high, and 15.6 percent rating it medium.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small high school, comprehensive high school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), or school/office experience (i.e., 0-2 years, 3 or more years). Differences were observed in the implementation ratings for High Quality Curriculum and Instruction by district experience (i.e., 0-5 years, 6-15 years, 16 or more years), with 100 percent of interviewees with 0-5 years of experience, 81.8 percent of interviewees with 6-15 years of experience, and 70.0 percent of interviewees with 16 or more years of experience rating implementation of this element as high or medium high.

A caution related to the interpretation of CTE program description data: During staff interviews, interviewees were asked to describe the implementation of each CTE program element (e.g., High Quality Curriculum and Instruction) at their site/in the district. Staff responses to these open-ended questions should not be viewed as "yes/no" in nature. That is, even though an interviewee might not have mentioned a particular characteristic (e.g., alignment with industry standards) when describing an element, we cannot assume that he/she believes that characteristic is not descriptive of the program at his/her site. Although we tested for differences, by group, we have elected not to characterize differences as statistically significant.

When asked to describe High Quality Curriculum and Instruction during the open-ended portion of the interview, interviewees most often said that their CTE curriculum and instruction is aligned with industry standards (56.4 percent) and features real-world connections (38.5 percent) – and they acknowledged the important role played by Advisory Boards in maintaining course and program quality. Males (60.0 percent), CCTE Department staff (66.7 percent), and staff at comprehensive high schools (50.0 percent) mentioned real-world connections more frequently than their female (25.0 percent) and small high school (17.7 percent) counterparts. One CTE teacher reported,

> *"Every year we have advisory meetings and have to do a continuing course proposal. [The Advisory Board] looks at our curriculum, standards, competencies, outcomes, and projects and helps us make changes based on industry trends."* (CTE Teacher)

Interviewees also said that project based learning (38.5 percent) and alignment with core academic standards (20.5 percent) are important features of CTE curriculum and instruction. But, as one principal remarked, "It's not just putting a standard on the board and saying, 'Here's what we're focused on today.'" Her opinion was echoed by a CCTE Department staff member and a CTE teacher, who said:

> *"If we can reinforce the core academics in the CTE classes in a way that is seamless, we know that it's better for our students. What we see is that when schools and programs embrace this notion – because of the relevance and the way that teachers are working together – it becomes something that transforms kids' lives."* (CCTE Department Staff)

> *"What makes [this school] what it is is the integration of all of the subjects. The fact that you've got teachers who are well versed in their content areas and comfortable mixing content and approaching content in multiple ways. Projects are developed by teachers who understand the content that they want to teach and who…modify things to find the 'hook.'"* (CTE Teacher)

Slightly more than one-fifth (20.5 percent) of interviewees mentioned rigor as an important characteristic of CTE curriculum and instruction at their school/in the district. One teacher, who has watched the evolution of CTE at his school over the last five years, said:

"One of the things that's unique about [this school] – and CCTE in general in SDUSD – is that there's a level of recognition and acceptance from academia. Before, [CTE was] one of the courses you sent Bobby to when he was messing up in English or math and you needed to schedule him in another class somewhere. I think [CTE] has gotten over the stigma of being the shop-oriented class." (CTE Teacher)

Integration with core coursework was called out as an important element of CTE curriculum and instruction by 20.5 percent of interviewees. Interestingly, while 35.3 percent of staff at small high schools and 33.3 percent of district office staff mentioned integration with core coursework, 0.0 percent of staff at comprehensive high schools did so. A small school principal linked rigor and integration with core academics when she said:

"When you take a CTE class like graphic design or multi-media and you embed it in an interdisciplinary situation where it is as important as an English class or a science class, then the level of [rigor] is [high] and that's where the curriculum flourishes. It's not the track for kids who can't do the regular curriculum. [It's not], I can't pass two years of foreign language so I go to the CTE class." (Principal)

Interviewees also characterized curriculum and instruction at their school/in the district as preparing students for both college and career (18.0 percent), as taught by teachers with industry experience (12.8 percent) who care about students (12.8 percent), as engaging (10.3 percent), and as featuring coursework aligned both vertically (across grade levels) and horizontally (across subject areas within a grade level) (5.3 percent). It is interesting to note that 100.0 percent of district office staff mentioned teachers with industry experience when describing CTE curriculum and instruction, compared with 39.4 percent of staff based at school sites. Differences were also observed by role in the percent of interviewees mentioning teachers with industry experience (CCTE Department staff, 100 percent; counselors, 66.7 percent; principals, 42.9 percent; teachers 38.9 percent; Employer Outreach Specialists, 20.0 percent).

Skilled Faculty and Professional Development

All 39 interviewees reported that Skilled Faculty and Professional Development are important elements of the CTE program at their school/in the district, with 80.7 percent of interviewees rating the implementation of this element as high or medium high and 19.4 percent rating it medium.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

One Employer Outreach Specialist commented that an important indicator of teacher quality is student opinion.

"Teachers here are very high quality. When I heard the reflections of the students during senior exhibitions, that was a common thing that was mentioned – the teachers were the favorite part of their high school career. High quality teachers that care." (Employer Outreach Specialist)

When asked to describe Skilled Faculty and Professional Development during the open-ended portion of the interview, interviewees most often (74.4 percent) mentioned the strong, relevant professional development provided by the SDUSD CCTE Department as contributing to CTE teacher quality. A comprehensive high school principal and a CTE teacher remarked:

"CCTE does a great job of providing PD [professional development]. They're extremely thorough. If a teacher is having an issue or is weak in an area they find a way to support him and they work with the school to do that. Most of the [CTE] teachers coming in don't have regular teaching credentials – they're getting their ROP-designated subject credential. They're coming from industry, which is a good thing – it brings a lot to the table. But a lot of times they haven't been through the classroom management and [they don't know] how to really get kids motivated. Skilled faculty is not just 'do I have the knowledge of the subject', but 'can I relate that knowledge to the students.'" (Principal)

"To me, the professional development is more important than the skilled faculty. If you go to industry you can find people who have three years minimum [experience]. Skilled faculty – they'll find them. But how do you take someone who is a construction worker and teach him how to teach kids? How do you take [CTE Teacher], who is used to working in [the public service sector] – he's got 20 years in [public service], at least – and bring him into a room of 14 or 15 year olds where he sometimes gets the same disrespect that he got in [his public service job]? He can't strangle a 15-year old student." (CTE Teacher)

Still another CTE teacher said:

"I know television news. I worked in it for almost a decade, but I didn't know how to teach it to a 14 year old or a 15 year old or a 16 year old. And without the Level I and Level II [CCTE professional development] I wouldn't know what scaffolding is, I wouldn't know what modeling is. All those things we're taught as teachers. I didn't go to school to be a teacher. My degree is in Communications. So why do I model? Why do I give them instruction in three ways? All that came from Level I and Level II classes.[22] So that is a huge factor in how successful we are here in the classroom." (CTE Teacher)

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[22] Professional development coursework provided by the CCTE Department for CTE teachers holding the Designated Subject Credential (i.e., teachers entering the teaching profession from business/industry, who have not attended a teacher education program at a college or university). Topics include principles and practices of CTE instruction, classroom management, counseling and guidance, and supporting students with special needs.

Interviewees also believed that industry experience (48.7 percent) and on-going connections with industry (23.1 percent) contributed to CTE teacher quality and effectiveness. Males (46.7 percent) mentioned on-going connections with industry more often than females (8.3 percent), and district office staff (66.7 percent) was more likely than school site staff (15.2 percent) – or staff at small high schools (11.8 percent) or comprehensive high schools (18.8 percent) – to do so.

Interviewees said that connections with industry are accomplished in many ways. One example of ongoing connection with a CTE teacher's former employers follows.

> *"I have the opportunity and the good fortune of being three blocks away from where I worked for 30 years at San Diego Police Department. So that when we talk about things related to the course – the legal aspects, the law enforcement aspects, forensics – I can really stay on top of it because of seminars and liaisons with the industry still."* (CTE Teacher)

Interestingly, interviewees also reported that non-CTE teachers have begun seeking out CTE-related professional development. As an Employer Outreach Specialist explained:

> *"Now, our academic teachers are wanting to learn more about the real world, and so they are going out and doing externships during the summer to find out more about how they can tie this [the industry] into their class. Our skills are coming together. The teachers are trying to go out in to the real world to find out what they can bring back to the classroom."* (Employer Outreach Specialist)

Another CTE teacher appreciated the fact that he benefited both from professional development provided by the district CCTE Department and from his ongoing contacts in the field. He remarked:

> *"All of this intermeshes. It enhances my teaching ability, of course, from the academic standpoint, so I'm getting developed in that manner. And, I'm also staying current and being developed professionally in the industry, so I'm not boring the kids with sea stories about what happened 20 years ago, but it's what's actually going on now."* (CTE Teacher)

More than one-quarter of interviewees identified grade-level teaming (30.8 percent) and general school-based professional development (25.6 percent) as contributing to the quality of faculty. One new teacher said that she was:

> *"…grateful for the Grade 11 team. We are all pushing each other to bring the level of the projects up and get students to the standards that they need and I need."* (CTE Teacher)

Other characteristics of Skilled Faculty and Professional Development mentioned by interviewees include careful selection of faculty (12.8 percent) and needs-based professional development (7.7 percent). More than one-third of principals (42.9 percent) mentioned needs-based professional development; no teachers, counselors, Employer

Outreach Specialists, or CCTE Department staff did so. One principal's remarks were particularly useful in understanding needs-based professional development.

> *"Professional development [at this school] is driven by what we need based on data [test scores] and on industry standards for the project. A perfect example is that I just ran the data for my incoming ninth graders, and I was a little bit alarmed by the number of English Learners [who will be here next year]. We've had English Learners, but not at the level we're going to see at the ninth grade [next year]. So immediately I got with my staff and said 'What is professional development going to look like for the ninth grade team next year?' We don't just spatter everybody with the same thing...it's all based on need. So we looked at both WestEd – they have some programs for teachers that can be used with ELs – and at the writing project, because one of their focus areas is English Learners. It's not one-size-fits-all PD [professional development]. It's really driven by where the teachers and students both are, and what are the resources we need to get them where we want them to be."* (Principal)

Student Support and Student Leadership. All but one interviewee reported that Student Support and Student Leadership are important elements of the CTE program at their school/in the district, with 65.6 percent of interviewees rating the implementation of this element as high or medium high, 28.1 percent rating it medium, and 6.3 rating it low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences ($p<.05$) were observed in implementation ratings for this element by location type (i.e., site, district office), with 50.0 percent of district office staff rating implementation as high or medium high and 50.0 percent rating it medium low or low, compared with site staff ratings of 67.9 percent high or medium high, 32.1 percent medium, and 0.0 percent medium low or low. Differences were also noted by school/office type, with 0.0 percent of small school staff and 0.0 percent of comprehensive school staff rating this element as medium low or low, compared with 50.0 percent of district office staff.

When asked to describe Student Support and Student Leadership during the open-ended portion of the interview, interviewees tended to focus their comments on the student leadership aspects of this element. Most often, they mentioned project-based learning (61.5 percent), and the opportunities for student leadership it encourages. These comments from two CTE teachers illustrate:

> *"As a school as a whole, we teach in a project-based learning environment, so we're constantly working on different projects. In my class, I average about four or five projects a semester. So students' groups will change – you'll have groups of two, groups of four, depending on what the projects are. [For each project], they'll establish themselves. Someone will always put themselves out as foreman [leader] of the group.*

It varies, but there is ample opportunity for students to learn about their leadership ability." (CTE Teacher*)*

"This is huge. [For our] first project, [we] worked with [Community Organization] and the students worked in groups… We try to offer the students lots of opportunities to take control of the projects themselves, and run it how they see fit – and we try to support them in any way. If there is an issue that needs to be resolved, that's what we're there for. But we try to put a lot back on the students as far as making the decisions – whether they're going to be successful or not. There are the few who take on the leadership roles and we, as teachers, are there to support them and give them any help. We've had a lot of individual group leaders who come up with a particular question or problem that they've had in their group and we give them some ideas, first of all, and then say, 'If need be, let's pull in your whole group.' But to put it back on the students to say, 'Here's a couple other ideas. See where that leads you. We're here to support so please come back and let us know.' We're also watching during class. Leadership progresses from group projects, to individual job projects, leading to senior projects and working more individually." (CTE Teacher)

Interviewees also reported that school clubs (35.9 percent) give students opportunities to acquire and demonstrate leadership skills. Females (50.0 percent) mentioned school clubs more frequently than males (13.3 percent); Employer Outreach Specialists (100.0 percent), CCTE Department staff (66.7 percent) and principals (42.9 percent) mentioned school clubs more frequently than teachers (11.1 percent) and counselors (0.0 percent). Student groups such as [School Name] Ambassadors and student clubs that meet during a grant-funded after-school program are described below.

"One [club] is our [School Name] Ambassadors. We have students that participate in Grades 10, 11, and 12. The Ambassadors is an after-school club. They are the ones that put together all of the tours [of the school]. We have a lot of visitors. They're the ones to take the visitors around the school and explain about our [CTE] program. Our kids really understand our [CTE] program." (Principal)

"We have a lot of clubs… We have a student who just came to us two months ago and said she wanted to start her own club. She became the founder of it and has 40 students who are fired up about this club. It's called Animal Life. They love animals. They want to put the word out about animals. They found a teacher who was willing to be their advisor, and they went to Behind the Scenes at The Wild Animal Park and they got to explore there." (Employer Outreach Specialist)

Other characteristics of student leadership development mentioned by interviewees were student involvement in the community through projects and/or volunteerism (5.1 percent) and student participation on school advisory committees and leadership teams (2.6 percent). A principal provided the following example of community involvement.

"[CTE] classes… give our students a chance to be leaders. Right now, the graphic arts classes are working with the movie theaters. [When] you walk into the movie theatres

[in the community], you'll see that our graphic arts students did the posters. That's letting them lead, not just at the school, but in the community." (Principal)

Before- and after-school support programs/opportunities (15.4 percent) were mentioned most frequently by interviewees when characterizing the student support component of Student Support and Leadership Development. A CTE teacher explains:

"My lab is always open at 7:45 or 8:00 before school and after school until at least 4:30, and students can come in for additional support. Kids know where they can go for help. It's very important for our school to support kids. Once or twice a month, we get a list of students who have required ATS hours [study/support time required for students who have D/F marks or are behind in schoolwork] and we stay on those students. They don't get to go on field trips… they won't be able to walk at graduation if they are seniors with those hours, so students know that this is important to us." (CTE Teacher)

Also mentioned – in equal measure (10.3 percent) – were the importance of grade level teams – especially common preparation time for team planning, data review, and conferencing with students in identifying, supporting, and monitoring struggling students – and differentiating instruction to meet student needs.

While all staff members were able to provide comprehensive examples of student leadership development at the school and district levels, examples of student support were quite limited. Perhaps this is because support for CTE students is provided through schoolwide (as opposed to CTE-specific) mechanisms, or perhaps struggling students are more engaged and successful in their CTE coursework. Interestingly, staff at less-than-effective high schools provided fewer descriptions of student support than their effective school counterparts, and their remarks did not indicate that systemic support for students was a particular need.

"I don't see too much struggling. A lot of it is internal/personal desire to learn about careers. Struggle is apathy. A large proportion [of students] don't see college in their future. [I] have students who want to work on cars, but don't know how to get there. It seems out of reach to them." (CTE Teacher)

"[Support] is handled the same way as any other class. Self-discipline is kind of up to them. We prod them along on discipline issues. If it's a language barrier I'm sometimes asked if they can present in their own language. I wouldn't say that we cater to their needs, but we definitely try to specify what their need is and then address it that way. If they're just lazy, then me personally, I'm not real tolerant of lazy individuals. If you're showing me that it's hard and you're trying, I can certainly try to find a way to make sure that we do enough assignments that you're at least doing half the class but, if you're just lazy, there's not much tolerance on this campus for that. That is kind of our demographics. We're underprivileged but we're also underachieving. I've run internships for the past three years here and the volunteers are all girls. Your boy population here, they're not too into academics." (CTE Teacher)

Career Exploration and Guidance. All 39 interviewees reported that Career Exploration and Guidance are important elements of the CTE program at their school/in the district, with 54.8 percent of interviewees rating implementation of this element as high or medium high, 35.5 percent rating it medium, and 9.7 percent rating it medium low or low. As one teacher remarked, "It's the most important thing. It's what CTE is."

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When asked to describe Career Exploration and Guidance during the open-ended portion of the interview, interviewees most often (64.1 percent) mentioned internships, job shadowing, and field trips as experiences that best provided career exploration opportunities for students. District office staff (83.3 percent) and staff at comprehensive high schools (81.3 percent) mentioned internships, job shadowing, and field trips more frequently than staff at small high schools (41.2 percent). A CTE teacher described internships at his school as:

> *"…lasting about one and one-half hours each day. [The students] are required to go four days a week, and they're with me on Fridays. They're required to create a resume and cover letter and go through mock interviews before they start [their internships], and when they come back they have to put together a PowerPoint presentation about the entire process so that they can show it to future interns."* (CTE Teacher)

Another CTE teacher stressed that internships provide students with opportunities to discover careers that they would like to pursue, as well as careers that might not interest them. "I've had students come back and tell me," she said, "'Holy cow, I thought this is what I wanted to do my whole life and I now know I don't want to...at all.'" (CTE Teacher)

Interviewees indicated that field trips are an important component of the CTE program at most high schools. Said one principal about CTE field trips at her school, "They're all over the place looking at what the real world is like." Field trips are characterized as aligned with course content (e.g., law enforcement, culinary arts, media and communication). One CTE teacher remarked,

> *"[Field trips] are another strong element of the course. It's almost built in. We have a law day when I take the kids down to talk with attorneys and sit in an actual judge's courtroom and have him or her explain what they do and how the system works. And then actually get to sit in on an actual trial to see the process first hand. This Friday we're going to the police academy. We're going to sit in the classroom where the recruits sit, talk with their instructors, go to their tactics course and the obstacle course and the kids are going to go through it and be timed. Then, they'll have that industry relationship. We've had a couple kids [who said], 'I can't wait to turn 21 so I*

can apply for the police department.' We also have a young lady who is in law school. It's still a relatively new process but it's starting to show benefits for the kids who are involved in the industry. What's surprising to me is the kids that said that 'I had no inclination to have anything to do with law enforcement until I took your course. Now, I'm really interested in doing that. Will you help me?'" (CTE Teacher)

More than one-third of interviewees (35.9 percent) said that career awareness is an integral part of CTE course curricula and textbooks. Differences in response patterns were observed with respect to school/office type, with 56.3 percent of staff at comprehensive high schools and 50.0 percent of district office staff naming CTE course curricula and textbooks, but only 11.8 percent of staff at small high schools doing so. And, differences were also observed between less-than-effective schools (0.0 percent), effective schools (35.0 percent), and the "on the move" school (66.7 percent) with respect to using CTE course curricula and textbooks to support Career Exploration and Guidance. One district office staff member explained career exploration in this way:

"In Hospitality and Tourism, it's not enough just to talk about your career as a chef, it's also important to talk about the entire operation and how it functions. There is a good reason for this. You will be a better worker if you understand the global system around you... you'll understand how things function. Also, you'll start to understand that there are other opportunities. If you look inside Arts, Media, and Entertainment as an industry sector, you'll understand that it's not just an actor on stage, it's not just the house manager or the lighting designers or the producers... there are lawyers involved and doctors involved and there's everything else." (CCTE Department Staff)

Career assessment and industry speakers/career days were each mentioned by 30.8 percent of interviewees when describing Career Exploration and Guidance. A number of interviewees reported using an online program called Career Cruising, in addition to more traditional career assessment instruments, such as COPS (Career Occupation Preference System) and COIN (COIN Basic Skills and Interest Survey). Staff with 6-15 years of district experience (53.3 percent) mentioned career assessments more frequently than staff with 0-5 years of district experience (23.1 percent) or staff with 16 or more years of district experience (9.1 percent).

It was reported that a range of industry partners – from corporations, professional organizations (such as the Association of General Contractors and the California Restaurant Association), medical facilities, construction companies, colleges and universities, law enforcement, the military, local hotels and restaurants, and even former students – spent time at schools and in classrooms talking with students about opportunities in their respective fields, assisting with class projects, and mentoring. Industry partners help students "find their passion" and "understand the importance of being job ready" (CTE teacher), discover a range of options within a given industry (Employer Outreach Specialist), "learn to work with people" (principal), and even get jobs (counselor). One counselor reported that "a lot of the seniors have already been hired – some even while they are still in high school – because they have the job skills" as a result of contacts made with industry partners.

Just over 15 percent of interviewees (15.4 percent) said that the Employer Outreach Specialists and counselors contributed to the success of Career Awareness and Exploration at their schools/in the district; just over ten percent (10.3 percent) mentioned mentors and project-based learning; just over five percent (5.1 percent) mentioned career clubs. Differences were observed, by location type (i.e., site, district office), in the percentage of interviewees who mentioned counselors as contributing to Career Exploration and Guidance. One-half (50.0 percent) of district office staff, compared with 9.1 percent of site-based mentioned counselors. Differences were also observed by school/office type, with 17.7 percent of small high school staff and 0.0 percent of staff at comprehensive high schools mentioning counselors, compared with 50.0 percent of district office staff.

Interviewees offered constructive criticism related to Career Exploration and Guidance in their schools, as well. One CTE teacher characterized this element at his school by saying:

> *"Right now, it's in a checkbox mentality. Is CalSOAP coming to giving you a little speech? Kaching. Did the counselor give you a checkbox of colleges you might want to go to? Kaching. Did you take the SAT? Kaching. It's not integrated. It doesn't seem real. It's no more connected than it was in a comprehensive setting."* (CTE Teacher)

With respect to career awareness opportunities provided to ninth-grade students through a year-long, six-week wheel[23] class, a practice that has been discontinued at his school, another CTE teacher said:

> *"[We] did a better job before – [we] had a mini-wheel. At the end [of the year], the students knew a bit about all of the pathways. To me that's exploration. [Then] some teachers wanted a whole semester class, but I think the wheel did a better job. It's so difficult for a lot of our students to have the opportunity [to explore pathways] because they have so many requirements. Especially college bound [students]. We do large group articulation where we tell them [students] about requirements and academics, and we have representatives from the [CTE] classes there. We were only able to hit half of the freshmen."* (CTE Teacher)

Regardless of the challenges associated with Career Awareness and Guidance, one CCTE Department staff member still believes that it has the "potential to change lives in a way that's authentic. Instead of asking 'Why do I need to do this?' they [students] understand that is a step in a direction to their future. A future that they look forward to, not just a future full of question marks."

Middle School Orientation and Preparation. Thirty-six interviewees reported that Middle School Orientation and Preparation is an important element of the CTE program at their school/in the district. However, only 10.7 percent of interviewees rated the

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[23] In a "wheel" class, ninth-grade students rotate through six exploratory classes in a given class period over the course of an academic year. Each mini-class lasts for six weeks, allowing students to experience a range of elective coursework (e.g., CTE, the arts, computer literacy), each taught by a different teacher.

implementation of this element as high or medium high, 32.1 percent rating it medium, and 57.2 percent rated it medium low or low.

Statistically significant differences ($p<.05$) were observed in implementation ratings for this element by school performance (i.e., less-than-effective, "on the move," effective), with 100.0 percent of staff at less-than-effective schools rating implementation as medium low or low; 80.0 percent of staff at the "on the move" school rating implementation medium low or low and 28.2 percent of staff at effective schools rating it medium low or low. Differences were also noted in implementation ratings for Middle School Orientation and Preparation by school/office experience (i.e., 0-2 years, 3 or more years), with 27.3 percent of staff with less experience at the school/district office rating implementation as medium low or low, compared with their more experienced colleagues (76.5 percent medium low or low).

Even though the majority of interviewees rated this element low, its importance was acknowledged. As one principal remarked, "It's important to give the [middle school] kids a sense of what you offer, especially in a choice atmosphere. It's important to have a relationship with [your feeder] middle schools so that kids know what their options are."

When asked to describe Middle School Orientation and Preparation during the open-ended portion of the interview, interviewees typically thought of the element as the articulation process designed to introduce and transition middle school students to the high school. As a result, interviewees most often mentioned high school visits to the middle school (38.5 percent), middle school visits to the high school (23.1 percent), and materials for middle school students and their parents (23.1 percent) when describing middle school orientation and preparation.

Responses related to high school visits to middle schools differed by role, with 100 percent of counselors, 60.0 percent of Employer Outreach Specialists, 42.9 percent of principals, 33.3 percent of teachers, and 0.0 percent of district office staff mentioning these types of visits. Differences were also observed by school/office type, location type, and school performance, with respect to materials used to support the articulation process. For school/office type, 66.7 percent of district office staff mentioned materials when describing middle school orientation and preparation, but only 31.3 percent of staff at comprehensive high schools and 0.0 percent of staff at small high schools did so. Responses were similar by location type, with 66.7 percent of district office staff mentioning materials, compared with 15.2 percent of site-based staff. Finally, 50.0 percent of staff at the "on the move" school mentioned materials, compared with 10.0 percent of staff at effective schools and 0.0 percent of staff at less-than-effective schools.

Typically, descriptions of the articulation process were not CTE-specific. Rather, CTE options were presented as "course electives," and pathways were not described in depth – except in the case of two effective small schools at one high school complex in which each school's theme and career pathway were one and the same. When asked about the limited amount of CTE information presented to middle school students and their parents during the articulation process, many interviewees suggested that 1) all incoming students at their small schools took the same introductory CTE courses in the ninth-grade year, so there

were no choices in CTE coursework, 2) "real" CTE (i.e., Regional Occupational Program/ROP coursework) didn't start until students were 16 years of age, so it was too early to inform students and parents, or 3) they [teachers] recruited informally using word-or-mouth or sibling referrals.

Most interviewees who mentioned high school visits to middle schools described principal/counselor presentations at parent nights at feeder middle schools for the purpose of recruiting students into one of the small schools at a larger high school complex. In a few cases, interviewees noted that high school students (e.g., robotics club members) attended parent nights to showcase popular clubs and program options. In some cases, it was reported that counselors made presentations to eighth-grade students during the school day or met with the middle school counselors to review course options for incoming ninth-grade students.

Even though high schools reported hosting middle school students and their parents for high school campus visits during students' eighth-grade year, one teacher at a less-than-effective high school said that ninth-grade students at his school "even now [in May] don't know what the pathways are." He goes on to say that:

> *"I know that they [students] take campus tours, but they're [high school staff] more like 'We want you in [this school] because we offer you these programs.' It's not so specifically geared to CTE, it's more like electives for the middle school students. I don't think they [students] hone in on that it's CTE or that they [high school staff] let them know that they can articulate to get college credit or any of that stuff. They [high school staff] prefer to have them pick a pathway, but they aren't always CTE."* (CTE Teacher)

Another CTE teacher at an effective high school had a similar observation about incoming ninth-grade students' understanding of CTE:

> *"It's not that apparent to me in the kids when they get here [that they understand what CTE is]. Maybe it's from an unfair perspective that I say this, but… a lot of times when they come to this class they don't know about the structure of CTE, but they don't know a lot about [my career pathway] either. It's an effort to educate them in both areas… If you have the old concept of shop class and the shop class instructor with the steel-toed boots and the missing thumb… that's the kind of the picture that a lot of kids have of CTE. But that's changed tremendously, drastically."* (CTE Teacher)

On the other hand, an Employer Outreach Specialist (EOS) at one effective high school described a particularly engaging outreach activity with a feeder middle school. In spring 2010, Grade 7 students from the middle school were invited to come to the high school to interact with and evaluate websites developed by Grade 10 students as part of one of their CTE classes. The animated websites were designed to convey Grade 7 science content via a "mystery" theme, and middle school students rated each on content and presentation. "Grade 10 students had an authentic audience for their websites and Grade 7 students learned about our program at the same time," said the EOS.

As mentioned above, 23.1 percent of interviewees reported that materials (e.g., brochures, booklets, videos) were used in middle school orientation and recruitment. These took the form of pathway brochures created by teachers at the high school, videos prepared by students in CTE classes as class projects, and booklets (*My Dream*) developed by the CCTE Department. Materials were used both with prospective middle school students and with current high school students as they prepared for articulation to the next grade level.

Just over ten percent (10.3 percent) of interviewees mentioned middle school coursework when describing Middle School Orientation and Preparation, and all but one of these were district office staff – suggesting that high school staff may be largely unaware of CTE offerings in middle school. One CCTE staff member suggested that CTE planning by cluster (e.g., a high school and all middle and elementary schools that feed into that high school) might be an effective way to focus and strengthen CTE options for students and raise awareness of program/pathway offerings.

Finally, 7.7 percent of respondents mentioned attending magnet school or choice school "fairs," to promote their CTE programs. Because nearly one-quarter of SDUSD students take advantage of school choice options (i.e., choose to attend a school other than their school of residence), a presence at these district-sponsored fairs affords high schools opportunities to connect with potential students and their parents.

Industry Partnerships. All 39 interviewees reported that Industry Partnerships are an important element of the CTE program at their school/in the district, with 60.0 percent of interviewees rating the implementation of this element as high or medium high, 23.3 percent rating it medium, and 16.7 rating it medium low or low. There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

Said one CCTE Department staff member – when referring to the 350 active industry partnerships across the district – "Industry Partnerships are our bread and butter. We couldn't do what we do without them. They are our greatest champions." Another CCTE Department staff member remarked, "We have a three-tier system with our industry partners. We want their time, their mind, or their money. Almost every partner is eager to do one of the three."

A principal described the importance and challenge of working with industry partners in this way:

> *"[Partnerships are] very important if they're done well. In the beginning, we didn't know what we were doing with industry. So we'd have board meetings and the only thing we could think of to ask them for was money. And they didn't want that, they wanted to help in some way but they didn't know what we needed – and we didn't know how to ask for the help. So what's really cool is that we formed relationships*

with our industry partners and we asked them to tell us what initiatives [projects] they're involved in – and then we shifted our projects to [match] the initiative. That has been outstanding. In the beginning, we were thinking 'Let's bring them to the table when we align our standards.' But the business people want kids to have soft skills, and to be able to communicate, and be able to write and know how to dress for an interview. They're not as interested in 'Are you teaching persuasion standard 2.7?' When we finally moved away from trying to bring them in at that level and made a connection [things] really blossomed. For example with [Partner], we listened to what their dream was and thought 'That would work with our [Name of] project' – and we built the experience together." (Principal)

However, a CTE teacher at the same school said that industry partners for his classes are "lacking" – but he's not sure that is problematic, right now, because his students aren't ready for "prime time." He explained:

"I don't have a lot of great 'outsourcing' or connections now, but I hope to develop something. [I think] it's more about preparing the students, at this point, to get them up to the level that I'm comfortable with. My juniors now, there's a quarter to half of them that I would feel extremely confident having them communicate with a professional outside the school. And then there are others that are still in the development stages. Before we run out and get all of these business relationships, I think we need to work on a few things at our school to develop their [partners'] expectations. So that way they don't come in and their expectations are so high that we can't meet them or hopefully we can blow them out of the water. I'm trying to do that in the senior class where they're getting out and getting work in the community. I'm struggling to find a great business relationship outside school. [I want to] use professionals in a good way vs. abusing them with 'Will you look at student work? Will you look at student work? Will you look at student work?'" (CCTE Teacher)

When asked to characterize Industry Partnerships during the open-ended portion of the interview, 41.0 percent of interviewees mentioned industry partners' participation in advisory boards. It was observed that staff with three or more years of experience at a given school/district office (59.1 percent) mentioned the importance of advisory boards more frequently than did teachers who had two or less years of experience at a school or district office (17.8 percent).

One CTE teacher described her school's relationship with its Advisory Board in this way:

"The best thing about the Advisory Board is that they are an integral part of how we operate. They tell us what skills they want the kids coming out of high school with and what they want us to focus on. They advise us on the type of CTE courses to emphasize, they advise us on the skill sets in the core courses, and from their input we actually think about and try to work on those skills. Once a month, Advisory Board members take kids out to a real adult lunch where they have conversation, they eat in a nice restaurant, [students] have to use their manners, and they have to use small talk...conversation. The reason this is all done is that they tell us that when the kids come to them they don't have soft skills." (CTE Teacher)

A CCTE Department staff member reiterated that the district is legally mandated to have Advisory Boards, but went on to say that the program couldn't function without them – and so SDUSD would ensure their existence even without the requirement to do so. With respect to Advisory Boards, he said:

> *"We have a standing rule. Hear what industry has to say. Teachers, don't speak. Just listen. Take 90 minutes out of your day and listen to what these people have to say. If they say we're not finding that students are graduating with the fundamental skills necessary to be successful in business, don't say 'We do that.' Stop, listen, and think about how are we [teaching those skills and whether we are] meeting the needs of our students. Are the things we're doing sticking with our students?"* (CCTE Department Staff)

Still another CCTE Department staff member emphasized the importance of Advisory Boards in working with CCTE staff and teachers to "evaluate and revise coursework to increase relevance and rigor."

In contrast, a CTE teacher at an effective small high school said,

> *"We no longer have an advisory committee as a small school. We didn't know what to do with them and they were neglected. [There is a] lot of potential [for Advisory Boards], but we don't seem to have the collective vision right now. We need to develop a community of people that is engaged with the school and understands what we're trying to do – to work with us to find common ground, to buy into what we're doing, to be aware of our vision. Technically we have partners, but they aren't effective or comprehensive.*" (CTE Teacher)

Interviewees also mentioned presentations to students/direct teaching by partners in the high school setting (41.0 percent) and student internship opportunities (38.5 percent) when describing Industry Partnerships. Interestingly, while 83.3 percent of district office staff said that presentations to students/direct teaching by partners characterized this element, only 33.3 percent of site-based staff did so. Differences were noted with respect to internships, as well, with 60.0 percent of males vs. 25.0 percent of females mentioning internships.

It was reported that industry partners spend time beside teachers in CTE classrooms doing direct teaching, staging demonstrations, and working with student project teams. An Employer Outreach Specialist said that CTE teachers at her school…

> *"…are always meeting with SMEs [Subject Matter Experts], and those…real-life experts are coming in and teaching the kids, which, I think keeps the students motivated because they get tired of hearing the teacher all of the time. When a real-life expert comes into the classroom and teaches them it's like 'Wow, these people really know what they're talking about!'"* (Employer Outreach Specialist)

Internships were characterized by interviewees as critically important, wonderful opportunities for students, and difficult to implement well. Typically, students participate in internships during Grades 11 or 12. An Employer Outreach Specialist at one small school said that she placed nine interns with various industry partners during the 2009-2010 academic year, in ten-week rotations. Students spent two hours each day (Monday through Thursday) working on projects at their partners' business locations, and attended class at the high school on Fridays. Each student's internship culminated with a formal presentation to the industry sponsor.

A Media and Communications CTE teacher at one high school said that internships give his students "a fresh set of eyes and a fresh opinion of what they can do with video." After a year or two, he said,

> *"they [the students] have seen my style and they've almost outgrown me. By the senior year, [students] need somebody else to give them fresh ideas. They've seen my style of shooting, they've seen my style of editing, and they need a third person's perspective. And that's why I've brought in [Industry Partner]. The [Industry Partner] brought some nice videos to look at and it gives us some new ideas. My interns work for our football team on Friday night and create highlight videos. That's where [Industry Partner] comes in and talks about how [student interns] should shoot different and where they should stand on the field and things like that. It's not just highlight videos [that student interns make] – they make recruiting videos. I met with the coach yesterday and he has three more players [who need recruiting videos]. They've got [College Name] and [College Name] coming to look at players, so we have to generate recruiting videos for a couple new guys this week. So we serve a purpose, but to make it an internship I have to have an outside professional come in look at it and that's how the [Industry Partner] is helping us out. The [Museum] came to us and asked if we could do two different documentaries on basketball. My interns know [Representative] at the [Museum], and can call her up. It gives them a chance to network*." (CTE Teacher)

Internships also offer students a number of opportunities beyond high school. One CTE teacher spoke about the benefits to one of his student interns:

> *"[Industry Partner] is a multi-location company, with five offices across the country – San Diego being one of their largest. One of my students did an internship there last semester, and she's going to Alabama for community college [next year]. She's already gotten a paid position with [Industry Partner] in Alabama doing something similar to her internship. That helps her out a lot."* (CTE Teacher)

Though acknowledging the importance of student internships, one CTE teacher said that finding internships – and supporting students in them – is the "hardest part" of her job. "I had 100 percent of my required internship placements this year," she said, "but have not found too many of the partnerships myself." Rather, she said that she had to "turn it back to the students" to find their own internship opportunities – and they all found places to complete them. He goal is to "do better on that" next year, but she wishes for more support with the task.

Interviewees reported that industry partners also support the CTE program at their schools/in the district by raising funds (23.1 percent), judging competitions or evaluating student projects (23.1 percent), providing materials and supplies (20.5 percent), and sponsoring field trips and job shadowing opportunities (20.5 percent). Funding raised by industry partners is used to support after-school programs (such as the robotics programs at several high schools), daily classroom needs (such as groceries for many of the culinary arts classes across the district), field trips, and competitions.

Several interviewees described the Iron Chef competitions (involving participant teams from several SDUSD high schools) supported by [Industry Partner], as follows:

> *"[The Industry Partner] sponsors a cooking competition – with chef's hats and everything – and the kids just ate it up. Some of the major chefs from local restaurants were on the [judging] panel and gave kids tips and instruction...this is the kind of industry assistance and input that we get. [Industry Partners] are almost jumping at the opportunity to be involved. Who knows… they might find the next five-star chef in one of these courses? I think maybe the industry is looking at it from that standpoint."* (CTE Teacher)

Finally, interviewees mentioned that industry partners provided mentoring/tutoring (15.4 percent), sponsored scholarships/awards (12.3 percent), gave students chances to make connections with "real world" professionals (7.7 percent), acted as clients (5.1 percent) and provided apprenticeship opportunities (2.6 percent). Among these characteristics of Industry Partnerships, differences were observed for only mentoring/tutoring. District office staff (33.3 percent) and staff at small high schools (23.5 percent) mentioned mentoring/tutoring more often than staff at comprehensive high schools (0.0 percent).

An Employer Outreach Specialist noted that CTE teachers at her school build projects linked to their industry sector and then involve industry partners in planning, evaluating, and recognizing those projects. One industry partner attended a project kick-off to speak with students about industry standards related to the project – and then announced that the top three projects would be posted on their website. The industry partner also invited students to use their studio to work on their projects.

At one school, students "ramp up" to working with industry partners as clients. According to a CTE teacher:

> *"In ninth grade, students don't have a client – they have an audience. In tenth grade, they…partner with a client. This year, they partnered with [Industry Partner] who gave a presentation on logo design, attended the project launch, gave feedback on final projects, and were here when we brought in our audience [seventh graders from a feeder middle school] to view the finished projects. At eleventh grade, the client is much more [involved] – they're [at school] quite frequently evaluating student work. By twelfth grade, the students [are required to find] their own clients."* (CTE Teacher)

4.1.2 *What organizational factors are associated with the CTE programs at case study schools?*

This section of the report addresses the organizational elements of the CTE programs at case study schools/in the district.

System Alignment and Coherence. All 39 interviewees reported that System Alignment and Coherence is an important element of the CTE program at their school/in the district, with 50.0 percent of interviewees rating the implementation of this element as high or medium high, 32.1 percent rating it medium, and 17.9 percent rating it medium low or low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

A caution related to the interpretation of CTE program description data: During staff interviews, interviewees were asked to describe the implementation of each CTE program element (e.g., System Alignment and Coherence) at their site/in the district. Staff responses to these open-ended questions should not be viewed as "yes/no" in nature. That is, even though an interviewee might not have mentioned a particular characteristic (e.g., clear course progression/pathways) when describing an element, we cannot assume that he/she believes that characteristic is not descriptive of the program at his/her site. Although we tested for differences, by group, we have elected not to characterize differences as statistically significant.

When asked to describe System Alignment and Coherence during the open-ended portion of the interview, interviewees most often (74.4 percent) mentioned the clear course progression/pathways established for the CTE program in SDUSD. CTE pathways at small themed high schools were characterized as more focused and proscriptive than those at large comprehensive high schools. For example, one principal at an effective small school said that:

> *"…all the kids have to take certain classes in certain places [in a certain order]. There are both academic core and technical core classes at Grades 9, 10, 11, and 12. We offer the UC 'a-g' [college prep] curriculum as a default and [our CTE classes] start with introductory classes [linked to the theme] and build toward advanced classes. And, it builds from field trips and guest speakers all the way to internships as twelfth graders. [We] have a clearly articulated pathway. When kids come in [to this school], they come into a [set] program. They have to buy in."* (Principal)

An Employer Outreach Specialist at the same school provided a description of the school's CTE course sequence, and went on to explain that all students at the school must complete

the CTE pathway there. "It's a part of their schedule," she said. A principal at another effective small high school said about her school's pathway, "[Students] know what it is, teachers know what it is…We're one pathway and it's very clear."

In contrast, several staff members at less-than-effective schools were not able to clearly describe the pathways at their schools. In some cases, other staff at the same schools did have an understanding of their schools' course progressions/pathways. The following statements illustrate:

> *"We've learned a lot from CCTE, but we haven't 'turned on the switch' yet. A lot of the courses students take here could connect with courses at the community college."* (Principal)

> *"In English and math there are classes over at the community college. We already have freshmen going to community college… Students can get credits for taking CTE classes if they get a B or higher."* (CTE Teacher)

> *"What are good models? Some pathways need to be strengthened, like VAPA [Visual and Performing Arts] because there's a tension between pathways and art. There is no career strand in VAPA now. Our industry partnerships are amazingly strong, but CTE is not as strong."* (Principal)

> *"There is less emphasis on sequencing and more on integration [with core academic coursework]… because there is little emphasis on CTE at this school. There is a lot of emphasis and funding going into CCTE at the district level, but we aren't going after those courses. We're pursuing AP instead."* (CTE Teacher)

CCTE Department staff agrees that pathways are in place at all district high schools, but acknowledges that "we're not where we want to be." Complete pathways are being implemented in the district but, said one district CCTE Department staff member, "some sites are fantastic… but it's just not everywhere." District CCTE Department staff would like to coordinate CTE pathways and allocate the appropriate CTE coursework, but, as things currently stand, are not able to require that all CTE courses in a given pathway are offered in a given school or "enforce" student completion of prerequisites. Barriers to effective implementation of clearly articulated, fully functional, and current course progression/pathways in the district were described as follows, by CCTE Department staff:

> *"The structure is there, and we are continually reviewing pathway sequences with principals. Sometimes [a school's] master schedule impacts our ability to have complete alignment – and understanding CTE is always a factor. A lot of general education teachers don't know anything about CTE; some counselors don't know what they need to know… a lot of teachers don't know that their classes articulate [to the community college]. We review the numbers each year with principals and many are shocked at how many students don't receive the [community college] credit they earn."*

> *"For every school we have [course] sequences and pathways, [and they are] part of the [district's] Course of Study. But I think that the sequences are muddy, and that we*

need to work on coherence. It's a matter of working with each school. The [course offerings] should be based on the needs of kids rather than needs of adults, but 90 percent of the decisions made [about course offerings are based] on... teachers that we have in place."

One-third of interviewees (33.3 percent) mentioned that the CTE courses at their school articulate to the community college, and students who receive B or higher marks in their CTE/ROP coursework leave high school with college course credit on their community college transcripts. Moreover, teachers at two small schools described how they "addressed vertical alignment with the community college" by meeting with community college instructors to discuss the types and levels of work required for students to earn community college credit. One CTE teacher reported working with community college staff to "ensure that our high school curriculum matches what they're doing in the [Community College] introductory classes."

Several interviewees (23.1 percent) remarked that the integration of academic and technical [CTE] coursework contributed to system alignment and coherence at their schools. Differences were observed by school performance level with respect to the integration of academic and technical coursework, with 66.7 percent of staff at the "on the move" school, 10.0 percent of staff at effective schools, and 0.0 percent of staff at less-than-effective schools mentioning course integration when describing System Alignment and Coherence at their school/in the district. Differences were also observed by district experience, with 0.0 percent of staff with five or less years of experience, 40.0 percent of staff with 6 to 15 years of experience, and 27.3 percent of staff with 16 or more years of experience mentioning the integration of academic and technical coursework.

In addition to integrating curriculum, one principal explained that he is "using the capstone model that I learned from CTE – it's such a good model" to structure non-CTE course offerings at his school. "It's going to be dialed in just like [CTE]," he said, "It can be translated into other subject areas. I want kids, families, and communities to see clear pathways and options for kids."

Other characteristics of System Alignment and Coherence mentioned by interviewees include real-world connections (20.5 percent), such as links to careers and internships, and industry certification (2.6 percent) that allow students to "get a jump start" and be able to compete on the job market when they leave high school.

Confluence of Efforts.[24] All but two interviewees reported that Confluence of Efforts is an important component of the CTE program at their school/in the district, with 37.9 percent rating implementation of the element as high or medium high, 35.1 percent rating it medium, and 27.0 percent rating it medium low or low. Statistically significant differences ($p<.05$) in implementation ratings for this element were observed by location type (i.e., site, district office) and school/office type (i.e., small school, comprehensive school, district office). No district office staff rated Confluence of Efforts high or medium high, 80.0

[24] Confluence of Efforts: A system of CTE pathways designed and implemented in a way that effectively leverages and maximizes existing resources and reduces duplication of efforts.

percent rated it medium, and 20.0 percent rated it medium low or low, compared with 43.8 percent of site-based staff who rated it high or medium high, 28.1 percent who rated it medium, and 28.1 percent who rated it medium low or low. Small high school staff rated Confluence of Efforts much higher than their comprehensive high school counterparts, with 68.8 percent giving implementation of this element high or medium high ratings, compared with comprehensive school ratings of 18.8 percent high or medium high.

When asked to describe Confluence of Efforts, interviewees most often (56.4 percent) called out the integration of academic/technical curriculum and grade level teaming as examples of practice related to the element. "Our curriculum is totally integrated," said one CTE teacher at an effective small school. "Depending upon the day that you walk into my classroom, you might wonder what class it is, because [students] work on math in here, they work on English. They bring all of the content areas together in their final products. It's atypical." One principal described CTE coursework at her effective small school by calling it "the top of the pyramid." "CTE courses," she said, "are the ones that drive our projects, themes, pathways, and partnerships. Our work is completely integrated."

At other schools, there was little evidence that academic and technical curricula are integrated or that grade-level teams are in place. For example, a CTE teacher at a less-than-effective small school said that,

> *"I don't know if the goal is to support CTE. I'll be honest that I don't know if the English and history teachers know that I'm a CTE teacher. They know that I'm an elective teacher and they know that I am an ROP teacher. They appreciate how we help their classes. They love that we can [video field trips] and they can come back and show it in their classrooms. Do they understand that they're helping me as a CTE teacher? No. They just think they're helping me as a teacher, but they don't refine it down to CTE. Next year we're going to get some English building skills that will help me with my [curriculum]. The [new] principal is starting to put this together. But in the past… no. The other teachers have an idea of CTE, but don't know my pathway."* (CTE Teacher)

Integrating academic and technical curricula and grade-level teaming are even more challenging at large comprehensive high schools. One staff member remarked that "counselors are aware of who is on the four-year college/traditional track and who might benefit from CTE." A CTE teacher at the same school voiced his frustration when asked to describe Confluence of Efforts at his school.

> *"It's [the curriculum is] integrated because they want us to teach standards from core subjects. That's really important. But…I never meet with math department. How can I integrate projects with math teachers? AP teachers don't want anything to do with us. It will never happen. Honors teachers won't work with us either. We are doing a project with science department. But that's a onesie-twosie kind of a thing. Nobody even knows about that except for me and the science teacher. I'm over here in the corner – the physical layout makes me feel isolated. The former principal… made [the CTE teachers] fear for our jobs. He wanted to get rid of [CTE] and move all of the kids*

into AP classes and eliminate CTE classes. But then the current principal came in and said, 'Wait a minute, we need more CTE classes.'" (CTE Teacher)

Comments provided by CCTE Department staff echo those of high school staff. One CCTE Department staff member said that:

"In recent years we're definitely more integrated. In part, this is due to project-based learning. With that came the whole emphasis on integrating academic core and technical curriculum and teachers. We do a summer institute professional development [summer workshop] focused on integration, and we're pleased with progress we've made in getting teachers together and talking together. They now have common planning periods, they have common professional development in the summer and throughout the year, they analyze data and develop projects together."

Other CCTE Department staff members acknowledged the progress that has been made, but said that academic and technical programs are still separate in many schools –

"We know what it needs to look like, and we've seen pockets of where it really works," he said, *"but, districtwide, when it comes to finding time to meet on campus, we still have the English teachers meeting, the math teachers meeting, the CTE teachers meeting. We have the academy structure, where some schools have been able to build in a common prep. But that's the rare opportunity. Until we can run professional development and have the CTE teachers as part of the English Department professional development or the English teachers part of the CTE professional development, then we aren't there."* (CCTE Department Staff)

"Part of the struggle we've always had is that CTE is for 'those kids,' it's 'less than.' But I think more and more people are realizing that every student going through SDUSD can benefit from the career exploration – from the relevance that CTE provides. AP students need to decide at a certain point what college major they're going to choose. Wouldn't it be nice if they had that experience...that hands-on experience...before they go ahead and declare that college major?" (CCTE Department Staff)

A number of interviewees (25.6 percent) remarked that the CTE teachers/program are an integral part of school life, and felt that this was important evidence of Confluence of Efforts. Interviewees mentioned that a CTE Department had been established at their schools, that the CTE Department was included in the Academic Council, and that the CTE teachers, themselves, were respected and involved faculty members. As one CTE teacher remarked:

"More and more as I've progressed as a high school teacher I've become more and more incorporated into the general teacher population. I'm an accepted part of the staff – I'm respected. It's a two-way street. We just finished the California Standards Tests [state mandated testing] last week and I pitched it because it's a part of what the total staff does." (CTE Teacher)

Another CTE teacher said,

> *"Half of the students in here [the CTE classroom] at lunch time aren't even my students. The current principal treats me and my students like a sports team. When we're having our Iron Chef competitions, he comes in to [cheer us on], he gives us messages of support. Next year we're working with the Science Department to create a food garden. We also have plans to hook up with the drama and music teacher for a dinner theater fund raiser."* (CTE Teacher)

Other "signals" of Confluence of Efforts were provided by CCTE Department staff:

> *"Certainly, compared to other districts/counties we're more integrated. The CTE teachers are 'regular' teachers and are compensated on the same salary schedule. In other districts they might be hourly workers and might not have benefits. That sends a big message. Our district has embraced our [CTE] work and we've done a good job of promoting the good work our students are doing. We have amazing teachers...some of the most amazing in the district. It could be better, but by in large [sic] we're part of this district. But… having said that, all of our funding comes from outside the district. If tomorrow, someone at the state level or federal level decided to cut ROP funding, that would be the litmus test. Would we still be here? Maybe. It would be interesting to ask the 'What if' question. Would the district prioritize these courses over other types of courses? Most people – taxpayers, politicians, school board members, district leadership – don't have a current definition of CTE. People understand CTE as another name for vocational education – the auto shop or woodshop where they stuck kids who weren't going to college. Changing that perception is an uphill battle."* (CCTE Department Staff)

Interviewees also mentioned the provision of integrated [academic/technical] professional development (18.0 percent), project-based learning (15.4 percent), and CTE as a "driver" of a school's program (10.3 percent) as evidence of Confluence of Efforts. "This is where professional development comes in," said one CTE teacher. "We have project-based learning at every grade level and it integrates all subject areas. Teachers plan together. Next year, we will be doing cross-curricular projects that will be evaluated by industry."

Effective Organizational Design. All but one interviewee reported that Effective Organizational Design is an important element of the CTE program at their school/in the district, with 80.7 percent rating the implementation of this element high or medium high, 12.9 percent rating it medium, and 6.4 percent rating it medium low or low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When asked to describe Effective Organizational Design during the open-ended portion of the interview, interviewees most often (71.8 percent) mentioned the CCTE Department's support, involvement, and responsiveness as a key characteristic of this element. A principal of an effective small school remarked that the CCTE Department is "outstanding, and probably my greatest partner in this work." Another effective school principal said,

> *"I have a very close relationship with the CCTE Department. They are an incredible resource and extremely supportive. I don't believe that the district realizes the strength of that department – the level of their expertise – and, not only that, the way that they support schools on a personal basis. I can call five different [CCTE Department staff] and get a call back within a day."* (Principal)

Another principal voiced his appreciation of the CCTE Department.

> *"I wish the [District Office] ran like [the CCTE] office. From my personal experience, whenever I've needed something – support, finances, industry, questions – I can go there and it's one-stop shopping. I can make a call and tell somebody what my problem is or what I need support in and [CCTE Department staff] get it handled. You don't see things linger with them. You don't see indecisiveness. And if there is an issue, they'll straight up tell me, or they'll say I can't do that but it's on my plate and I'll get back to you as soon as I know."* (Principal)

A new CTE teacher echoed the principals' comments by saying,

> *"[The CCTE Department] is very well organized. I know exactly who to talk to. I have a great support provider who is guiding me through the entire thing. Thank the good Lord [for her]. I've met the Director of CCTE. I know more about the direction of CTE than the district."* (CTE Teacher)

CTE teachers reported that the CCTE Department staff host monthly meetings for CTE teachers, attend districtwide counselors' meetings to provide information and network, visit schools/classrooms to view projects, sit on project panels, and work directly with students and teachers.

One CTE teacher said,

> *"I wish the rest of the district functioned as well as they [the CCTE Department] do. They're organized… [they] don't forget about the teachers when they plan things, they work with us, not against us. I've never had them not support me. When I call and ask for something, they do what we ask. They even come and do specific work with kids. If we want a course, they say 'How can we do that?'"* (CTE Teacher)

While interviewees' comments revealed strong agreement about the support, involvement, and responsiveness of the CCTE Department, they were less enthusiastic about support for the CTE program by district leadership. As two principals observed,

"Those of us who believe in the value of preparing students for both college and career continue to have this as the focus of our work. But I don't see it as a districtwide effort. It isn't discussed at our principal operations meetings... If there isn't a sense of overall direction then it feels like we're all floating out here. I find it disconcerting. I believe that there has to be a strong vision and collective impetus." (Principal)

"I can't say enough about [the CCTE Department]. In terms of the Central Office… There used to be a very strong sense that we were supported. I know that the Central Office doesn't think that, but we're not a priority. Which is amazing given the data coming out of [this school]. I don't think that CTE is a driving force in this district. At the site level, we know that a miracle has happened here. At the district level, I spend a lot of time defending this place. When people from [all over the world/country] come to see what you're doing and the mayor recognizes what you're doing, but the very people who are benefiting [the district] [interviewee shrugs]…that's an amazing disconnect. There's the hill." (Principal)

A CTE teacher echoed principals' comments by saying, "I know who to get support from in the [CCTE Department]. As far as the district… that's fuzzy. It's the CCTE office and us. It's like there's a hole in the ceiling... I don't feel that anyone higher up in the district has anything to do with what we're doing here. But all of the people in CCTE are supportive. I can email anyone and get help – I can call even the director." (CTE Teacher)

More than half of interviewees (53.6 percent) mentioned the expertise and experience of CCTE Department staff to describe Effective Organizational Design of CTE in SDUSD. Interviewees mentioned "outstanding teacher preparation," appreciate the "valuable information provided to parents" about the CTE program, rely on the pathway-specific support provided by CCTE Program Specialists, and find the technical/program support provided is invaluable. It is interesting to note that staff with five or less years of experience in the district (61.5 percent) and staff with 6 to 15 years of experience in the district (73.3 percent) mentioned CCTE Department expertise and experience more frequently than did staff with 16 or more years of district experience (18.2 percent). This may reflect more limited contact with CCTE Department staff at professional development offerings required for newer site staff.

Interviewees said that Effective Organizational Design is characterized by highly visible CCTE Department staff (30.8 percent), a high-quality CTE program (23.1 percent), effective connections with college and industry partners (20.5 percent), sufficient funding and supplies to support programs (18.0 percent), and clear CCTE Department vision (10.3 percent). Staff with less district experience – five or less years (53.9 percent) and 6 to 15 years (33.3 percent) – were more likely to mention CCTE Department visibility than staff with 16 or more years of district experience (0.0 percent).

Differences in responses by role, location type, and school/office type were observed in responses mentioning a high-quality CTE program as evidence of Effective Organizational Design. Principals (28.6 percent), teachers (11.1 percent), counselors (0.0 percent), and Employer Outreach Specialists (0.0 percent) mentioned a high-quality program much less frequently than did CCTE Department staff (83.3 percent). Similarly, only 12.1 percent of

site based staff mentioned a high-quality CTE program compared with 83.3 percent of district office staff; 0.0 percent of staff at comprehensive high schools mentioned a high-quality program, compared with 23.5 percent of small school staff and 83.3 percent of district office staff.

Differences were also observed in the percentage of interviewees mentioning connections with college and industry partners to describe this Organizational Design and Effectiveness. While 83.3 percent of CCTE Department staff mentioned such connections, only 16.7 percent of teachers, 0.0 percent of counselors, 0.0 percent of Employer Outreach Specialists did so. Site-based staff (9.1 percent) called out connections with college and industry partners less frequently than district office staff (83.3 percent); staff at comprehensive schools (0.0 percent) and staff at small schools (17.7 percent) mentioned connections far less frequently than district office staff (83.3 percent).

Postsecondary Articulation. All 39 interviewees reported that Postsecondary Articulation is an important element of the CTE program at their school/in the district, with 58.1 percent of interviewees rating the implementation of this element as high or medium high, 32.2 percent rating it medium, and 9.7 percent rating it mediumlow or low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), or district experience (i.e., five or less years, 6-15 years, 16 or more years). Differences were observed by school/office experience, with 33.3 percent of less experienced teachers vs. 73.7 percent of more experienced teachers rating implementation of this element as high.

When asked to describe Postsecondary Articulation during the open-ended portion of the interview, interviewees most often (84.6 percent) mentioned CTE course articulation – the process through which student earn community college credit for successfully completing qualifying high school coursework. "Articulation is simple," said one CTE teacher. "When they [students] get to their freshman year [at the community college], [the credits are] already on their transcript."

Another CTE teacher explained:

> *"My courses articulate to [the community college]. There are two things that they [students] have to do – go on [to the community college website] and apply. They fill out an application…and print that out for their [senior] portfolio. Then they go to another website and register [at the community college] so that I can go on at the end of the semester and give them the credits. They then have a record at [the community college] with a grade. The [community college] credits can be transferred to other colleges. It's a requirement in my class – I make them apply."* (CTE Teacher)

A CCTE Department staff member reported that the district has "sequences of courses that articulate to the San Diego Community College District," and that the district is making

"good strides linking to UC [University of California]/CSU [California State University], as well." If students earn a "B" or higher mark in articulated classes, they can "earn up to 16 credits that are, in some cases, transferrable to the UC/CSU."

The CCTE Department monitors and supports the articulation process at all SDUSD high schools, and meets with principals and community college personnel regularly to ensure that the articulation agreement is satisfactory to both parties. Important factors in the willingness of the community college to grant college-level credit for coursework taken in high school are course content and rigor. One CTE teacher described the collaboration with the community college around this issue:

> *"Articulation with the community college is in place. When it first began… they [community college] actually wanted me to be allowed to give my students 15 units of credit. But the reality is that high school is a lot different [than community college]. I never felt comfortable with that, so we trimmed it down to 12 units. But I never gave anybody 12 units, because didn't think they truly deserved it. Over time, articulation was taken more seriously by everybody. But I… didn't know really what was happening at [the community college] and I couldn't honestly say that what I was doing at [the high school] was even close. I had the sense it was – I had taught there and I had an idea – but I still wasn't comfortable with the preciseness of it. So we went back with the help of the CCTE Department and community college and spent time with the instructors at [the community college] and did serious alignment – so I became much more comfortable giving the units because I knew that what my students were doing was comparable to what was going on there [at the community college]. We're going back this summer to deal with the final piece – which is the quality level. The high school teachers really want to know if the work that our high school students are doing...if the college teachers see that work as A, or B, or C work. That is the last step."* (CTE Teacher)

The CCTE Department is working to "standardize" CTE curriculum and instruction across the district. A CCTE Department staff member provided an example of this focus on consistency when he said that, "Across the district, we have a program with 17 separate instructors and maybe seven difference processes, and they're should be one. Now, …we're developing common portfolio practices so students can demonstrate mastery. We're using common assessments across the district, with common rubrics."

More than one-quarter (25.6 percent) of interviewees said that students at their school/in the district currently attend classes at a community college, with differences observed by role and school/office type. Counselors (66.7 percent), Employer Outreach Specialists (60.0 percent), and principals (42.9 percent) mentioned concurrent community college enrollment more frequently than CCTE Department staff (16.7 percent) and teachers (5.6 percent). Staff at small high schools (47.1 percent) mentioned concurrent college enrollment more frequently than staff at comprehensive high schools (6.3 percent).

Interviewees also mentioned meetings with community college staff (23.1 percent), CCTE Department-provided professional development related to articulation (7.7 percent), the move to obtain University of California 'a-g' designation for CTE coursework (i.e., UC

approval for individual CTE courses to satisfy UC admission eligibility requirements) (7.7 percent), and apprenticeships (5.13 percent) when describing Postsecondary Articulation in their school/in the district.

Facilities and Equipment. All 39 interviewees reported that Facilities and Equipment are an important element of the CTE program at their school/in the district, with 38.9 percent of interviewees rating the implementation of this element as high or medium high, 44.4 percent rating it medium, and 16.7 percent rating it low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). However, differences were observed by school/office type (i.e., small school, comprehensive school, district office), with 43.8 percent of small high school staff, 46.7 percent of comprehensive high school staff, and 0.0 percent of CTE Department staff rating the implementation level of this element as high or medium high, and 0.0 percent of small high school staff, 26.6 percent of comprehensive high school staff, and 40.0 percent of CCTE Department staff rating implementation as medium low or low.

Most often, during the open-ended portion of the interview, interviewees said that funding to ensure that facilities and equipment meet industry standards/are up-to-date (36.0 percent) is critically important. Staff mentioned computer equipment and software needed to implement specific programs (e.g., Project Lead the Way[25]), to give students experience with the media/broadcasting, publications, graphic design, engineering, and culinary arts equipment that they're likely to encounter in the real-world workplace, and to ensure uninterrupted, high quality instruction are reliant on adequate funding for facilities and equipment. One principal explained that,

> *"Our school is 65 years old. Some equipment is old – though we have a few new pieces – and we don't have a budget to replenish. Last year, with magnet funds, we got one new lab. We get by. We don't get from the district what we need, but we make do with what we have."* (Principal)

A CTE teacher at a different school said that he "could whine about that [facilities and equipment] forever, but I won't."

> *"I'd love to have tables, not desks. I'd like more computers that are more up-to-date. But my kids aren't going to suffer because of it. In an ideal world, we'd have everything we want. In the real world we do the best we can. We had an actual hands-on teaching seminar at [a charter school]. They basically had to pull me away because*

[25] Project Lead the Way (PLTW) offers science, technology, engineering, and mathematics (STEM) coursework from career readiness and hands-on experiences through college preparatory classes. Implementation of PLTW engineering courses requires availability of specific hardware/software.

my hands were on the rail …I didn't want to leave. It was so awesome. The facility and the way things are laid out and the learning environment. And if I had the ability and the resources, every kid I know would have a school like that, but I know that's not the real world. In the meantime, I'll teach with what I have." (CTE Teacher)

One-third of interviewees (33.3 percent) said that the CCTE Department provides funding to maintain facilities and supplies at high school sites, but differences were observed in the responses by location type, with 18.2 percent of site staff vs. 83.3 percent of district office staff mentioning this CCTE Department function. One small school principal said that her school has been "very fortunate," in that "CCTE has provided us with everything we need…very specialized, industry standard equipment [for all pathways]." Another principal at a comprehensive high school remarked that support from CCTE has been "extremely high. Whenever we've started a new course, they're right there helping us get what we need."

A CTE teacher at a small school said that, "I could always use more, but we have enough to facilitate students…I have a budget through CCTE. I've never really asked my principal to buy anything for me."

Interviewees also said that they relied on federal and state grants (e.g., California Proposition 1D[26], federal Magnet School Assistance Program), as well as grants associated with projects and programs (e.g., California Partnership Academy, ConnectEd), to maintain facilities and supplies. Overall, 33.3 percent of respondents mentioned such grants, but there were differences in these responses by role, school/office type, and district experience. CCTE Department staff (83.3 percent) most often mentioned grants associated with federal, state, or regional initiatives/programs, compared with 42.9 percent of principals, 37.5 percent of staff at comprehensive high schools, 22.2 percent of teachers, 20.0 percent of Employer Outreach Specialists, and 0.0 percent of Employer Outreach Specialists. Staff at small high schools (11.7 percent) and comprehensive high schools (37.5 percent) mentioned these grants less frequently than district office staff (83.3 percent).

A small school principal remarked that Proposition 1D funding will allow some "very significant projects around the district… like state-of-the-art kitchens, broadcasting studios, and workshops." Also in reference to Proposition 1d, a CCTE Department staff member praised the updated facilities and equipment that will result – "The local media are looking at what we're building and saying, 'Wait a minute, we don't even have that!'"

Even though grant funding makes a number of important building projects possible, one CCTE Department staff member believes that CCTE should be included in the district's long-range facilities plan so that ongoing repair and maintenance – typically not covered by grant funding – can be accomplished. Currently, "all facilities meet minimum safety

[26] California's Proposition 1D provided new construction funding, remodeling and reconfiguration funding and/or funding for CTE equipment.

requirements," he said, "but they're not all adequate for students." "When we're rebuilding a school, it's going well. But existing schools…[shrug]."

A number of interviewees (28.2 percent) said that they apply for grants on their own, solicit donations from partners or professional organizations (e.g., California Restaurant Association), hold fund-raisers, or use personal resources to support the CTE program at their school. But, as one CTE teacher explained, accepting donations is sometimes quite difficult,

> *"We don't get support from the district when it comes to receiving gifts and equipment or donations. All these big organizations would love to give stuff to schools and there's just no way for them to do it. Either the money gets lost somewhere – or we don't know where it's supposed to go – and there is no written procedure as to what to do. The district is a mystery… of all of these… people, and you're not sure who you're supposed to contact. I just want to know what the procedure is… How do we just get it, first of all? It was six months to figure out how to even receive it [donated equipment] because of all of this complicated hoodoo. Sorry, it's totally insane."* (CTE Teacher)

Another CTE teacher credits his school's foundation for providing resources.

> *"This school is better than most, but our supply budget is cut for next year. How do you run a program without supplies? The school foundation bought me [new equipment and supplies] and gave me $1000 to get a new class started. One of my pet peeves is we got an email from [CCTE] saying that 'maybe you should apply for grants.' It's my feeling that I'm a classroom teacher and it's not my job to go out and get the money… It's my job to teach kids. It's a sore spot with me that they would even ask. I already give a lot more than 40 hours, a lot more than 60 hours. I'm not going to start writing grants. Otherwise, let's teach it [CTE] like a math class...here's a book. It's not their fault. If you don't have money you don't have money."* (CTE Teacher)

CTE Promotion, Outreach, and Communication. All but two interviewees reported that CTE Promotion, Outreach, and Communication is an important element of the CTE program at their school/in the district, with 18.5 percent of interviewees rating the implementation of this element as high or medium high, 48.2 percent rating it medium, and 33.3 percent rating it medium low or low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, CCTE Department), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When describing this element during the open-ended portion of the interview, interviewees most often (41.0 percent) said that program/course brochures, videos, and other informational materials, created by teachers/students, schools, and the CCTE Department, are important resources – and that counselors/teachers (35.9 percent) and

the CCTE Department (28.2 percent) usually handle CTE promotion, outreach, and communication at their school/in the district. With respect to the CCTE Department's role, differences were observed by role (with 83.3 percent of CCTE Department staff mentioning their involvement, compared with 0.0 percent of counselors and Employer Outreach Specialists, 14.3 percent of principals, and 27.8 percent of teachers) and by school/office type (83.3 percent of district office staff compared with 17.7 percent of staff at small high schools and 18.8 percent of staff at comprehensive high schools).

Interestingly, while most site staff believes that CTE Promotion, Outreach, and Communication should be a high priority in the district, some believe that it is less important at their school. As one principal remarked:

> *"In graphic arts, we don't have to promote to get kids – every year we have to move 120 kids out [we're oversubscribed]. It's the same with culinary arts. The pathways are in place so we don't have to promote, and the teachers do a good job of working with counselors [to enroll students]. Ninety percent of the positive publicity we received this year was from [the CTE program]. I need that as a principal."* (Principal)

A CTE teacher at a small, themed high school said that, because all students in the school are automatically enrolled in CTE coursework, there is no critical need for promotion at the school level:

> *"At the school level, we're an elective [by the standard definition]… but not an elective. So I don't need to promote my class. I don't need to protect my class."* (CTE Teacher)

And, more than one-fifth of interviewees (20.5 percent) – most of whom were staff at small high schools – said that, because their school theme, school plan, and CTE coursework/pathways are in sync, CTE promotion takes care of itself. "We don't promote CTE," said one small high school principal, "we promote our theme. CTE is a given."

Even though interviewees maintained that this element is important, many indicated that improvement is needed. One CCTE Department staff member said, "We're not very good at this…I can't even give you a brochure [about the district program]. The teachers do a great job of recruiting and selling their programs, and communications to schools is good. But outreach to expand business partners isn't good. We don't spend a whole lot of time promoting." A CTE teacher at one of the small high schools discussed his awareness of CTE promotion efforts at his school,

> *"Because I make these videos, I have knowledge of it [outreach]. If I didn't make those videos, I wouldn't know what outreach was. I would rely on counselors to bring in the students I need. If I'm short [under-enrolled], then my CCTE advisors tell me that I need to go recruit. I go around campus. My first year here, my students went out to the PE area and grabbed the 'non-suits' [those who hadn't changed into their PE clothes]. I didn't know what to do so I used the students [enrolled in CTE to recruit additional students]."* (CTE Teacher)

In equal numbers (23.1 percent), interviewees mentioned the following characteristics of CTE Promotion, Outreach, and Communication at their school/in the district – visits to middle schools, school/district websites, community events/showcases, and school tours and open houses. Of these, differences in responses were observed only for visits to middle schools, with counselors (66.7 percent) and principals (57.1 percent) mentioning visits to middle school more frequently than Employer Outreach Specialists (20.0 percent), CCTE Department staff (16.7 percent), or CTE teachers (5.6 percent). This seems reasonable, given that visits to middle schools are most often made by principals and counselors as part of the eighth-grade articulation process.

Other mechanisms for CTE Promotion, Outreach, and Communication include contacts with business and industry partners (18.0 percent), print and broadcast media (12.8 percent), magnet and school choice fairs (10.3 percent), community service by students (7.7 percent), parent letters (7.7 percent), and (with 2.6 percent each), banners posted outside the school, contacts with teacher education programs, and student ambassadors.

4.1.3 *What institutional factors are associated with the CTE programs at case study schools?*

This section of the report addresses the institutional elements of the CTE programs at case study schools/in the district.

Leadership at All Levels. All 39 interviewees reported that Leadership at All Levels is an important element of the CTE program at their school/in the district, with 65.2 percent of interviewees rating the implementation of this element as high or medium high, 17.4 percent rating it medium, and 17.4 percent rating it medium low or low.

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

A caution related to the interpretation of CTE program description data: During staff interviews, interviewees were asked to describe the implementation of each CTE program element (e.g., Leadership at All Levels) at their site/in the district. Staff responses to these open-ended questions should not be viewed as "yes/no" in nature. That is, even though an interviewee might not have mentioned a particular characteristic (e.g., strong leadership provided by the CCTE Department) when describing an element, we cannot assume that he/she believes that characteristic is not descriptive of the program at his/her site. Although we tested for differences, by group, we have elected not to characterize differences as statistically significant.

When asked to describe Leadership at All levels during the open-ended portion of the interview, interviewees most often (46.2 percent) mentioned strong leadership provided by the CCTE Department. Interviewees remarked that CCTE Department staff "know what they're doing and can answer questions," "are always available and responsive," "open and honest," "in classrooms routinely," and "set the tone." One principal said that "having a relationship with [CTE] leaders is a crucial point. I always get a straight answer from [the CCTE Department Director], and I've never had to go over his head."

Interviewees also mentioned principal leadership (38.5 percent) as an important component of this element. One counselor said that

> *"Administrative support makes or breaks a program. When we had [the former principal] here, [he/she] was awesome… [he/she] established our program. Our current program is not as structured and developed, but [our current principal] wants to make pathways clearer. We lost our rhythm when we switched leaders."* (CTE Teacher)

Leadership provided by teachers (30.8 percent), grade-level teams of teachers (12.8 percent), and schoolwide leadership teams (7.7 percent) were also mentioned by interviewees. An Employer Outreach Specialist remarked that "all of the teachers here are leaders… go-getters. A lot of that comes out in the team meetings – teachers take turns leading." A CTE teacher said that, at his school, there is a "department chair who restructured the department this year. If there are any needs that aren't addressed, we go through the chair and those needs are [taken care of]."

Interviewees also mentioned student leadership (7.7 percent). The relationship between teacher leadership and student leadership is explained by a CTE teacher.

> *"It's hard for me to let go of being the leader, but I teach them [the students] the skills they need and then I let them go with it. If things go wrong, they go wrong...it's not the end of the world. We've had events fall apart at the last minute. Last year we had a big [schoolwide event] that was supposed to happen and the person who was in charge of it was gone for a lot of days before the event and I said 'You guys are not prepared anymore because nobody has stepped up to assume that [leadership] role,' so I had to cancel it. They learned. That's real life. That's what happens."* (CTE Teacher)

In addition to calling out the "sources" of leadership at their school/in the district, interviewees described the characteristics of leadership in the context of CTE. They remarked that leaders advocate for the CTE program and staff – removing barriers, solving problems, and taking initiative (46.1 percent). As one principal noted, "My job is to hold the vision and remove the boulders." A CTE teacher at the same school agreed, and said that the "principal does an excellent job by sheltering teachers from what keeps them from teaching and learning." Interestingly, 100 percent of staff at the "on the move" school mentioned advocacy as an important aspect of leadership, compared with 42.9 percent of staff at less-than-effective schools and 40.0 percent of staff at effective schools.

Interviewees also said that leaders "know the program" (35.9 percent) and are good communicators (20.5). A CTE teacher described the importance of leaders knowing his program,

> *"It's very instrumental that the people above me know what goes on in this class. I have an understanding by the principal and the counselors [about course content, sequence, pathways]. They have as much a factor on this class being successful as my curriculum… Knowing what goes on in my classroom and what kind of teacher I am. That's huge. I've not taught at a comprehensive high school and I don't want to leave a small school."* (CTE Teacher)

Two other aspects of leadership described by interviewees are "leaders are available" (15.4 percent) and "leaders monitor the work, and hold themselves and others accountable" (12.8 percent). Most often, interviewees mentioned the availability of CCTE Department staff, saying that they had a "direct link to CCTE," that "[CCTE Department staff] were all at the school this year to talk about articulation, and provide information and feedback," that [the CCTE Department Director] came in to sit down and meet with me just to talk," and that "at ten o'clock at night I can get [the CCTE Department Director] by email or phone."

With respect to monitoring and accountability, interviewees described leadership at the district, principal, and teacher levels – but the CCTE Department was mentioned most frequently. An Employer Outreach Specialist remarked that the "CCTE [Department] is on top of it, too. It's their baby. We have to answer to them on a monthly basis in a monthly report. They give it to the Superintendent."

While leadership by principals and the CCTE Department was mentioned by 46.2 percent of interviewees, leadership at the top levels of the district (e.g., by the Board of Education, Superintendent, and executive leadership) was considered less apparent. Many interviewees voiced opinions about senior leadership that were similar to that of a principal, who said, "There isn't overall district direction now about CCTE." Although acknowledging the challenge of gaining Board of Education and senior leadership support for, and understanding of, the CCTE program in the district, CCTE Department staff was less critical. When asked directly if district leadership understands and supports CTE in SDUSD, one CCTE Department staff member said,

> *"They're trying. They trust in us. But it's very difficult right now. They are focusing on keeping the lights on and the doors open. Whether that's the right thing [to focus on]… let's set that aside. Everything should focus on curriculum and student achievement. But it's hard to have discussions about that if you're not sure you can make payroll.* (CCTE Department Staff)

Another CCTE Department staff member said that leadership at senior levels is very important, but believes that the current budget crisis has affected district priorities, and that a lack of adequate data to highlight the effectiveness of CCTE has been difficult. He said,

"I don't think there's ever been a Superintendent or Board of Education member who said that CTE wasn't important. They all value it. In terms of prioritizing it…not so much. I don't think that district leadership sees how we have supported increased test scores and graduation rates. We go around saying that CTE makes a difference in the lives of our kids but, without hard evidence, we'll only get to a point [get so far]." (CCTE Department Staff)

System Responsiveness to Changing Economic Demands. All 39 interviewees reported that System Responsiveness to Changing Economic Demands is an important element of the CTE program at their school/in the district, with 75.0 percent of interviewees rating the implementation of this element as high or medium high and 25.0 percent rating it medium. A CCTE Department staff member mentioned that the district is "charged by the Education Code to make sure that [CTE] courses meet local economic demand." Currently the CCTE program in SDUSD consists of "15 industry sectors and 58 career pathways that match the San Diego and California economy."

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, CCTE Department), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When asked to describe System Responsiveness to Changing Economic Demands during the open-ended portion of the interview, interviewees most often (46.2 percent) mentioned Advisory Boards as contributing to their ability to stay current with the field. Differences were observed by role with respect to Advisory Boards, with 72.2 percent of teachers and 60.0 percent of Employer Outreach Specialists mentioning them, compared with 33.3 percent of CCTE Department staff, 0.0 percent of principals, and 0.0 percent of counselors.

One CTE teacher said that her Advisory Board is her "biggest resource." "I was in hospitality forever," she said, "but now I'm kind of out of it. With industry connections, you can call up and say 'What's going on?'" Another CTE teacher credited her Advisory Board with helping her "change with the times."

Interviewees also mentioned industry contacts (38.5 percent) when describing System Responsiveness to Changing Economic Demands. One CTE teacher said, "I stay current because still I'm still involved in AIA [American Institute for Architects]… [it] keeps me up to date on requirements." An Employer Outreach Specialist explained how industry contacts helped them teachers at her school keep their program up-to-date –

"Recently, the teachers decided that construction needed a little updating, so the teachers met with AGC [Association of General Contractors] to look at the curriculum. A teacher who used to be a teacher here is [now] working with the apprenticeship program at AGC and [that relationship] helps us keep it up to date." (Employer Outreach Specialist)

Interviewees also reported that students benefited from their teachers' relationships with industry contacts. One CTE teacher described how an industry partner supported her Culinary Arts program in a way that her current classroom budget allocation could not,

> *"We need to expose students to a range of food. [Industry partner] came out and did a full cheese display of imported cheeses, like four kinds of Parmesan cheeses, and five different bleu cheeses, and some other domestic [cheese] and some triple-cremés and Bries and Camemberts and stuff. I want my students to be aware and exposed."* (CTE Teacher)

A principal described the way in which her school/program is linked to its industry partners – with respect to fiscal and human resources – when she said:

> *"[Our school] took a hit just like the construction industry did here in San Diego, because the way that our school functions is that a lot of the supplies that we use for construction come from industry donations. That's the reality. The district only gives us a fixed budget, and you can't run a program of this magnitude unless you have support from industry. Whenever industry hurts, we feel the impact here. But we have been able to reverse some of the impact in that we're asking more for human support...for tutoring, guidance, and being in the classrooms. I am very worried about the future if we have to continue to cut down, because we're working at the bare bones now."* (Principal)

Other characteristics of System Responsiveness to Changing Economic Demands include access to up-to-date equipment and software (18.0 percent), support by the CCTE Department (12.8 percent), continuing to work in the field (10.3 percent), and staying current through professional publications (10.3 percent). Differences were observed, by role, with respect to the percentages of interviewees mentioning CCTE support as an aspect of system responsiveness, with 42.9 percent of principals mentioning CCTE support, compared with 20.0 percent of Employer Outreach Specialists, 16.7 percent of CCTE Department staff, 0.0 percent of teachers, and 0.0 percent of counselors doing so. Differences were also observed, by district experience, in the percentages of interviewees mentioning that they continued to work in the field, with 30.8 percent of interviewees with the least experience (0-5 years in the district) reporting continued work in the field compared to 0.0 percent of more experienced interviewees (6-15 years, more than 15 years).

A principal described the importance of CCTE support when she said, "The CTE department brings all of my construction teachers together with construction teachers across the district and they spend the whole day looking at the sequence of the program, certification, new guidelines for construction."

A number of CTE teachers reported that they continue to work in the field – as graphic designers, caterers, broadcasters, and technicians. One CTE teacher explained his rationale for doing so –

"I stayed in industry and taught for a year and a half just so that I could stay with relevant views and fresh ideas and what is in the workplace and technology and all of that. I worked two jobs for a year and a half just so I could keep that correlation. It also kept doors open for internships." (CTE Teacher)

Interviewees remarked that conferences (7.7 percent), student internships (7.6 percent), visiting job sites/field trips (5.1 percent), ongoing training (5.1 percent), and establishing/implementing new courses (5.1 percent) also allowed them to keep themselves and their coursework up-to-date.

Evaluation, Accountability, and Continuous Improvement. All interviewees reported that Evaluation, Accountability, and Continuous Improvement is an important element of the CTE program at their school/in the district, with 70.4 percent of interviewees rating the implementation of this element as high or medium high and 29.6 percent rating it medium. Attitudes about this element were generally positive. As one principal remarked, "We welcome evaluation and accountability. We want other people to look independently at what we do. If it's not replicable, then it's not valid."

There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, CCTE Department), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When asked to describe Evaluation, Accountability, and Continuous Improvement during the open-ended portion of the interview, interviewees most often mentioned the role of the CCTE Department (41.0 percent). Differences were observed by location type, with 83.3 percent of district office staff mentioning the CCTE Department's role in this element, compared with 33.3 percent of site staff doing so.

School-based staff typically characterized CCTE Department activities as being monitoring in nature (e.g., percent of students earning credit that articulates to the community college), and CCTE Department staff acknowledge that they must collect a range of data to satisfy CTE reporting requirements – "We're held accountable to all of our funders… the Federal government, Perkins, California ROP…" However, one CCTE Department staff member remarked that,

"Some of what we evaluate is the wrong stuff to evaluate. Have [teachers/schools] offered internships? Done ROP certificates? At the end of the day [what we need to look at is if] the teacher teaching kids. A lot of teachers do all of the paperwork, but evaluating teachers on whether they do paperwork well isn't the point of education." (CCTE Department Staff)

Interviewees from the CCTE Department report that they are "continually evaluating…looking at [things like] rigor in coursework, classroom management,

curriculum, facilities" and that the "managers meet weekly to [review data] to look at our overall programs."

One-third (33.3 percent) of interviewees reported that regular evaluation of their CTE curriculum (by the CCTE Department, Advisory Board, and school-based teams) was a characteristic of Evaluation, Accountability, and Continuous Improvement at their school/in the district, and 28.2 percent of interviewees said that they were accountable for improving student outcomes (e.g., test results, grades, student projects, course completion rates, articulation rates). Said one CTE teacher (about course outcomes for students in her Culinary Arts classes), "That's the advantage of teaching what I'm teaching. It's obvious when the blade comes to the table."

Interviewees also mentioned the role of the Advisory Boards/Industry Partners when describing this element. One CTE teacher said about his Advisory Board's role in deciding whether his course would be continued during the next academic year, " That's some serious accountability!" Industry partners also have a role in evaluating student work. Another CTE teacher reported that, at his school, staff emphasized production of high-quality work products. "We try to instill that value in students," he said. "At [our school], a core goal is to have serious media community judging student work… We don't want a 'this is high school so we're just going through the motions' situation. We want…serious…" business industry involvement.

When characterizing Evaluation, Accountability, and Continuous Improvement, 20.5 percent of interviewees mentioned principal evaluation of teacher effectiveness. Differences were observed, by gender, for principal evaluation with 40.0 percent of males noting this characteristic compared with 8.3 percent of females. Interviewees also said that they conduct self evaluations (12.8 percent), and look at data (12.8 percent) and discuss program outcomes in grade-level teams or schoolwide leadership teams (12.8 percent). CTE program effectiveness at one small school is determined "through our grade level meetings," said one Employer Outreach Specialist,

> *"When [students] are doing the project, we let [the team] know, like – 'they're [the students] not even finished with the writing [part of the project].' So we might have our schedule of when all of the pieces were supposed to fall in place for the end project, but we find that it takes longer in one area...like the science piece or the writing piece. Once or twice this year the teachers decided to have a pull out. If the writing piece was struggling, they coordinated all the classes where they spent two periods on the writing piece and eliminated the media part that day. Another time it was the science piece, where they stayed two periods in the science classes so it was kind of like a pull-out so that the science part could get finished. They're always talking to each other to coordinate."* (Employer Outreach Specialist)

Interviewees also reported that student evaluations (10.3 percent) and evaluations required by partner organizations/funders (e.g., Project Lead the Way, California Partnership Academy, ConnectEd) (10.3 percent) play a role in Evaluation, Accountability, and Continuous Improvement at their school/in the district. "I'm always asking student to evaluate me," said one CTE teacher. "They are my most important customers. As an

Executive Chef, I'm feeding them these lessons and good food… They've been school all of these years… they know what a good teacher looks like and what a bad teacher looks like."

And finally, interviewees remarked that studies conducted by external researchers (5.1 percent) and self-evaluation required by the WASC [Western Association of Schools and Colleges] accreditation process (2.56 percent) contributed to Evaluation, Accountability, and Continuous Improvement at their school/in the district.

Funding. As might be expected, all interviewees said that Funding is an important element of the CTE program at their school/in the district, with 27.6 percent of interviewees rating the implementation of this element as high or medium high, 27.6 percent rating it medium, and 44.8 percent rating it medium low or low. There were no statistically significant differences ($p<.05$) in implementation ratings for this element based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences were observed by school/office experience, with 42.9 percent of newer staff (i.e., 0-2 years experience at the school) rating implementation high, compared with 13.3 percent of staff with three or more years experience.

Given the current budget crisis in the state/district, some interviewees said that they were "dreading receiving CTE allocations for next year" and characterized resources as "dwindling." Even so, one CTE teacher's remarks typify the "can-do" attitude of most interviewees: "I get things donated wherever I can," she said. "Funding is very important, but I can still find a way to teach effectively even on a tight budget. I'm OK, but I see it in other classes. If our cameras all broke, the class wouldn't continue."

When asked to describe this element during the open-ended portion of the interview, interviewees said that funding came from the CCTE Department (66.7 percent), grants (25.6 percent), industry partners (20.5 percent), teachers' personal contributions (10.3 percent), fund-raising activities (7.7 percent), and schools and school foundations (5.1 percent).

A small school principal said, "If CCTE wasn't here to support our needs for professional development and equipment, we would not exist. Because it's not factored into the budget we get from the district." And, even when designated funding exists to support CTE programs, district procedures sometimes make it difficult to access those funds. Several interviewees reported that, during a spending freeze last year, all procurement (credit) cards were frozen and, as a result, CTE teachers could not purchase supplies for their classrooms for more than a month. In several cases, industry partners contributed pre-loaded debit cards to teachers so that they could make critical purchases and keep their programs running.

For the most part, interviewees reported that funding is used to purchase the equipment (41.0 percent) and supplies (33.3 percent) needed to implement the CTE programs at their school/in the district. Differences were responses were observed, by role, with 66.7

percent of teachers saying that funding was used to purchase or maintain equipment, compared with 28.6 percent of principals, 20.0 percent of Employer Outreach Specialists, 16.7 percent of CCTE Department staff, and 0.0 percent of counselors. Differences were also observed by location type, with 52.9 percent of staff at small high schools saying that funding was used for CTE supplies, compared with 25.0 percent of staff at comprehensive high schools, and 0.0 percent of staff in the CCTE Department.

Other uses for funding included staff release time (18.0 percent), field trips (12.8 percent), and after school programs (2.6 percent). Differences were observed, by role, in the percentages of interviewees who mentioned field trips as being supported by CTE funding, with 60.0 percent of Employer Outreach Specialists mentioning field trips, compared with 11.1 percent of teachers, 0.0 percent of principals, 0.0 percent of counselors, and 0.0 percent of CCTE Department staff.

4.1.4 *The Spend-a-Dot Activity: To what extent does each programmatic, organizational, and institutional factor contribute to the success of the CTE programs at case study schools/in the district?*

The Spend-a-Dot activity was used to determine interviewees' perceptions about the relative impact/importance of each programmatic, organizational, and institutional element to the success of the CTE program at their school/in the district. During interview sessions, each interviewee was given 32 adhesive dots and asked to distribute ("spend") them among the 16 elements of an effective CTE program, based upon the perceived impact/importance of that element. Interviewees were told that a maximum of eight dots could be spent on any one element, and that assigning zero dots to one or more elements was permitted. Of course, if interviewees thought that all elements were equally important to the success of the CTE program at their school/in the district (i.e., distributed dots evenly among the 16 elements), each element would have received two dots.

The mean number of dots assigned to the CTE elements ranged from a high of 3.7 (High Quality Curriculum and Instruction) to a low of 0.9 (Middle School Orientation and Preparation). Seven elements received "above average" ratings (i.e., > 2.0); nine elements were rated "below average" (i.e., < 2.0). The table below provides mean impact/importance ratings for all 16 elements (in descending order); detailed results by group (e.g., gender, role) can be found in Appendix H.

CTE Program Element	Mean Impact/Importance Rating
High Quality Curriculum and Instruction	3.7
Skilled Faculty and Professional Development	3.2
Industry Partnerships	2.8
Funding	2.4
Career Exploration and Guidance	2.3
Facilities and Equipment	2.3
Leadership at All Levels	2.2
Postsecondary Articulation	1.8
Student Support and Student Leadership	1.8
Evaluation, Accountability, and Continuous Improvement	1.7
System Alignment and Coherence	1.6
Confluence of Efforts	1.5
Effective Organizational Design	1.4
CTE Promotion, Outreach, and Communication	1.3
System Responsiveness to Changing Economic Demands	1.2
Middle School Orientation and Preparation	0.9

We tested for variations across types of respondents by regressing each impact and importance rating on an intercept and a set of dummy variables for all but one subgroup of respondents, which served as the comparison group. We performed F-tests of the hypothesis that there was no difference among groups. In Appendix H we also report differences among groups in cases for which significant inter-group differences emerged.

There were no statistically significant differences ($p<.05$) in impact/importance ratings for High Quality Curriculum and Instruction; Industry Partnerships; Funding; Postsecondary Articulation; Evaluation, Accountability, and Continuous Improvement; Confluence of Efforts; or Middle School Orientation and Preparation, by gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small high school, comprehensive high school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences were noted, however, for the following elements:

Skilled Faculty and Professional Development (Overall Mean Rating 3.2)

- Differences were observed by role: The mean rating for principals (4.3) was significantly higher than the mean rating for teachers (2.9).

Career Exploration and Guidance (Overall Mean Rating 2.3)

- Differences were observed by school performance: The mean rating for staff at less-than-effective schools (3.3) was significantly higher than the mean rating for staff at effective schools (2.0).

- Differences were observed by school/office type: The mean rating for district office staff (1.3) was significantly lower than the mean rating by staff at comprehensive high schools (2.7).

Facilities and Equipment (Overall Mean Rating 2.3)
- Differences were observed by role: The mean ratings for principals (1.9), Employer Outreach Specialists (1.6), and CCTE Department staff (1.7) were significantly lower than the mean rating for teachers (2.8).
- Differences were observed by school/office type: The mean ratings for small high school staff (1.9) and district office staff (1.7) were significantly lower than the mean rating for comprehensive high school staff (2.8).

Leadership at All Levels (Overall Mean Rating 2.2)
- Differences were observed by role: The mean rating for CCTE Department staff (3.7) was significantly higher than the mean rating for teachers (2.1).
- Differences were observed by school/office type: The mean rating for district office staff (3.7) was significantly higher than the mean rating for staff at comprehensive high schools (1.8).
- Differences were observed by location type: The mean rating for district office staff (3.7) was significantly higher than the mean rating for site-based staff (1.9).

Student Support and Student Leadership (Overall Mean Rating 1.8)
- Differences were observed by district experience: The mean rating for staff with 6-15 years of district experience (1.3) was significantly lower than the mean rating of staff with 16 or more years of district experience (2.2).

System Alignment and Coherence (Overall Mean Rating 1.6)
- Differences were observed by school performance: The mean rating for staff at the "on the move" school (0.8) was significantly lower than the mean rating for staff at effective schools (1.9).

Effective Organizational Design (Overall Mean Rating 1.4)
- Differences were observed by role: The mean rating for principals (0.6) was significantly lower than the mean rating for teachers (1.7).

CTE Promotion, Outreach, and Communication (Overall Mean Rating 1.3)
- Differences were observed by role: The mean ratings for counselors (2.3) and Employer Outreach Specialists (2.6) were significantly higher than the mean rating for teachers (1.1).

System Responsiveness to Changing Economic Demands (Overall Mean Rating 1.2)
- Differences were observed by role: The mean rating for Employer Outreach Specialists (2.0) was significantly higher than the mean rating for teachers (0.9).

4.1.5 *Have case study schools made any programmatic, organizational, and/or institutional changes over the last five years?*

When asked if any programmatic, organizational, and/or institutional changes had been made at their school/in the district over the last five years, 85.3 percent of interviewees indicated that there had been changes. There were no statistically significant differences ($p<.05$) in responses to this question based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

What changes have been made? When asked to describe the changes that had been made at their school/in the district, interviewees most often mentioned changes to the CTE program and/or coursework (62.2 percent). Differences were noted by school performance for this question, with 100 percent of staff at the "on the move" school indicating CTE program/coursework changes had occurred, compared with 52.6 percent of staff at effective high schools and 28.6 percent at less-than-effective high schools. Differences were also observed by school/office type, with staff in the district office (100 percent) and staff at comprehensive high schools (81.3 percent) reporting changes more often than staff at small high schools (31.3 percent). Finally, differences were observed in the percent of interviewees reporting CTE program/coursework changes by district experience, with 92.9 percent of staff with six to nine years of experience reporting such changes, compared with 38.5 percent of less experienced staff (i.e., 0-5 years) and 50.0 percent of more experienced staff (i.e., 16 or more years).

Interviewees reported that changes to the CTE program were prompted by things such as "new CTE teachers coming in from industry bringing new experience," a decline in student interest in a particular course or pathway, a "tightening up of pathways and course sequences," the "constant evolution" that characterizes the program improvement cycle, and work done to align CTE and core academic standards and curricula. One CTE teacher said that the main change over the past five years in his CTE program was "being more included in the life of school. When I first got here," he said, "it [my class] was a 'would be nice to have' class. The effort and resources weren't there. Now, it's included in the flow of things."

Nearly one-quarter of interviewees (24.3 percent) said that changes had been made to site/district staffing (i.e., staff turnover) and that, in the past five years, the number of CTE classes/students at the school/in the district had increased (compared with 8.1 percent of interviewees who said that there were fewer CTE classes/students). Differences were observed in the percent of interviewees mentioning increased CTE numbers of classes/students by school/office type, with 56.2 percent of staff at comprehensive high schools reporting increases, compared with 0.0 percent of staff at small schools and 0.0 percent of district office staff. Differences were also observed by school performance, with 100 percent of staff at the "on the move" school mentioning increases in CTE

classes/students, compared with 28.6 percent of staff at less-than-effective schools and 5.3 percent at effective schools.

Interviewees mentioned new facilities (16.2 percent) when asked about changes to their school/in the district in the past five years, with differences noted by school performance. 100 percent of staff at the "on the move" school reported new facilities, compared with 28.6 percent of staff at less-than-effective schools and 0.0 percent of staff at effective schools.

Other changes reported over the past five years include changes in CCTE Department staffing (8.1 percent), changes in partnerships (8.1 percent), increased student support (8.1 percent), and increased community involvement (2.7 percent).

A CTE teacher at an effective comprehensive high school voiced concern about the addition of new non-CTE coursework at his site, which resulted in fewer CTE course offerings.

> *"We've added additional non-CTE electives that don't meet any graduation/UC 'a-g' requirements. I don't understand. It's baffling. A lot of ROP [CTE] instructors are having problems meeting [minimum enrollment] numbers, but this [new, non-CTE] class had several sections. We're not developing ROP programs here."* (CTE Teacher)

Why were changes made? When asked about the reasons that changes had been made over the past five years at their school/in the district, interviewees most often said that the changes had been initiated by the principal and/or site staff (37.8 percent) in order to build or improve the CTE program (27.0 percent). Staff at comprehensive high schools (68.8 percent) cited principal/staff initiative more often than district office staff (20.0 percent) or staff at small high schools (12.5 percent). "Charismatic" principals/teachers were often credited for positive changes made to the CTE program at schools/in the district, but principal initiative was also linked to less supportive changes. As one CTE teacher remarked, "The principal has a different direction that is not consistent with our school. Originally there was serious, professional, client based experience. Now it's about [academic] coursework… government, economics…"

Differences were also observed by school performance in the percent of interviewees who said that changes were made to build or improve the CTE program at their school/in the district, with staff at the "on the move" school (83.3 percent) mentioning this reason for change more often than staff at effective schools (10.5 percent) and staff at less-than-effective schools (0.0 percent). District office staff (60.0 percent) was more likely to report change for the purpose of building/improving the CTE program than was staff at comprehensive high schools (37.5 percent) or small high schools (6.3 percent). Differences were also observed, by district experience, in the percentage of interviewees who said that changes were made in order to build/improve the CTE program, with 57.1 percent of staff with six to 15 years of district experience mentioning this rationale, compared with 10.0 percent of more experienced staff (i.e., 16 or more years) and 7.7 percent of less experienced staff (i.e., 0-5 years).

Interviewees also mentioned new funding (13.5 percent) and a desire to better meet student needs (13.5 percent) as reasons for change over the past five years. Staff at the "on

the move" school (33.3 percent) said that changes were a result of new funding more often than staff at less-than-effective schools (14.3 percent) and staff at effective schools (0.0 percent). The percentage of interviewees who mentioned change for the purpose of better meeting student needs differed by school performance (50.0 percent of staff at the "on the move" school, 14.3 percent of staff at less-than-effective schools, and 5.3 percent of staff at effective schools), school/office type (31.3 percent of staff at comprehensive high schools, 0.0 percent at small high schools, and 0.0 percent in the district office), and district experience (35.7 percent of staff with 6-15 years experience, 0.0 percent of staff with 0-5 years experience, 0.0 percent of staff with 16 or more years experience).

Other reasons for change reported by interviewees included lack of funding (8.1 percent), requirements/suggestions by an external partner or funder (8.1 percent), staff turnover (8.1 percent), and efforts to "stay current" (5.4 percent). Of these reasons, differences were observed only for staff turnover, by role, with 40.0 percent of Employer Outreach Specialists reporting this change, compared with 20.0 percent of CCTE Department staff, 0.0 percent of principals, 0.0 percent of teachers, and 0.0 percent of counselors.

What outcomes were associated with these changes? Lastly, interviewees were asked to describe the outcomes of changes that had been made at the school/in the district over the past five years. More than one-third of interviewees (35.1 percent) said that changes resulted in a better CTE program, with differences observed by school performance – 100 percent of staff at the "on the move" school said that the changes resulted in a better CTE program, compared with 21.1 percent of effective school staff and 14.3 percent of less-than-effective school staff. One small school principal said that the changes at her school resulted in a "more focused and coherent program." "Before," she said," we put in electives that we didn't need because I thought we needed that to draw students. We didn't need them. We wanted kids to be happy and have fun electives, but media/arts [classes] are a part of our theme and the rest [of the classes we offer] need to prepare students for college."

Interviewees also said that changes resulted in increased numbers of high-quality teachers (16.2 percent) and increased teacher enthusiasm and motivation (13.5 percent). Differences were noted in the percentages of interviewees reporting increased teacher enthusiasm/motivation, with 50.0 percent of staff at the "on the move" school mentioning this characteristic, compared with 5.3 percent of staff at effective high schools and 0.0 percent of staff at less-than-effective schools.

More than ten percent (10.8 percent) of interviewees said that changes resulted in improved support for students; 33.3 percent of staff at the "on the move" school and 28.6 percent of staff at less-than-effective schools mentioned improved student support, compared with 0.0 percent of staff at effective schools. Other outcomes related to changes over the past five years include improved student outcomes (8.1 percent), lower quality CTE programs (8.1 percent, with 21.4 percent of males and 0.0 percent of females reporting lower quality), equipment that meets industry standards (8.1 percent, with 33.3 percent of staff at the "on the move" school mentioning this outcome, compared with 53 percent of staff at effective schools and 0.0 percent of staff at less-than-effective schools), increased expectations for students (5.4 percent), and increased community involvement/partnerships (5.4 percent).

4.1.6 *Are any programmatic, organizational, and/or institutional changes anticipated for the 2010-2011 academic year?*

When asked if any programmatic, organizational, and/or institutional changes are planned for the 2010-2011 academic year at their school/in the district, 48.7 percent of interviewees indicated that there would be changes. There were no statistically significant differences ($p<.05$) in responses to this question based on role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences were observed, by gender, for this question, with 71.4 percent of males indicating that changes are planned, compared with 34.8 percent of females).

What changes are planned? When asked what changes are likely to occur, interviewees most often mentioned that there would be fewer CTE teachers (16.2 percent) and Employer Outreach Specialists (13.5 percent) during the 2010-2011 academic year. Employer Outreach Specialists (60.0 percent) and CCTE Department staff (40.0 percent) noted the decrease on Employer Outreach Specialist positions more often than principals (0.0 percent), teachers (0.0 percent), and counselors (0.0 percent). Other changes reported include fewer CTE classes (10.8 percent), more CTE classes (8.1 percent), and less support for teachers (2.7 percent).

Why will changes be made? When asked about the reasons that changes will be made for the 2010-2011 academic year at their school/in the district, interviewees most often mentioned cuts to CTE program budgets (24.3 percent). Differences were observed by role, school/office type, and location type for this response. CCTE Department staff (80.0 percent) and Employer Outreach Specialists (60.0 percent) mentioned budget cuts more often than did principals (16.7 percent), teachers (5.6 percent), or counselors (0.0 percent). Site-based staff (15.6 percent) mentioned budget cuts less frequently than did staff based in the district office (80.0 percent); staff at comprehensive high schools (18.6 percent) and small high schools (12.5 percent) mentioned budget cuts less often than district office staff (80.0 percent).

Interviewees mentioned that they expected student engagement/interest (18.9 percent) to improve as a result of the changes planned for 2010-2011. Differences were observed for this reason by school/office type, with staff at comprehensive high schools (43.8 percent) mentioning student engagement/interest more often than staff at small high schools (0.0 percent) and the district office (0.0 percent).

Interviewees explained that changes were planned in order to improve student outcomes (10.8 percent) and to maintain currency with industry standards (10.8 percent). Staff in the district office (20.0 percent) mentioned improved student outcomes more often than staff at small high schools (12.5 percent) and staff at comprehensive high schools (6.3 percent). Males (28.6 percent) mentioned efforts to stay current with industry standards

more often than females (0.0 percent). Interviewees also remarked that changes were likely to occur because of better/new facilities (8.1 percent) or in response to principal or teacher request (8.1 percent). Differences were observed in the percent of interviewees who mentioned new/better facilities, with 21.4 percent of males mentioning this change, compared with 0.0 percent of females.

What outcomes are anticipated as a result of planned changes? Lastly, interviewees were asked to describe the anticipated outcomes of changes planned for the 2010-2011 academic year. Most often, interviewees said that they thought planned changes would result in a stronger CTE program at their school/in the district (21.6 percent), a weaker CTE program at their school/in the district (21.6 percent), and improved outcomes for students (21.6 percent). Differences were observed, by school/office type and school performance, in the percent of interviewees mentioning a better CTE program. Staff in the district office (60.0 percent) mentioned this outcome more frequently than staff at comprehensive high schools (25.0 percent) and staff at small high schools (6.3 percent); staff at less-than-effective schools (42.9 percent) mentioned a better CTE program outcome more frequently than staff at the "on the move" school (33.3 percent) or effective schools (0.0 percent). With respect to improved outcomes for students, staff at less-than-effective schools (42.9 percent) thought that changes would result in improved student outcomes, compared with 33.3 percent of staff at the "on the move" school and 5.3 percent of staff at effective schools.

Additionally, interviewees remarked that the changes planned for 2010-2011 were likely to result in decreased support for teachers (16.2 percent), with Employer Outreach Specialists (60.0 percent) and CCTE Department staff (40.0 percent) mentioning this outcome most frequently, compared with 5.6 percent of teachers, 0.0 percent of principals, and 0.0 percent of counselors. More than ten percent (10.8 percent) of interviewees believe that planned changes will allow them to "stay current" – but differences were observed by gender for this outcome, with 28.6 percent of males citing "staying current" compared with 0.0 percent of females.

A loss of knowledge at the school/in the district was mentioned by 8.1 percent of interviewees, with differences observed between the responses of Employer Outreach Specialists (60.0 percent) and all other roles (0.0 percent). Some interviewees said that the elimination of Employer Outreach Specialist positions across the district would result in a loss of important programmatic continuity. One Employer Outreach Specialist noted that teachers are already overworked, and said that the elimination of her position will hit the school hard.

> *"There will be less support for teachers. I plan field trips, get guest speakers, arrange internships, go out in the field. I do all of the ROP [CTE] paperwork and prep for senior exhibitions. And the database that we have for all of our contacts... Who manages that? Years of contacts for guest speakers, volunteers, industry panel members."*
> (Employer Outreach Specialist)

The final outcomes of changes planned for the 2010-2011 academic year include decreased accountability (5.4 percent) and better teachers (2.7 percent).

4.1.7 *What barriers to success/improvement exist at case study schools?*

Barriers to CTE Program Success. A decided majority of interviewees (83.8 percent) believe that there are barriers to the success of the CTE program at their school/in the district. There were no statistically significant differences ($p<.05$) in responses to this question based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

When asked to describe these barriers, interviewees mentioned the following (in descending order):

- Insufficient funding (32.4 percent)
- Master scheduling challenges (13.5 percent)
- Lack of University of California 'a-g' designation for CTE coursework (13.5 percent)
- Lack of support by Board of Education/senior leadership (10.8 percent)
- Lack of principal support (10.8 percent)
- Lack of sufficient time in students' schedules for CTE (10.8 percent)
- Change/uncertainty in the district (8.1 percent)

  "There is a constant fear of being closed or being reconfigured. It's a nightmare for my staff because they are so bought into this place… There's a constant threat of excess. My probs [new teachers] get pink slips and they think that they'll lose the job they love. Teachers here are relatively young so they haven't lived through this before." (Principal)

- CTE coursework seen as "less than" core coursework (8.1 percent)

  "We [CTE teachers] have to compete for kids. They always tell us during articulation that if the kids don't sign up, they'll cancel the class. That's a mistake. They shouldn't tell us that. In a math class, you can be as strict as you want. When you're an elective teacher you have to be the cool guy. You have to make your class as fun or more fun as the other classes, because if you don't the kids aren't going to take your class. That's frustrating. They'll elect not to take your elective. I wish we should say these are the electives we're teaching and put kids in those classes. It feels like we're competing against each other." (CTE Teacher)

  "There is still that stigma out there. It's systemic in terms of looking at CTE as for 'those kids' as opposed to embracing it for what it could be…preparing all students for college and career. Every student in some way benefits from taking a CTE course. Getting beyond that whole notion that it's about teaching skills, as opposed to more than that, is a big barrier." (CCTE Department staff)

- Inadequate technology/equipment (8.1 percent)
- Teacher workload/counselor caseload (5.4 percent)
- Weak CTE pathway(s) (5.4 percent)

  "There are too many options at this school. Instead of unified pathways, they are watered down. Students can jump in and jump out of pathways and that's an issue." (CTE Teacher)

- Transportation (2.7 percent):

  "Transportation is a barrier at our school. Many of our students are bussed in and when we have an open house, not too many of the parents can come. We tried to set up busses for the parents, but they didn't come. [Transportation affects] students going on internships – we had 20 internships this spring that we could have sent students to, but because of transportation, we could only send 10 out. It would take them too long to take the bus… two hours to get to their internship, two hours there, and then two hours back. [It's] a huge issue at our school." (Principal)

- Ineffective utilization of industry partners (2.7 percent)
- Teacher creativity (2.7 percent)
- Insufficient collaboration across small schools in complexes (2.7 percent)

  "I like that we're [small schools in a complex] independent, but I also think we've isolated ourselves from the needs of each other. I think there's too much of 'it's all about me' here. [The principal prior to the establishment of small schools] always said 'All the boats have to float.' I think we worried about our own boat floating. 'Is my boat floating?' "Well, it's really too bad that their boat isn't floating, but my boat is floating.' I think that mentality still exists here. …Now that we're six years in, I feel bad… How is it OK that there's an API [Academic Performance Index] 2, 9, and 6 here? How can you have an API 2 on the same campus? Every kid deserves a good school." (Principal)

- Insufficient CTE courses (2.7 percent)
- Not enough hands-on projects (2.7 percent)

Differences were noted for "lack of sufficient time in students' schedules for CTE," by district experience – with 28.6 percent of staff with six to 15 years of experience mentioning this characteristic, compared with 0.0 percent of their less- or more-experienced peers.

Barriers to Student Success in the CTE Program. A decided majority of interviewees (75.7 percent) believe that there are barriers to student success in the CTE program at their school/in the district. There were no statistically significant differences ($p<.05$) in responses to this question based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school

performance (i.e., less-than-effective, "on the move," effective), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences were noted, by school/office experience (i.e., 0-2 years, 3 or more years), with 90.5 percent of more experienced staff indicating barriers to student success, compared with 56.3 percent of less experienced staff.

When asked to describe these barriers to student success, interviewees mentioned the following (in descending order):

- Insufficient workplace skills/motivation for students (21.6 percent)

  "A lot of students put up their own roadblocks. This generation has had a lot given to them and they continue to think that that will continue. They're not used to doing things on their own. Their time management skills are lacking. Their workforce skills are weak." (CTE Teacher)

- Community issues (e.g., English language status, high poverty) (21.6 percent)

  "Community issues are a barrier... drug use, low expectations. Many people in the community have the end-game [goal] of a high school diploma. Of course I want that, but my goal is to get them [students] into and through college. Or, make sure they have a skill." (Principal)

  "It's hard for kids to get here on time. That's a result of geography, maybe. A lot of kids aren't so inclined to worry about the bell ringing. They're more worried about bullets coming through their windows." (CTE Teacher)

- Lack of adequate facilities/equipment/supplies (10.8 percent)

  "A lot of teachers struggle to buy supplies, especially the sewing classes struggle. [Students] buy their own thread and fabric, but you're supposed to have availability for all students. One teacher said 'What I'm doing is that they have to learn to sew in a zipper – so I give them the zipper and they sew it in – and I give them a grade and we rip the zipper out and give it to another student. That's how bad it is." (CCTE Department staff)

- Lack of career awareness by students (10.8 percent)

  "Kids don't understand why they're here. They don't understand their potential. We have to communicate that to them. I ask kids how what they're doing [in class] can help them in the future and they don't know." (CTE Teacher)

- Insufficient time for CTE coursework in students' schedules (10.8 percent)
- High class size/high counselor caseload (8.1 percent)
- CTE course availability (8.1 percent)
- Lack of adequate support for students (8.1 percent)
- Transportation (5.4 percent)

- Cell phones (5.4 percent)
- Weak home-school connections (2.7 percent)
- High expectations for students (2.7 percent)
- Low basic skills (2.7 percent)
- Low opinion of CTE coursework (2.7 percent)

Differences were observed for "insufficient time for CTE coursework in students' schedules" by role, school/office type, and school performance. Interviewees in the CCTE Department (40.0 percent), counselors (33.3 percent), and Employer Outreach Specialists (20.0 percent) mentioned this barrier more often than did principals (0.0 percent) and teachers (0.0 percent); staff from the central office (40.0 percent) mentioned this barrier more often than staff at comprehensive high schools (12.5 percent) or staff at small high schools (0.0 percent); staff at the "on the move" school (33.3 percent) mentioned this element more often than staff at less-than-effective schools (0.0 percent) and effective schools (0.0 percent).

Staff based in the district office (40.0 percent) and at comprehensive high schools (12.5 percent) mentioned "lack of adequate facilities/equipment" more often than staff at small high schools (0.0 percent), and staff from the district office (40.0 percent) mentioned CTE course availability more often than site-based staff (3.1 percent).

4.1.8 *How does staff at each case study school (and district office CCTE staff) characterize the CTE program at the school/in the district?*

Does staff encourage students to participate in the CTE program? More than half of interviewees (54.4 percent) said that staff encourages students to participate in the CTE program at their school/in the district. There were no statistically significant differences ($p<.05$) in responses to this question based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years). Differences were noted by school/office type (i.e., small school, comprehensive school, district office), with 80.0 percent of small high school staff reporting such encouragement, compared with 35.7 percent of staff a comprehensive high schools and 25.0 percent of staff based at the district office.

When asked which students may not be encouraged to participate in CTE, 27.0 percent of interviewees said "the AP students" (high-achievers). Differences were observed by school/office type, with 50.0 percent of staff at comprehensive high schools and 40.0 percent of staff based at the district office stating that high-achievers were not encouraged to participate, compared with 0.0 percent of staff at small high schools. Differences were also observed by district experience, with 50.00 percent of staff with six to 15 years of experience mentioning high-achievers, compared with 20.0 percent of their more experienced and 7.7 percent of their less experienced colleagues.

A CTE teacher explained that CTE coursework is rigorous – but non-CTE teachers don't know it.

> *"At this school, AP rules – but I also have high achieving kids in my class. The encouragement is more to take AP or honors classes, more than CTE classes. The counselors do a really good job. In my classes, half my kids are also in calculus and pre-calculus. That's great. That means that the counselors are saying look, you want to be an engineer, you want to be in the sciences, you should take this engineering class. The counselors are doing that. The other teachers might not understand that. They encourage their top-level kids to take AP physics, not engineering. 'You want to go to a good school, you need to take AP physics, not engineering.' But a lot of the kids... the word's out, this is a cool class, it's fun. You know I have the valedictorian in my class this year and she's getting a B. She says this is her hardest class. I don't know why because I have a lot of kids getting As in this class. For some reason, she's really struggling with it. Isn't that funny. The valedictorian! She has all AP classes and my class. They should make this an AP class...AP engineering."* (CTE Teacher)

Interviewees also said that CTE is mandatory at small high schools (8.1 percent) and that teachers view CTE as a remedial program (5.4 percent). One CTE teacher remarked that, at his school, CTE coursework is not considered important.

> *"I don't feel encouragement from non-CTE teachers. At this school, all of the responsibility for promoting CTE falls on the shoulders of the CTE teachers. Although counselors tell students what their options are and there is a little video about CTE, there isn't much beyond that. That wasn't the same case at the last two schools that I taught at, where leaving a pathway was a really big deal."* (CTE Teacher)

Another CTE teacher remarked,

> *A couple teachers think [CTE is remedial]. I had a teacher tell me that a student was talking about my class and that he was failing it. That teacher was a core teacher. He wondered how someone could fail a CTE class. He thought CTE was a corral, where students go for an hour or two to be watched. Kids that we officially or informally classify as "lost" kids are not encouraged at all."* (CTE Teacher)

What are the benefits of CTE program participation? When asked to list the benefits of CTE program participation, interviewees mentioned (in descending order):

- Career awareness and exploration (43.2 percent)

> *"I've always told my students, if you know your passion and you can find a way to have your profession go with your passion, it's not a job any more. You're going to be fine in the world… You see the light go on with some of these kids, where all of a sudden when they haven't been successful and they find something that they're really good at. We've had kids who find that… and some go on to get a full ride though school. It's really neat to see."* (Counselor)

- Acquisition of job skills (35.1 percent)

  "If [my students] wanted to go to work, they could. I've had students who went directly from high school to work. One student surprised her employers by being able to do the job right out of high school. It's better than working fast food." (CTE Teacher)

- Acquisition of life skills (29.7 percent)
- Coursework has real-world relevance/application (16.2 percent)

  "The projects they [students] do in CTE classes make everything else relevant. I point that out to students all the time. For instance, kids who are failing algebra can somehow be given a recipe to convert… and figure out a way to take a recipe for four people and make it feed 100… and go online and look at all of the ingredients, and figure out what the food cost is, and figure out how much each plate costs. They can do that, but maybe they can't get it when this math guy is standing up front and writing on the overhead and everyone is looking at him like 'What?' They come in here and all of a sudden they're like 'Oh, my gosh! Is that what it is? I thought I could never do fractions.' And all of a sudden they're doing it because they have to multiply 1/4 teaspoon by 20." (CTE Teacher)

- Coursework is engaging/motivating (16.2 percent)
- Students learn teamwork (10.8 percent)

  "Students learn to socialize with other students. In CTE, you work as a team – and you learn to be a leader work in a group. When you get out in the real world you're going to have to work with people in an office. Today…most kids interact through text or computers…" (CTE Teacher)

- Coursework includes hands-on projects/activities (10.8 percent)
- Students learn to use technology (8.1 percent)
- CTE curriculum is interdisciplinary (8.1 percent)
- Students earn postsecondary credit/certification (8.1 percent)
- Industry contacts (8.1 percent)

  "One benefit is contacts with industry, real world experiences. Students get to make contacts with people in industry through field trips and job shadows… They see what it's like in the real world. And, the connections that they make draw people from companies back [to the school], because they have connections with students. Then they get involved [with the school]. (Employer Outreach Specialist)

- Students learn responsibility (5.4 percent)
- Higher degree of personalization in CTE (5.4 percent)
- Students learn time management (5.4 percent)
- CTE coursework meets district graduation requirements (2.7 percent)

Differences were observed, by gender, in the percent of interviewees who said that the CTE program offers students opportunities for career awareness and exploration, with 56.5 percent of females mentioning this benefit, compared with 21.4 percent of males). Differences were also noted, by role, for engaging/motivating CTE coursework, with 83.3 percent of principals and 33.3 percent of counselors identifying this benefit, compared with 0.0 percent of teachers, 0.0 percent of Employer Outreach Specialists, and 0.0 percent of CCTE Department staff.

Do some groups of students benefit more from CTE program participation? More than three-quarters (80.6 percent) of interviewees said that some groups of students benefit more from CTE program participation than others. There were no statistically significant differences ($p<.05$) in responses to this question based on gender, role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff), school/office type (i.e., small school, comprehensive school, district office), location type (i.e., site, district office), school performance (i.e., less-than-effective, "on the move," effective), school/office experience (i.e., 0-2 years, 3 or more years), or district experience (i.e., 0-5 years, 6-15 years, 16 or more years).

Interviewees said that students who benefit most from CTE program participation include:

- Students who struggle in core academic coursework (27.0 percent)
- Students who are "active"/prefer hands-on learning (24.3 percent)
- Students with poor study skills/motivation (21.6 percent)

> *"Students who think that they never want to go to college or that it's not important [benefit from CTE]. Through CTE they get to look at career – and see it first hand through an internship or a job shadow. And then, by having the exposure to the people who are doing that career, they start to learn that they can get a certification in this or, and maybe an associate degree… and learn that this is a great career and that maybe they can take classes on the side and have college tuition assistance and… advance to management. So it opens their minds to the possibilities...a better life, more opportunities. They think 'I can do this and I can be successful.'"* (CTE Teacher)

- Students with an interest in a particular CTE pathway (13.5 percent)
- Students who have a "hard time" coming to school (8.1 percent)
- Students who participate in internships (2.7 percent)
- Students who are "OK with" group work (2.7 percent)
- Older/more mature students (2.7 percent)

Differences were observed, by school/office experience, in the percent of interviewees who mentioned that students with poor study skills benefit from CTE coursework, with 43.8 percent of less experienced staff (i.e., 0-2 years) and 4.8 percent of more experienced staff (i.e., 3 or more years) this group of students.

Is there a "typical" CTE student? Interestingly, not one interviewee believed that there is a "typical" CTE student at their school/in the district.

4.2 Student Focus Groups

Of the 45 Grade 12 students invited to participate in one of three student focus group sessions (15 non-participants, 15 participants, 15 concentrators), 19 ultimately participated – eight students in the non-participant group, five students in the participant group, and six students in the concentrator group. Twelve (63.2 percent) of the focus group students were male; seven (36.8 percent) were female.

4.2.1 *How do students (concentrators, participants, non-participants) at case study schools characterize the CTE program at their school?*

The CTE Program at [Focus] High School. When asked to describe the CTE program at their high school, students in all three groups (non-participants, participants, and concentrators) had difficulty describing the CTE pathways or the range of CTE coursework offered. Students in the non-participant group said either that they had "no knowledge whatsoever," or that the CTE program offered courses that were more "career-based" and "less rigorous than other subjects." One student in the non-participant group said, "They're like electives that sort of get away from academics, but they're still academic classes – but not like math or science." Another student offered that students take CTE coursework if "they're going into a field, like cooking." Still another non-participant student said, "Most students who are interested in academics tend not to look at ROP [CTE] classes…and concentrate on core classes."

Students in the participant group offered no descriptions of the CTE program or pathways at the focus school. Rather, they explained how students know about the CTE program. One student said, "It's more like that [CTE] information is put out there and people who are interested enough are attracted to the information."

Similarly, students in the concentrator group had a difficult time describing the CTE program or pathways at their focus school. With one exception, they described individual CTE courses that they had taken during their high school careers. Students in this group had participated in a variety of CTE coursework while in high school. Only one student described his experiences in a sequence of CTE coursework [pathway] – and he did so in great detail and with enthusiasm. His remarks related to his coursework in the Engineering and Design pathway follow.

> *"In my sophomore year I took my first engineering class and last year – in my junior year – I took the second course. This year I'm taking the third and final one, which you actually can't get into unless you've aced the second course – so there are actually only five of us this year. I've learned several things throughout the entire thing – spreadsheets, task sheets, design matrices, how to use computer programming to turn a simple object into a three-dimensional image on the computer. There are competitions that we've gone to [in sophomore, junior, and senior years]. This year we had to make a machine that could pick up a sugar cube and drop it onto a square grid like a checkerboard, with black squares and white squares. It [the robot] would actually have to read which one [square] was black and which was white. None of the other schools were able to do it. We didn't cheat, but we asked if instead of using black*

and white if we could use red and blue. Because they [red and blue] have different numbers on the color spectrum, we were able to figure out how to make it [the robot] see the difference between the red and blue. With that, we were one of the only teams that finished the design. No other team thought of that." (Concentrator)

The CTE Coursework Offered at [Focus] High School. Students in both the participant and concentrator groups described the CTE coursework offered at their school as very good. Concentrators explained that, in spite of the district's current budget crisis, "we still have all of the things that we need – like computers and everything in the classrooms." One student in auto shop explained that, in his classes, "they're getting help from the college. We…got three new models [cars] in, so we're up to date on our learning on the cars." Another student said, "In our engineering class we actually have funds to make a robot." He then linked the availability of supplies and equipment to the quality of the coursework when he said, "we sometimes come in after school to work on it [the robot]. [The quality of the CTE program] definitely makes us want to come back to it. We're not just, 'Oh, I have to go to class' – we look forward to it." Still another student said, "You don't hate Mondays, you look forward to them."

Students in the participant and concentrator groups provided numerous examples to illustrate their opinions about the quality of the CTE coursework at their school – most of these related to rigor, usefulness, project-based learning opportunities, qualified teachers, and clear expectations. A student in the concentrator group explained the difference between his CTE courses and his academic/core courses –

"[CTE courses] are about the same as regular courses, it's just a little bit different. They're more hands-on, and not as difficult – but there's a lot to do. It's not necessarily, 'I need to go home and study' – but 'I need to think outside of the box to get done what I need to get done.' Even though you don't have homework, you're still thinking about the course. 'What can I do tomorrow to make this work?'" (Concentrator)

But students in the non-participant group had a different perspective about the relative work load and rigor of CTE coursework – not based, of course, on direct experience. One student said that her friends say that the cooking class is fun. "All you do is cook," she reported. "There are no tests or written exams. Most of your grade is based in participation." Another student in the non-participant group said that CTE coursework is good for "a student who wants an easy grade. Lots of kids want to get an A. Also they want to relax. It's also good for students in ESL classes…it's easier and that might help them a little bit."

A student in the concentrator group said that his CTE classes were useful, in that they have helped him clarify his career goals. He remarked,

"[CTE classes] are more useful. I thought I was going to be a computer engineer when I grew up. But I just like working with cars. This year, I'm doing both, and I kind of see with these courses that I'm actually enjoying my auto shop course more than my engineering course. So now, I've decided to major in automotive technology as opposed to computer programming. So, to me, it was a lot easier to figure out what to

do with my life as opposed to taking a lot of general [education] classes and thinking 'Someday I'll figure it out.' I'm going to do this." (Concentrator)

[CTE] teachers were characterized as less formal – and clearer in their expectations – by students in both the participant and concentrator groups. One student in the participant group said that his CTE teacher "knows what he's doing" and "tells us what he expects." Two students in the concentrator group described their CTE teachers in this way,

"The [CTE] teachers are more laid back than other teachers. They're still strict and still want all of the work done, but they're more understanding about what goes on in the real world. Most of the time they won't, but there are those times when they'll give you another hour [to finish something]. They'll say 'Get it to me by the end of the day,' rather than 'give it to me now.' They're more open, not to say that expectations are lower…they just start seeing you as a person." (Concentrator)

"It's good, because we have that connection between the teacher and the student. He'll go over everything that we have to do – and he'll set up what he needs us to do for a grade – and then it's up to us to ask the questions. Before [we start the assignment] he shows us what he expects… and then we earn it [the grade]." (Concentrator)

Enrolling in CTE Coursework at [Focus] High School. When asked why they chose to enroll/not to enroll in CTE coursework, student in the non-participant group said most often that was not enough room in their schedules. "If you're taking four or five required classes… and electives that you need… and athletics," they explained, "then your schedule is too full." They also remarked that CTE coursework was more for students who "are interested and see themselves in that field. Someone who is going directly into that career after high school rather than going for a bachelor's [degree]"

Participants and concentrators said that they chose to enroll in CTE coursework in order to fulfill the district's computer literacy requirement, because they heard about CTE coursework from friends, through student presentations, or through Update (schoolwide video news program), or because counselors suggested that they might be interested in CTE. A student in the concentrator group explained the role that a CTE teacher and a counselor played with respect to his enrollment in CTE –

"To get into the engineering class I'm in now… [my teacher from last year] told me about the course and how I should take it. And he also mentioned to my counselor how I should take it. So when I went to my counselor to sign up for my classes for this year she said, 'How would you like to take [my current CTE course], because it's the next step up and I have a [teacher] signature saying you should probably take it.'" (Concentrator)

Similar reasons for not enrolling in CTE coursework were mentioned when students in all three groups were asked why other students might not participate in CTE. Students opined that non-participants might not have room in their schedules (e.g., they may be making up required coursework that they had previously failed, they were involved in athletics), might be taking Advanced Placement or Honors coursework instead (in order to get

weighted credit), or that "they might not find value in it [CTE] because they don't know what it has to offer."

Students were asked their opinions about the benefits of completing a CTE pathway. They remarked that students who complete pathways "get farther in life," are "a step ahead of other people," and are "more prepared." One student in the participant group said,

> *"Once you're there [at the community college], you're the expert in the group. Compared to the other students in the freshman class, you're ahead. It makes the colleges think you know what you're doing sooner than other people."* (Participant)

Participants characterized students who had completed a CTE pathway as more experienced than their peers.

> *"[It's also helpful] for getting a job… you've already done the thing in high school. Would you take someone who's already had experience in the area they want to go into or someone who doesn't have the experience. It's a common fact that you would take the experienced person over the inexperienced person, because he already understands the concepts."* (Participant)

Students in all three focus groups remarked that there is no such thing as a typical CTE student, though a student in the participant group said that some students might think that they "really don't need math or English so I guess they just want to take electives." Some students "think of the [CTE] courses as an easy A. Some [CTE] courses are harder [than core courses], but they don't realize that." A student in the concentrator group was adamant that the typical CTE student doesn't exist, and described her culinary arts class by saying, "There are so many different personalities and different people coming together just because they enjoy cooking. I've never had a class as diverse as my cooking class. It was nice… getting to know all kinds of different people."

Benefits of taking CTE Coursework at [Focus] High School. Like staff, students in focus groups listed a number of benefits from participating in the CTE program. They include:

- Acquiring useful skills:
  "Learning lots of practical things… like how to change your brakes. A lot of people now days don't even know how to change their oil. If you're in auto shop, that will teach you the good basics. It's more useful than AP calculus that you'll never use." (Non-Participant)

- Making contacts:
  "The people you meet. You could meet someone like a business person, who is in the same occupation [that you're interested in] who is already working [in the field]." (Participant)

- Discovering career options:
  "Speakers that you have [are from industry]. You think, 'Wow, I didn't know that!' You think you'll just be a mechanic, maybe, but there's actually a line of careers that branch off

from that course. Like, you could be a General Motors manager or someone who is in a body shop selling parts, or you could be a mechanic." (Participant)

- Hands-on experience:
  "We're actually able to see and use what we learn. There are real-world applications." (Concentrator)

- Getting a "jump start"

- Finding a job:
  "When I did the internship at the [private club], we got to shadow the different areas. I actually applied for a job there and ended up getting hired. I worked there last summer and I'm going to work there this summer. If I didn't take the culinary arts class, I wouldn't have even known about the [private club]." (Concentrator)

- Clarifying college plans:
  "[With CTE classes], you've already learned…different things that people who haven't taken these classes wouldn't know until it hit them in the face when they were applying for college." (Concentrator)

- Acquiring job experience:
  "To get a job you need experience, but in order to get experience, you need a job or an internship. It's kind of like a door that's blocking you. But by taking these classes, it's giving you experience and a knowledge based to use as your advantage when applying for jobs." (Concentrator)

At the conclusion of each focus group session, students were asked to name and describe the coursework (CTE or non-CTE) that they most enjoyed while in high school. Students mentioned coursework in which there was "activity" ("not sitting in a chair for hours listening to a boring speech about something you'll never use"), a chance to "experience something," opportunities for "teamwork" and to "be part of something bigger than yourself," "challenge," and a chance to "improve yourself" and "develop confidence." Interestingly, coursework – both CTE and non-CTE – included AP Government, AP Psychology, AP U.S. History, Art, Auto Shop, Ceramics, Drama, Photography, and Physical Education.

One focus group student was a strong advocate for his CTE coursework. His thoughts about auto shop – his favorite course in high school – follow:

"Auto shop is definitely my favorite course. I'm doing what I love. When I work on a car, no one else is there. You're free when you're there…like in another world. It's just you and the car. [It's] a place of peace." (Concentrator)

Students in all three groups maintained that "it's all about the teacher" when describing their favorite coursework. Teachers were characterized as being "good people to talk to if

you have problems," "really good at helping you get better," presenting in "new and fresh" ways, "funny and crazy," and "not ordinary, but it works."

5.0 SUMMARY OF FINDINGS

5.1 Selection of Case Study Schools

5.1.1 *Identification of "Effective" and "Less-than-Effective" High Schools*

1. Seven of the 28 SDUSD high schools considered for inclusion in the study (25.0 percent) were considered "effective" schools. That is, they demonstrated higher performance than other San Diego high schools in *both* CTE outcomes (i.e., higher than average percentages of CTE two-course concentrators in 2007-08 and higher than average CTE course enrollments in Fall 2009) and *both* academic achievement outcomes (i.e., higher than average statewide or similar schools 2008 API ranks and higher than average 2008 graduation rates relative to the state average). Six of these seven schools were small, themed high schools; one was a large, comprehensive high school.

2. Two high schools had below average ratings on all four outcome measures and were considered "less-than-effective." One of these was a small school and the other was a large, comprehensive high school.

3. In order to ensure balance in the size, type, and location of schools selected for the study – and to take advantage of SDUSD staff knowledge about the CTE programs, course offerings, leadership, and staffing at district high schools – the following seven SDUSD high schools were selected for inclusion in the study:
   - Two effective small schools within a high school complex where all schools in the complex met the "effective" criteria,
     - ✓ School A – Effective
     - ✓ School B – Effective
   - One effective and one less-than-effective small school within a high school complex where only one school in the complex met the "effective" criteria,
     - ✓ School C – Effective
     - ✓ School D – Less-than-Effective, and
   - Three large, comprehensive high schools
     - ✓ School E – Effective
     - ✓ School F – "On the Move" (i.e., met both academic effectiveness criteria and in the mid-range on CTE effectiveness criteria),[27] and

[27] This high school's 2008 API Statewide Rank, Similar Schools Rank, and 2008 graduation rate placed it well above average with respect to academic outcomes. In addition, the school's Fall 2009 CTE course-taking rate was only slightly below the district average. Even though the percentage of two-course concentrators in 2007-08 was lower than the district average, the

- ✓ School G – Less-than-Effective

5.2 Characteristics of Case Study Schools

5.2.1 *Overall Results: Implementation and Impact/Importance Ratings for Programmatic, Organizational, and Institutional Elements*

1. Interviewees gave **highest implementation ratings** to High Quality Curriculum and Instruction (84.4 percent), Skilled Faculty and Professional Development (80.7 percent), Effective Organizational Design (80.7 percent), and System Responsiveness to Changing Economic Demands (75.0 percent). Except for High Quality Curriculum and Instruction, no statistically significant differences ($p<.05$) were noted by gender, role, school/office experience, district experience, school performance, school/office type, or location type.

    - For High Quality Curriculum and Instruction, differences were observed by length of district experience, with 100 percent of the least experienced staff (i.e., 0-5 years) rating implementation of this element as high or medium high, compared with 81.8 percent of staff with 6-15 years of experience and 70.0 percent of staff with 16 or more years of experience.

2. Interviewees gave **lowest implementation ratings** to Middle School Preparation and Orientation (10.7 percent rated implementation of this element high or medium high), CTE Promotion, Outreach, and Communication (18.5 percent), Confluence of Efforts (38.9 percent), and Facilities and Equipment (38.9 percent). Statistically significant differences ($p<.05$) were observed for at least one group for every element, except CTE Promotion, Outreach, and Communication.

    - For Middle School Orientation and Preparation, differences were noted by school/office experience, with 27.3 percent of less experienced staff rating implementation of this element low or medium low, compared with 76.5 percent of more experienced staff. Differences were also noted by school performance, with 100 percent of staff at less-than-effective schools rating this element low or medium low, compared with 80.0 percent of staff at the "on the move" school and 28.6 percent of staff at effective high schools.
    - Differences by school/office type and location type were also observed for Confluence of Efforts. Staff at small high schools (68.8 percent) rated implementation of this element as high or medium high more often than staff at comprehensive high schools (18.8 percent) and staff based in the district office (0.0 percent). Staff based at schools sites (both small schools and comprehensive schools) rated implementation of Confluence of Efforts high or medium high more often than district office staff (43.8 percent and 0.0 percent, respectively).

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school's strong academic outcomes and improving CTE outcomes (they offered the highest number of distinct CTE courses in the district) supported their inclusion in the study.

- Finally, differences by school/office type were noted for Facilities and Equipment, with 0.0 percent of staff at small high schools rating the element low or medium low, compared with 26.7 percent of comprehensive high schools staff and 40.0 percent of district office staff.

3. Interviewees gave **highest impact/importance ratings** (via a Spend-a-Dot activity[28]) to High Quality Curriculum and Instruction (3.7 dots), Skilled Faculty and Professional Development (3.2 dots), Industry Partnerships (2.8 dots), and Funding (2.4 dots). With the exception of Skilled Faculty and Professional Development, no statistically significant differences ($p<.05$) were noted by gender, role, school/office experience, district experience, school performance, school/office type, or location type.

    - For Skilled Faculty and Professional Development, differences were observed by role; the mean number of dots assigned to this element by principals was 4.3 compared with teachers' mean impact/importance rating of 2.9 dots.

4. Interviewees gave **lowest importance/impact ratings** to Middle School Preparation and Orientation (0.9 dots), System Responsiveness to Changing Economic Demands (1.2 dots), CTE Promotion, Outreach, and Communication (1.3 dots), and Effective Organizational Design (1.4 dots). Statistically significant differences ($p<.05$) were noted for some groups for all of these elements, with the exception of Middle School Orientation and Preparation.

    - For System Responsiveness to Changing Economic Demands, differences were noted by role, with Employer Outreach Specialists rating the impact/importance of this element significantly higher than teachers (2.0 and 0.9 dots, respectively).
    - Differences were also noted, by role, for impact/importance ratings for CTE Promotion, Outreach, and Communication with Employer Outreach Specialists (2.6 dots) and counselors (2.3 dots) rating this element significantly higher than teachers (1.1 dots).
    - Finally, impact/importance ratings for Effective Organizational Design differed by role; principals' mean ratings were significantly lower than teachers' mean ratings (0.6 and 1.7 dots, respectively).

5. Interestingly, High Quality Curriculum and Instruction and Skilled Faculty and Professional Development received highest implementation *and* the highest impact/importance ratings from interviewees.

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[28] The Spend-a-Dot activity was used to capture interviewees' opinions about the relative importance of each program element. Each interviewee was given 32 adhesive dots and asked to distribute ("spend") them among the 16 elements of an effective program, based upon the perceived importance/impact of each element on the CTE program at the school/in the district. Interviewees were told that a maximum of eight dots could be spent on any one element, and that assigning zero dots to one or more elements was permitted.

6. Even though they were considered of high impact/importance, Industry Partnerships (third highest with a mean of 2.8 dots) and Funding (fourth highest with a mean of 2.4 dots), had implementation ratings that were considerably lower (i.e., Industry Partnerships was tenth of 16 elements; Funding was fourteenth of 16 elements).

7. Middle School Preparation and Orientation received the lowest implementation *and* the lowest impact/importance ratings; CTE Promotion, Outreach, and Communication was not far behind (i.e., rated second lowest in implementation and third lowest in impact/importance). Even though System Responsiveness to Changing Economic Demand was rated second lowest in impact/importance, the element was rated fourth highest with respect to implementation.

8. Overall, statistically significant differences were found in interviewees' implementation ratings in 9 of 112 cases (i.e., 16 elements X 7 groups) – five related to programmatic elements, three to organizational elements, and one to institutional elements. Statistically significant differences in impact/importance ratings were found in 13 of 112 cases – four related to programmatic elements, five to organizational elements, and four to institutional elements. Given that we might expect differences in interviewees' ratings to be due to chance in five percent of cases, this finding allows us to reject our null hypothesis that no significant differences would be found.

5.2.2 *Differences by Group: Implementation and Impact/Importance Ratings for Programmatic, Organizational, and Institutional Elements*

1. There were no differences in implementation ratings for any element by **gender** or **role**.

2. Differences in implementation ratings by **school/office experience** were observed for Middle School Orientation and Preparation and Funding; for both elements, less experienced staff tended to rate the implementation of these elements higher than more experienced staff.

    - More than three-quarters (76.5 percent) of staff with more school/office experience (i.e., 3 or more years) rated Middle School Orientation and Preparation low or medium low, compared with 27.3 percent of less experienced staff (i.e., 0-2 years experience).
    - Staff with less school/district experience rated Funding high or medium high more often than more experienced staff (42.9 and 13.1 percent, respectively).

3. Differences in implementation ratings by **district experience** were noted for only one element – High Quality Curriculum and Instruction – with less experienced staff (i.e., 0-5 years experience) (100 percent) rating implementation of this element higher than their more experienced colleagues

(81.8 percent for staff with 6-15 years experience; 70.0 percent for staff with 16 or more years experience).

4. Differences in implementation ratings by **school performance** were noted only for one element – Middle School Orientation and Preparation. While only 28.6 percent of staff at effective schools rated this element low or medium low, 80.0 percent of staff at the "on the move" school and 100 percent of staff at less-than-effective schools did so.

5. Differences in implementation ratings by **school/office type** were observed for Student Support and Student Leadership, Confluence of Efforts, and Facilities and Equipment.

   - Staff at comprehensive high schools (71.4 percent) rated implementation of Student Support and Student Leadership high or medium high more often than staff at small high schools (64.3 percent) or staff at the district office (50.0 percent).
   - Staff at small high schools (68.8 percent) rated implementation of Confluence of Efforts high or medium high, compared with 18.8 percent of their comprehensive high school peers and 0.0 percent of district office staff.
   - And, district office staff (0.0 percent) rated implementation of Facilities and Equipment as high or medium high, compared with 43.8 percent of small high school staff and 46.7 percent of comprehensive high school staff.

6. Differences in implementation ratings by **location type** were noted for Student Support and Student Leadership (with 50.0 percent of district office staff assigning a rating of low or medium low compared with 0.0 percent of school site staff) and Confluence of Efforts (with 43.8 percent of school site staff rating implementation of this element as high or medium high compared with 0.0 percent of district office staff).

7. There were no statistically significant differences ($p<.05$) in impact/importance ratings by **gender** or **school/office experience**.

8. Significant differences in impact/importance ratings by **role** were noted for six elements: Effective Organizational Design, System Responsiveness to Changing Economic Demands, CTE Promotion, Outreach, and Communication, Facilities and Equipment, and Leadership at All Levels.

   - Principal ratings (0.6 dots) for Effective Organizational Design were significantly lower than those of teachers (1.7 dots).
   - Employer Outreach Specialist ratings (2.0 dots) for System Responsiveness to Changing Economic Demands were significantly higher than those of teachers (0.9 dots).

- Employer Outreach Specialist (2.6 dots) and counselor (2.3 dots) ratings for CTE Promotion, Outreach, and Communication were significantly higher than those of teachers (1.1 dots)

9. Significant differences in impact/importance ratings by **district experience** were observed for Student Support and Student Leadership, with staff with 6-15 years of experience rating this element significantly lower than their more experienced peers (i.e., 16 or more years of district experience) (1.3 and 2.2 dots, respectively).

10. Significant differences in impact/importance ratings by **school performance** were noted for two elements – Career Exploration and Guidance (with a mean rating of 3.3 dots for staff at less-than-effective schools compared with 2.0 dots at effective schools) and System Alignment and Coherence (with a mean rating of 0.8 dots for staff at the "on the move" school compared with 1.9 dots at effective schools).

11. Significant differences in impact/importance ratings by **school/office type** were noted for three elements – Career Exploration and Guidance, Facilities and Equipment, and Leadership at All Levels.

    - Staff based at the district office rated the impact/importance of Career Exploration and Guidance significantly lower than staff at comprehensive high schools (1.3 and 2.7 dots, respectively).
    - Staff based at the district office (1.7 dots) and staff at small high schools (1.9 dots) rated the impact/importance of Facilities and Equipment significantly lower than staff at comprehensive high schools (2.8 dots).
    - Staff based at the district office rated the impact/importance of Leadership at All Levels significantly higher than staff at comprehensive high schools (3.7 and 1.8 dots, respectively).

12. Significant differences were noted by **location type** for Leadership at All Levels, with district office staff rating the element significantly higher than staff based at school sites (3.7 and 1.9 dots, respectively).

5.3 Modifications to Practice

5.3.1 *Programmatic, Operational, and Institutional Changes in the Last Five Years, Reasons for Changes, and Resulting Outcomes*

1. A decided majority of interviewees (85.3 percent) reported that changes had been made to the CTE program at their school or in the district over the last five years. There were no statistically significant differences ($p<.05$) by gender, role, school/office type, location type, school performance, school/office experience, or district experience.

2. Interviewees reported **changes** to the CTE program (e.g., pathways) and/or coursework (62.2 percent), changes to CTE staffing at the site (24.3 percent), increasing numbers of CTE courses or students (24.3 percent), new facilities (16.2 percent), changes to CTE staffing at the district office, changes in partnerships (8.1 percent), increased student support (8.1 percent), fewer CTE classes or students (8.1 percent), and increased community involvement (2.7 percent). Of these, differences were noted for increases in CTE classes or students (by school/office type and school performance) and new facilities (by school performance).

3. Interviewees most often said that the **reasons** for making changes to the CTE program were principal or site staff initiative (37.8 percent), a desire to build or improve the CTE program (27.0 percent), the availability of new funding (13.5 percent), a desire to better meet student needs (13.5 percent), lack of funding (8.1 percent), staff turnover (8.1 percent), requirements or suggestions by an external partner or funder (8.1 percent), and efforts to stay current (5.4 percent). Of these, differences were observed for principal or site initiative (by school/office type), a desire to build or improve the CTE program (by school performance, location type, and district experience), new funding (by school performance), a desire to better meet student needs (by school performance, school/office type, and district experience), and staff turnover (by role).

4. Interviewees reported a number of **outcomes** associated with changes made to the CTE program over the past five years, including a better CTE program (35.1 percent), increased numbers of highly qualified teachers (16.2 percent), increased teacher enthusiasm and motivation (13.5 percent), better support for students (10.8 percent), equipment that meets industry standards (8.1 percent), higher expectations for students (5.4 percent), and increased community involvement/partnerships (5.4 percent). Of these, differences were observed for a better CTE program (by school performance), increased teacher enthusiasm and motivation (by school performance), better support for students (by school performance), and lower quality CTE programs (by gender), and equipment that meets industry standards (by school performance).

5.3.2 *Programmatic, Operational, and Institutional Changes Anticipated for the 2010-2011 Academic Year, Reasons for Changes, and Expected Outcomes*

1. Nearly half of interviewees (48.7 percent) reported that changes to the CTE program at their school or in the district would be made in 2010-2011. There were no statistically significant differences ($p<.05$) by role, school/office type, location type, school performance, school/office experience, or district experience. Significant differences were observed by gender, with 71.4 percent of males indicating that changes were planned, compared with 34.8 percent of females.

2. **Anticipated changes** mentioned by interviewees were fewer CTE teachers (16.2 percent), fewer Employer Outreach Specialists (16.2 percent), fewer CTE classes (10.8 percent), more CTE classes (8.1 percent), and less support for teachers (2.7 percent). Of these, differences were noted only for fewer CTE teachers (by role).

3. Interviewees said that the **reasons** for making changes are cuts to CTE program budgets (24.3 percent), a desire to increase student engagement and motivation (18.9 percent), a desire to improve student outcomes (10.8 percent), a desire to maintain currency with industry standards (10.8 percent), the availability of new/improved facilities (8.1 percent), and principal or teacher request (8.1 percent). Of these, differences were observed for cuts to CTE program budgets (by role, school/office type, and location type), a desire to increase student engagement and motivation (by school/office type), a desire to improve student outcomes (by school/office type), a desire to maintain currency with industry standards (by gender), and new/improved facilities (by gender).

4. **Anticipated outcomes** mentioned by interviewees are a stronger CTE program (21.6 percent), a weaker CTE program (21.6 percent), improved outcomes for students (21.6 percent), decreased support for teachers (16.2 percent), staying current (10.8 percent), loss of knowledge (8.1 percent), decreased accountability (5.4 percent), and better teachers (2.7 percent). Of these differences were observed for stronger CTE program (by school/office type and school performance), decreased support for teachers (by role), staying current (by gender), and loss of knowledge (by role).

5.4 Staff Perceptions of CTE

5.4.1 *Barriers to Success/Improvement of the CTE Program at Case Study Schools*

1. A decided majority (83.3 percent) of interviewees believe that there are barriers to the success of the CTE program at their school/in the district. There were no statistically significant differences ($p<.05$) by gender, role, school/office type, location type, school performance, school/office experience, or district experience.

2. Barriers mentioned were insufficient funding (32.4 percent), master scheduling challenges (13.5 percent), lack of University of California 'a-g' designation for CTE coursework (13.5 percent), lack of support by Board of Education/senior leadership (10.8 percent), lack of principal support (10.8 percent), lack of sufficient time for CTE in students' schedules (10.8 percent), change/uncertainty in the district (8.1 percent), CTE coursework seen as "less than" core coursework (8.1 percent), inadequate technology/equipment (8.1 percent), teacher workload/counselor caseload (5.4 percent), weak CTE

pathways (5.4 percent), transportation (2.7 percent), ineffective utilization of industry partners (2.7 percent), teacher creativity (2.7 percent), insufficient collaboration across small schools in complex (2.7 percent), insufficient CTE coursework (2.7 percent), and not enough hands-on projects (2.7 percent).

3. Differences were noted by lack of support by Board of Education/senior leadership (by role) and lack of sufficient time for CTE in students' schedules (by district experience).

5.4.2 *Barriers to Student Success at Case Study Schools*

1. A decided majority (75.7 percent) of interviewees believe that there are barriers to student success in the CTE program at their school/in the district. There were no statistically significant differences ($p<.05$) by gender, role, school/office type, location type, school performance, or district experience. Differences were observed by school/office experience, with 90.5 percent of more experienced staff indicating that there were barriers for students, compared with 56.3 percent of less experienced staff.

2. Barriers to student success listed by interviewees[29] are insufficient workplace skills/motivation for students (21.6 percent), community issues (21.6 percent), lack of adequate facilities, equipment, and supplies (10.8 percent), lack of career awareness (10.8 percent), insufficient time for CTE coursework in students' schedules (10.8 percent), high class size/high counselor caseload (8.1 percent), CTE course availability (8.1 percent), lack of adequate support for students (8.1 percent), transportation (5.4 percent), cell phones (5.4 percent), weak home-school connections (2.7 percent), high expectations for students (2.7 percent), low basic skills (2.7 percent), low opinion of CTE coursework (2.7 percent).

3. Differences were noted for insufficient time for CTE coursework in students' schedules (by role, school/office type, and school performance) and lack of adequate facilities, equipment, and supplies (by school/office type).

5.4.3 *Staff Encouragement for CTE Participation*

1. More than half (54.4 percent) of interviewees said that staff encourages students to participate in the CTE program. There were no statistically

[29] During staff interviews, interviewees were asked to name barriers to program/student success, list the benefits of CTE program participation, and describe students who benefit from CTE program participation. Staff responses to these open-ended questions should not be viewed as "yes/no" in nature. That is, even though an interviewee might not have mentioned a particular barrier (e.g., lack of adequate facilities, equipment, and supplies), we cannot assume that he/she believes that it is not a barrier. Although we tested for differences, by group – and note them here – we have elected not to characterize differences as statistically significant.

significant differences ($p<.05$) by gender, role, location type, school performance, school/office experience, or district experience. Differences were noted by school/office type, with 80.0 percent of small high school staff reporting such encouragement, compared with 35.7 percent of comprehensive high school staff and 25.0 percent of staff based at the district office. Most often, interviewees reported that high achievers are not encouraged to participate in CTE (27.0 percent).

5.4.4 *Benefits of CTE Program Participation*

1. Benefits of CTE program participation mentioned by interviewees are career awareness and exploration (43.2 percent), acquisition of job skills (35.1 percent), acquisition of life skills (29.7 percent), coursework has real-world relevance/application (16.2 percent), coursework is engaging/motivating (16.2 percent), students learn teamwork (10.8 percent), coursework includes hands-on projects/activities (10.8 percent), students learn to use technology (8.1 percent), CTE curriculum is interdisciplinary (8.1 percent), students earn postsecondary credit/certification (8.1 percent), industry contacts (8.1 percent), students learn responsibility (5.4 percent), higher degree of personalization in CTE (5.4 percent), students learn time management (5.4 percent), CTE coursework meets district graduation requirements (2.7 percent).

2. Differences were observed for career awareness and exploration (by gender) and for engaging/motivating coursework (by role).

5.4.5 *Who benefits from CTE Program participation?*

1. More than three-quarters (80.6 percent) of interviewees said that some groups of students benefit more from CTE program participation. There were no statistically significant differences ($p<.05$) by gender, role, school/office type, location type, school performance, school/office experience, or district experience.

2. Interviewees said that students who benefit most are those who struggle in core academic coursework (27.0 percent), are "active"/prefer hands-on learning (24.3 percent), have poor study skills/motivation (21.6 percent), have an interest in a particular CTE pathway (13.5 percent), have a "hard time" coming to school (8.1 percent), participate in internships (2.7 percent), are "OK with" group work (2.7 percent), and are older/more mature students (2.7 percent).

3. Differences, by school/office experience, were observed in the percent of interviewees to said that students with poor study skills benefit most from CTE participation.

5.4.6 *Is there a "typical" CTE student at the school/in the district?*

1. All interviewees (100 percent) reported that there is no "typical" CTE student at their school/in the district.

5.5 Student Perceptions of CTE

5.5.1 *Student Descriptions of the CTE Program at their High School*

1. When asked to describe the CTE program at their high school, students in all three groups (non-participants, participants, and concentrators) had difficulty describing the CTE pathways or the range of CTE coursework offered.

2. Students in all three groups characterized the CTE program at their school as "very good" – giving high marks for CTE course quality. However, they differed in their opinions of the workload and level of rigor of CTE coursework – with non-participants characterizing CTE coursework as less demanding than did participants and concentrators. CTE teachers were characterized as less formal – but more knowledgeable and personable – than teachers of core academic subjects.

3. Most often, students in the non-participant group reported that they did not enroll in CTE coursework because there was no room in their schedules. Students who did enroll (i.e., participants and concentrators) did so to fulfill district graduation requirements, because they heard about the coursework from fellow students, or because counselors suggested enrollment to them.

4. Students in all three groups suggested that students who do not enroll in CTE coursework do so because they might not have room in their schedules or that they might not find value in CTE because "they don't know what it has to offer."

5. Those who do complete CTE coursework/pathways were characterized as "a step ahead," "more prepared," and more experienced than their peers.

6. Like staff, students in all three focus groups remarked that there is "no such thing" as a typical CTE student.

7. The benefits of taking CTE coursework listed by students were acquiring useful skills, making contacts, discovering career options, hands-on experience, getting a jump start, clarifying college plans, and acquiring job experience.

8. Coursework most enjoyed by focus group students during their high school careers were characterized as having opportunities for active learning, opportunities for new experiences, opportunities for teamwork, challenge, opportunities to improve one's self, and opportunities to develop confidence.

9. Students agreed that the most important characteristic of their favorite coursework is the teacher.

6.0 CONCLUSIONS

The two primary goals of this descriptive case study are (1) to examine the programmatic, organizational, and institutional elements associated with particularly effective vs. less-than-effective CTE programs in selected SDUSD high schools and (2) to describe the ways in which career technical education is structured and managed in a large, urban school district.

Characteristics of the CTE Program at "Effective" vs. "Less-than-Effective" Schools
Surprisingly few differences were observed, by school performance (i.e., less-than-effective, "on the move," effective), in interviewees' responses to questions about the implementation level of each CTE program element at their schools, the impact/importance of each element to the success of their CTE program, or in their descriptions of the CTE program elements at their schools.

Significant differences in implementation ratings and impact/importance ratings for the 16 CTE program elements studied were found most often by role (i.e., principal, teacher, counselor, Employer Outreach Specialist, CCTE Department staff) and school/office type (i.e., comprehensive, small school, district office). Differences by role and school/office type may be attributable to differences in interviewees' scope of work and area of responsibility. No significant differences were found, by gender, for any implementation or impact/importance rating.

Although few statistically significant differences were found in interviewees' responses to questions about the implementation levels and the impact/importance of the elements of their CTE program, important insight into the challenges associated with implementing a comprehensive, high quality CTE program in a large, urban school district was gained during the course of staff interviews.

As the study progressed, the complexity of building and maintaining a districtwide CTE program (while effectively leveraging legislative mandates, funding sources, business and community involvement, community college connections, professional development, staffing, and alignment with other district priorities and initiatives), the important and interconnecting roles played by a range of site-based and district office staff and, of course, the challenge of meeting the needs of a diverse student population became apparent.

The conclusions and observations below are drawn from staff interviews, student focus groups, and document review.

1. **There was clear evidence of a structured, comprehensive, and robust CTE program in San Diego Unified School District, at both the district and site levels. Interviewees' descriptions of the program, its successes, and its challenges were remarkably similar.** Although many district office and site-

based staff stressed the need to improve CTE in the district, they acknowledged that they are committed to CTE, especially in tough economic times, actively seek external funding to support the program, and view the program as systemic and well-connected. The goal of continuous improvement was mentioned frequently, and interviewees were, for the most part, optimistic and focused on plans for the coming academic year.

2. **School site staff characterized the district's CCTE Department as respected (both within the district and beyond), well-organized, and "present" – and viewed district office CCTE staff (at all levels) as accessible, knowledgeable, and supportive**. A principal at an effective small high school maintained that the CCTE Department was her "greatest partner in this work" and a CTE teacher said "I know more about the direction of CTE than the district." Comments such as these were voiced by a majority of interviewees, illustrating the productive relationship that exists between district office and site-based staff.

3. **The quality of the professional development provided by the CCTE Department – especially for CTE teachers new to the teaching profession – was widely acknowledged by principals and teachers.** CTE teachers, Employer Outreach Specialists, and principals at case study high schools appreciate the professional development and on-site support provided to staff by the CCTE Department. This support is particularly important for CTE teachers new to the classroom – teachers who know their industry, but have never been enrolled in a teacher education program. Principals reported that CCTE Department staff members, who have both pedagogical and CTE content knowledge, are critical to the success of the CTE programs at their sites.

4. **Although interviewees gave high marks to the CCTE Department's vision, leadership, and support, they were frustrated by the relatively low levels of awareness of, and support for, the district's CTE program by the Board of Education and senior leadership**. Many interviewees believe that the CTE program, in spite of the fact that it serves more than 25,000 district students, is not as visible or valued as other district programs, such as the Visual and Performing Arts program or the Gifted and Talented Education program. They reasoned that this might be because the CTE program is supported primarily by external funding (and, therefore, not discussed during the annual budget cycle), because CTE coursework is still viewed by many in "shop class" terms, or because of the push to enroll larger numbers of students in Advanced Placement coursework. In any event, increased awareness of, and support for, the district's CTE program by the Board and senior leadership would strengthen program offerings and improve program coherence.

5. **Surprisingly few site-based staff (regardless of role) and students (whether non-participants, participants, or concentrators) were able to describe their school's CTE program (e.g., list the career pathways offered at the school, describe the progression of coursework in a given pathway)**. While CTE teachers and students provided detailed information about the courses they had

taught or taken, very few were able to discuss the district's CTE program, name the pathways at their school, or describe CTE coursework other than their own. In a number of cases, site-based staff and students named non-CTE elective coursework (e.g., band, ceramics) when describing the CTE program at their schools. On a few occasions, principals (both new and long-standing) had difficulty summarizing their schools' CTE program, and included non-CTE coursework in their descriptions.

6. **A majority of interviewees gave low implementation and impact/importance ratings to CTE Promotion, Outreach, and Communication – and, at the same time, voiced dissatisfaction with the lack of awareness and support of the CTE program at their school/in the district.** Challenges associated with CTE Promotion, Outreach, and Communication may affect the district's CTE program in many ways. Low awareness by parents, students, site-based and district office staff (CTE and non-CTE), Board of Education and senior leadership, and the business community may result in decreased enrollment in CTE coursework and pathway completion rates, fewer resources (both human and fiscal) for CTE programs, reduced options for high school students, declining industry involvement in CTE activities, and a less integrated and coherent K-12 educational program. A focused investment in CTE Promotion, Outreach, and Communication may result in increased levels of funding, support, and student participation.

7. **Even though interviewees reported – almost universally – that all 16 CTE program elements were a part of the CTE programs at their schools, it was apparent that effective implementation and coordination of those elements was a challenge for site-based staff**. During his interview, a CTE teacher used the term "checkbox mentality" when describing one of the CTE program elements at his school, and went on to say that the result of this approach is "not integrated… or connected" and "doesn't seem real." Implementing, coordinating, and integrating the 16 CTE program elements is a tall order – made even more difficult by insufficient funding and staffing, lack of adequate time for staff planning and ongoing collaboration, and the many competing demands associated with running a secondary school. Given these constraints, it may be useful for the CCTE Department to use findings from this case study – in addition to information gathered in-house – to identify CTE program priorities for the next several academic years, rather than attempting to "do it all."

8. **There was clear agreement that principals' understanding of, and advocacy for, the CTE program is critical to its success**. As one effective school principal observed, "It's my job to hold the vision and remove the barriers." Interviewees' descriptions of principal knowledge, support, and advocacy at the seven case study schools revealed wide variation. In some cases, this was a result of principal turnover – either the arrival of an experienced and enthusiastic principal who "pumped up" the CTE program or the arrival of an inexperienced principal with little awareness of CTE. In other cases, principal attention to other district initiatives (such as the directive to increase AP course enrollment) or shifting priorities (such as increasing college-going rates) had a negative impact on CTE course offerings and student participation. At high schools where principals understood the value of CTE

– and pushed for increased rigor and integration of CTE coursework – stronger programs flourished.

9. **The establishment of complete career pathways at case study high schools – as well as maintaining those pathways, once established – is a significant challenge**. While the CCTE Department has responsibility for establishing and maintaining the district's CTE program, decisions made on the school site can significantly impact the CTE program "on the ground." For example, interviewees frequently mentioned the difficulty of maintaining viable career pathways in a given industry sector because critical coursework in the sequence had been discontinued or students had been allowed to enroll in higher-level coursework without taking prerequisites. Some interviewees reported that CTE coursework was added or dropped as a result of either teacher interest in teaching a particular CTE course or teacher turnover. Additionally, interviewees voiced frustration that CTE course offerings at their high schools were impacted by allowing a non-CTE teachers to offer "one off" elective courses that met no requirements and added little value to students' high school experiences. A number of interviewees suggested that it might be useful to limit (but strongly support) the number of career pathways at a given high school – and to offer introductory experiences in those pathways at feeder middle school.

10. **While interviewees provided rich descriptions of the student leadership development component of Student Support and Student Leadership Development program element, their descriptions of student support were weak**. With the exception of the Level I and Level II courses offered to new CTE teachers by the CCTE Department, interviewees provided few examples illustrating systematic support for struggling students in CTE classrooms. Several interviewees indicated that most students who struggle in academic core coursework tend not to experience difficulty in CTE coursework. Nevertheless, it is important that site-based and district office CTE staff follow up to determine if additional attention to this element is merited.

11. **Responses by staff based at small schools (or at a smaller learning community within a comprehensive high school) – where all students are expected to complete one of a limited number of career pathways – indicate that the small school environment allows more effective integration of CTE and core academic coursework (and common planning time for CTE and non-CTE teachers), features more active, project-based learning, builds and protects career pathways, and produces higher percentages of CTE concentrators**. This suggests that small schools – or smaller, themed "academies" at larger schools – might stabilize career pathways, increase student engagement, and build the CTE program in the district.

12. **Staff members at the "on the move" school (regardless of role or tenure) were universally committed to building and maintaining a high-quality CTE program at their school and optimistic about succeeding in that endeavor**. Given that the "on the move" school is a large, comprehensive high school, it might

be useful for district staff to explore the reasons for this school's focus and drive, so that lessons learned can be applied to other large high schools in the district.

13. **Although differences in implementation ratings, by district experience, for the 16 CTE program elements were *statistically* significant for only one element (High Quality Curriculum and Instruction), it is important to note that interviewees with more district experience gave lower implementation ratings to 15 of 16 the elements, and gave the same implementation rating to the remaining element**. This was in contrast to ratings for impact/importance, where more experienced staff rated nine elements higher than less experienced staff. It may be that experienced staff are more knowledgeable about the CTE program at the site and district levels than their less experienced colleagues, that less experienced staff have more opportunities for professional development and support (and, therefore more personal connections with CCTE Department staff), or that newer staff members are generally more optimistic. In any event, the overall pessimism of more experienced staff is a concern that should be addressed.

14. **At all seven case study schools, there was evidence of substantial involvement by business and industry partners – more than 350 districtwide**. A majority of interviewees mentioned the significant contributions that industry partners made by serving on Advisory Boards providing internships, mentoring students and teachers, acting as guest speakers, contributing materials and supplies, and sponsoring clubs and competitions. At the same time, many staff wished that they (and their students) could interact with industry partners in even more authentic ways. Acknowledging the many contributions by industry partners, two questions might be raised: (1) Why hasn't this widespread and visible involvement by business and industry partners resulted in higher levels of awareness of, and support for, the district's CTE program by the Board of Education and senior leadership? (2) What can be done to assist schools in using business and industry partners more meaningfully and effectively?

15. **There was widespread concern about the budget for the 2010-2011 academic year, and the negative impact expected budget cutbacks would have on the CTE program at the district and site levels**. Interviewees voiced concern about the potential loss of CTE-related positions (and the associated loss of CTE course "seats"), decreased levels of professional development and other supports for teachers, lack of supplies and equipment necessary for program implementation, and cuts to after-school activities, field trips, competitions, and student clubs. There was widespread agreement that staff, particularly CTE teachers, go "above and beyond" in terms of workload and personal contributions toward classroom materials. Even so, interviewees were generally optimistic about their ability to "do what it takes" to ensure that students' experiences in the classroom are maintained at high levels.

16. **Districtwide budget directives – especially those related to procurement – adversely affected the CTE program at case study high schools**. Many site-based staff reported difficulty in accessing funds already allocated to their CTE programs

as a result of blanket procurement procedures implemented during the academic year. For example, all procurement (credit) cards were "frozen" for several weeks, making it impossible for teachers to purchase supplies for their classrooms for more than a month. In several cases, industry partners contributed pre-loaded debit cards so that teachers could make critical purchases and keep their programs running. Interviewees also said that it is difficult to accept donations from industry partners because of confusing district procedures. It may be useful for CCTE Department staff to work with the district budget and finance staff to simplify procedures specific to CTE.

17. **Staff and students had remarkably similar opinions about the benefits of CTE program participation for students.** Both staff and students mentioned career awareness and exploration, acquisition of workplace and life skills, hands-on learning experiences, and making industry contacts as important benefits – and students were eager to provide rich examples for each benefit named. Although the CCTE Department and some high schools have featured students in promotion and outreach materials, it may be productive to expand that practice. The students with whom we spoke were thoughtful and articulate – and their stories were compelling.

18. **When asked if there was such a thing as a "typical CTE student" at their school/in the district, not one staff member or student said yes. Remarkable.**

APPENDICES

Appendix A: Evaluation of the Outcomes of Career and Technical Education in the San Diego (CA) School District: Case Study Analysis Plan

Appendix B: 2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District High Schools

Appendix C: Case Study School Characteristics

Appendix D: Staff Interview Protocol

Appendix E: Programmatic, Organizational, and Institutional Factor Descriptions

Appendix F: Student Focus Group Protocol

Appendix G: Staff Implementation Rating Summaries

Appendix H: Staff Spend-a-Dot Response Summaries

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT
CASE STUDY ANALYSIS PLAN

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
Selection of Case Study Schools				
1. Which SDUSD high schools are "particularly effective"/"less than effective" – higher/lower than average CTE outcomes and higher/lower than average academic achievement?	**CTE OUTCOME MEASURE #1** 1.a. Which SDUSD high schools had higher than average/lower than average percentages of CTE Concentrators in 2007-08?	SDUSD Course/ Pathway Completion Records	Zau	12/09
	CTE OUTCOME MEASURE #2 1.b. Which SDUSD high schools have higher than average/lower than average CTE enrollment rates (November 2009)?	SDUSD Enrollment Records	Bachofer	12/09
	ACADEMIC ACHIEVEMENT MEASURE #1 1.c. Which SDUSD high schools have higher than average/lower than average academic achievement when compared to high schools statewide and/or to high schools with similar demographic characteristics?	CDE 2008 Base Academic Performance Index (API) Data	Bachofer	12/09
	ACADEMIC ACHIEVEMENT MEASURE #2 1.d. Which SDUSD high schools have a graduation rate higher/lower than the state (California) average?	CDE DataQuest	Bachofer	12/09
2. What are the characteristics of case study schools?	**SCHOOL CHARACTERISTICS** 2.a. What are the characteristics (e.g., student ethnicity, student EL status, student SES, school type, school mobility/stability, CTE theme) of case study schools?	CDE/District Records	Bachofer	3/10

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
Characteristics of Case Study Schools				
3. What programmatic factors are associated with the CTE programs at case study schools?	3.a. According to site/central staff, is **High Quality Curriculum and Instruction** a component of the CTE program at each case study school? What are the characteristics of High Quality Curriculum and Instruction at case study schools? 3.b. According to site/central staff, is **Skilled Faculty and Professional Development** a component of the CTE program at each case study school? What are the characteristics of Skilled Faculty and Professional Development at case study schools? 3.c. According to site/central staff, is **Student Support and Student Leadership Development** a component of the CTE program at each case study school? What are the characteristics of Student Support and Student Leadership Development at case study schools? 3.d. According to site/central staff, is **Career Exploration and Guidance** a component of the CTE program at each case study school? What are the characteristics of Career Exploration and Guidance at case study schools? 3.e. According to site/central staff, is **Middle School Orientation and Preparation** a component of the CTE program at each case study school? What are the characteristics of Middle School Orientation and Preparation at case study schools? 3.f. According to central/site staff, is **Industry Partnerships** a component of the CTE program at each case study school? What are the characteristics of **Industry Partnerships** at case study schools? 3.g. According to site/central staff, are there **additional programmatic components** of the CTE programs at case study schools? What are the characteristics of these components?	**Interviews** Principals Counselors CTE Teachers Central Office Staff **Document Review**	Bachofer	6/10

Sources for components of high-quality CTE programs:

- 11 Elements of a High-Quality CTE System, *2008-2012 California State Plan for Career Technical Education* (In Fulfillment of the Requirements of the Carl D. Perkins Career and Technical Education Improvement Act of 2006)
- ConnectEd: *Capacity Needs Assessment Tool* (Critical Elements)

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
4. What organizational factors are associated with the CTE programs at case study schools?	4.a. According to site/central staff, is **System Alignment and Coherence** a component of the CTE program at each case study school? What are the characteristics of System Alignment and Coherence at case study schools? 4.b. According to central/site staff, is **Confluence of Efforts** a component of the CTE program at each case study school? What are the characteristics of Confluence of Efforts at case study schools? 4.c. According to site/central staff, is **Effective Organizational Design** a component of the CTE program at each case study school? What are the characteristics of Effective Organizational Design at case study schools? 4.d. According to site/central staff, is **Postsecondary Articulation** a component of the CTE program at each case study school? What are the characteristics of Postsecondary Articulation at case study schools? 4.e. According to central/site staff, is **Facilities and Equipment** a component of the CTE program at each case study school? What are the characteristics of Facilities and Equipment at case study schools? 4.f. According to site/central staff, is **CTE Promotion, Outreach, and Communication** a component of the CTE program at each case study school? What are the characteristics of CTE Promotion, Outreach, and Communication at case study schools? 4.g. According to site/central staff, are there **additional organizational components** of the CTE program at case study schools? What are the characteristics of these components?	**Interviews** Principals Counselors CTE Teachers Central Office Staff **Document Review**	Bachofer	6/10

Sources for components of high-quality CTE programs:

- 11 Elements of a High-Quality CTE System, *2008-2012 California State Plan for Career Technical Education* (In Fulfillment of the Requirements of the Carl D. Perkins Career and Technical Education Improvement Act of 2006)
- ConnectEd: *Capacity Needs Assessment Tool* (Critical Elements)

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
5. What institutional factors are associated with the CTE programs at case study schools?	5.a. According to central/site staff, is **Leadership at All Levels** a component of the CTE program at each case study school? What are the characteristics of Leadership at All Levels at case study schools? 5.b. According to site/central staff, is **System Responsiveness to Changing Economic Demands** a component of the CTE program at each case study school? What are the characteristics of **System Responsiveness to Changing Economic Demands** at case study schools? 5.c. According to site/central staff, is **Evaluation, Accountability, and Continuous Improvement** a component of the CTE program at each case study school? What are the characteristics of Evaluation, Accountability, and Continuous Improvement at case study schools? 5.d. According to central/site staff, is **Funding** a component of the CTE program at each case study school? What are the characteristics of Funding at case study schools? 5.e. According to central/site staff, are there **additional institutional elements** of the CTE program at case study schools? What are the characteristics of these factors?	**Interviews** Principals Counselors CTE Teachers Central Office Staff **Document Review**	Bachofer	6/10

Sources for components of high-quality CTE programs:

- 11 Elements of a High-Quality CTE System, *2008-2012 California State Plan for Career Technical Education* (In Fulfillment of the Requirements of the Carl D. Perkins Career and Technical Education Improvement Act of 2006)
- ConnectEd: *Capacity Needs Assessment Tool* (Critical Elements)

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
6. To what extent does each programmatic, organizational, and institutional factor contribute to the success of the CTE programs at case study schools?	6.a. According to central/site staff, which of the following CTE program components has had the greatest impact on the CTE program at each case study school? • High Quality Curriculum and Instruction • Skilled Faculty and Professional Development • Student Support and Student Leadership • Career Exploration and Guidance • Middle School Orientation and Preparation • Industry Partnerships • System Alignment and Coherence • Confluence of Efforts • Effective Organizational Design • Postsecondary Articulation • Facilities and Equipment • CTE Promotion, Outreach, and Communication • Leadership at All Levels • System Responsiveness to Changing Economic Demands • Evaluation, Accountability, and Continuous Improvement • Funding • Additional Components Elicited in Interviews	**Interviews** Principals Counselors CTE Teachers Central Office Staff	Bachofer	6/10

Sources for components of high-quality CTE programs:

- 11 Elements of a High-Quality CTE System, *2008-2012 California State Plan for Career Technical Education* (In Fulfillment of the Requirements of the Carl D. Perkins Career and Technical Education Improvement Act of 2006)
- ConnectEd: *Capacity Needs Assessment Tool* (Critical Elements)

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
Modifications to Practice				
7. Have case study schools made programmatic, organizational, and/or institutional changes over the last decade? Are any changes anticipated for the 2010-2011 academic year?	7.a. According to central/site staff, what changes have been made to CTE programs at case study schools over the past decade? 7.b. Why were these changes made and what was the outcome? 7.c. Are any programmatic, organizational, or institutional modifications anticipated for the 2010-2011 academic year? If so, why are these modifications being considered?	**Interviews** Principals Counselors CTE Teachers Central Office Staff	Bachofer	6/10
Staff Perceptions of CTE				
8. What barriers to success/ improvement exist at case study schools?	8.a. According to site/central staff, what programmatic, organizational, or institutional factors inhibit success/improvement at case study schools? 8.b. According to site/central staff, what factors inhibit student success (i.e., enrolling in CTE coursework, successfully completing CTE coursework, becoming concentrators) at case study schools?	**Interviews** Principals Counselors CTE Teachers Central Office Staff	Bachofer	6/10

CORE STUDY QUESTION	*SPECIFIC STUDY QUESTION*	*DATA SOURCE*	*DATA RESPONSIBILITY*	*DUE DATE*
9. How does staff at each case study school (and central office CTE staff) characterize the CTE program at their site?	9.a. To what extent does site staff demonstrate awareness of CTE coursework/pathways offered at case study schools? 9.b. How does site staff characterize the quality/rigor of CTE coursework? Of non-CTE coursework? 9.c. How does staff characterize the overall quality of the CTE program at case study schools? 9.d. To what extent does site staff encourage student participation in the CTE program at case study schools? 9.e. What benefits for students does site staff associate with CTE participation? 9.f. According to site staff, which students benefit from CTE program participation? How does site staff describe the typical CTE student?	**Interviews** Principals Counselors CTE Teachers Central Office Staff	Bachofer	6/10
Student Perceptions of CTE				
10. How do students (concentrators, participants, non-participants) at case study schools characterize the CTE program at their school?	10.a. To what extent are students aware of CTE coursework/pathways offered at case study schools? How do students characterize the quality/rigor of CTE coursework? Of the overall CTE program? 10.b. Why do students at case study schools choose to enroll (or choose not to enroll) in CTE coursework? 10.c. What benefits do students at case study schools associate with participation in the CTE program?	**Student Focus Groups** Concentrators Participants Non-Participants	Bachofer	6/10

APPENDIX B

2008 SWR/SSR, 2008 Graduation Rate, Fall 2009 CTE Course-Taking Rate, Percent of Two-Course CTE Concentrators in 2007-08 for San Diego Unified School District (SDUSD) High Schools

High School	Enrollment 11/09	2008 API SW Rank	2008 API SS Rank	2008 Graduation Rate (NCES Definition)	# CTE Courses Offered Fall 2009	CTE Enrollment 11/09	Fall 2009 CTE Course-Taking Rate	% 2-Course Concentrators in 2007-08
School A: Effective	< 500	1-4	7-10	> 90	12	553	1.67	17.92
School B: Effective	< 500	5-6	7-10	> 90	10	611	1.29	17.72
School C: Effective	< 500	5-6	7-10	80-90	10	304	.61	12.96
School D: Less-than-Effective	< 500	1-4	1-4	< 80	9	164	.33	1.61
Schoo l E: Effective	> 1,000	7-10	1-4	> 90	29	1,251	.52	10.00
School F: On-the-Move	> 1,000	7-10	7-10	> 90	30	1,197	.45	5.68
School G: Less-than-Effective	> 1,000	1-4	1-4	< 80	17	686	.32	7.55
Non-Study School	> 1,000	1-4	1-4	> 90	24	814	.57	10.00
Non-Study School	< 500	1-4	7-10	80-90	9	261	.69	16.67
Non-Study School	< 500	1-4	1-4	< 80	10	279	.86	28.33
Non-Study School	< 500	1-4	5	80-90	6	164	.53	20.41
Non-Study School	< 500	1-4	1-4	< 80	9	224	.59	22.03
Non-Study School	> 1,000	7-10	5-6	> 90	20	1,107	.45	6.62
Non-Study School	< 500	7-10	7-10	80-90	11	229	.51	14.29
Non-Study School	< 500	1-4	7-10	> 90	10	433	.88	10.53
Non-Study School	> 1,000	7-10	1-4	> 90	12	568	.36	7.99
Non-Study School	> 1,000	1-4	1-4	80-90	16	1,209	.56	n/a
Non-Study School	> 1,000	1-4	5-6	> 90	12	383	.31	3.90
Non-Study School	> 1,000	1-4	1-4	80-90	15	562	.35	7.74
Non-Study School	> 1,000	1-4	1-4	80-90	16	1,088	.47	12.23
Non-Study School	> 1,000	5-6	1-4	> 90	22	627	.30	8.42
Non-Study School	< 500	1-4	1-4	< 80	12	315	.65	12.50
Non-Study School	< 500	1-4	1-4	< 80	6	226	.57	11.76
Non-Study School	500-1,000	7-10	7-10	> 90	5	327	.60	7.69
Non-Study School	500-1,000	1-4	7-10	< 80	11	265	.49	10.26
Non-Study School	500-1,000	7-10	1-4	> 90	7	297	.37	9.71
Non-Study School	> 1,000	5-6	7-10	> 90	16	930	.45	6.96
Non-Study School	> 1,000	7-10	1-4	> 90	12	844	.46	5.46
Total	**33,105**			**80.2***		**15,918**	**.48**	**9.91**

* 2008 California Graduation Rate (NCES Definition)

APPENDIX C

San Diego Unified School District Case Study School Characteristics

Characteristic	School A *Effective*	School B *Effective*	School C *Effective*	School D *Less-than-Effective*	School E *Effective*	School F *On-the-Move*	School G *Less-than-Effective*
School Type	Small School in Complex	Small School in Complex	Small School in Complex	Small School in Complex	Large Comprehensive	Large Comprehensive	Large Comprehensive
Grade Span	9-12	9-12	9-12	9-12	9-12	9-12	9-12
Master Schedule Format	4X4 Schedule (64 Credits in 4 Years Possible)	4X4 Schedule (64 Credits in 4 Years Possible)	4X4 Schedule (64 Credits in 4 Years Possible)	4X4 Schedule (64 Credits in 4 Years Possible)	6-Period Day (48 Credits in 4 Years Possible)	6-Period Day (48 Credits in 4 Years Possible)	4X4 Schedule (64 Credits in 4 Years Possible)
Fall 2009 Enrollment[i]	< 500	< 500	500-1000	< 500	> 1,000	> 1,000	> 1,000
Student Population[ii]							
White	13.6	18.8	5.0	8.5	46.1	17.9	2.9
Non-White	86.1	81.2	95.0	91.5	53.9	82.1	97.1
Percent Economically Disadvantaged (Fall 2009)[iii]	50-90	50-90	> 90	> 90	< 50	< 50	> 90
Percent English Learners (March 2010)[iv]	> 25	10-25	10-25	> 25	< 10	< 10	> 25
Percent Special Education (March 2010)[v]	≥ 10	≥ 10	≥ 10	≥ 10	< 10	< 10	≥ 10
Percent Gifted and Talented (March 2010)[vi]	15-25	15-25	< 15	< 15	> 25	> 25	< 15
Graduation Requirements (SDUSD)[vii]	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA	44 Semester Credits/ 2.0 WGPA
English	8	8	8	8	8	8	8
Mathematics	6	6	6	6	6	6	6
Science	6	6	6	6	6	6	6
History	6	6	6	6	6	6	6
Physical Education	4	4	4	4	4	4	4
Fine/Practical Arts/World Languages	3	3	3	3	3	3	3
Electives	11	11	11	11	11	11	11
Computer Literacy	Y	Y	Y	Y	Y	Y	Y

Characteristic	School A *Effective*	School B *Effective*	School C *Effective*	School D *Less-than-Effective*	School E *Effective*	School F *On-the-Move*	School G *Less-than-Effective*
Senior Exhibition	Y	Y	Y	Y	Y	Y	Y
CA High School Exit Exam	Y	Y	Y	Y	Y	Y	Y
Academic Overview[viii]							
2009 Percent Proficient/Advanced (ELA)	< 40	40-60	< 40	< 40	> 60	40-60	< 40
2009 Percent Proficient/Advanced (Mathematics)	< 10	< 10	< 10	< 10	> 40	10-40	< 10
2008 API SW Rank	1-4	5-6	5-6	1-4	7-10	7-10	1-4
2008 API SS Rank	7-10	7-10	7-10	1-4	1-4	7-10	1-4
2008 Graduation Rate	> 90	> 90	80-90	< 80	> 90	> 90	< 80
CTE Overview							
Percentage of 2-Course Concentrators (2007-08)[ix]	17.9	17.7	13.0	1.6	10.0	5.7	7.6
CTE Enrollment Rate (Fall 2009)[x]	1.7	1.3	0.6	0.3	0.5	0.5	0.3
Number of Courses Offered (Fall 2009)[xi]	12	10	10	9	29	30	17

[i] San Diego Unified School District (SDUSD) *Active Enrollment Report* (October 2, 2009)
[ii] San Diego Unified School District (SDUSD) Research and Evaluation Division
[iii] San Diego Unified School District (SDUSD) *Title I Ranking Report* (January 14, 2010)
[iv] San Diego Unified School District (SDUSD) Research and Evaluation Division
[v] San Diego Unified School District (SDUSD) Research and Evaluation Division
[vi] San Diego Unified School District (SDUSD) Gifted and Talented Education (GATE) Department
[vii] San Diego Unified School District (SDUSD) *2009-10 K-12 Course of Study*
[viii] San Diego Unified School District (SDUSD) Research and Evaluation Division and California Department of Education (CDE) 2008 Base Academic Performance Index (API) Report
[ix] Calculated using administrative records from San Diego Unified School District
[x] San Diego Unified School District Research and Evaluation Division
[xi] San Diego Unified School District Research and Evaluation Division

APPENDIX D

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT

STAFF INTERVIEW PROTOCOL

Thank you for agreeing to participate in this interview today. My name is Karen Bachofer and I'm pleased to meet you. As you may know, San Diego Unified School District (SDUSD) is working with the Department of Economics at UCSD on a national research project to study the effectiveness of career and technical education (CTE). The study is sponsored by the United States Department of Education, and is required by the Carl D. Perkins Career and Technical Education Act of 2006. [Provide Case Study Overview.]

One part of the research project involves studying the CTE programs at seven San Diego high schools to find out what makes CTE programs successful. We will be interviewing principals, counselors, and CTE teachers at each case study high school to discover how the school's program, organization, and culture contribute to the success of its program. Thank you for your willingness to participate in this important study.

Please know that your responses to interview questions are confidential, and any reports or presentations about the study will not include the name(s) of individuals or school sites. In addition, researchers will not include any verbatim quotations in reports or presentations, unless you have an opportunity to review and approve their anonymous inclusion prior to publication. You may feel free to skip any questions that you don't wish to answer and may terminate this interview at any time – asking that the audiotape be erased, if you wish. May I have your permission to audiotape this interview so that important information is not lost?

1. *Let's start by getting some information about the CTE program at [Insert Name] High School. Here is a list of some programmatic factors associated with effective CTE programs – according to the California State Plan for Career Technical Education and ConnectEd. As we look at each factor, I'd like you to tell me if it is a part of the CTE program at [Insert Name] High School. Then, I'd like you to tell me more about that factor here at [Insert Name].*

Element		Implementation Rating	Factor?
1.a.	High Quality Curriculum and Instruction	H/M/L	Y / N
1.b.	Skilled Faculty and Professional Development	H/M/L	Y / N
1.c.	Student Support and Student Leadership	H/M/L	Y / N

1.d.	Career Exploration and Guidance	H/M/L	Y / N
1.e.	Middle School Orientation and Preparation	H/M/L	Y / N
1.f.	Industry Partnerships	H/M/L	Y / N

2. *Next, let's talk about the organization of the CTE program at [Insert Name] high school. This time, we'll look at a list of some of the organizational factors associated with effective CTE programs. As we look at each factor, I'd like you to tell me if it is a part of the CTE program at [Insert Name] High School. Then, I'd like you to tell me more about that factor here at [Insert Name].*

Element		**Implementation Rating**	**Factor?**
2.a.	System Alignment and Coherence	H/M/L	Y / N
2.b.	Confluence of Efforts	H/M/L	Y / N
2.c.	Effective Organizational Design	H/M/L	Y / N
2.d.	Postsecondary Articulation	H/M/L	Y / N
2.e.	Facilities and Equipment	H/M/L	Y / N

2.f. CTE Promotion, Outreach, and Communication	H/M/L	Y / N

3. Now, *we'll look at a list of some of the institutional factors associated with effective CTE programs. As we look at each factor, I'd like you to tell me if it is a part of the CTE program at [Insert Name] High School. Then, I'd like you to tell me more about that factor here at [Insert Name].*

Element		**Factor?**
3.a. Leadership at All Levels	H/M/L	Y / N
3.b. System Responsiveness to Changing Economic Demands	H/M/L	Y / N
3.c. Evaluation, Accountability, and Continuous Improvement	H/M/L	Y / N
3.d. Funding	H/M/L	Y / N

4. Thank you giving me such a complete picture of CTE at [Insert Name]. Now that we have discussed each of the elements of the program at your school, I'm going to ask you to decide which of the elements has had the greatest impact on the success of the CTE program here. We'll do that using the "spend-a-dot" activity. Here is a list of the 16 elements of an effective CTE program that we've just talked about and a set of 32 colored dots. I'd like you to distribute ("spend") your dots based upon the impact you think that element has had on the success of your CTE program. You can spend up to 8 dots on any one element, and it's OK if some elements receive no dots at all. [Provide Spend-a-Dot Recording Sheet and dots to participants.]

5. *Thank you! Now, I'd like you to think about the CTE program at [Insert Name] High School over the past 10 years or so.*

Question		
5.a.	Have any programmatic, organizational, or institutional changes been made to this school's CTE program in the last decade?	Y / N

5.a.1. If so, what were they?

5.a.2. When/why were these changes made?

5.a.3. What was/were the outcome(s) of making these changes?

5.b.	Are you planning to make any programmatic, organizational, or institutional modifications to your program for the 2010-2011 school year?	Y / N

5.b.1. If so, what are they?

5.b.2. Why will you be making these changes?

6. *Now, I'd like you to think about any barriers to success or improvement that might affect the CTE program at [Insert Name] High School.*

Question		
6.a.	Are there any programmatic, organizational, or institutional factors that inhibit success/improvement of the CTE program at this school?	Y / N

6.a.1. If so, what are they?

6.b.	Are there any factors that inhibit student success in the CTE program at this school?	Y / N

6.a.1. If so, what are they?

7. *Finally, I have a few questions about the impact on students of participating in the CTE program at this school.*

APPENDIX D

Question		
7.a.	Do all staff at this school encourage students to participate in the CTE program?	Y / N
7.a.1.	If not, which students are not encouraged to participate?	

7.b.	What are the benefits for students of participating in the CTE program at this school?	

7.b.1.	Do some groups of students benefit more/less from participation? If so, which students?	Y / N

7.c.	Is there such a thing as a "typical" CTE student at this school?	Y / N
7.c.1.	If so, how would you describe that student?	

I have no more questions for you, other than to ask you a bit about your role at [Insert Name] High School and how long you've worked at the school/district.

Interviewee's Name/Role	Principal	Counselor	CTE Teacher	Other

8.a. How long have you been assigned to [Insert Name] High School? _____

8.b. How long have you worked in San Diego Unified School District? _____

8.c. Finally, just in case we need to get in touch with you, may I have your contact information?

Do you have any questions for me before we wrap up our time together? Here is my card in case you'd like to contact me for any reason. Again, I thank you so much for taking time to talk with me today.

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT

Staff Interviews

PROGRAMMATIC FACTOR DESCRIPTIONS

1. **High Quality Curriculum and Instruction**
   Rigorous, integrated technical and academic content that stays current with changes in the workplace and is focused on careers that are interesting to students, aligned with academic and industry standards, and delivered through applied, performance- and project-based strategies in personalized learning environments

2. **Skilled Faculty and Professional Development**
   Faculty are experts in technical skills required in their fields, essential workplace skills, and academic skills required of practitioners in their career areas – and are exceptional teachers who use a variety of strategies to facilitate learning and assess student performance; they act as career guides, mentors, champions for students and the CTE program. Element also includes recruitment and retention of faculty, ongoing professional development for faculty, counselors, administrators, and other staff.

3. **Student Support and Student Leadership Development**
   Takes many forms, including outreach programs; referrals and links to services both on and off campus; instructional support; support for child care, transportation, and other needs; coaching, career development, mentoring; assistance with transitions to employment; flexible and individualized technology-based instruction; professional development to assist faculty and staff in working effectively with special populations

4. **Career Exploration and Guidance**
   Provides students with access to career information and experiences so that they can envision a wide range of possibilities for their lives and make informed career decisions – based on their own interests, needs, and goals, and on an informed assessment of opportunities

5. **Middle School Orientation and Preparation**
   Students have been exposed to career opportunities in a variety of industry sectors and know their high school pathway options. Students are academically prepared to succeed in rigorous pathway programs of study and assisted in the transition from middle school to high school pathways.

6. **Industry Partnerships**
   Business and industry work with the education community through advisory committees, forums, and other educational/training partnerships to inform CTE program design, instruction, and assessment – ensuring CTE's relevance to the workplace and facilitating placement of students/teachers in work experience, work-based learning, job shadowing, and internships.

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT

Staff Interviews

ORGANIZATIONAL FACTOR DESCRIPTIONS

1. **System Alignment and Coherence**
   Components of the CTE program are effectively linked. Pathways incorporate secondary education and postsecondary elements, academic/technical content is rigorous/coherent, and there is a coordinated, non-duplicative progression of courses that align secondary education with postsecondary education. Students have opportunities to participate in dual or concurrent enrolment or have other ways to acquire postsecondary education credits.

2. **Confluence of Efforts**
   A system of pathways has been designed and implemented in a way that effectively leverages and maximizes existing resources and reduces duplication of efforts.

3. **Effective Organizational Design**
   K-12, adult school, and community college systems ensure students are prepared to meet rigorous standards and have employable skills. Organizational structures/processes facilitate student access to programs; enable faculty to collaborate; promote personalization; link students with business/industry for workplace learning. Examples: career-themed learning communities; block scheduling; effective use of after-school, extended-day, out-of-school time; choice and student mobility within district; open-entry/open-exit; effective use of technology

4. **Postsecondary Articulation**
   Students graduating from pathway programs have seamless transition to postsecondary education and training options. Formal agreement with local community colleges (and/or 4-year universities) allows students dual enrollment options. Articulation agreements are in place. School counselors and other staff provide ample/timely information to students about entrance requirements and financial aid for a full range of postsecondary options.

5. **Facilities and Equipment**
   Facilities are designed to accommodate the teaching/learning needs of pathway programs of study. Space has been reconfigured/reassigned/expanded to ensure adequacy. Necessary equipment is available to support pathway teaching/learning. District CTE staff consults with CTE teachers and local business/industry partners to determine facility/equipment needs.

6. **CTE Promotion, Outreach, and Communication**
   Communication that CTE promotes academic achievement, as well as technical/workplace skills; communication between CTE and non-CTE faculty, and with all students, parents, community, policymakers about opportunities/benefits of CTE; administrators/counselors understand benefits of CTE; students have information about CTE at key decision points in course selection and career development.

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT

Staff Interviews

INSTITUTIONAL FACTOR DESCRIPTIONS

1. **Leadership at All Levels**
   Leadership at all levels – site, central office CTE staff, district leadership and Board, community college system, business and community – work together to support, sustain, and expand the CTE program.

2. **System Responsiveness to Changing Economic Demands**
   Demand-driven CTE program offers curriculum relevant to current and future workforce needs, establishes public/private partnerships between industry and education; builds capacity of educators/counselors so that they stay current with needs of the workplace; ensures sufficient enrollments to meet workforce needs; ensures consistent/reliable data about regional economic/labor markets so high schools and community colleges can plan programs; and moves "at the speed of business" to address workforce needs quickly.

3. **Evaluation, Accountability, and Continuous Improvement**
   There is agreement about goals/standards; identification of needed data/indicators based on agreed upon goals/standards; identification and/or development of data collection tools and methods, including appropriate assessments and databases; collection and analysis of data; sharing of findings with customers, practitioners, and policymakers; and implementation of improvement strategies.

4. **Funding**
   Funding needs have been evaluated and plans put in place to support those needs – site has examined existing finding sources (e.g., California Partnership Academies, specialized student programs, Carl Perkins, small Learning communities, ROP) that support the formation of multiple pathways and ways to use other funding to support elements of pathway programs of study.

APPENDIX F

EVALUATION OF THE OUTCOMES OF CAREER AND TECHNICAL EDUCATION IN THE SAN DIEGO (CA) SCHOOL DISTRICT

STUDENT FOCUS GROUP PROTOCOL

San Diego Unified School District (SDUSD) is working with researchers in the Department of Economics at UCSD on a national research project to study the effectiveness of career and technical education (CTE). My name is Karen Bachofer, and I am one of the UCSD researchers working on this study.

One part of this research project involves studying the CTE programs seven San Diego high schools to find out what makes those schools successful. Researchers will interview principals, counselors, and CTE teachers at each high school. At [Insert Name] High School, we are also talking with students – in focus groups – to learn what they think about the CTE program at their school. Thank you for your willingness to participate in this important study. Can you each please introduce yourself?

Before we get started, I'd like to take a few minutes to explain the ground rules of the focus group and to make sure that everyone here understands what we'll be doing today. OK?

The way a focus group works is that I will toss out a question about the CTE program here at [Insert Name] High School, and the members of the group will share their ideas and opinions. Since we want to be sure to capture everyone's ideas, I'm going to ask that everyone respect the "one-person-talking-at-a-time" rule. We're going to be audio recording this meeting, and it will be almost impossible to catch everything that's said if we "talk over" one another. Another important thing to remember is that everyone's ideas are valuable – we don't all feel the same way about every issue, but everyone has a right to his/her opinion, and I want to hear it…OK? Finally, we need to agree not to use the names of teachers or school staff when making comments – even if the comments are positive. So, it's OK to say "my CTE teacher" or "my counselor," but not "Ms. Jones." Are we all in agreement, so far? Any questions?

We're almost ready to begin with the questions, but first I'd like everyone to take a look at this Student Assent Form and, if you're OK with it, to sign the form agreeing to participate in the focus group. [Distribute forms.] I'm giving you two copies – one for you to keep and one for my records. The form gives you background information about the study (the information we've already discussed), and tells you that your participation is voluntary. That means that you are volunteering to participate, but know that you can leave the room at any time to go back to your regular school activities. I hope that you will all feel comfortable sharing your ideas but, if you feel uncomfortable at any time during the meeting, I hope you'll let me know so that we can make things right. You understand that you won't be paid for participating in the focus group (except in pizza!).

I want to stress that anything you say in this room is completely confidential. In reports and presentations, no student or school names will be linked to any comments you make, and nobody except researchers will hear the tape of this session. The tape and any transcripts will be kept locked up at UCSD. Are there any questions?

OK, if you agree to participate in the study, please go ahead and check the "yes" line, sign the form, and print your name on the bottom line. Thanks!

Just to double check – students in this room are [CTE Concentrators, CTE Participants, non-CTE Participants], right? OK, here we go with the questions.

7. *Let's start by getting some information about the CTE program here at [Insert Name] High School.*

Question
1. Can you please describe the CTE program at [Insert Name] High School?

Prompts (If Needed)

1.a. What CTE courses are offered at this school?

1.b. Does this school have a CTE theme?

1.c. Are there any CTE pathways at [Insert Name] High School?

1.d. What do you think about the quality of the CTE program at [Insert Name] High School?

8. *Now, I'd like to ask you to tell me about the CTE courses offered at this school.*

Question
2. What do you think about the quality of the CTE courses offered at [Insert Name] High School?

Prompts (If Needed)

2.a. Are the CTE courses harder or easier than non-CTE courses?

2.b. Are the CTE courses more useful or less useful than non-CTE courses?

9. *Next, let's talk about why you chose to enroll or chose not to enroll in CTE courses.*

Question
3. All of the student in this focus group are [CTE Concentrators, CTE Participants, non-CTE Participants]. Why did you choose (choose not) to enroll in CTE coursework?

Prompts (If Needed)

3.a. What courses have you taken? What courses are you now enrolled in?

3.b. Why do you think some students don't enroll in any CTE courses?

3.c. Why do you think some students complete enough CTE courses to become CTE concentrators?

34.d. Is there a "typical" CTE student at this school?

10. *My last question is about the benefit of taking CTE coursework.*

Question
4. What are the benefits of taking CTE courses and/or becoming a CTE Concentrator?

Prompts (If Needed)

4.a. Do you think CTE classes help students get into college or get a good job after high school?

4.b. What is it about the CTE coursework that can make that happen?

11. *Is there anything else you'd like to share with me about the CTE program at [Insert Name] High School?*

Do you have any questions for me before we wrap up our time together? Again, I thank you so much for taking time to talk with me today. I've learned so much from you all!

Appendix G-1: Staff Implementation Ratings (Part 1)
Percentage of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	High Quality Curriculum and Instruction			Skilled Faculty and Professional Development			Student Support and Student Leadership		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Overall	**84.4**	**15.6**	**0.0**	**80.7**	**19.4**	**0.0**	**65.6**	**28.1**	**6.3**
Respondent Characteristics									
Gender									
Male	83.3	16.7	0.0	76.9	23.1	0.0	50.0	33.3	16.7
Female	85.0	15.0	0.0	83.3	16.7	0.0	75.0	25.0	0.0
Role									
Principal	71.4	28.6	0.0	57.1	42.9	0.0	71.4	28.6	0.0
Teacher	92.9	7.1	0.0	93.3	6.7	0.0	60.0	40.0	0.0
Counselor	50.0	50.0	0.0	50.0	50.0	0.0	100.0	0.0	0.0
EOS	100.0	0.0	0.0	100.0	0.0	0.0	75.0	25.0	0.0
District Office	75.0	25.0	0.0	75.0	25.0	0.0	50.0	0.0	50.0
School/Office Experience									
0-2 Years	87.5	12.5	0.0	71.4	28.6	0.0	66.7	33.3	0.0
3 or More Years	81.3	18.8	0.0	88.2	11.8	0.0	64.7	23.5	11.8
District Experience			*						
0-5 Years	100.0	0.0	0.0	90.0	10.0	0.0	70.0	30.0	0.0
6-15 Years	81.8	18.2	0.0	72.7	27.3	0.0	75.0	8.3	16.7
16 or More Years	70.0	30.0	0.0	80.0	20.0	0.0	50.0	50.0	0.0

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Appendix G-1: Staff Implementation Ratings (Part 1) – Continued
Percentage of Staff Rating Implementation of Programmatic Elements High Medium, Low

	High Quality Curriculum and Instruction			Skilled Faculty and Professional Development			Student Support and Student Leadership		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Site Characteristics									
School Performance* **									
Less-than-Effective	75.0	25.0	0.0	80.0	20.0	0.0	60.0	40.0	0.0
On-the-Move	100.0	0.0	0.0	100.0	0.0	0.0	83.3	16.7	0.0
Effective	83.3	16.7	0.0	75.0	25.0	0.0	64.7	35.3	0.0
School Type									*
Small School	80.0	20.0	0.0	80.0	20.0	0.0	64.3	35.7	0.0
Comprehensive	92.3	7.7	0.0	83.3	16.7	0.0	71.4	28.6	0.0
District Office	75.0	25.0	0.0	75.0	25.0	0.0	50.0	0.0	50.0
Location Type									*
School Site	85.7	14.3	0.0	81.5	18.5	0.0	67.9	32.1	0.0
District Office	75.0	25.0	0.0	75.0	25.0	0.0	50.0	0.0	50.0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-1: Staff Implementation Ratings (Part 2)
Percentage of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Career Exploration and Guidance			Middle School Orientation and Preparation			Industry Partnerships		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Overall	**54.8**	**35.5**	**9.7**	**10.7**	**32.1**	**57.1**	**60.0**	**23.3**	**16.7**
Respondent Characteristics									
Gender									
Male	45.5	45.5	9.1	8.3	16.7	75.0	50.0	20.0	30.0
Female	60.0	30.0	10.0	12.5	43.8	43.8	65.0	25.0	10.0
Role									
Principal	42.9	28.6	28.6	0.0	42.9	57.1	54.1	14.3	28.6
Teacher	53.3	40.0	6.7	15.4	23.1	61.5	53.3	26.7	20.0
Counselor	0.0	100.0	0.0	0.0	50.0	50.0	0.0	100.0	0.0
EOS	75.0	25.0	0.0	0.0	100.0	0.0	66.7	33.3	0.0
District Office	100.0	0.0	0.0	25.0	0.0	75.0	100.0	0.0	0.0
School/Office Experience						*			
0-2 Years	53.3	33.3	13.3	27.3	45.5	27.3	50.0	28.6	21.4
3 or More Years	56.3	37.5	6.3	0.0	23.5	76.5	68.8	18.8	12.5
District Experience									
0-5 Years	60.0	40.0	0.0	14.3	57.1	28.6	50.0	37.5	12.5
6-15 Years	50.0	50.0	0.0	18.2	27.3	54.6	66.7	16.7	16.7
16 or More Years	54.6	18.2	27.3	0.0	20.0	80.0	60.0	20.0	20.0

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Appendix G-1: Staff Implementation Ratings (Part 2) – Continued
Percentage of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Career Exploration and Guidance			Middle School Orientation and Preparation			Industry Partnerships		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Site Characteristics									
School Performance* **						**			
Less-than-Effective	75.0	0.0	25.0	0.0	0.0	100.0	60.0	0.0	40.0
On-the-Move	33.3	66.7	0.0	20.0	0.0	80.0	60.0	20.0	20.0
Effective	50.0	38.9	11.1	7.1	64.3	28.6	50.0	37.5	12.5
School Type									
Small School	42.9	35.7	21.4	7.7	53.9	38.5	53.9	23.1	23.1
Comprehensive	57.1	42.9	0.0	9.1	18.2	72.7	53.9	30.8	15.4
District Office	100.0	0.0	0.0	25.0	0.0	75.0	100.0	0.0	0.0
Location Type									
School Site	50.0	39.3	10.7	8.3	37.5	54.2	53.9	26.9	19.2
District Office	100.0	0.0	0.0	25.0	0.0	75.0	100.0	0.0	0.0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-2: Staff Implementation Ratings (Part 1)
Number of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	High Quality Curriculum and Instruction			Skilled Faculty and Professional Development			Student Support and Student Leadership		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Overall	**27**	**5**	**0**	**25**	**6**	**0**	**21**	**9**	**2**
Respondent Characteristics									
Gender									
Male	10	2	0	10	3	0	6	4	2
Female	17	3	0	15	3	0	15	5	0
Role									
Principal	5	2	0	4	3	0	5	2	0
Teacher	13	1	0	14	1	0	9	6	0
Counselor	1	1	0	1	1	0	2	0	0
EOS	5	0	0	3	0	0	3	1	0
District Office	3	1	0	3	1	0	2	0	2
School/Office Experience									
0-2 Years	14	2	0	10	4	0	10	5	0
3 or More Years	13	3	0	15	2	0	11	4	2
District Experience			*						
0-5 Years	11	0	0	9	1	0	7	3	0
6-15 Years	9	2	0	8	3	0	9	1	2
16 or More Years	7	3	0	8	2	0	5	5	0

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Appendix G-2: Staff Implementation Ratings (Part 1) – Continued
Number of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	High Quality Curriculum and Instruction			Skilled Faculty and Professional Development			Student Support and Student Leadership		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Site Characteristics									
School Performance* **									
Less-than-Effective	3	1	0	4	1	0	3	2	0
On-the-Move	6	0	0	6	0	0	5	1	0
Effective	15	3	0	12	4	0	11	6	0
School Type									*
Small School	12	3	0	12	3	0	9	5	0
Comprehensive	12	1	0	10	2	0	10	4	0
District Office	3	1	0	3	1	0	2	0	2
Location Type									*
School Site	24	4	0	22	5	0	19	9	0
District Office	3	1	0	3	1	0	2	0	2

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-2: Staff Implementation Ratings (Part 2)
Number of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Career Exploration and Guidance			Middle School Orientation and Preparation			Industry Partnerships		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Overall	**17**	**11**	**3**	**3**	**9**	**16**	**18**	**7**	**5**
Respondent Characteristics									
Gender									
Male	5	5	1	1	2	9	5	2	3
Female	12	6	2	2	7	7	13	5	2
Role									
Principal	3	2	2	0	3	4	4	1	2
Teacher	8	6	1	2	3	8	8	4	3
Counselor	0	2	0	0	1	1	0	1	0
EOS	3	1	0	0	2	0	2	1	0
District Office	3	0	0	1	0	3	4	0	0
School/Office Experience						*			
0-2 Years	8	5	2	3	5	3	7	4	3
3 or More Years	9	6	1	0	4	13	11	3	2
District Experience									
0-5 Years	6	4	0	1	4	2	4	3	1
6-15 Years	5	5	0	2	3	6	8	2	2
16 or More Years	6	2	3	0	2	8	6	2	2

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Appendix G-2: Staff Implementation Ratings (Part 2) – Continued
Number of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Career Exploration and Guidance			Middle School Orientation and Preparation			Industry Partnerships		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Site Characteristics									
School Performance* **						**			
Less-than-Effective	3	0	1	0	0	5	3	0	2
On-the-Move	2	4	0	1	0	4	3	1	1
Effective	9	7	2	1	9	4	8	6	2
School Type									
Small School	6	5	3	1	7	5	7	3	3
Comprehensive	8	6	0	1	2	8	7	4	2
District Office	3	0	0	1	0	3	4	0	0
Location Type									
School Site	14	11	3	2	9	13	14	7	5
District Office	3	0	0	1	0	3	4	0	0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

** Significantly different from comparison group at 5% level; shaded light gray*
*** Significantly different from comparison group at 1% level; shaded dark gray*
**** Excludes District Office Staff*

Appendix G-3: Staff Implementation Ratings (Part 1)
Percentage of Staff Rating Implementation of Organizational Elements High, Medium, Low

	System Alignment and Coherence			Confluence of Efforts			Effective Organizational Design		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Overall	**50.0**	**32.1**	**17.9**	**37.8**	**35.1**	**27.0**	**80.7**	**12.9**	**6.5**
Respondent Characteristics									
Gender									
Male	40.0	40.0	20.0	21.4	42.9	35.7	75.0	16.7	8.3
Female	55.6	27.8	16.7	47.8	30.4	21.7	84.2	10.5	5.3
Role									
Principal	66.7	0.0	33.3	28.6	42.9	28.6	66.7	16.7	16.7
Teacher	33.3	46.7	20.0	44.4	22.2	33.3	81.3	12.5	6.3
Counselor	50.0	50.0	0.0	66.7	33.3	0.0			
EOS	100.0	0.0	0.0	50.0	25.0	25.0	100.0	0.0	0.0
District Office	50.0	50.0	0.0	0.0	80.0	20.0	80.0	20.0	0.0
School/Office Experience									
0-2 Years	46.2	30.8	23.1	43.8	18.8	37.5	85.7	7.1	7.1
3 or More Years	53.3	33.3	13.3	33.3	47.6	19.1	76.5	17.7	5.9
District Experience									
0-5 Years	50.0	37.5	12.5	58.3	8.3	33.3	90.0	0.0	10.0
6-15 Years	54.5	27.3	18.2	21.4	50.0	28.6	91.7	8.3	0.0
16 or More Years	44.4	33.3	22.2	36.4	45.5	18.2	55.6	33.3	11.1

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Appendix G-3: Staff Implementation Ratings (Part 1) – Continued
Percentage of Staff Rating Implementation of Organizational Elements High, Medium, Low

	System Alignment and Coherence			Confluence of Efforts			Effective Organizational Design		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Site Characteristics									
School Performance* **									
Less-than-Effective	20.0	40.0	40.0	42.9	28.6	28.6	60.0	40.0	0.0
On-the-Move	83.3	16.7	0.0	33.3	50.0	16.7	100.0	0.0	0.0
Effective	46.7	33.3	20.0	47.4	21.1	31.6	81.3	6.3	12.5
School Type						**			
Small School	46.2	38.5	15.4	68.8	18.8	12.5	78.6	7.1	14.3
Comprehensive	53.8	23.1	23.1	18.8	37.5	43.8	83.3	16.7	0.0
District Office	50.0	50.0	0.0	0.0	80.0	20.0	80.0	20.0	0.0
Location Type						*			
School Site	50.0	30.8	19.2	43.8	28.1	28.1	80.8	11.5	7.7
District Office	50.0	50.0	0.0	0.0	80.0	20.0	80.0	20.0	0.0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-3: Staff Implementation Ratings (Part 2)
Percentage of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Postsecondary Articulation			Facilities and Equipment			CTE Promotion, Outreach, and Communication		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Overall	**58.1**	**32.3**	**9.7**	**38.9**	**44.4**	**16.7**	**18.5**	**48.2**	**33.3**
Respondent Characteristics									
Gender									
Male	60.0	40.0	0.0	40.0	40.0	20.0	28.6	28.6	42.9
Female	57.1	28.6	14.3	38.9	47.6	14.3	15.0	55.0	30.0
Role									
Principal	42.9	14.3	42.9	42.9	28.6	28.6	16.7	50.0	33.3
Teacher	57.1	42.9	0.0	50.0	38.9	11.1	16.7	41.7	41.7
Counselor	50.0	50.0	0.0	50.0	50.0	0.0	0.0	50.0	50.0
EOS	100.0	0.0	0.0	25.0	75.0	0.0	25.0	75.0	0.0
District Office	60.0	40.0	0.0	0.0	60.0	40.0	33.3	33.3	33.3
School/Office Experience									
0-2 Years	33.3	41.7	25.0	50.0	31.3	18.8	16.7	50.0	33.3
3 or More Years	73.7	26.3	0.0	30.0	55.0	15.0	20.0	46.7	33.3
District Experience									
0-5 Years	57.1	42.9	0.0	41.7	50.0	8.3	14.3	57.1	28.6
6-15 Years	61.5	38.5	0.0	30.8	38.5	30.8	36.4	27.3	36.4
16 or More Years	54.6	18.2	27.3	45.5	45.5	9.1	0.0	66.7	33.3

Continued on next page

Appendix G-3: Staff Implementation Ratings (Part 2) – Continued
Percentage of Staff Rating Implementation of Programmatic Elements High, Medium, Low

	Postsecondary Articulation			Facilities and Equipment			CTE Promotion, Outreach, and Communication		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Site Characteristics									
School Performance* **									
Less-than-Effective	20.0	60.0	20.0	28.6	57.1	14.3	0.0	60.0	40.0
On-the-Move	83.3	16.7	0.0	66.7	16.7	16.7	50.0	33.3	16.7
Effective	60.0	26.7	13.3	44.4	44.4	11.1	7.7	53.9	38.5
School Type						*			
Small School	46.2	30.8	23.1	43.8	56.3	0.0	7.7	53.9	38.5
Comprehensive	69.2	30.8	0.0	46.7	26.7	26.7	27.3	45.5	27.3
District Office	60.0	40.0	0.0	0.0	60.0	40.0	33.3	33.3	33.3
Location Type									
School Site	57.7	30.8	11.5	45.2	41.9	12.9	16.7	50.0	33.3
District Office	60.0	40.0	0.0	0.0	60.0	40.0	33.3	33.3	33.3

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-4: Staff Implementation Ratings (Part 1)
Number of Staff Rating Implementation of Organizational Elements High, Medium, Low

	System Alignment and Coherence			Confluence of Efforts			Effective Organizational Design		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Overall	**14**	**9**	**5**	**14**	**13**	**10**	**25**	**4**	**2**
Respondent Characteristics									
Gender									
Male	4	4	2	3	6	5	9	2	1
Female	10	5	3	11	7	5	16	2	1
Role									
Principal	4	0	2	2	3	2	4	1	1
Teacher	5	7	3	8	4	6	13	2	1
Counselor	1	1	0	2	1	0			
EOS	3	0	0	2	1	1	4	0	0
District Office	1	1	0	0	4	1	4	1	0
School/Office Experience									
0-2 Years	6	4	3	7	3	6	12	1	1
3 or More Years	8	5	2	7	10	4	13	3	1
District Experience									
0-5 Years	4	3	1	7	1	4	9	0	1
6-15 Years	6	3	2	3	7	4	11	1	0
16 or More Years	4	3	2	4	5	2	5	3	1

Continued on next page

Appendix G-4: Staff Implementation Ratings (Part 1) – Continued
Number of Staff Rating Implementation of Organizational Elements High, Medium, Low

	System Alignment and Coherence			Confluence of Efforts			Effective Organizational Design		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Site Characteristics									
School Performance* **									
Less-than-Effective	1	2	2	3	2	2	3	2	0
On-the-Move	5	1	0	2	3	1	5	0	0
Effective	7	5	3	9	4	6	13	1	2
School Type						**			
Small School	6	5	2	11	3	2	11	1	2
Comprehensive	7	3	3	3	6	7	10	2	0
District Office	1	1	0	0	4	1	4	1	0
Location Type						*			
School Site	13	8	5	14	9	9	21	3	2
District Office	1	1	0	0	4	1	4	1	0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-4: Staff Implementation Ratings (Part 2)
Number of Staff Rating Implementation of Organizational Elements High, Medium, Low

	Postsecondary Articulation			Facilities and Equipment			CTE Promotion, Outreach, and Communication		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Overall	**18**	**10**	**3**	**14**	**16**	**6**	**5**	**13**	**9**
Respondent Characteristics									
Gender									
Male	6	4	0	6	6	3	2	2	3
Female	12	6	3	8	10	3	3	11	6
Role									
Principal	3	1	3	3	2	2	1	3	2
Teacher	8	6	0	9	7	2	2	5	5
Counselor	1	1	0	1	1	0	0	1	1
EOS	3	0	0	1	3	0	1	3	0
District Office	3	2	0	0	3	2	1	1	1
School/Office Experience									
0-2 Years	4	5	3	8	5	3	2	6	4
3 or More Years	14	5	0	6	11	3	3	7	5
District Experience									
0-5 Years	4	3	0	5	6	1	1	4	2
6-15 Years	8	5	0	4	5	4	4	3	4
16 or More Years	6	2	3	5	5	1	0	6	3

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Appendix G-4: Staff Implementation Ratings (Part 2) – Continued
Number of Staff Rating Implementation of Organizational Elements High, Medium, Low

	Postsecondary Articulation			Facilities and Equipment			CTE Promotion, Outreach, and Communication		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Site Characteristics									
School Performance* **									
Less-than-Effective	1	3	1	2	4	1	0	3	2
On-the-Move	5	1	0	4	1	1	3	2	1
Effective	9	4	2	8	8	2	1	7	5
School Type									
Small School	6	4	3	7	9	0	1	7	5
Comprehensive	9	4	0	7	4	4	3	5	3
District Office	3	2	0	0	3	2	1	1	1
Location Type									
School Site	15	8	3	14	13	4	4	12	8
District Office	3	2	0	0	3	2	1	1	1

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-5: Staff Implementation Ratings (Part 1)
Percentage of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Leadership at All Levels			System Responsiveness to Changing Economic Demands			Evaluation, Accountability, and Continuous Improvement		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Overall	**65.2**	**17.4**	**17.4**	**75.0**	**25.0**	**0.0**	**70.4**	**29.6**	**0.0**
Respondent Characteristics									
Gender									
Male	71.4	28.6	0.0	85.7	14.3	0.0	58.3	41.7	0.0
Female	62.5	12.5	25.0	69.2	30.8	0.0	80.0	20.0	0.0
Role									
Principal	71.4	14.3	14.3	100.0	0.0	0.0	85.7	14.3	0.0
Teacher	60.0	10.0	30.0	60.0	40.0	0.0	75.0	25.0	0.0
Counselor	100.0	0.0	0.0						
EOS	66.7	33.3	0.0	66.7	33.3	0.0	33.3	66.7	1.0
District Office	50.0	50.0	0.0	100.0	0.0	0.0	60.0	40.0	0.0
School/Office Experience									
0-2 Years	75.0	8.3	16.7	80.0	20.0	0.0	91.7	8.3	0.0
3 or More Years	54.6	27.3	18.2	70.0	30.0	0.0	53.3	46.7	0.0
District Experience									
0-5 Years	83.3	0.0	16.7	66.7	33.3	0.0	87.7	14.3	0.0
6-15 Years	77.8	11.1	11.1	87.5	12.5	0.0	63.6	36.4	0.0
16 or More Years	37.5	37.5	25.0	66.7	33.3	0.0	66.7	33.3	0.0

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Appendix G-5: Staff Implementation Ratings (Part 1) – Continued
Percentage of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Leadership at All Levels			System Responsiveness to Changing Economic Demands			Evaluation, Accountability, and Continuous Improvement		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Percent			Percent			Percent		
Site Characteristics									
School Performance* **									
Less-than-Effective	40.0	20.0	40.0	50.0	50.0	0.0	75.0	25.0	0.0
On-the-Move	100.0	0.0	0.0	80.0	20.0	0.0	60.0	40.0	0.0
Effective	63.6	18.2	18.2	77.8	22.2	0.0	76.9	23.1	0.0
School Type									
Small School	63.6	27.3	9.1	77.8	22.2	0.0	69.2	30.8	0.0
Comprehensive	70.0	0.0	30.0	66.7	33.3	0.0	77.8	22.2	0.0
District Office	50.0	50.0	0.0	100.0	0.0	0.0	60.0	40.0	0.0
Location Type									
School Site	66.7	14.3	19.1	72.2	27.8	0.0	72.7	27.3	0.0
District Office	50.0	50.0	0.0	100.0	0.0	0.0	60.0	40.0	0.0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-5: Staff Implementation Ratings (Part 2)
Percentage of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Funding		
	High/ Med High	Med	Med Low/ Low
	Percent		
Overall	**27.6**	**27.6**	**44.8**
Respondent Characteristics			
Gender			
Male	36.4	27.3	36.4
Female	22.2	27.8	50.0
Role			
Principal	42.9	14.3	42.9
Teacher	38.5	30.8	30.8
Counselor	0.0	0.0	100.0
EOS	0.0	25.0	75.0
District Office	0.0	50.0	50.0
School/Office Experience			*
0-2 Years	42.9	28.6	28.6
3 or More Years	13.1	26.7	60.0
District Experience			
0-5 Years	44.4	33.3	22.2
6-15 Years	22.2	22.2	55.6
16 or More Years	18.2	27.3	54.5
Site Characteristics			
School Performance* **			
Less-than-Effective	50.0	25.0	25.0
On-the-Move	25.0	0.0	75.0
Effective	29.4	29.4	41.2
School Type			
Small School	30.8	38.5	30.8
Comprehensive	33.3	8.3	58.3
District Office	0.0	50.0	50.0
Location Type			
School Site	32.0	24.0	44.0
District Office	0.0	50.0	50.0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
*** Excludes District Office Staff

Appendix G-6: Staff Implementation Ratings (Part 1)
Number of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Leadership at All Levels			System Responsiveness to Changing Economic Demands			Evaluation, Accountability, and Continuous Improvement		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Overall	**15**	**4**	**4**	**15**	**5**	**0**	**19**	**8**	**0**
Respondent Characteristics									
Gender									
Male	5	2	0	6	1	0	7	5	0
Female	10	2	4	9	4	0	12	3	0
Role									
Principal	5	1	1	5	0	0	6	1	0
Teacher	6	1	3	6	4	0	9	3	0
Counselor	1	0	0						
EOS	2	1	0	1	2	0	1	2	0
District Office	1	1	0	2	0	0	3	2	0
School/Office Experience									
0-2 Years	9	1	2	8	2	0	11	1	0
3 or More Years	6	3	2	7	3	0	8	7	0
District Experience									
0-5 Years	5	0	1	4	2	0	6	1	0
6-15 Years	7	1	1	7	1	0	7	4	0
16 or More Years	3	3	2	4	2	0	6	3	0

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Appendix G-6: Staff Implementation Ratings (Part 1) – Continued
Number of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Leadership at All Levels			System Responsiveness to Changing Economic Demands			Evaluation, Accountability, and Continuous Improvement		
	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low	High/ Med High	Med	Med Low/ Low
	Number			Number			Number		
Site Characteristics									
School Performance* **									
Less-than-Effective	2	1	2	2	2	0	3	1	0
On-the-Move	5	0	0	4	1	0	3	2	0
Effective	7	2	2	7	2	0	10	3	0
School Type									
Small School	7	3	1	7	2	0	9	4	0
Comprehensive	7	0	3	6	3	0	7	2	0
District Office	1	1	0	2	0	0	3	2	0
Location Type									
School Site	14	3	4	13	5	0	16	6	0
District Office	1	1	0	2	0	0	3	2	0

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix G-6: Staff Implementation Ratings (Part 2)
Number of Staff Rating Implementation of Institutional Elements High, Medium, Low

	Funding		
	High/ Med High	Med	Med Low/ Low
	Number		
Overall	**8**	**8**	**13**
Respondent Characteristics			
Gender			
Male	4	3	4
Female	4	5	9
Role			
Principal	3	1	3
Teacher	5	4	4
Counselor	0	0	1
EOS	0	1	3
District Office	0	2	2
School/Office Experience			*
0-2 Years	6	4	4
3 or More Years	2	4	9
District Experience			
0-5 Years	4	3	2
6-15 Years	2	2	5
16 or More Years	2	3	6
Site Characteristics			
School Performance* **			
Less-than-Effective	2	1	1
On-the-Move	1	0	3
Effective	5	5	7
School Type			
Small School	4	5	4
Comprehensive	4	1	7
District Office	0	2	2
Location Type			
School Site	8	6	11
District Office	0	2	2

Note: Although interviewees were asked for High/Medium/Low responses, some interviewees elected to rate implementation of some elements as Medium High or Medium Low, declined to answer, or answered "Don't Know." Statistical tests in this table are based on 5 response categories, but displayed as 3 (High and Medium High have been grouped together, as have Medium Low and Low).

* Significantly different from comparison group at 5% level; shaded light gray
** Significantly different from comparison group at 1% level; shaded dark gray
*** Excludes District Office Staff

Appendix H-1: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

HIGH QUALITY CURRICULUM AND INSTRUCTION

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**3.7**	**1.2**	**2**	**7**	Equality Among Groups
Respondent Characteristics						
Gender						0.5899
Male	15	3.5	1.1	2	6	
Female	24	3.8	1.3	2	7	
Role						0.2999
Principal	7	4.4	1.3	2	6	
Teacher	18	3.5	1.3	2	7	
Counselor	3	4.0	1.7	2	5	
EOS	5	3.0	0.7	2	4	
District Office	6	3.7	0.5	3	4	
School/Office Experience						0.3301
0-2 Years	17	3.9	1.5	2	7	
3 or More Years	22	3.5	1.0	2	5	
District Experience						0.9757
0-5 Years	13	3.6	1.4	2	7	
6-15 Years	15	3.7	1.2	2	6	
16 or More Years	11	3.7	1.1	2	5	
Site Characteristics						
School Performance						0.6519
Less-than-Effective	7	4.0	1.7	2	7	
On-the-Move	6	3.8	1.2	2	5	
Effective	20	3.5	1.2	2	6	
Missing	6	3.7	0.5	3	4	
School Type						0.8947
Small School	17	3.8	1.3	2	7	
Comprehensive	16	3.6	1.3	2	6	
District Office	6	3.7	0.5	3	4	
Location Type						1
School Site	33	3.7	1.3	2	7	
District Office	6	3.7	0.5	3	4	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-2: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

SKILLED FACULTY AND PROFESSIONAL DEVELOPMENT

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**3.2**	**1.3**	**0**	**7**	Equality Among Groups
Respondent Characteristics						
Gender						0.6948
Male	15	3.3	1.0	2	5	
Female	24	3.2	1.4	0	7	
Role						0.0638
Principal	7	4.3*	1.5	2	7	
Teacher	18	2.9	1.3	0	5	
Counselor	3	4.0	1.0	3	5	
EOS	5	2.6	0.9	1	3	
District Office	6	3.2	0.4	3	4	
School/Office Experience						0.3236
0-2 Years	17	3.0	1.4	0	5	
3 or More Years	22	3.4	1.1	2	7	
District Experience						0.3652
0-5 Years	13	2.8	1.1	1	5	
6-15 Years	15	3.5	1.6	0	7	
16 or More Years	11	3.3	0.8	2	4	
Site Characteristics						
School Performance						0.9879
Less-than-Effective	7	3.3	1.0	2	5	
On-the-Move	6	3.2	1.9	0	5	
Effective	20	3.3	1.4	1	7	
Missing	6	3.2	0.4	3	4	
School Type						0.4135
Small School	17	3.5	1.4	2	7	
Comprehensive	16	2.9	1.3	0	5	
District Office	6	3.2	0.4	3	4	
Location Type						0.8949
School Site	33	3.2	1.4	0	7	
District Office	6	3.2	0.4	3	4	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-3: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

STUDENT SUPPORT AND STUDENT LEADERSHIP

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.8**	**1.0**	**0**	**4**	Equality Among Groups
Respondent Characteristics						
Gender						0.051
Male	15	1.4	0.6	0	2	
Female	24	2.0	1.1	0	4	
Role						0.5228
Principal	7	1.6	1.0	0	3	
Teacher	18	1.8	1.1	0	4	
Counselor	3	2.7	1.5	1	4	
EOS	5	2.0	0.7	1	3	
District Office	6	1.5	0.8	0	2	
School/Office Experience						0.8716
0-2 Years	17	1.8	1.1	0	4	
3 or More Years	22	1.8	0.9	0	4	
District Experience						0.0655
0-5 Years	13	2.0	1.0	1	4	
6-15 Years	15	1.3*	0.9	0	3	
16 or More Years	11	2.2	1.0	1	4	
Site Characteristics						
School Performance						0.2534
Less-than-Effective	7	2.4	1.3	1	4	
On-the-Move	6	1.7	1.2	0	3	
Effective	20	1.7	0.9	0	4	
Missing	6	1.5	0.8	0	2	
School Type						0.7328
Small School	17	1.9	1.0	1	4	
Comprehensive	16	1.8	1.1	0	4	
District Office	6	1.5	0.8	0	2	
Location Type						0.4418
School Site	33	1.8	1.0	0	4	
District Office	6	1.5	0.8	0	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-4: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

CAREER EXPLORATION AND GUIDANCE

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**2.3**	**1.3**	**0**	**5**	Equality Among Groups
Respondent Characteristics						
Gender						0.1265
Male	15	1.9	1.2	0	5	
Female	24	2.5	1.4	0	5	
Role						0.2571
Principal	7	2.1	2.0	0	5	
Teacher	18	2.4	1.1	1	5	
Counselor	3	3.3	1.5	2	5	
EOS	5	2.6	1.1	1	4	
District Office	6	1.3	0.8	0	2	
School/Office Experience						0.7753
0-2 Years	17	2.4	1.6	0	5	
3 or More Years	22	2.2	1.2	0	5	
District Experience						0.1845
0-5 Years	13	2.5	1.2	1	5	
6-15 Years	15	1.8	1.4	0	5	
16 or More Years	11	2.7	1.3	1	5	
Site Characteristics						
School Performance						0.0466
Less-than-Effective	7	3.3*	1.3	2	5	
On-the-Move	6	3.0	1.4	1	5	
Effective	20	2.0	1.2	0	4	
Missing	6	1.3	0.8	0	2	
School Type						0.1026
Small School	17	2.2	1.2	0	5	
Comprehensive	16	2.7	1.5	0	5	
District Office	6	1.3*	0.8	0	2	
Location Type						0.0576
School Site	33	2.5	1.3	0	5	
District Office	6	1.3	0.8	0	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-5: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

MIDDLE SCHOOL ORIENTATION AND PREPARATION

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**0.8**	**0.8**	**0**	**3**	Equality Among Groups
Respondent Characteristics						
Gender						0.8986
Male	15	0.9	0.6	0	2	
Female	24	0.8	0.9	0	3	
Role						0.6397
Principal	7	0.9	1.1	0	3	
Teacher	18	0.8	0.8	0	3	
Counselor	3	0.3	0.6	0	1	
EOS	5	1.0	0.7	0	2	
District Office	6	1.2	0.4	1	2	
School/Office Experience						0.5105
0-2 Years	17	0.9	0.9	0	3	
3 or More Years	22	0.8	0.7	0	2	
District Experience						0.9427
0-5 Years	13	0.8	0.6	0	2	
6-15 Years	15	0.8	0.9	0	3	
16 or More Years	11	0.9	0.9	0	3	
Site Characteristics						
School Performance						0.3338
Less-than-Effective	7	0.4	0.5	0	1	
On-the-Move	6	0.7	1.2	0	3	
Effective	20	1.0	0.8	0	3	
Missing	6	1.2	0.4	1	2	
School Type						0.1503
Small School	17	1.0	0.8	0	3	
Comprehensive	16	0.6	0.8	0	3	
District Office	6	1.2	0.4	1	2	
Location Type						0.2792
School Site	33	0.8	0.8	0	3	
District Office	6	1.2	0.4	1	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-6: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

INDUSTRY PARTNERSHIPS

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**2.8**	**1.3**	**0**	**6**	Equality Among Groups
Respondent Characteristics						
Gender						0.7827
Male	15	2.9	1.4	0	6	
Female	24	2.8	1.2	0	6	
Role						0.2447
Principal	7	2.4	1.9	0	6	
Teacher	18	3.2	1.1	1	6	
Counselor	3	2.0	2.0	0	4	
EOS	5	3.0	0.0	3	3	
District Office	6	2.2	0.8	1	3	
School/Office Experience						0.1606
0-2 Years	17	2.5	1.4	0	6	
3 or More Years	22	3.0	1.1	1	6	
District Experience						0.9956
0-5 Years	13	2.8	1.1	0	4	
6-15 Years	15	2.8	1.4	0	6	
16 or More Years	11	2.8	1.3	1	6	
Site Characteristics						
School Performance						0.2778
Less-than-Effective	7	2.6	2.1	0	6	
On-the-Move	6	3.7	1.4	2	6	
Effective	20	2.8	0.9	0	4	
Missing	6	2.2	0.8	1	3	
School Type						0.1326
Small School	17	2.6	1.1	0	4	
Comprehensive	16	3.3	1.4	0	6	
District Office	6	2.2	0.8	1	3	
Location Type						0.188
School Site	33	2.9	1.3	0	6	
District Office	6	2.2	0.8	1	3	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-7: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

SYSTEM ALIGNMENT AND COHERENCE

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.6**	**1.0**	**0**	**5**	Equality Among Groups
Respondent Characteristics						
Gender						0.2712
Male	15	1.8	1.3	0	5	
Female	24	1.4	0.9	0	3	
Role						0.149
Principal	7	2.0	1.4	1	5	
Teacher	18	1.3	1.0	0	4	
Counselor	3	0.7	0.6	0	1	
EOS	5	2.0	0.7	1	3	
District Office	6	2.0	0.6	1	3	
School/Office Experience						0.2986
0-2 Years	17	1.8	1.2	0	5	
3 or More Years	22	1.4	0.9	0	4	
District Experience						0.9864
0-5 Years	13	1.5	0.8	0	3	
6-15 Years	15	1.6	1.2	0	5	
16 or More Years	11	1.5	1.1	0	4	
Site Characteristics						
School Performance						0.0516
Less-than-Effective	7	1.0	0.6	0	2	
On-the-Move	6	0.8*	0.8	0	2	
Effective	20	1.9	1.2	0	5	
Missing	6	2.0	0.6	1	3	
School Type						0.3641
Small School	17	1.6	0.9	0	4	
Comprehensive	16	1.3	1.3	0	5	
District Office	6	2.0	0.6	1	3	
Location Type						0.2729
School Site	33	1.5	1.1	0	5	
District Office	6	2.0	0.6	1	3	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-8: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

CONFLUENCE OF EFFORTS

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.5**	**1.2**	**0**	**5**	Equality Among Groups
Respondent Characteristics						
Gender						0.2077
Male	15	1.1	1.2	0	4	
Female	24	1.7	1.3	0	5	
Role						0.8951
Principal	7	1.6	1.7	0	4	
Teacher	18	1.4	1.5	0	5	
Counselor	3	1.0	1.0	0	2	
EOS	5	1.2	0.4	1	2	
District Office	6	1.8	0.8	1	3	
School/Office Experience						0.7743
0-2 Years	17	1.5	1.2	0	4	
3 or More Years	22	1.4	1.4	0	5	
District Experience						0.6436
0-5 Years	13	1.5	1.1	0	4	
6-15 Years	15	1.7	1.4	0	5	
16 or More Years	11	1.2	1.3	0	3	
Site Characteristics						
School Performance						0.4928
Less-than-Effective	7	1.7	2.0	0	5	
On-the-Move	6	0.8	0.8	0	2	
Effective	20	1.5	1.2	0	4	
Missing	6	1.8	0.8	1	3	
School Type						0.3802
Small School	17	1.6	1.3	0	4	
Comprehensive	16	1.1	1.4	0	5	
District Office	6	1.8	0.8	1	3	
Location Type						0.4445
School Site	33	1.4	1.3	0	5	
District Office	6	1.8	0.8	1	3	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-9: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

EFFECTIVE ORGANIZATIONAL DESIGN

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.4**	**0.9**	**0**	**3**	Equality Among Groups
Respondent Characteristics						
Gender						0.4572
Male	15	1.3	1.0	0	3	
Female	24	1.5	0.9	0	3	
Role						0.0283
Principal	7	0.6	1.0**	0	2	
Teacher	18	1.7	0.8	1	3	
Counselor	3	1.0	1.0	0	2	
EOS	5	1.2	0.8	0	2	
District Office	6	2.0	0.9	1	3	
School/Office Experience						0.1745
0-2 Years	17	1.2	1.0	0	3	
3 or More Years	22	1.6	0.9	0	3	
District Experience						0.3559
0-5 Years	13	1.2	0.7	0	2	
6-15 Years	15	1.7	1.2	0	3	
16 or More Years	11	1.4	0.8	0	2	
Site Characteristics						
School Performance						0.9157
Less-than-Effective	7	1.3	1.1	0	3	
On-the-Move	6	1.2	1.0	0	3	
Effective	20	1.4	0.9	0	3	
Missing	6	2.0	0.9	1	3	
School Type						0.2514
Small School	17	1.3	0.8	0	2	
Comprehensive	16	1.3	1.1	0	3	
District Office	6	2.0	0.9	1	3	
Location Type						0.0944
School Site	33	1.3	0.9	0	3	
District Office	6	2.0	0.9	1	3	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-10: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

POSTSECONDARY ARTICULATION

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.8**	**0.8**	**0**	**4**	Equality Among Groups
Respondent Characteristics						
Gender						0.3059
Male	15	2.0	1.1	0	4	
Female	24	1.7	0.7	1	3	
Role						0.8027
Principal	7	2.0	1.3	0	4	
Teacher	18	1.9	0.8	1	3	
Counselor	3	2.0	1.0	1	3	
EOS	5	1.6	0.5	1	2	
District Office	6	1.5	0.5	1	2	
School/Office Experience						0.7251
0-2 Years	17	1.8	0.8	0	3	
3 or More Years	22	1.9	0.9	1	4	
District Experience						0.2295
0-5 Years	13	1.9	0.9	1	3	
6-15 Years	15	1.5	0.7	0	3	
16 or More Years	11	2.1	0.9	1	4	
Site Characteristics						
School Performance						0.9252
Less-than-Effective	7	2.0	1.2	1	4	
On-the-Move	6	1.8	0.4	1	2	
Effective	20	1.9	0.9	0	3	
Missing	6	1.5	0.5	1	2	
School Type						0.6193
Small School	17	1.9	0.9	1	3	
Comprehensive	16	1.9	1.0	0	4	
District Office	6	1.5	0.5	1	2	
Location Type						0.3244
School Site	33	1.9	0.9	0	4	
District Office	6	1.5	0.5	1	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-11: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

FACILITIES AND EQUIPMENT

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**2.3**	**1.1**	**0**	**5**	Equality Among Groups
Respondent Characteristics						
Gender						0.2156
Male	15	2.5	1.1	1	5	
Female	24	2.1	1.1	0	4	
Role						0.0622
Principal	7	1.9*	1.2	0	4	
Teacher	18	2.8	1.1	1	5	
Counselor	3	2.3	0.6	2	3	
EOS	5	1.6*	0.9	1	3	
District Office	6	1.7*	0.8	1	3	
School/Office Experience						0.9172
0-2 Years	17	2.2	1.0	1	4	
3 or More Years	22	2.3	1.2	0	5	
District Experience						0.7765
0-5 Years	13	2.1	0.8	1	3	
6-15 Years	15	2.3	1.4	0	4	
16 or More Years	11	2.4	1.0	1	5	
Site Characteristics						
School Performance						0.5088
Less-than-Effective	7	2.1	1.1	1	4	
On-the-Move	6	2.8	1.3	1	4	
Effective	20	2.3	1.1	0	5	
Missing	6	1.7	0.8	1	3	
School Type						0.0215
Small School	17	1.9*	0.8	0	3	
Comprehensive	16	2.8	1.2	1	5	
District Office	6	1.7*	0.8	1	3	
Location Type						0.1535
School Site	33	2.4	1.1	0	5	
District Office		1.7	0.8			

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-12: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

CTE PROMOTION, OUTREACH, AND COMMUNICATION

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.3**	**1.0**	**0**	**4**	Equality Among Groups
Respondent Characteristics						
Gender						0.1957
Male	15	1.1	0.8	0	2	
Female	24	1.5	1.1	0	4	
Role						0.0009
Principal	7	0.6	0.5	0	1	
Teacher	18	1.1	0.9	0	3	
Counselor	3	2.3*	0.6	2	3	
EOS	5	2.6**	0.9	2	4	
District Office	6	1.3	0.8	0	2	
School/Office Experience						0.1372
0-2 Years	17	1.1	0.9	0	3	
3 or More Years	22	1.5	1.1	0	4	
District Experience						0.1674
0-5 Years	13	1.7	1.0	0	4	
6-15 Years	15	1.3	1.0	0	3	
16 or More Years	11	0.9	0.8	0	2	
Site Characteristics						
School Performance						0.9642
Less-than-Effective	7	1.4	1.3	0	3	
On-the-Move	6	1.3	1.2	0	3	
Effective	20	1.3	1.0	0	4	
Missing	6	1.3	0.8	0	2	
School Type						0.9042
Small School	17	1.4	1.1	0	4	
Comprehensive	16	1.3	1.1	0	3	
District Office	6	1.3	0.8	0	2	
Location Type						1
School Site	33	1.3	1.1	0	4	
District Office	6	1.3	0.8	0	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-13: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

LEADERSHIP AT ALL LEVELS

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**2.2**	**1.5**	**0**	**8**	Equality Among Groups
Respondent Characteristics						
Gender						0.0585
Male	15	2.8	2.1	0	8	
Female	24	1.8	1.0	0	4	
Role						0.0995
Principal	7	2.0	1.0	0	3	
Teacher	18	2.1	1.5	0	6	
Counselor	3	2.0	1.0	1	3	
EOS	5	1.2	0.4	1	2	
District Office	6	3.7*	2.3	2	8	
School/Office Experience						0.1825
0-2 Years	17	1.8	1.0	0	4	
3 or More Years	22	2.5	1.9	0	8	
District Experience						0.1681
0-5 Years	13	1.6	1.0	0	4	
6-15 Years	15	2.7	1.8	1	8	
16 or More Years	11	2.2	1.7	0	6	
Site Characteristics						
School Performance						0.3367
Less-than-Effective	7	1.4	0.8	0	2	
On-the-Move	6	1.7	0.8	1	3	
Effective	20	2.2	1.5	0	6	
Missing	6	3.7	2.3	2	8	
School Type						0.0306
Small School	17	2.1	1.4	0	6	
Comprehensive	16	1.8	1.1	0	4	
District Office	6	3.7**	2.3	2	8	
Location Type						0.0105
School Site	33	1.9	1.3	0	6	
District Office	6	3.7*	2.3	2	8	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-14: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

SYSTEM RESPONSIVENESS TO CHANGING ECONOMIC DEMANDS

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.2**	**1.1**	**0**	**5**	Equality Among Groups
Respondent Characteristics						
Gender						0.2701
Male	15	1.4	1.4	0	5	
Female	24	1.0	0.8	0	3	
Role						0.1265
Principal	7	1.7	1.8	0	5	
Teacher	18	0.9	0.8	0	3	
Counselor	3	0.7	0.6	0	1	
EOS	5	2.0*	0.7	1	3	
District Office	6	0.8	0.8	0	2	
School/Office Experience						0.1114
0-2 Years	17	1.5	1.3	0	5	
3 or More Years	22	0.9	0.8	0	3	
District Experience						0.4711
0-5 Years	13	1.5	0.9	0	3	
6-15 Years	15	1.0	1.3	0	5	
16 or More Years	11	1.0	1.0	0	3	
Site Characteristics						
School Performance						0.4413
Less-than-Effective	7	1.3	1.0	0	3	
On-the-Move	6	0.7	0.8	0	2	
Effective	20	1.4	1.3	0	5	
Missing	6	0.8	0.8	0	2	
School Type						0.7325
Small School	17	1.2	0.9	0	3	
Comprehensive	16	1.3	1.4	0	5	
District Office	6	0.8	0.8	0	2	
Location Type						0.4406
School Site	33	1.2	1.1	0	5	
District Office	6	0.8	0.8	0	2	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-15: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

EVALUATION, ACCOUNTABILITY, AND CONTINUOUS IMPROVEMENT

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**1.7**	**1.1**	**0**	**4**	Equality Among Groups
Respondent Characteristics						
Gender						0.1471
Male	15	1.4	1.0	0	4	
Female	24	2.0	1.2	0	4	
Role						0.7484
Principal	7	1.7	1.6	0	4	
Teacher	18	1.7	1.1	0	4	
Counselor	3	1.0	1.0	0	2	
EOS	5	1.8	0.8	1	3	
District Office	6	2.2	1.2	1	4	
School/Office Experience						0.1389
0-2 Years	17	2.1	1.3	0	4	
3 or More Years	22	1.5	1.0	0	4	
District Experience						0.7904
0-5 Years	13	1.8	1.0	0	4	
6-15 Years	15	1.9	1.2	0	4	
16 or More Years	11	1.5	1.4	0	4	
Site Characteristics						
School Performance						0.9214
Less-than-Effective	7	1.6	1.5	0	4	
On-the-Move	6	1.8	1.5	0	4	
Effective	20	1.7	1.0	0	4	
Missing	6	2.2	1.2	1	4	
School Type						0.5024
Small School	17	1.5	1.1	0	4	
Comprehensive	16	1.8	1.2	0	4	
District Office	6	2.2	1.2	1	4	
Location Type						0.3396
School Site	33	1.7	1.2	0	4	
District Office	6	2.2	1.2	1	4	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response.

Appendix H-16: Spend-a-Dot Response Summaries
Staff Importance Ratings for CTE Program Elements

FUNDING

Characteristics	Observations	Mean	Std. Deviation	Minimum	Maximum	Overall p-value
Overall	**39**	**2.4**	**1.5**	**0**	**7**	Equality Among Groups
Respondent Characteristics						
Gender						0.3345
Male	15	2.7	1.4	1	5	
Female	24	2.3	1.6	0	7	
Role						
Principal	7	2.3	1.6	0	5	0.9431
Teacher	18	2.6	1.8	0	7	
Counselor	3	2.7	1.2	2	4	
EOS	5	2.6	0.5	2	3	
District Office	6	2.0	1.3	1	4	
School/Office Experience						0.3299
0-2 Years	17	2.7	1.3	0	5	
3 or More Years	22	2.2	1.6	0	7	
District Experience						0.6108
0-5 Years	13	2.8	1.0	1	4	
6-15 Years	15	2.3	2.0	0	7	
16 or More Years	11	2.2	1.2	1	5	
Site Characteristics						
School Performance						0.6208
Less-than-Effective	7	2.1	1.6	0	4	
On-the-Move	6	3.0	2.4	0	7	
Effective	20	2.5	1.3	0	5	
Missing	6	2.0	1.3	1	4	
School Type						0.6164
Small School	17	2.4	1.1	0	4	
Comprehensive	16	2.7	1.9	0	7	
District Office	6	2.0	1.3	1	4	
Location Type						0.4466
School Site	33	2.5	1.5	0	7	
District Office	6	2.0	1.3	1	4	

** Significantly different from comparison group at 1% level
* Significantly different from comparison group at 5% level
Comparison group is shaded in gray. The p-value in the rightmost column refers to an F-test that all of the categories have the same response