The Research and Planning Group for California Community Colleges (RP Group) strengthens the ability of California community colleges to undertake high quality research, planning, and assessments that improve evidence-based decision making, institutional effectiveness, and success for all students. It does so through three primary strategies. First, RP’s Center for Student Success (CSS) conducts research and evaluation projects that utilize the skills and unique perspectives of California community college institutional researchers, faculty, and administrators. Second, the RP Group builds the skills of administrators, faculty, and staff through a broad range of professional development offerings and by disseminating effective practices. Finally, the RP Group develops strategic partnerships and provides leadership on statewide initiatives to help keep evidenced-based decision making, accountability, and student success at the forefront of California community college efforts.

Since 2000, CSS has led dozens of system-level research and evaluation projects that have resulted in significant changes to the California community college system, including the laying of the groundwork for the statewide accountability system (ARCC), the modification of admission requirements for the registered nursing programs, and the publication *Basic Skills as the Foundation for Success in the California Community Colleges*, which was instrumental in the development of the Basic Skills Initiative and provided the framework for evaluating college-level basic skills programs throughout the state. The success of CSS projects is rooted in their design. Each project is led by a unique team of community college staff, faculty, and administrators who have proven research skills and a direct understanding of the subject at hand. Projects culminate in audience-specific products that stimulate discussion, improve outcomes, and strengthen student success. You can find out more about CSS research and the RP Group at www.rpgroup.org
Introduction

The Research and Planning Group’s Center for Student Success is currently engaged in the Career and Technical Education (CTE) Transfer Research Project. This study aims to assess the state of transfer between community colleges and four-year institutions for CTE students (2/4 CTE transfer) and document factors that inhibit and support such transfer. Funding from the California Community College's Chancellor's Office launched Phase I of this investigation, conducted between Fall 2007 and Summer 2009. The research continues into a second stage with additional support from the James Irvine Foundation; Phase II of the project will conclude in Fall 2010.

This document summarizes an extensive review of literature related to CTE transfer performed during Phase I. The research team carried out this literature review between Fall 2007 and Spring 2008 to provide context for its subsequent exploration. Specifically, the goal was to identify current research on and policies and practices impacting occupational transfer; inform the study’s research questions and design; and distinguish gaps in existing research that could potentially be addressed by the CTE Transfer Research Project. This summary highlights information found in the literature that particularly relates to preliminary results from the study’s first phase and in a few cases, supplements the initial literature review with publications and findings produced after Spring 2008.

Reader’s Guide

Based on the available literature, this document addresses the following: 1) the definition of CTE transfer; 2) the context for studying CTE transfer; 3) models that facilitate and support CTE transfer; and 4) factors that influence this transition. Where possible, information is highlighted on the status of these issues in California policy and practice. Each section concludes with the identification of specific research questions that arise from the literature to guide the CTE Transfer Research Project’s quantitative and qualitative investigation, including those that the team addressed during Phase I or will respond to during Phase II.

The information presented in this literature review summary reflects one major discovery: only limited research has been conducted on transfer between community college and four-year institutions in occupational disciplines. This finding underscores that CTE transfer is an emerging area of educational practice, policy and research.
What is CTE Transfer?

Practitioners, policymakers and researchers alike have historically tied career technical education, often referred to as vocational or occupational programming, to the terminal function of the community college system. Separating students in CTE disciplines from those in transfer programs, vocational candidates were generally expected to complete their education and enter the workforce; in turn, they were not considered transfer bound (Townsend, 2001). However, in recent decades, researchers have begun to examine if, how and why CTE students make this transition to baccalaureate programming and what states and institutions do to encourage or impede it. In the early 1980s, Kintzer (1983) defined a “vocational transfer student” as one who moves to a senior institution as a career/occupational candidate rather than to pursue a liberal arts degree. He also predicted increased attention would be paid to vocational transfers as “more four-year colleges developed career-oriented undergraduate programs and worked with community colleges to develop joint degree programs” (Townsend, 2001).

This study acknowledges that today, CTE programs are designed to achieve a wide range of outcomes and transfer is only one such outcome. Yet, recent workforce studies (referred to in the following section) agree that there is a pressing need and opportunity for both the community college and four-year systems in the state to increase transfer for students in a large number of CTE disciplines. Given this trend, community colleges and other education stakeholders face a new era in career technical education where defining what occupational transfer does and should mean for their students will become all the more critical.

For the purposes of this study, CTE programs are those that include 12 or more units of transferable coursework that is either (1) marked as vocational in the California's Taxonomy of Programs (TOP) guide (a system of numerical codes for collecting and reporting information on community college programming) or (2) relates to a high-growth, high-demand occupation in the state. Notably, the California Community Colleges’ TOP code system demarcates “vocational” and “transfer” programs; those with a vocational designation can be counted for the purposes of government vocational education funding and accountability mandates. However, separating “vocational” from “transfer” programs may present limitations for students and institutions and reinforce traditional ways of thinking about CTE. The distinction can be particularly problematic when considering those disciplines that relate to preparation for specific occupations and simultaneously place students on a path toward baccalaureate completion (e.g., engineering).

The following section further explores the changing context for CTE and how the historical view of vocational education as ending with community college certificates and degrees is evolving in some educational circles.

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Why is CTE Transfer Important?

Changing workforce demands

At a time when gains in education are becoming sluggish, several national studies project an increased need for a workforce with higher levels of education (Kirsch, Braun, Yamamoto & Sum, 2007; Aspen Institute, 2003). In the literature researchers debate what is driving this demand—the market value for higher-level credentials to access particular occupations or actual changes in the education and skills requirements of jobs (Kirsch, 2007). Moreover, researchers ascribe to different theories about what kind of post-secondary preparation is most urgently required to fuel our nation’s economy. In particular, several studies examine the need for baccalaureate-trained workers versus those with sub-baccalaureate degrees and certificates across and within sectors (Aspen Institute, 2003; Carnevale, 2008; Holzer & Lerman, 2007; Levy, 2007; Executive Office of the President-Council of Economic Advisers, 2009).

Reports produced by multiple initiatives and organizations in California emphasize the urgent need to close the gap between the growing number of positions that demand baccalaureate-level preparation and the number of individuals available to fill them (Fountain and Cosgrove, 2006; Johnson & Reed, 2007; Reed, 2008; Johnson, 2009). Most recently, the Public Policy Institute of California (PPIC) released a series of reports projecting a significant shortage by 2025 in the supply of college-educated workers versus the demand for those workers by employers. These reports suggest that while the number of baccalaureate-prepared workers increased between 1980 and 2006, this supply did not keep pace with employer need for four-year college graduates. The trend can be attributed largely to the fact that those currently retiring have high levels of four-year degree attainment while those entering the workforce have dramatically lower baccalaureate preparation. Based on these developments, PPIC predicts that by 2025, the percent of jobs for which a bachelor’s degree is required or preferred will increase to 41% of all employment in California (Reed, 2008). At the same time, the study predicts that only 33% of the population will possess a baccalaureate degree. PPIC and other researchers conclude that the resulting gap will present a significant economic challenge to the state that urgently requires a coordinated response from educators, policy makers, funders and employers.

Research Questions:

- Which sectors and disciplines will show the greatest need for workers with post-secondary education in California— in terms of number of job openings and the rate of growth?
- In which occupations and disciplines should California community colleges and four-year institutions prioritize transfer efforts?
- How well do community colleges and four-year institutions collaborate to transfer students in these disciplines?
Changing student demographics

Community colleges increasingly serve as the point of entry for individuals to higher education and this movement is particularly alive in California. Nationwide, just over one-half of all first time freshmen attend community colleges; by comparison, in California, two-thirds of all first-time freshmen are community college enrollees (NCES, 1993; Wassmer, Moore & Shulock, 2003). Further, recent estimates for California’s public undergraduate population show that figure rising to nearly three-quarters (Shulock & Moore, 2007).

Using national data from the American Association for Community Colleges, the Lumina Foundation (2006) reported that these students are often older, working adults. The average age of a community college student is 29 years old with 32% of students over the age of 30. Most (85%) are employed with more than half holding down full-time employment. According to this information, 30% of those who work full time also take a full academic load (12 or more credit hours). This rate rises to 41 for students 30-39 years of age. According to Measuring Up 2006, a national report on higher education, California ranked second highest in the rate of participation of working-age adult enrollment in post-secondary education, just below New Mexico (National Center for Public Policy and Higher Education). Moreover, as noted by Ignash and Kotun (2005), research indicates that these adult students will also enroll in multiple institutions and transfer more than once.

National research also shows that a significant portion of these community college students enroll in vocational education (Cohen & Brower, 1996; Townsend, 2001; Hudson & Shafer, 2004). For example, a 2004 report produced by the National Center for Education Statistics (NCES) found that a majority of baccalaureate and sub-baccalaureate students enrolled in career-oriented majors in 1999-2000, as opposed to academic majors. According to this study, “sub-baccalaureate students were more likely than baccalaureate students to enroll in career majors, with about 7 out of 10 sub-baccalaureate students having vocational career majors” (Hudson & Shafer, 2004).

The literature challenges the widely held belief that college students in career and technical education programs do not wish to transfer (Townsend, 2001). Significantly, one longitudinal report (Berkner, Horn & Clune, 2000) found that about one-third of vocational students enroll with the intent to transfer to four-year institutions, representing a 23% increase in CTE student interest in transfer based on data collected a decade earlier. However, limited research exists examining the actual transfer rates of students from two-year occupational to four-year baccalaureate programs.

One NCES (Bradburn, Hurst & Peng, 2001) report indicates that between 20% and 40% of vocational students successfully make the transition to baccalaureate institutions. As noted by Townsend (2001), tracking student transfer in occupational disciplines can be challenging as students often take a “non-linear” path, leaving the community college and returning to higher-education after several years based on the demands of the workplace or an evolution in the skills and knowledge necessary for success in rapidly-changing occupations. At present, student transfer rates from California community college vocational programs are not specifically tracked through the system’s performance framework detailed annually through the Accountability Reporting for Community Colleges (ARCC) initiative. State-defined

2 Community college transfer rates are reportedly low according to the literature and they can range considerably given the varying ways of calculating this data used by different researchers. Of note, some estimates may exclude vocational students from the equation given the kinds of courses or programs in which they enroll, thus potentially lowering the transfer rate further (Townsend, 2001).
and generated Perkins accountability data currently lumps CTE student transfer rates together with degree and certificate completion. Accordingly, colleges are unable to identify specific information and trend data on their CTE students' pursuit of baccalaureate degrees.

**Research Questions:**

- What are California community college CTE enrollments? What are these students' demographics?
- What impact do the demographic characteristics of CTE students have on transfer?
- How should CTE transfer be defined?
- What are the transfer rates for California community college CTE students?
- What do CTE students' transfer patterns look like?

**Changing approach to career preparation**

Reflective of changes in students' educational interests and goals and in the economic and workforce demands facing our nation, the literature reveals that a growing number of educators are thinking differently about the relationship between community college career preparation and transfer. As noted above, transfer preparation and vocational education have been historically viewed as separate functions within community colleges, with some researchers pointing to career preparation as a potential obstacle to student outcomes like transfer and degree attainment (Brint & Karabel, 1989, Dougherty, 2001). Yet, many community colleges are rethinking these silos, considering ways to expand CTE beyond the terminal certificates and degrees commonly characterizing this part of the system's mission and including transfer as an option for students enrolled in career-focused programs.

As noted by the Association for Career and Technical Education, CTE has advanced from a “limited number of vocational programs available at the turn of the 20th century into a broad system that encompasses a variety of challenging fields in diverse subject areas…. constantly evolving [with] the changing global economy.”3 Terming this shift “new vocationalism,” Bragg (2001) outlines several principles that characterize this revised way of thinking, a few of which are highlighted given their specific relevance to CTE 2/4 transfer:

- An emphasis on career clusters or pathways4 that extend from entry to the professional level in career fields integral to the current and future marketplace such as business, health care and technology—connecting community college preparation explicitly to workforce and economic needs
- Integrated academic and vocational curricula and instruction that prepares individuals to solve real-world problems

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3 [http://www.acteonline.org/cteresearch.aspx](http://www.acteonline.org/cteresearch.aspx)

4 The Center for Occupational Research and Development, with the U.S. Department of Education's endorsement, defines a "career pathway" as "a coherent sequence of rigorous academic and technical courses that prepare students for successful completion of state academic standards and support transition to more advanced post secondary coursework related in a career area of interest" (Hull, 2004).
A focus on ensuring vocational education is highly integrated into the K-16 system and broader economic and social structures—emphasizing career ladders that offer opportunities for educational and career advancement.

Recognizing this changing dynamic in community college career preparation, the federal government permitted for the first time in the 2006 Carl D. Perkins Career and Technical Education Act (CTEA) reauthorization the allocation of funds to facilitate the transition of sub-baccalaureate degree students to baccalaureate-level programming. The Perkins legislation previously precluded this kind of investment on the part of states and colleges.

**Research Questions:**

- What is the prevailing thinking about CTE among California community college faculty, counselors and other practitioners?
- Do these practitioners consider transfer an option for students in occupational disciplines or does current practice reflect the traditional approach of primarily encouraging completion of terminal degrees and certificates?
- How does the thinking about CTE transfer vary by college and/or by discipline?
- How have CTE reform initiatives (see following page) played into ground-level efforts to encourage 2/4 CTE transfer?

**How is California rethinking CTE?**

California has made several efforts to improve career preparation and align its education systems with the state’s workforce and economic needs. For example, the *California Community Colleges System Strategic Plan 2006* outlines partnerships for economic and workforce development as one of five primary goals, including development of career pathways, support for regional collaboration and alignment with long-term economic and workforce trends. One realization of this goal includes the Economic and Workforce Development (EWD) program of the California community colleges. Regional EWD centers hosted in colleges across the state provide education and training services to employers in emerging and/or growth industries such as health, advanced manufacturing and transportation. In some cases, these initiatives broker relationships between colleges and four-year institutions that promote transfer in disciplines related to high-demand occupations.

Additionally, the 2005-06 *Governor’s Initiative on Improving and Strengthening Career Technical Education* passed through Senate Bill 70 (SB70), funds CTE opportunities for middle and high school students and seeks to strengthen linkages between secondary schools and community colleges. Four-year partners were encouraged to take part in this initiative, which despite the current economic downturn, is expected to receive modified funding through 2013-14. California’s *2008-2012 California State Plan for Career Technical Education* (2007), developed as part of the CTEA 2006 reauthorization, also highlights investment in career technical education as the lynchpin in
What approaches and strategies exist to support and facilitate CTE Transfer?

Articulation agreements between community colleges and four-year institutions in CTE disciplines serve as the primary traditional method for supporting transfer between postsecondary segments. Yet, the literature refers to several emerging approaches and strategies that also lay the foundation for transfer in CTE disciplines and/or that aid students in pursuing baccalaureate-level preparation in a particular occupation. These examples include innovative associate and bachelor’s degrees such as the Associate of Applied Science and community college baccalaureate; university partnerships; and special articulation agreements designed to transfer a block of credits in a particular discipline or major.

Innovative Degrees

A growing body of research shows a range of models to bolster CTE transfer pathways and connect occupational associate degrees to baccalaureate options, recognizing that “the educational needs of the workforce have resulted in increasing amounts of course content that have begun to exceed the limits of what can be called two year degrees” (Puyear, 1998). These models include specialized associate and bachelor’s degrees; take varying but often overlapping forms; emphasize different kinds of content; are conferred by both two- and

California’s workforce development plan and similarly emphasizes career pathways. Although the bulk of this plan focuses on K-12 and community college infrastructure and alignment, it also outlines a system that will move vocational education in the direction of greater two- to four-year program articulation.

At the same time, the California Postsecondary Education Commission (CPEC) asserts that the state “has no single workforce and economic development plan that aligns workforce systems with all levels of education and economic development entities” (CPEC, 2007). The Commission notes that current federal funding requirements mandated through CTEA and the Workforce Investment Act (WIA) do not yet serve that function. CPEC views California’s vast array of CTE funding streams as adding to the complexity. The Postsecondary Commission notes that the lack of a robust career development component throughout the system leaves students with no clear understanding of the resources and programs available to successfully continue and complete a course of study and how best to plan and implement career goals including transfer (CPEC, 2007).
four-year institutions; and can be initiated at the institutional level or legislated by the state. Research uncovers a range of factors contributing to institutions and states adopting these models. While motivations and approaches differ by model and across states, common themes include efforts to:

- address specific institutional or curricular needs (Townsend, Bragg, & Rudd, 2009)
- reduce duplication of coursework and increase course-taking efficiencies (Ignash & Kotun, 2005)
- respond to particular workforce demands (Townsend, Bragg, & Rudd, 2009)
- enhance transfer as a means to grow baccalaureate attainment in the state (Townsend, Bragg, & Rudd, 2009)
- improve financial, geographic and programmatic access for students to bachelor's level preparation; and (Floyd & Walker, 2009; Jacobs, J., Grothe, M. & Borofsky, D., 2007)
- address the various issues of adult learners in their efforts to advance to bachelor's level training and progress to supervisory or management-level positions (Townsend, Bragg & Rudd, 2009)

Critiques of these models include concerns about “watering down” and decreasing the quality of baccalaureate degrees, departing from the community college mission for those two-year institutions offering four-year degrees and increasing the cost of an already expensive higher education system (Bragg, Townsend & Rudd, 2009; Floyd & Walker, 2009). While the following literature reveals multiple models to enhance CTE transfer and baccalaureate attainment, minimal research exists exploring their efficacy, largely due to their emergent nature.

Community colleges across the nation are offering applied associate degree programs in specific technical/occupational areas such as Accounting and Welding. Applied associate degrees have been those traditionally designed for students who plan to enter the workforce after completion of program requirements, focusing content on a specific occupation. However, some colleges have begun to develop articulation agreements with four-year colleges that allow students in these applied degree programs to transfer. For example, states like Oregon and Washington offer the Associate of Applied Science – Transfer (AAS-T)—a professional-technical degree with a core of general education courses commonly accepted when students transition from community colleges to four-year institutions. These degrees focus on particular occupations such as early childhood education or computer programming and are often negotiated for transfer between individual community colleges and four-year institutions. According to Bragg, Townsend and Rudd (2008), applied associate degrees provide a “potentially important curriculum path to the baccalaureate for a sizeable number of postsecondary students.”

Research by Ignash and Kotun (2005) found a significant number of states engaged in efforts to improve CTE transfer including the development of degrees that grouped into three categories: 1) career ladder; 2) inverse (or upside down); and 3) management ladder degrees. In their study, 31 of 40 responding states indicated they were or had developed “career ladder” degrees through policies or agreements that transfer an occupational to a bachelor's degree in a specific field such as nursing or computer programming (e.g.

5 http://www.spscc.ctc.edu/academics/degrees.html
Associate's Degree in Nursing to Bachelor's of Science in Nursing). States included Florida, Texas, Illinois, New York and Washington.

Ten states reported developing “inverse” or “upside down degrees,” in which general education coursework is typically taken in the junior and senior years and the technical and vocational work is mastered at the community college. States included Indiana, Kentucky, North Carolina and Washington. Eight states specified developing “capstone” or “management ladder” degrees which “cap off” the two-year technical degree with broad-based courses in the field. Some additional technical coursework may be allowed during the last two years of study. These states included Arizona, Michigan, New York, Utah and Wisconsin.

Townsend, Bragg and Ruud (2009) performed a 50-state inventory of “applied baccalaureate degrees,” which they define as follows:

a bachelor’s degree designed to incorporate applied associate courses and degrees once considered ‘terminal’ or non-baccalaureate level while providing students with the higher-order thinking skills and technical knowledge and skills so desired in today’s job market.

According to their research, institutions assign these programs a range of titles such as Bachelors of Applied Science, Bachelors of Applied Arts and Sciences, Bachelors of Technology or the more traditional Bachelors of Science and Bachelors of General Studies. Of the states contacted, 39 (78%) indicated they offer applied baccalaureate degrees in a public higher education institution. States with more than seven institutions offering these degrees include Kentucky, Florida, Georgia, Illinois, Texas and Washington.

As discussed by Townsend, Bragg and Ruud (2009) and explored extensively by Floyd and Walker (2009), Floyd (2006), Floyd, Skolnik and Walker (2005), community colleges in states across the nation have begun conferring applied baccalaureate degrees in addition to four-year institutions. Termed “community college baccalaureate degrees” (CCB), Floyd and Walker (2009) define this option specifically as “the degree granted by postsecondary institutions approved for associate degree awards with the addition of limited baccalaureate degree approval in specialized fields.” Their research identified 16 states authorizing community college baccalaureates, although only 11 states legislate that institutions providing this degree maintain their emphasis on the community college mission. These states include Florida, Nevada, New York, Texas, Utah and Washington.

How has Florida implemented career ladder & capstone degrees?

According to research conducted by the Columbia University Teachers College Community College Research Center (Hughes & Karp, 2006), Florida’s state colleges offer nine “career ladder” arrangements through AS to BS articulation. Those who complete an AS in one of these nine programs are guaranteed admission to a university BS program in the same field. Florida legislation also enables universities to create “capstone” programs that enable AS degree recipients to achieve their BS degree. As juniors and seniors, these students top off major and technical requirements completed through their community college program with general education coursework at the university level.
University Centers

Another model with a slightly longer history, several community colleges have formed collaborative relationships with four-year institutions, broadly termed “university center[s],” to provide students greater local access to the baccalaureate degree (Lorenzo, 2005). Most of these arrangements have developed through collaboration with local and regional partners to meet pressing workforce needs (Windham, Perkins & Rogers, 2001). Lorenzo (2005) notes that the university center does not award the baccalaureate, rather the partnering institution confers the degree. According to Lorenzo (2005), these university center arrangements group into six different formats. Collaborations range from minimal commitments such as co-location of university programs and services at the community college to intensive arrangements such as the sponsorship model where the community college leads center development, operations, program selection and engagement of public and private partners. Florida, Illinois, Michigan, Ohio, Texas are homes to some of the most intensive models.

Special Block Articulation Agreements

Finally, Ignash and Kotun (2005) identified several states that have developed articulation agreements or policies between community college and four-year partners to facilitate the transfer of “smaller ‘chunks’ of courses within occupational/technical programs.” Of 40 responding states, 19 indicated arrangements that allowed for the transfer of blocks of courses within a CTE major. An analysis of state responses indicated that the most commonly articulated fields included nursing, computer science and engineering with a handful reporting criminal justice, business, allied health and early childhood education. California indicated engineering and business were most easily articulated.

Research Questions:

- What can California learn from other states that have developed other models for supporting CTE transfer?
- What are the limitations of these models in the California context?
- How effective are the alternative models already embraced by CA?
- Do the colleges and universities implementing them show improved transfer rates and baccalaureate attainment for their students?
- How aware of these options are California community college policy makers, practitioners and students?

How has Washington enacted Community College Baccalaureate (CCB) degrees?

Washington’s legislature passed a bill (E2SHB 1794) in 2005 to improve baccalaureate attainment in the state, including provision of applied baccalaureate degrees by community colleges. Washington State Board of Community and Technical Colleges (SBCTC) received funding to initiate pilots at four community colleges serving 100 students total beginning in Fall 2007; the Board approved two additional pilots to admit students in Fall 2009.

According to SBCTC, degrees must specifically target those students with an associate of applied science to maximize use of technical course credits in baccalaureate degree attainment and include a curriculum that integrates theoretical and applied knowledge and skills in a particular occupational area. Colleges receive reimbursement at the same rate as universities for students engaged in applied baccalaureate programs.

For more information, visit http://www.sbtc.ctc.edu/college/_e-transferbachelorspilots.aspx
How has California engaged with models to support & facilitate transfer?

While California does not generally appear in the abovementioned research, ground-level investigation reveals that the state is in fact home to some strategies to facilitate transfer in occupational disciplines.

**University Centers:** A handful of community colleges across the state have generated partnerships with a range of universities based on local needs and resources. For example, Cañada College’s university center offers the baccalaureate in nursing, a degree in child and adolescent development and some business courses through San Francisco State University. A collaboration with CSU-East Bay leads to a bachelor’s in health science. College of the Canyons maintains arrangements with three private universities (Chapman University, La Verne University, and National University) and three public institutions (CSU-Bakersfield, CSU-Northridge, and UC-Los Angeles). Bachelor’s degree options are available in a range of disciplines such as business administration, child development and criminal justice.

In 2006, the California legislature allocated $100,000 for the Baccalaureate Partnership Program (BPP) which competitively awarded two $50,000 grants through the State Chancellor’s Office. The purposes of this funding included increasing access to bachelor’s degrees in areas with low baccalaureate attainment and meeting documented labor market demand. College of the Sequoias developed a partnership with CSU-Fresno resulting in the provision of baccalaureate degrees in early childhood development with additional options such as social work, nursing, business and criminology in development. Porterville College collaborated with CSU-Bakersfield to confer a bachelor’s degree in Child Adolescent and Family studies. BPP has not received continued funding since the initial allocation, although efforts continue at both colleges.

**Bachelors of Applied Studies:** Designed for “community college students who have earned associate degrees in technical fields for which there is no apparent bachelor’s degree program into which they may readily transfer,” CSU-Dominguez Hills and CSU-Stanislaus both offer this degree, each establishing their programs in the late 1990s. Students must earn an associate degree prior to program entry and the interdisciplinary curriculum focuses on preparing them with management and supervisory skills. Both universities offer the degree through their College of Business.

**Bachelors of Vocational Education:** CSU-San Diego, CSU-San Bernardino and CSU-Sacramento offer this option, in existence since 1943 with the passage of the Swan Bill. This baccalaureate program is intended for vocational professionals with more than seven years experience who wish to teach in their area of expertise. While students submit an application to the State Board of Examiners for Career Technical Teachers, individual institutions determine how many units to award for work experience. Students then take teacher education classes at the university.

**Special Articulation & Transfer Agreements:** Some individual community colleges locally negotiate CTE program-level articulation agreements with CSUs and UCs, although these do not appear on ASSIST, an online information system for those interested in transferring between California’s public community colleges and universities. Other initiatives like the Intersegmental Major Preparation Articulate Curriculum (IMPAC) and Lower-Division Transfer Pattern (LDTP) have also promoted agreements designed to facilitate community college students’ transfer into particular occupational disciplines. For example, through IMPAC, community college and baccalaureate Nursing faculty collaborated with Chemistry instructors to consolidate three Chemistry courses required for transfer to the CSU BSN programs into one, five-unit course, making lower-division major requirements identical for entry into all CSU BSN programs.
What factors impact CTE transfer?

The research also indicates a range of factors can impact CTE transfer, including those any community college student might encounter as well as those specific to students attempting transfer in occupational disciplines.

Factors Impacting Transfer in General

The literature identifies several elements that influence general student transitions from community colleges to four year institutions which can be informative to the CTE transfer discussion. These elements include state-level policies, institutional practices and particular student attributes.

Wellman (2002) notes several state-level variables that can impact transfer including: governance that takes into account multiple factors influencing transfer; enrollment planning that anticipates student demand; academic policies that promote transfer; and data collection and accountability that tracks success and provides transparency to the legislature. She argues that “states need to understand the correlates of success within their own state, to build upon them, and to identify the missing ingredients for students and institutions that do not have a history of success,” (Wellman, 2002).

At the local level, research shows that institutional commitment can significantly influence transfer rates (Cohen & Brawer, 1996). This collective dedication of administration, faculty, counselors and support staff to moving students from community college to four-year institutions is referred to as the “transfer culture,” (Wassmer, Moore & Shulock, 2003). Simply put, the stronger the culture, the higher the rates of transfer. Factors contributing to a transfer culture include: counselor advisement (Wassmer, Moore & Shulock, 2003); faculty involvement (Cuseo, 1998); student interaction and engagement (Dougherty, 2001; Moore & Shulock, 2007); and transfer center support (Zamani, 2001).

Moreover, individual student attributes or characteristics also impact transfer to four-year institutions. Transfer students tend to come from historically underrepresented groups, be non-traditional students, and use the community college as the primary portal for post-secondary education (Dougherty and Kienzl, 2006). In turn, research shows that several variables play a role in the success or failure of students’ transfer process including: extent of academic preparation (Best & Ghering, 1993; Roska, 2006); the availability of financial resources, access to support for navigating the educational system and socio-economic status (Dougherty & Kienzl, 2006; Roska, 2006; Moore & Shulock, 2007); enrollment status (Roska, 2006); age, gender and ethnicity (Dougherty & Kienzl, 2006; Moore & Shulock, 2007); and individual motivation (Roska, 2006).

Research Questions:

- What state-level transfer policies and practices in California may be inhibiting or facilitating CTE transfer specifically?
- Observing other states, what combination of or revision in policies should California consider to promote CTE transfer?
- At the institutional level, what are CTE programs and/or colleges doing to develop a culture of transfer with occupational students?
- In terms of student characteristics, how do attributes of CTE students differ from traditional transfer path students and how do these factors impact their transfer motivations, experience and success?
Factors Specifically Impacting CTE Transfer

Limited research discusses factors that uniquely effect student transfer in CTE disciplines. The research highlights fundamental issues of alignment between two- and four-year systems that can compromise smooth transitions and clear career pathways. Most of the literature discusses specific challenges CTE students encounter when attempting to transfer credits. An additional factor impacting occupational transfer identified by the literature includes the goals and expectations community colleges have for their CTE students.

Systems Alignment

The literature notes that fundamental issues of coordination between two- and four-year systems contribute to the disjointed nature of career pathways for CTE students, including transfer. This lack of alignment and cohesion can lead to a range of challenges encountered by vocational students when transferring credits earned at their community college to their receiving institution (see below). As observed by Hughes and Karp (2006), many states bifurcate higher education into community college and four-year university systems which are organized as separate entities with distinct governance and leadership. These divisions can minimize communication and maximize confusion between systems, with community colleges unclear about university-level expectations and four-year institutions unaware of what CTE students learned prior to their transfer (Hughes & Karp, 2006). This issue is underscored by a 2003 Lumina Foundation for Education survey designed to identify barriers to the universal acceptance of the associate degree as equivalent to the first two years of study at a senior institution underscores this issue (Lumina Foundation for Education, 2003). Respondents from both community colleges and four-year institutions identified a range of obstacles particular to vocational transfer based in poor communication, lack of understanding about one another's expectations and requirements and insufficient alignment between systems.

Research on general issues of transfer in California echoes these findings. With three systems of higher education established under the California Master Plan for Higher Education (1960), state policy makers intended the transfer function to be a primary point of access to baccalaureate-level preparation. However, several studies note that despite the intentions for transfer outlined in the original plan, results have fallen short of the original goal. As discussed by Reeves Bracco and Callan (2002), the level of collaboration needed to support student transitions is inhibited by a governance structure that is separated into three distinct “silos” or tracks, limiting the opportunity to develop a more fluid transfer process.

Research Questions:

- How do issues of alignment specifically impact CTE transfer between California’s three higher education systems?

- What advantage do private universities have over the state’s four-year systems in attracting CTE transfer students due to their operation outside of the limitations of these public systems?

7 http://www.ucop.edu/acadinit/mastplan/mpsummary.htm
Transferability of Credits

Several issues specifically related to the impact of course transferability on occupational transfer arise in the literature including those related to the transferability of CTE coursework, general education courses and applied academic offerings as well as the availability and efficacy of statewide articulation agreements.

CTE Courses. The research reveals variable data on the transferability of occupational versus traditional liberal arts and sciences courses, indicating that the willingness of four-year institutions to accept CTE credit earned at the community college level may impact student success in this transition. The Center for the Study of Community Colleges (CSCC) conducted a study in 1991 on “the extent to which courses classified as occupational are accepted for transfer at four year institutions,” involving 164 two-year colleges in California, Florida, Illinois, North Carolina, and Texas. Researchers found that 41.6% of all vocational courses in Texas, 61.7% in California, and 80.4% in Illinois did transfer to a comprehensive state university from a two-year college (Cohen & Ignash, 1993). Nationally, Schuyler (1999) found that generally over 70% of liberal arts and science courses transfer to four-year colleges while slightly under a third of vocational courses do, although results naturally varied by state.

Following up on the abovementioned Cohen and Ignash (1993) investigation, Striplin (1999) examined the transferability of non-liberal arts courses in 26 California community colleges with the CSU and UC systems. Reflective of their different missions, Striplin discovered that 26.7% of the non-liberal arts courses transferred to the UC system while 72.6% transferred to CSUs. Additionally, the investigation found that in all individual subject areas, more non-liberal arts and sciences courses transferred to the CSU than to UC. Striplin expressly attributed the findings to the greater selectivity of the UC system and its continued emphasis on traditional liberal arts and sciences baccalaureate degrees, while CSU campuses offer more career-based degrees.

According to Ignash and Kotun (2005), an additional challenge to CTE course transferability is the number of credits a student must take in their occupational discipline at the lower level compared to the number their receiving institution will accept. Of 40 responding states in their 2005 study, nine indicated establishing minimum credit hour requirements for an associate degree's occupational coursework.

General Education Courses. Research suggests that students do not necessarily observe strict distinctions between liberal arts and career pathways and expect that the general education credits they earn as part of their occupational programs will transfer if they continue towards a bachelor's degree (Townsend, 2001). However, they may encounter otherwise in the transfer process. According to Ignash and Kotun (2005),

general education coursework in occupational programs is different in content and purpose than general education in transfer-oriented programs, and often doesn't transfer from 2- to 4-year institutions. Because it is different, however, does not mean that it is necessarily less rigorous (Ignash & Kotun, 2005).

These researchers found that among the 40 states reporting on the transferability of general education courses in occupational/technical degrees, just over half (23) reported specifying a general education core for CTE programs. Twenty states indicated setting credit hour guidelines, with California indicating a required minimum of 18 general education credit hours (often increased by districts) for degrees. The vast majority of the states in the survey reported policies that “required” or “encouraged” transferable general educational course
requirements in occupational degrees, depending on the major course of study. According to the study, California encourages but does not mandate inclusion of transferable general education coursework in CTE degrees—potentially impacting the time to and cost of baccalaureate degree completion for those who do transfer.

Ignash and Kotun (2005) remark that the variation in content across CTE disciplines, often determined by accrediting bodies and licensing agencies, also impacts the kinds of general education requirements desirable if not required for different programs. These course requirements may not fit with the general education expectations of receiving institutions when students attempt transfer. Another factor influencing the transferability of general education offerings in occupational degree programs noted by the research includes the reluctance of community college occupational programs to add prerequisites to their courses. However, many baccalaureate-granting institutions require them and will not accept courses for transfer without prerequisites.

**Applied Academics Courses.** Another approach to enhancing CTE transfer argues for an integration of vocational and academic courses (Bragg & Reger, 2000). Bragg and Reger state that isolating academic and occupational education negatively impacts students who have difficulty transferring what they have learned from one discipline to another. Brewer (1992) asserts that academic and vocational integration can improve student learning, regardless of their curriculum or major, by broadening occupational education and strengthening its connection to civic goals.

At the same time, one study found few applied academics transfer courses intended for occupational students. In an investigation of these courses in Illinois community colleges, Bragg and Reger (2000) discovered that only 10 of 48 colleges indicated implementation of applied academic transfer offerings, which primarily included technical writing, advanced technical communications, and science classes related to health care programs. Bragg and Reger note that, despite a statewide adoption of transfer guarantees, colleges did not guarantee the transfer of applied academic courses toward a baccalaureate degree.

**Articulation Agreements.** Several researchers point to state-level articulation policy as a key factor in facilitating transfer. Townsend (2001) asserts that state-level articulation policy can specifically help to facilitate CTE transfer but that few states have “paid attention to the articulation of what are traditionally considered nontransfer degrees.” As mentioned above, Ignash and Kotun’s (2005) research noted that while 22 states indicated state-wide agreements to facilitate transfer, most reported doing so within only one CTE discipline (e.g. nursing). According to their research, many states show articulation activity at the individual college and university level. In California, a vast array of course-level articulation agreements developed between individual community colleges and CSU or UC institutions can be found catalogued on ASSIST. However, these localized agreements potentially leave students navigating a confusing array of agreements that vary from institution to institution, making course selection challenging.

**Research Questions:**

- What issues of credit transferability do CTE students most face in California when transitioning to baccalaureate programs and how might these challenges differ between CSU, UC and private institutions and/or across disciplines?
- How well does the “traditional” course-to-course system of articulation work for CTE students intent on transfer?
- In which disciplines does this system support CTE transfer the most effectively?
CTE Program Goals and Expectations

A number of studies have linked the occupational emphasis of community colleges, including their associate degree programs, with decreased student outcomes (Brint & Karabel, 1989, Dougherty, 2001). However, Roska (2006) utilized National Education Longitudinal Study (NELS) data to specifically explore the impact of the vocational focus of an associate's degree on student transfer and bachelor's degree attainment. Roska controlled for factors not considered in prior research, including aspects of the state environment such as the presence of four-year institutions, the existence of state-wide articulation agreements and the occupational structure of the labor market as well as individual student attributes like demographic characteristics and academic ability.

Ultimately, the data revealed that “the vocational training within degree-granting programs does not have a negative effect on students' successful completion of associate degrees” (Roska, 2006). Furthermore, this investigation determined that the occupational emphasis of a degree program is not a deterrent to transfer. The report (Roska, 2006) states that “students who attend community colleges focusing on providing training in degree-granting programs fare equally well” regardless of whether that training has a vocational or academic emphasis.

At the same time, Roska (2006) reveals in her research that when community colleges focus on awarding certificates in CTE disciplines rather than degrees, student attainment—including transfer—is negatively impacted. The study specifically discovered an inverse relationship between the number of certificates awarded and the number of students transferring. Data analysis revealed that “students enrolled in community colleges awarding all of their credentials as certificates would be approximately 60% less likely to transfer than students attending community colleges that award no certificates.”

The literature also discusses how the historical view of CTE programs as terminal or as expecting CTE students to end their education with a community college degree or certificate may impact students' transfer experience. Despite their educational and career interests or needs, some researchers assert that CTE students receive little encouragement to pursue transfer (Bragg, 2001; Cohen & Ignash, 1993; Frederickson, 1998; Townsend, 2001). This perception of occupational students as “non-transfer” material may add to the complexity of their transfer experience, manifesting in a lack of support from college educators and/or provision of information on transfer opportunities.

Research Questions:

- What emphasis on degree versus certificate completion exists at California community colleges showing high rates of transfer across CTE programs?
- Do colleges with high CTE transfer rates (overall or in a particular CTE program) tend to have lower associate degree or certificate completion rates?
- How do these colleges encourage transfer among their students and provide accurate and timely information to facilitate this pursuit?
What are the implications for research?

As noted at the beginning of this document, an assessment of the available literature reveals that very limited research has been performed on the specific issues of CTE transfer. The research does reveal data on workforce trends and projections indicating that transitioning students from community college CTE disciplines to bachelor's level preparation presents a critical new horizon in postsecondary education. With CTE students increasingly considered the primary future drivers of the nation's economic health and well-being by many researchers, legislators and educators, understanding how both policy and practice can contribute to their ongoing education and career advancement appears vital.

Moreover, several models for and approaches to promoting occupational students’ transition to baccalaureate opportunities are emerging within California and across the nation. Innovative degrees such as the applied and community college baccalaureate, university partnerships and strategic articulation agreements transferring a block of coursework all offer possible modes for improving students’ movement from community college to four-year career preparation programs. Recognizing these efforts and understanding their unique benefits and limitations can help inform stakeholders interested in improving and expanding transfer paths for CTE students within the state.

At the same time, the literature reveals several factors that may impact student advancement from community college CTE programs to related baccalaureate degree opportunities. Achieving the appropriate mix of transferable general education and major-related coursework and having those units accepted by four-year institutions appears in the research as particularly problematic. Moreover, a particular focus on certificate achievement (versus degree completion) and the historical perspective of community college programs as terminal may negatively impact students’ awareness and pursuit of transfer in the first place. Further exploring the relativity of these findings to the California context as well as examining how factors related to general transfer distinctively impact CTE students’ transitions can also help stakeholders in formulating strategies for improving this outcome for students, institutions and the state.

These findings combined with the fact that such narrow information exists on the topic present the CTE Transfer Research Project with the opportunity to contribute to this emerging body of research on a number of fronts. Specifically, as indicated by the Research Questions identified throughout the above literature review discussion, the research team will pursue a number of issues in its qualitative and quantitative investigation. These areas of inquiry are summarized as follows:

Context for CTE Transfer

- Documenting numbers and trends for students transferring from community college CTE programs to four-year institutions in the state, both public and private, with a particular focus on high-growth, high-demand occupations
- Exploring how California community college practitioners define CTE and CTE transfer
- Understanding the impact of state-level initiatives efforts to “rethink” CTE on ground-level efforts to increase CTE transfer
Models for and Approaches to CTE Transfer

- Examining practices and policies other states have developed to promote CTE transfer and their particular viability in the California context
- Understanding existing models to promote CTE transfer in California, assessing student and practitioner awareness of these efforts and their perceptions of their effectiveness

Factors Impacting CTE Transfer

- Investigating issues of systems alignment, including transferability of credits for CTE students
- Exploring the relationship between community college goals and expectations for CTE students and occupational students' success with transfer
- Identifying the unique factors that enhance or inhibit transfer between community college CTE disciplines and private and public four-year institutions, with a particular focus on student and practitioner perspectives and experiences in high-transfer programs and/or colleges

The CTE Transfer Research Project will present findings from these investigations throughout 2009 and 2010 in a series of reports, briefs and presentations.

Kelley Karandjeff (Researcher, RP Group) compiled this literature review summary based on previous research performed by Suzanne Korey and Lorraine Giordano. For more information on and publications produced by the CTE Transfer Research Project, visit www.rpgroup.org/css/CTETransfer.html.
References


