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Examination of the Collaboration between Career Technical Education and Core Teachers in Linked Learning Pathways

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Examination of the Collaboration between Career Technical Education and Core Teachers in Linked Learning Pathways

A Dissertation by

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Submitted in partial fulfillment of the requirements for the degree of

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ABSTRACT

Examination of the Collaboration between Career Technical Education and Core Teachers in Linked Learning Pathways

by Lucia Van Scyoc

Purpose. The purpose of this mixed methods study was to determine how teachers in Linked Learning Pathways rate the effectiveness and identify the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. This also included identifying and describing the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

Methodology. A mixed method research design, consisting of quantitative and qualitative data, was used to conduct this study. Specifically, an explanatory sequential design model starting with a 12-question survey and followed by interviews was used.

Findings. Teachers engaged in Linked Learning Pathways effectively rated the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. The key collaboration element of a shared purpose had the highest mean score and the lowest standard deviation, followed by an interdependent team and a focus on results. Similar to the survey results, the interviews revealed that a focus on results is the weakest key collaboration element in the pathway. There were nine ideas shared by the interviewees as evidence that the collaboration strategies discussed have a positive impact on the work of teachers in Linked Learning Pathways.
**Conclusions.** The collaboration strategies of a shared purpose, interdependent team and focus on results are effective in integrating career and technical education with core academic courses. A variety of criteria centered on the success and continued interest of both the students and teachers in the pathway is used by the pathway teachers to determine that collaboration has a positive impact on the integration of CTE and core academic courses.

**Recommendations.** Based on this study, the researcher has made five recommendations to further expand the research on how teachers in Linked Learning Pathways rate the effectiveness and describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results to integrate career and technical education and core academic courses.
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CHAPTER I: INTRODUCTION

Since the late 1800s, school reform in American high schools has centered on what should be the standard education preparation for all high school students (Bowles & Gintis, 2011; EdSource, 2009). High school education has consisted mainly of two paths; the academic, serving students who continue their education and the technical path, preparing students to transition directly into a career (EdSource, 2009; J. Kemple, & Wilner, 2008; Kotamraju, 2010; J. Oakes, Gamoran, & Page, 1992). Although these two paths were meant to meet the needs of all students, high schools are still plagued by irrelevant curriculum, disengaged students, and dropouts (American Youth Policy Forum, 2009; EdSource, 2009).

The disengagement of students in schools dates back to the 1880s, where schools were criticized for having students memorize material of no value to them (Lazerson & Grubb, 1974; Kliebard, 1999). This started the discussion of increasing relevance in schools by connecting education to the emerging industrial order. As the children of the uneducated entered high school, additional questions were raised on how to keep students in school (Graham, 2005; Kliebard, 1999; Lazerson & Grubb, 1974). A need emerged for a curriculum built on the interests of the students and directly related to the demands of the workforce; identified in the early 1900s as vocational education (Graham, 2005; Kliebard, 1999; Lazerson & Grubb, 1974).

More than a century later, schools are still struggling with the same issues; engagement, relevant curriculum, and dropouts. However, the longstanding choice of separate pathways for career and college-bound students is now emerging as one path focused on preparing all students for some form of post-secondary education (EdSource,
2009; S. Plank, 2001; Southern Regional Education Board [SREB], 2006; D. Stern, Dayton, & Raby, 2000). In 2006, the Carl D. Perkins and Technical Education Improvement Act, provided federal funds to support the integration of rigorous academics and career technical preparation (American Youth Policy Forum, 2009; Donnelly, 2015; EdSource, 2009; Kotamraju, 2010). Federal funding together with the Common Core State Standards (CCSS), brought to the forefront of education the need for a rigorous core curriculum to prepare all students for college and a career (EdSource, 2009; Kotamraju, 2010; SREB, 2006; Stone & Aliaga, 2003). According to the Southern Regional Education Board (SREB) (2006), “research by the American Diploma Project has confirmed that all graduates need ‘analytic and reasoning skills’—skills that are developed in higher level courses” (p. 3).

This shift requires that high schools increase student access to rigorous coursework, connect coursework to careers, and strengthen the connections between adults, students and local industries (EdSource, 2009). The emergence of the Linked Learning Pathways in 2009, was aimed at addressing the areas aforementioned in the context of one of California's (CA) 15 major industry sectors (Profiles of the California Partnership Academies 2004-05, 2007; Profiles of the California Partnership Academies 2009-10, 2011; James Irvine Foundation, 2006; LaPlante & Stearns, 2011; D. Stern et al., 2000; Symonds & Gonzales, 2009). In order to achieve full integration of Career and Technical Education (CTE) and core academic courses, teachers must collaborate (J. Kemple & Snipes, 2000). This includes establishing a system that allows teachers to coordinate curriculum, plan instruction, analyze student data and have a systemic plan for improvement (LaPlante & Stearns, 2011).
Background

**History of Secondary Education in the United States**

Secondary education in the United States between 1890 and 1920 was critically impacted by massive immigration (Graham, 2005; Johnson, 1988; Lazerson & Grubb, 1974). The role of school was mainly to prepare students to assimilate into society through learning English, patriotic practices and skills for work (Graham, 2005; Spring, 2012). The common curriculum, which included foreign languages and scientific practices, was no longer appropriate for the influx of immigrants and instead students were sorted into a vocational path, focused on skills for the workforce (EdSource, 2005; Graham, 2005; Nasaw, 1979). According to Graham (2005), students could earn a high school diploma “by enrolling for four years in shop, vocational agriculture, or home economics, all with a little basic English and general math included” (p. 45).

Between 1920 and 1954, the focus of society was on the roaring 20s, the depression in the 30s and the war in the 40s (Graham, 2005). Even though education was not a focus for society, the enforcement of child labor laws and the lack of jobs due to the depression created a need to keep students in school longer and increase the graduation rates (Graham, 2005; Nasaw, 1979). This resulted in a push for child-centered education, which in reality meant flexible curriculum, such as general mathematics and algebra being viewed as equivalent courses (Graham, 2005). Additionally in 1918, the federal government published a report titled, *Cardinal Principles of Secondary Education*, reaffirming that the focus of education during this time period was not on rigorous academics (Graham, 2005; Pulliam & Van Patten, 2013).
Secondary education between 1954 and 1983 was characterized by public
dissatisfaction with education and the push for equal access to education for all students
(Graham, 2005). Significant court cases and legislation promoting equality during this
period include: Brown vs. Board of Education in 1954, making segregation illegal;
Elementary and Secondary Education Act 1965 (ESEA), focused on programs for
children in low income areas; and Education for All Handicapped Children Act 1975,
allowing a free education for handicapped children (Graham, 2005). Public
dissatisfaction with education came as a result of Soviet Union’s launching of Sputnik in
1957 and sending an astronaut into orbit in 1961; both signs that the United States was
falling behind (Graham, 2005; Nasaw, 1979).

During the 1980s, A Nation at Risk and other similar reports, revealed the need for
a stronger academic education (Graham, 2005; Spring, 2012). Due to the federal
government’s hesitation to dictate school practice and curriculum, reform was initiated by
state government. This started the state standards movement of the 1990s. Through the
No Child Left Behind (NCLB) Act of 2001, the reauthorization of the 1965 ESEA, the
federal government required yearly testing in language arts, reading and mathematics to
determine the effectiveness of schools and proficiency level of students (Graham, 2005;
U.S. Department of Education, 2004). Despite the reform and accountability
requirements, high school graduates are still not adequately prepared for college and
employers are concerned that they do not have critical thinking skills necessary to enter
the workforce (Rothman, 2012; Wise, 2008). This information has prompted the latest
reform in education, CCSS initiative, requiring schools to prepare all students for college
and career (Rothman, 2012).
History of CTE

Secondary education has primarily consisted of two paths; the academic and the technical path. These paths reflect the purpose of education, which has been predominantly tied to meeting the labor or industry needs of society, making education meaningful, and helping all social groups become integrated in the economy (EdSource, 2009; Graham, 2005; Lazerson & Grubb, 1974). The technical path was initiated in high schools as a result of the mass European immigration to the United States starting in the 1890s (Graham, 2005). Based on the influx of students into the school system, Charles William Elliot, president of Harvard, in 1908 urged for a system to sort students in high school into a technical path (Graham, 2005).

Manual training. Manual training was the technical education path introduced in the United States in the late 19th century (Graham, 2005; Kliebard, 1999; Lazerson & Grubb, 1974). Manual labor focused on "educating the mind through the hand" (Lazerson & Grubb, 1974, p. 5), concentrating on manual tasks such as woodworking. However, it also incorporated into the curriculum the teaching of moral values, such as self-respect and self-reliance, because many proponents of this movement felt students were lacking morals during this time period (Lazerson & Grubb, 1974). Proponents of this movement included John Dewey, Scott Nearing and Francis Parker. Their goal was to make education relevant to all students, including immigrants and the poor, by actively engaging students in the manipulation of objects (Graham, 2005; Lazerson & Grubb, 1974). However, manual training instead developed into a program for non-college bound students.
**Vocational education movement.** By 1910, the demands of society were once again changing as there was a need for highly skilled labor, resulting in the vocational education movement (Lazerson & Grubb, 1974). This movement consisted of "typically one group of students attending vocational programs daily -- in areas such as auto mechanics or agriculture -- while students heading to college took academic classes instead" (EdSource, 2005, p. 1). In 1917, vocational education was officially funded through the federal Smith-Hughes Act (EdSource, 2009; Graham, 2005; Kliebard, 1999; Lazerson & Grubb, 1974; Schmidli, 2001). The justifications for the funding of vocational educational included, “the need to enhance national productivity in the face of international competition, the increment to the individual's earning power, the stability of trained workforce and the establishment of true equality of educational opportunity that vocationalism would bring” (Lazerson & Grubb, 1974, p. 28). Vocational education was a practical path for students as it prepared them for industrial work (Kliebard, 1999). During this period of time, the United States was the world’s leading industrial power (Johnson, 1988).

Vocational education continued to dominate the technical education path through the 1940s (Lazerson & Grubb, 1974). During the late 1940s and early 1950s, a new movement known as *Life Adjustment Education* emerged in response to the majority of students not being prepared for college or a skilled trade (Graham, 2005; Lazerson & Grubb, 1974). Even though this movement argued that “schools could only correct this condition by redirecting education toward more practical ends” (Lazerson & Grubb, 1974, p. 43), it was short lived. Vocational education did not resurface until the early 1960s, when unemployment rates were high and technological changes were affecting the
demands of the job market, requiring a workforce with a stronger education (Berg, 1971; Lazerson & Grubb, 1974). According to Lazerson and Grubb (1974), “the commission's recommendations, legislated in the Vocational Act of 1963, attempted to redirect vocational training by broadening its scope and flexibility and by focusing on the economically and educationally disadvantaged” (p. 45). This also led to the creation of Regional Occupational Centers and Programs (ROCPs) in the late 1960s, providing schools in the region access to equipment and programs not financially feasible for the high school (EdSource, 2005).

Vocational education was once again impacted in the 1980s, but this time because of a series of reports criticizing the American educational system. The most popular of these reports, A Nation at Risk, indicated that the American economy was falling behind, as was the performance of American students compared to that of other nations (Graham, 2005). As a result of these reports, an increase in the academic courses was required for graduation (National Center for Educational Statistics, 2000). This affected vocational course taking resulting in a decline in vocational courses and an increase in enrollment in academic courses (Delci & Stern, 1999; E. Hoachlander, Kaufman, Levesque, & Houser, 1992; Houser, 1996; K. Levesque, Premo et al., 1995; S. Plank, 2001).

**Shift to CTE and school-to-work movement.** The technical education path in the 1990s was characterized by three important pieces of federal legislation aimed at improving the workforce development opportunities for students (Stone, & Aliaga, 2003). These laws were the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, the School-to-Work Opportunities Act (STWOA), in 1994, and the reauthorization of the Carl D. Perkins Vocational and Technical Education Act in
The 1990s also marked the shift from Vocational Education to CTE, (EdSource, 2005). The legislation enacted in the 1990s was a response to concerns from employers in regards to recently hired workers lacking academic skills necessary to function in the workplace (Stone & Aliaga, 2003). According to G. Hayward and Benson (1993), the Perkins Act of 1990 was the most significant shift in the history of federal funding of vocational-technical education because of its focus on vocational and academic skills for all students. The emphasis on integration of vocational and academic skills was further strengthened by the Perkins Act of 1998 (S. Plank, 2001). The STWOA focused on three types of instructional programs geared at preparing students for the workforce: Career or Partnership Academies, Tech Prep programs and general school-to-career activities (EdSource, 2005)

Standards movement. The transition of CTE into the 21st century was most influenced by the requirement of state standards in the core academic areas and strict accountability measures imposed by the NCLB Act of 2001. Schools were required to have all students proficient in language arts, reading and mathematics by 2013-14 (Chadd & Drage, 2006). The goal of NCLB was for "all children to have an opportunity to obtain high-quality education and reach proficiency on state academic achievement standards” (Chadd & Drage, 2006, p. 82). As a result, schools devoted more instructional time to supporting students' in language arts, reading and mathematics, and less time for CTE courses (Center on Educational Policy, 2005; EdSource, 2005). The standards requirement for the core academic classes also influenced specific legislation in 2002 requiring the creation of CTE standards and framework (American Youth Policy Forum, 2009).
Career academies. The economy in the United States and most western countries shifted at the end of the 20th century from a manufacturing to a knowledge-based market (Donnelly, 2015). Prior to this shift, vocational education and preparing students for the workforce was predominantly seen as the option for non-college bound students (Kotamraju, 2010). Even though Career Partnership Academies (CPAs) or Career Academies started in CA in 1981, the purpose of CPAs shifted greatly with the turn of the century (Profiles of the California Partnership Academies 2004-05, 2007; Profiles of the California Partnership Academies 2009-10, 2011; J. Kemple & Snipes, 2000; J. Kemple & Wilner, 2008; D. Stern et al., 2000). The main goal of the academies in the 1980s and 1990s was to prevent students from dropping out of high school and prepare them for work; however the shift in the market and changes in federal legislation such as the Perkins Act of 1998, shifted the goal of academies to preparing all students, including the highly engaged for work and college (J. Kemple & Snipes, 2000). By the 2004-05 school year, there were 290 CPAs focused on the new goals (CASN, 2007). According to J. Kemple and Wilner (2008), career academies have three distinguishing features "small learning communities, combine academic and technical curricula around a career theme and established partnerships with local employers to provide work-based learning opportunities" (p. iii).

Linked learning academies. Trends in the workforce, such as:

The supply of California workers with no more than a high school diploma will far exceed the number of jobs available to this group by 2020, while the supply of workers with some college or more could fall short of the demand. (EdSource, 2009, p. 2)
Economical needs continue to drive educational reform and bring additional focus to preparing students for one path, college and career ready. The multiple pathways initiative recognizes the complimentary nature of college and career ready for all students (EdSource, 2009). The California Multiple Pathways District Initiative of 2009 became known as Linked Learning in 2010, led by ConnectEd and financially supported by the James Irvine Foundation (EdSource, 2009; CASN, 2011). According to the James Irvine Foundation (2006), unlike the narrow occupational training focus of traditional vocational education, the Linked Learning model “by blending the best of technical education with rigorous academic work, makes the curricula engaging and relevant to students, while meeting all the requirements for postsecondary success” (p. 2). Linked Learning Academies are organized around the 15 major industries in CA and have four program components: (a) rigorous academics, (b) a career technical sequence, (c) work-based learning, and (d) academic and career counseling support services (CASN, 2007; EdSource, 2009).

**Core Academic Courses**

According to the SREB (2006), the demands of today’s workplace make it necessary for all students to be able to analyze and reason, skills that are developed in a strong core curriculum. Through the alignment of the University of California (UC), and California State University (CSU), admission requirements in 2003, the a-g subject requirements define school rigor in CA (EdSource, 2009). These requirements include two years of history and social science, four years of English, three years of mathematics including Algebra 1, Geometry and Algebra 2, two years of a laboratory science including one biological and one physical science, two years of a language other than
English, a year of Visual and Performing Arts, and a year of a college preparatory elective (California State University, 2016)

**Collaboration in Educational Environments**

The integration of core academic courses and CTE in Linked Learning pathways, requires a shift in mindset and practice, as teachers must to collaborate across subject areas (EdSource, 2009). According to EdSource (2009), “the pathways concept challenges academic and CTE teachers to coordinate teaching and curricula across disciplinary boundaries, rather than work primarily or only within specialized programs” (p. 16).

**Nature of collaboration in organizational settings.** Our collaborative nature dates back to when we lived in caves and worked together to devise strategies to kill our prey (E. Wenger, McDermott, & Snyder, 2002). This same level of collaboration can be cultivated in organizations through communities of practice, defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting in an on-going basis” (E. Wenger et al., 2002, p. 4). A community of practice in an organization has three basic elements. The elements are a domain of knowledge or a common purpose; a group of people interested in the common purpose; and shared practice, the knowledge developed, shared and maintained by the community (E. Wenger et al., 2002).

**Collaboration in secondary education.** Collaboration in the educational setting is rooted in elements very similar to those fundamental to the communities of practice in an organizational setting. The three basic elements in building a culture of collaboration in secondary education consists of establishing a shared purpose; an interdependent team;
and results-oriented focus (Eaker, DuFour, & DuFour, 2002). The shared purpose consists of a mission, vision, values and goals established through team consensus (Eaker et al., 2002). In a collaborative culture, members develop a shared knowledge base, continue to develop and improve their collective knowledge, and depend on each other to achieve their goals (Eaker et al., 2002). Collaboration is a key component in the integration of CTE and core academic courses (EdSource, 2009; LaPlante & Stearns, 2011; Silverberg, Warner, Fong & Goodwin, 2004). CTE and core academic teachers must work together to fully integrate the curriculum, instruction and work related skills (J. Kemple & Snipes, 2000). According to LaPlante and Stearns (2011), teachers in Linked Learning Academies must “use formalized processes and structures to collaborate within and across disciplines and grade levels to provide students with a highly coordinated, coherent curriculum” (p. 4).

Many research studies have focused on the impact of career academies on school engagement, dropout rates, and transition to the workforce. The Manpower Demonstration Research Corporation, MRDC, has conducted rigorous detailed studies on career academies since 1993 (Kemple & Snipes, 2000). In 2000, the study found that career academies: increase the support provided to students and their participation in career awareness activities; reduce dropout rates; and improve engagement, attendance, academic course-taking, and ability to graduate on time (Kemple & Snipes, 2000). The study also found that academies allow students to take vocational courses without compromising the core academic curriculum (Kemple & Snipes, 2000). In 2008, further research revealed that career academies also have a positive impact on the transition from high school to postsecondary education and work, as well as earnings (Kemple & Wilner,
Although many research studies have been conducted on career academies, collaboration is an area that has not been explored, while it is essential in the integration of CTE and core academic courses. There is a need to examine the collaboration practices themed as having a positive impact on integrating career technical education and core academic courses.

**Collaboration variables.** Research has identified collaboration between CTE and core teachers as being a key component in the integration of college preparatory and CTE curriculum, instruction and work related skills (EdSource, 2009; J. Kemple & Snipes, 2000; LaPlante & Stearns, 2011; Silverberg et al., 2004). The key factors necessary for collaboration or a “community of practice” to develop in an organization were identified by E. Wenger (1998) as mutual engagement, joint enterprise and a shared repertoire. E. Wenger et al., (2002) defined these same elements as domain of knowledge, community of people, and shared practice. Senge (2006) also identified elements similar to those described by E. Wenger (1998) as necessary in fostering collaboration or creating a “learning organization.” The five elements or *disciplines* identified by Senge (2006) are: (a) systems thinking, (b) personal mastery, (c) mental models, (d) building a shared vision, and (e) team learning.

The private business concept of communities of practice or learning communities was applied to education in the 1990’s (S. Hord, 2004; Sergiovanni, 1994). S. Hord (2004) identified five major themes as key practices of a learning community: shared values and vision; collective learning and application of the learning; supportive conditions; a shared personal practice; and supportive and shared leadership (S. Hord, 2004). Blankstein (2013) also contributed to the identification of the key practices for
collaboration by building on the work of Senge (2006) and Sergiovanni (1994). The six principles identified by Blankstein (2013) are as follows: (a) common mission, vision, values and goals; (b) ensuring achievement of all students through systems for intervention and prevention; (c) collaborative teaming focused on teaching for learning; (d) data-based decision for making for continuous improvement; (e) gaining active engagement from family, and community; (f) and building sustainable leadership capacity. However, it was educators, Eaker, DuFour, and DuFour (2002), who popularized the concept of PLCs, bringing it to the forefront of education. Eaker et al. (2002) synthesized the elements necessary for collaboration into three main concepts: a shared purpose, an interdependent team and a focus on results. These key concepts directly relate to the three elements of a community of practice identified by E. Wenger. These three elements are the variables that will be used to identify the level of collaboration used by Linked Learning Pathways teachers in the integration of CTE and Core curriculum.

**Statement of the Research Problem**

According to Rothman (2012) “a large proportion of U.S. high school graduates are ill-prepared to meet the challenges of college or career” (p. 10). Employers are concerned that students graduating from high school do not have the critical thinking skills necessary to enter the workforce (Wise, 2008). Even though high schools have been in existence for more than a century, they are still faced with strong demands to increase graduation rates and improve the preparation of all students for college and a career (EdSource 2009). Career pathways, specifically Linked Learning Academies, may
be the answer to high schools meeting the demands of the CCSS and society, to adequately prepare students for post-secondary education and transition to the workforce.

Since the 1980s, many studies have been conducted on the impact of Career Academies on graduation rates, post-secondary education and transition to the workforce. Manpower Demonstration Research Corporation (MDRC) has conducted a rigorous evaluation of career academies since 1993 and found positive correlations to increased support for students, career awareness, graduation rates, attendance and academic course-taking, (J. Kemple, 1997; J. Kemple & Snipes, 2000). Even though the evaluation of the career academies also revealed that teachers have more time to collaborate and focus on the needs of students, research studies have not been conducted on the key component of integration; collaboration strategies used by the teachers (J. Kemple, 1997).

Integration of CTE and core academic courses is necessary in preparing students that are college and career ready (EdSource, 2009; LaPlante & Stearns, 2011). An integrated curriculum requires collaboration between CTE and core academic teachers (EdSource, 2009; J. Kemple & Snipes, 2000; LaPlante & Stearns, 2011). LaPlante and Stearns (2011) describe an integrated curriculum as:

Series of conscious and informed strategies used to connect the content of one or more academic and CTE course so that what is learned in one discipline is combined with and reinforced in the other disciplines over an extended period of time. (p. 11)

Even though collaboration amongst teachers is crucial in the integration of CTE and core academic courses in Career Academies, there is a lack of research studies in this area (EdSource, 2009; J. Kemple & Snipes, 2000; LaPlante & Stearns, 2011). Academies
require high school teachers to break from their traditional role as subject matter specialists with full autonomy over their curriculum (EdSource 2009). With the rapid expansion of Career Academies in CA, there is an urgent need to identify the collaboration strategies deemed as having a positive impact on the integration of CTE and core academic courses.

**Purpose Statement**

The purpose of this mixed methods study was to determine how teachers in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Another purpose was to identify the impact of strategies teachers engaged in Linked Learning Pathways use on the integration of career and technical education and core academic courses. The final purpose was to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

**Research Questions**

1. How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses?

2. How do teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used on the integration of career and technical education and core academic courses?
3. What criteria do teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies?

**Significance of the Problem**

Despite many reforms targeting the American secondary education system, students continue to graduate from high school inadequately prepared for college or a career (Rotham, 2012; Wise, 2008). Data from The National Center for Public Policy and Higher Education (2010) indicates that 60% of college freshmen who met the admittance requirements have to take remedial college courses in English and mathematics. This discrepancy has created a gap between being college-eligible and college-ready. Employers also voice similar concerns; describing employees as lacking the necessary preparation for the workforce and specifying that entry-level workers need the same level of critical thinking skills required for college admission (Haycock, Barth, Mitchell, & Wilkins, 1999). Career academies, specifically Linked Learning Academies, aim at meeting the needs of both colleges and employers through focusing on the integration of CTE and rigorous core academic courses.

Even though numerous studies have examined the effectiveness of career academies, one fundamental component in the integration of CTE and core academic courses has not been explored; collaboration. According to EdSource (2009), “the pathways concept challenges academic and CTE teachers to coordinate teaching and curricula across disciplinary boundaries, rather than work primarily or only within specialized programs” (p. 16). The studies conducted have mainly assessed the effectiveness of career academies through the analysis of graduation rates, attendance and academic course-taking, (J. Kemple, 1997; J. Kemple & Snipes, 2000). In order to
completely understand how career academies function, collaboration strategies must be explored.

CA continues to devote a significant amount of funding to career academies. As districts prepare to implement academy models in their schools, such as Linked Learning Academies, it is important to have valid and reliable information on the collaboration strategies deemed by teachers as having a positive impact on the integration of CTE and core academic courses. This study will complement the research studies conducted on the effectiveness of Linked Learning Academies by identifying collaboration strategies considered by teachers as supporting the integration of CTE and core academic courses. The information provided in this study will add depth to the existing body of knowledge on Linked Learning Academies by providing descriptive data on a key component in implementing and sustaining a rigorous college and career pathway; collaboration. This information will be of great use to teachers, schools, and districts, as well as the California Department of Education (CDE), since the ultimate goal in addressing the problem of ill-prepared students for college and a career, is to create opportunities in our educational system that prepare all students for a single path with multiple college and career options.

**Definition of Terms**

The following terms are found throughout the literature review and are briefly defined as follows.

*Career Academy.* A type of school-within-a-school that integrates a college preparatory and career technical curriculum with a focus on career awareness, used interchangeably with Career Pathway (D. Stern, Dayton, & Raby, 2010).
Career Technical Education. "A program of study that involves a multi-year sequence of courses that integrates the core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers" (CDE, 2016, section 1).

Collaboration. Occurs when a team of interdependent professionals is “fully committed and focused on helping students learn by becoming active learners themselves” (Blankstein, 2013, p. 148).

Collaboration Strategies. E. Wenger (1998) identifies the three fundamental elements of communities of practice as being mutual engagement, joint enterprise and a shared repertoire. These same elements are defined by Eaker et al. (2002) as a shared purpose, interdependent team and focus on results. For the purposes of this study, collaboration strategies are defined as a shared purpose, interdependent team and focus on results.

Communities of practice. “Groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (E. Wenger et al., 2002, p. 4).

Core Curriculum. The college preparatory curriculum defined by the a-g subject requirements (EdSource, 2009; The Education Trust-West, 2004; D. Stern, & Stearns, 2006).

Learning organization. An organization “where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (Senge, 2006, p. 3).
**Linked learning approach.** Approach used by career academies that includes rigorous academics, career-based learning in the classroom, work-based learning in the real-world workplace, and integrated student supports (ConnectEd, 2011).

**Professional learning communities.** “A school coming together to learn in order to become more effective so that students learn more successfully” (S. Hord & Sommers, 2008 p. 2).

**Delimitations**

This study was delimited to teachers engaged in the Linked Learning Pathways in the Tulare-Kings Linked Learning Consortium for Career and Technical Education in CA that meet the following criteria:

- Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
- Have two or more years of teaching experience.
- Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

**Organization of the Study**

Chapter I presented the rationale for the study along with the Problem, Purpose, and Research Questions (RQ) for the study. Chapter II presents the Literature Review supporting the study including the background and development of CTE, core classes, and collaboration strategies. Chapter III presents the Methodology of the study, Chapter IV presents the Findings, and Chapter V presents the Conclusions, Implications, and Recommendations for Action.
CHAPTER II: LITERATURE REVIEW

The purpose of this chapter is to review the literature concerning collaboration in the integration of CTE and core academic courses. This chapter is organized into the following sections: History of Secondary Education in the United States, History of CTE, Core Academic Courses and Collaboration. Support from the literature will be used to show the need for and impact of collaboration strategies on the integration of career technical education and core academic courses.

History of Secondary Education in the United States

The history of secondary education in the United States can be categorized into four main eras (Altenbaugh, 2003; Graham, 2005; Lazerson & Grubb, 1974; Mondale & Patton, 2001; Nasaw, 1979; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). The 40-year period spanning from the 1880s to the 1920s, can be described by an influx of immigrants and the need to create a system for both the students transitioning to the workforce and those seeking higher education. The second time period is characterized by a society facing multiple issues, such as the depression and war, drawing attention away from education. From the 1920s to the 1950s education is left to the attention of theorists. However, as the United States emerges from War World II, education once again becomes a priority, with a focus on providing an equal education for all students through the early 1980s. The past 40 years have brought much attention to education and have resulted in major reform based on the standardization of education and assessments to measure the success of students and schools.
Response of Secondary Education to Immigration, late 1800s to 1920

Massive immigration from eastern and southern Europe played a key role in secondary education in the United States between 1890 and 1920 (Altenbaugh, 2003; P. Johnson, 1988; Graham, 2005; Lazerson & Grubb, 1974; Mondale & Patton, 2001). Immigration caused school enrollment to double every decade until 1930, forcing society to examine the role of education, specifically in regards to the appropriate curriculum and types of opportunities to provide to students (Altenbaugh, 2003; Boers, 2007; Graham, 2005; Mondale & Patton, 2001). Prior to the influx of immigrants, the National Education Association’s Committee of Ten on Secondary School Studies, chaired by Charles William Elliot, president of Harvard, released a report in 1893, advocating for a standardized curriculum focused on college for all students, with an emphasis on the foreign languages and sciences (Graham, 2005; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). However, the new wave of immigrants differed from the “old” immigrants from northern and western Europe, and were described by leaders of this era as “illiterate, criminal, dependent and ill-fitted to the demands of the Teutonic civilization” (Mondale & Patton, 2001, p. 65). Schools were now faced with students who did not speak the language, behaved differently and lived in poor conditions (Graham, 2005; Mondale & Patton, 2001; Urban & Wagoner Jr., 2009).

The needs of the new immigrants and an industrial-driven society, shifted the focus of education in the early 20th century (EdSource, 2005; Graham, 2005; Lazerson & Grubb, 1974; Mondale & Patton, 2001; Nasaw, 1979). William Elliot abandoned his recommendation in the Committee of Ten, arguing in 1908 that “the teachers of the elementary school ought to sort the pupils by their evident or probable destinies”
(Graham, 2005, p. 37). The common curriculum was no longer appropriate for all students; schools now centered on preparing students to assimilate into the American culture through a curriculum focused on learning English, citizenship, and work skills (Altenbaugh, 2003, EdSource, 2005; Graham, 2005; Mondale & Patton, 2001; Nasaw, 1979, Spring, 2012). According to Graham (2005), “the only way to keep the hordes in schools was to change the curriculum in ways that would make it more easily understood and more immediately useful, allowing them better jobs, jobs that would make them more productive citizens” (p. 43). This led to the onset of the two main paths in secondary education; the academic, serving students who continue their education and the vocational or technical path, preparing students to transition directly into a career (EdSource, 2009; J. Kemple & Wilner, 2008; Kotamraju, 2010; J. Oakes et al., 1992).

**Child-Centered Education, 1920s to 1954**

From the 1920s to the 1950s, the focus of education transitioned from assimilation or meeting the needs of the nation, to attending to the needs of students through a child-centered education (Graham, 2005). This movement began as a result of the publishing of *Cardinal Principles of Secondary Education*, a National Education Association report by its Commission on the Reorganization of Secondary Education in 1918 (Altenbaugh, 2003; Graham, 2005; Urban & Wagoner Jr., 2009). Graham (2005) explains that this “document reified the idea that high school was about something other than mastery of academic material” (p. 76). Even though the *Cardinal Principles of Secondary Education* identified seven principles, only one directly addressed academics, which was referred to as “fundamental processes” (Altenbaugh, 2003; Graham 2005; Pulliam & Van Patten, 2013). The remaining principles concentrated on the students’
understanding of their values and purpose and included “health, worthy home membership, vocation, civic education, worthy use of leisure time, and ethical character” (Graham, 2005, p. 77), giving rise to extra-curricular activities in schools.

The child centered movement, led to the expansion of the traditional high school curriculum, in spite of society’s lack of interest in education caused by the Roaring Twenties, Great Depression and World War I (Altenbaugh, 2013; Boers, 2007; Graham, 2005). The new curriculum included the addition of subjects’ equivalent to history and government, such as social studies; journalism, speech and language arts as equivalents to English; and arithmetic as an equivalent to Algebra, as well as new vocational courses (Graham, 2005). The child centered movement also justified having different paths for the college-bound gifted students and the non-academic students (Graham, 2005). The curriculum expansion was furthermore necessary to accommodate the pressure from society to keep students in school, stemming from new child labor laws and compulsory education laws meant to address the lack of jobs associated with the Great Depression (Altenbaugh 2003; Graham, 2005, Nasaw, 1979). Other initiatives during this time period impacting education included an increase in the length of the school year, the number of years in school and student attendance expectations (Graham, 2005; Nasaw, 1979). These changes had a positive impact on the percentage of students graduating from high school, “in 1900, 6 percent of the seventeen-year-olds were high school graduates [and] by 1945, the number had risen to 51%” (Mondale & Patton, 2001, p. 113).

This time period was also greatly affected by the ideas of John Dewey, a principal scholar and advocate for the Progressive educational movement (Altenbaugh, 2003;
Boers, 2007; Graham, 2005). The progressive movement also advocated for a child-centered education, but a meaningful curriculum where the:

Teaching methods should stress active and engaged learning, focus on interests of the student, and encompass the emotional side of the child—the antithesis of the typical passive approaches of recitation, memorization and the drill used in the public schools at that time. (Altenbaugh, 2003, p. 191)

The Progressive Education Association was founded in 1919 and was grounded in the following principles:

Freedom to develop naturally; interest, the motive of all work; the teacher, a guide, not a task master; scientific study of pupil development; great attention to all that affects the child’s physical development; the progressive school, a leader in education movements. (Altenbaugh, 2003, p. 192)

The effectiveness of progressive education was measured through a study called the *Thirty School Study*, also referred to as the *Eight Year Study*, which assessed the academic success of college students who graduated from 18 public and 16 private high schools (Altenbaugh, 2003; Graham, 2005; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). The results of the study demonstrated that the students who graduated from progressive schools were as academically successful, as students from traditional schools. Based on this study, “the rational became that curriculum does not make a difference” (Graham, 2005, p. 87). Regardless of these favorable results, the dissatisfaction with the lenient methods of the progressive movement started to unfold in the 1940s (Altenbaugh, 2003; Urban & Wagoner Jr., 2009).
Life Adjustment Education, a new educational movement geared at the students not pursuing an academic or vocational path, came into existence in 1945 (Graham, 2005; Lazerson & Grubb, 1974; Pulliam & Van Patten, 2013). Charles Prosser, an early proponent of vocational education and the leader of this movement, “argued that only 20% of American youth could benefit from academic curriculum, while another 20% would find a vocational curriculum useful and the balance (60%) should receive Life adjustment training” (Graham, 2005, p. 93). By 1954, 29 states implemented at least portions of this program focused on basic life skills, in an effort to make education more meaningful for the largest portion of high school students (Graham, 2005; Mondale & Patton, 2001; Pulliam & Van Patten, 2013). This program was short-lived “because of heavy criticism by those interested in only intellectual development and a great public fear that academic standards were being lowered by life adjustment, it was terminated in the late 1950’s” (Pulliam & Van Patton, 2013, p. 228).

**Equality of Educational Opportunity, 1954 to 1983**

The transition from child centered educational practices to ensuring equal access for all students, regardless of race, gender or disability, summarizes the main changes in education during this era (Altenbaugh, 2003; Graham, 2005; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). These changes were necessary because of a continued increase in population, diversity, and the need to accommodate all students. The number of students rose from “26 million at the end of WWII to 36 million by 1954, to a peak of more than 51 million in 1974” (Graham, 2005, p. 106). Another contrast during this period of time is the increase of public interest in education; educational needs and practices were no longer left to be determined by the
professors of education. Additionally, for the first time, the federal government responded to the interests of the public by developing and implementing laws and policies, such as the Civil Rights Act, and Elementary and Secondary Education Act, which have greatly impacted education and society (Altenbaugh, 2003; Graham, 2005; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009).

One of the major influences on education during this time period was the 1954 ruling of Brown v. Board of Education, prohibiting the separation of public schools by race. However, the implications of this court case were not fully visible until the Civil Rights Act of 1964, through Title VI, which tied federal funds to desegregation. Since schools were slow to respond to the requirements of desegregation, the federal government, for the first time, used money to control public schools (Altenbaugh, 2003; Graham, 2005; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). Federal funding was not significant prior to this era, however this also changed with the implementation of the ESEA of 1965. ESEA increased the money provided to schools and made desegregation valuable (Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). Federal funding increased from 4.4% in 1964 to 8.8% in 1968 and 9.8 % in 1980. This directly impacted the schools in the South, with the percentage of black students attending desegregated schools increasing drastically from 11% in 1964-65 to 84% in 1970-71. ESEA was meant to support the compensatory education of students from low-income families, specifically in reading and mathematics. Since the nation did not have a national assessment system, one of the conditions associated with the implementation of ESEA was the creation of a national assessment system, National Assessment of Educational Progress, (NAEP). This
assessment generated further attention to the disparity in achievement between blacks and whites (Graham, 2005; Spring, 2012).

The reform movement was not solely aimed at African-Americans, but also at other minority populations such as English Learners, students with disabilities, American Indians and women (Altenbaugh, 2003; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Spring 2012; Urban & Wagoner Jr., 2009). The focus on bilingual education started in 1968 with the Bilingual Education Act through Title VII. However, since this law did not mandate a bilingual education program, it was not until Lau vs. Nichols in 1974, that bilingual education guidelines were provided and schools were required to provide language support to English Language Learners (Altenbaugh, 2003; Mondale & Patton, 2001; Spring, 2012; Urban & Wagoner Jr., 2009). Other significant legislation during this time period, included the Education for All Handicapped Children Act passed in 1975. This law required that public schools provide a “free and appropriate” education for handicapped students between the age of 3 and 18 by the 1978-79 school year (Graham, 2005; Pulliam & Van Patten, 2013; Spring, 2012). Similarly, in 1975, the Indian Self-Determination and Education Assistance Act, gave tribes the ability to contract with the federal government to provide health and educational services (Altenbaugh, 2003; Spring, 2012; Urban & Wagoner Jr., 2009). The rights of women were also addressed during this period of time through Title IX, which aimed at eliminating discrimination based on gender and closing the funding gap between women’s and men’s programs (Altenbaugh, 2003; Mondale & Patton, 2001; Spring, 2012; Urban & Wagoner Jr., 2009)
Russia’s launching of the first satellite into space in 1957, Sputnik, and the first astronaut into orbit in 1961, caused Americans to heavily question and criticize education during this era. This criticism stemmed from the fear that America was falling behind and, in turn, led to the questioning of America’s mathematics and science programs and the demand for more and better instruction (Graham, 2005; Mondale & Patton, 2001; Nassaw, 1981, Urban & Wagoner Jr., 2009). Eisenhower’s administration capitalized on this fear by passing the National Defense Education Act of 1958, which provided federal funds to specifically support mathematics and science, as well as foreign language in secondary and higher education (Spring, 2012; Urban & Wagoner Jr., 2009). This topic was once again discussed in 1977, in response to the quick decline in the Scholastic Aptitude Test (SAT) since the 1950s. “Increasing bureaucratization and loss of public confidence in their enterprise, teachers and administrators” (Graham, 2005, p. 152) also characterized education during this span of time.

**Standards and Assessment Movement, 1983 to Present**

Even though the mid-1950s through the 1970s were characterized by a focus on equality, the newly developed policies did not always directly impact educational practices in schools (Graham, 2005; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). Furthermore, the lack of a national assessment tool made it difficult to assess the academic achievement of students, including minority students, until the inception of NAEP in the early 70s (Graham, 2005). Prior to this era, emphasis had not been on the measuring of academic achievement, but was instead placed on social values and virtues. The dissatisfaction with the academic performance
of students intensified with the publishing of multiple reports targeting the academic performance of American students.

This dissatisfaction was clearly communicated in multiple reports published in the early 1980s, including *Making the Grade, Action for Excellence, High School,* and *A Nation at Risk* (Boers, 2007; Graham, 2005, Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Spring, 2012; Urban & Wagoner Jr., 2009). *A Nation at Risk* was the most popular of these reports, as it “coupled mediocre student performance on national and international tests to mediocre economic performance in the global market place” (Mondale & Patton, 2011, p. 177). These reports included a long list of the issues plaguing the schools, but unfortunately lacked suggestions for improvement. *A Nation at Risk* reversed the priorities in American education and called for an increase in rigor because “Americans feared that our economy was falling behind that of other nations whose citizens were more proficient academically than ours” (Graham, 2005, pp. 160-162).

The reports published in the early 1980s, elicited public dissatisfaction with education and pushed for academic and performance standards (Boers, 2007; Graham, 2005, Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009; Vinovskis, 1999). Even though the federal government initially did not want to have direct control over school curriculum and practice, President George H. Bush led the National Educational Summit conference in 1989 to discuss with the governors the concerns raised by *A Nation at Risk.* At the summit, consensus was reached on six goals, known as the America 2000 initiative and four key areas, including the process for setting national educational goals, the monitoring of federal resources to meet the goals, the
restructuring of the states’ education system, and the reporting of annual progress. It was also established that these tasks would be completed and shared by the early 1990s. In secondary education, the established goals were also to support the students’ ability to compete nationally in mathematics and science, reduce dropout rates, train for a competitive workforce, increase the supply of qualified teachers and up to date technology, and establish safe and drug-free schools. America 2000 was signed into law as the Goals 2000: Educate America Act in 1994. A second National Education Summit, was held in 1996 and once again attended by governors and business leaders (Achieve, 1996). It reinforced the topics previously discussed and placed emphasis, once again, on implementing standards, establishing partnerships with businesses, reporting progress, and professional development on instructional methods and the use of technology (Achieve, 1996).

The educational summits in 1989 and 1996, promoted the standards and assessment movement at the state level, which for CA resulted in the Standardized Testing and Reporting Program (STAR), established by the legislature in 1997 (CalEdFacts, 2016; Graham, 2005; G. Hayward & Benson, 1993; Milne, 1998; Mondale & Patton, 2001). STAR initially consisted of a norm-referenced test in grades two through 11, but eventually included items linked to specific content standards and additional subject area tests in history, science and writing (CalEdFacts, 2016). The accountability in the STAR system was established through the approval of Public Schools Accountability Act (PSAA) in 1999, which was “the first step in developing a comprehensive system to hold students, schools, and districts accountable for improving student performance” (Ed-Data, 2015, p. 1). The accountability system eventually
consisted of the STAR, California High School Exit Exam (CAHSEE), and the Academic Performance Index (API). The STAR and CAHSEE were both aligned to the academic content standards, while the API was used to measure progress.

In 2002, the concept of assessment and accountability, once again heightened with President George W. Bush signing into law the NCLB Act, the reauthorization of the 1965 ESEA (Spring, 2012; Urban & Wagoner Jr., 2009). The NCLB Act consisted of three basic elements: assessment of student learning through English Language Arts and mathematics content-aligned tests, an annual report of student progress towards proficiency, and consequences for schools who did not make Adequate Yearly Progress (AYP). Each state had the flexibility to create its own yearly assessments and plan for implementation, however the yearly targets for proficiency were established by NCLB. The yearly assessments were used to determine not only the students’ knowledge, but also the schools’ competence. The targets increased each year, with an expectation that 100% of students would reach proficiency in English/language arts and mathematics by 2013-14. Schools who did not make AYP were subject to program improvement sanctions, including notification to parents and depending on the level, the opportunity for students to transfer to a higher performing school.

Despite the implementation of standards, assessments and an accountability system, high schools are still struggling (Castellano, Stringfield, & Stone III, 2003; H. Johnson, 2009; Tyler & Lofstrom, 2009). According to a 2008 report by the National Governor’s Association, the Council of Chief State School Officers and Achieve, Inc. (2008), “the U.S. is rapidly losing its historic edge in educational attainment” (p. 6), citing that America in 1995 was tied for first in college and university graduation rates,
but quickly dropped to 14th in 2006. This report has led to the development of the CCSS, a state led initiative. The CCSS were developed by National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO), which include leaders from 48 states, two territories and the District of Columbia (Common Core, 2016). The goal of the CCSS Initiative is to “ensure all students, regardless of where they live, are graduating high school prepared for college, career, and life” (Common core website, 2016); an attempt to bridge the longstanding gap between vocational education and college.

**History of CTE**

Much like the general history of secondary education, vocational education has also experienced many challenges and changes throughout history. Lazerson and Grubb (1974) attribute the changes in education to the need to adapt to “the requirements of jobs and helping certain groups become fully integrated into the economy” (p. 42). The significant events in the history of vocational education include the implementation of manual training, the Smith-Hughes Act of 1917, Vocational Education Act of 1963, the Carl D. Perkins Vocational Acts and the push for integration of academics and vocational education (Lazerson & Grubb, 1974; P. Johnson, 1988; Nasaw, 1979; Kliebard, 1999; J. Oakes & Saunders, 2006).

**Manual Training**

The influx of immigrants at the end of the 19th century contributed to the United States emerging as the main industrial power, however it also raised questions on how to make education more meaningful and supportive of industrialism (P. Johnson, 1988; Lazerson & Grubb, 1974; J. Oakes & Saunders, 2006). These questions led to the
criticism of the education system, which consisted of “overcrowded classrooms dulled by
the repetitiveness of recitation and drill, [where] children studied material of ambiguous
value” (Lazerson & Grubb, 1974, p. 3). The answer to these concerns centered on the
teaching of manual skills in the classroom because of its direct connection to life, support
of moral values, and ability to directly improve the lives of the economically
disadvantaged children (Altenbaugh, 2003; Boers, 2007; P. Johnson, 1988; Lazerson &
Kliebard (1999) further described manual training as having a "three-fold emphasis:
manual training as moral regeneration, as pedagogical reform and as preparation for the
workplace in the new industrial society" (p. 8).

By 1893, manual training had become a national movement and a common
curriculum in secondary education. Shop work, including woodworking, drafting and
metalworking was part of the curriculum, with woodworking being one of the most
popular subjects (Boers, 2007; Graham, 2005; Kliebard, 1999; Lazerson & Grubb, 1974;
Nasaw, 1979). This sent a strong message that learning no longer occurred just through
books, but also through the practice of manual labor (Kliebard, 1999). According to
Lazerson and Grubb (1974), woodworking “received support as a way of integrating
respect for manual labor, as well as self-respect, self-reliance, and habits of order,
accuracy and neatness” (p. 11). Beyond its strong focus on social values meant to
counteract the moral chaos associated with industrial growth, manual training also
provided students with the skills necessary to transition directly into the industrial world
(Altenbaugh, 2003; Kliebard, 1999; Lazerson & Grubb, 1974). Proponents of this
movement also declared that manual work strengthened thinking skills (Lazerson & Grubb, 1974).

While manual training was supported by educational leaders, such as John Dewey, Scott Nearing and Francis Parker, it only lasted two decades (Kliebard, 1999; Lazerson & Grubb, 1974). These individuals supported manual training because they believed it provided a balance to the educational curriculum, making it engaging and relevant to the immigrants and poor. However, manual training quickly became a technical education path for students who were not college bound (Boers, 2007; Graham, 2005; Lazerson & Grubb, 1974). The main criticisms of manual training was that it did not meet the principles of a secondary education because of its focus on a lower level of learning, resembling training for the trades.

**Vocational Education Movement**

The need for vocational education was strongly influenced by a report issued in 1906 by the Commission on Industrial and Technical Education, known as the Douglas Commission (Kliebard, 1999; Richmond, 2009). This report stated that schools were not adequately preparing students for the current needs of industrialism, which required highly skilled labor. Specifically the "industrial employers wanted schools to socialize immigrants with the work habits and attitudes to "fit in" as factory workers (proper deportment, punctuality, willingness to be supervised and managed) with technical skills” (Richmond, 2009, p. 3). During this period of high immigration, schools were also charged with keeping students in school, building on their background knowledge, and preparing them to assimilate into society (Altenbaugh, 2003; EdSource, 2005; Graham, 2005; Lazerson & Grubb, 1974; Mondale & Patton, 2001; Nasaw, 1979, Spring, 2012).
According to Lazerson and Grubb, (1974) “curricula differentiation, categorization of students by future economic roles and the adjustment of the curriculum to the economic demands of the marketplace became the defining characteristics of public education” (p. 25). Vocational education focused on preparing students for industrial work, as the emphasis in education was on securing the economic well-being of society (Kliebard, 1999).

**Smith-Hughes Act of 1917.** The National Society for the Promotion of Industrial Education (NSPIE), founded in 1906, was composed of business leaders who sought to bring attention to the vocational education movement, specifically the attention of congress (Donnelly, 2015; Urban & Wagoner Jr., 2009). After nearly a decade of advocating for vocational education from NSPIE together with the National Association of Manufacturers, and the American Federation of Labor, Congress formed the Commission of National Aide to Vocational Education in 1914. It was this commission that proposed the Smith-Hughes Act of 1917, providing 7.2 million annually to states for education in agriculture, trade and industrial education, and home economics (G. Hayward & Benson, 1993; Kliebard, 1999; Mobley, 1964; Schmidli, 2001). This was the first federal mandate to support vocational education, more than doubling what had been previously spent. The Smith-Hughes Act provided financial support for salaries in the form of federal matching of funds spent by states, local government or a combination of both and an added one million dollars for the training of vocational teachers (G. Hayward & Benson, 1993; Kliebard, 1999). This new law also exerted control over the courses students could take by establishing a maximum of 50% for academic courses taught by a teacher partially or fully funded through federal vocational funds (G. Hayward & Benson,
1993). This established the “50-25-25” rule, which consisted of 50% vocational courses, 25% related subjects and 25% academic courses, solidifying the division between academic and vocational programs (Ed Source, 2005; G. Hayward & Benson, 1993; Kliebard, 1999; Raizen, 1989; Richmond, 2009; D. Stern, Finkelstein, Stone III, Latting, & Dornsife, 1994).

In order for states to receive the funding allocation provided through the Smith-Hughes Act of 1917, they had to establish vocational education boards, develop a plan for the use of the funds and annually report how the funds were used (Kliebard, 1999; Mobley, 1964). According to Kliebard (1999),

Strict guidelines were put into place in terms of the beneficiaries of the legislation, the instructional time devoted to the vocational training, and the actual content in order to insure that the money could not be expended for general education purposes. (p. 133)

Another significant effect of the Smith-Hughes Act 1917, was that it sent a clear message that public education was responsible for educating more than just a small minority of students (Milne, 1998). Funding through the Smith-Hughes Act continued through the end of the 1950s (G. Hayward & Benson, 1993).

1930s through the 1950s. In the early 1900s, through the passing of the Smith-Hughes Act, NSPIE quickly achieved its goal of bringing attention to the vocational education movement. However the federal government’s fiscal support of vocational education continued to expand through the next three decades (Donnelly, 2015; Milne, 1998; Urban & Wagoner Jr., 2009). Additional funding was received through the George-Deen Act of 1936, George-Barden Act of 1946 and the Health Amendment Act
of 1956, increasing the vocational education funding to 29 million (Donnelly, 2015; G. Hayward & Benson, 1993; Milne, 1998). In addition to the increase in funding, the vocational education area and population of students served also expanded to include health occupations, highly skilled technicians, and economically disadvantaged students.

Even with the continued financial support from the federal government and growth in vocational fields, the popularity of vocational education came to a halt in the late 1940s and early 1950s (Graham, 2005; Lazerson & Grubb, 1974; Pulliam & Van Patten, 2013). This came as a result of the Life Adjustment education movement affirming that “American schools were failing to educate a majority of its youth, in this case the sixty percent who were neither being prepared for college nor for skilled trades under the existing vocational programs” (Lazerson & Grubb, 1974, p. 43). This movement called for a more practical and engaging education for these students focused on basic life skills (Graham, 2005; Lazerson & Grubb, 1974; Mondale & Patton, 2001; Pulliam & Van Patten, 2013). Life Adjustment Education was short-lived because of its lack of focus on building intelligence.

**1960s through the 1970s.** The economic climate during the 1960s, consisted of a workers unprepared for the advancements in technology, high unemployment rates, and a widening gap between the rich and the poor (G. Hayward & Benson, 1993; Lazerson & Grubb, 1974; Lotto, 1986; Raizen, 1989). Society once again looked to education to solve these issues, specifically vocational education, resulting in an increase in the number of students taking vocational classes. Congress also recognized the importance of vocational education and continued to provide support by passing the Manpower Development and Training Act of 1961 (MDTA), followed by the Vocational Education
Act of 1963 (VEA) (Hayward & Benson, 1993; Lazerson & Grubb, 1974; Lotto, 1986; Raizen, 1989). According to Lazerson and Grubb (1974), Congress tried to solve the economic issues through VEA, as it “attempted to redirect vocational training by broadening its scope and flexibility and by focusing on the economically and educationally disadvantaged” (p. 45). VEA also introduced a new concept referred to as “set-asides”, meaning that specific percentages of the federal money had an identified purpose. The set-asides targeted particular types of students, communities, and/or projects (Hayward & Benson, 1993). For example 25% of the funding was to be spent either on students who completed or left high school, additional facilities for vocational education, or both. More set asides came along with the Educational Amendments of 1976, which focused on socioeconomically disadvantaged students, handicapped students and postsecondary programs. This legislation was also unique, as it included towards the end of its funding cycle the National Assessment of Vocational Education (NAVE) to measure compliance with the intent of legislation and provide data on how to improve the re-authorization of legislation.

During this time period, the primary focus of education was based on meeting the economic needs of society (G. Hayward & Benson, 1993; Lazerson & Grubb, 1974; Lotto, 1986; Raizen, 1989). Additional programs were created outside the realm of education to further support the economy and youth. This included the creation of a separate employment and training system by the U.S. Department of Labor through the passing of the following legislation: the Manpower Development and Training Act (MDTA); the Economic Opportunity Act; the Emergency Employment Act into the Comprehensive Employment and Training Act, (CETA), and the Youth Employment and
Demonstration Programs Act (YEDPA) (Raizen, 1989). The goal of this legislation was to provide guidance to youth in finding and keeping a job. These programs were created out of the criticism that schools did not have the ability or experience to support students in these areas, and was therefore a task better suited for private businesses. Additionally in 1967, Regional Occupational Centers and Programs, ROCP, were created as a way to give high schools more opportunities to successfully prepare students for the workforce or postsecondary training (EdSource, 2005; EdSource 2009). These centers were better able to provide access to equipment and business partnerships and offered classes to students in multiple districts in areas that met the needs of the region. Through ROCPS students at least 16 years of age, received advanced training at the regional center or an industry site, as well as career guidance and job placement assistance. According to Lazerson and Grubb (1974),

The ideal school system had come to be modeled after the modern corporation both in its hierarchical and bureaucratic organization and in its purpose; students were raw materials to be processed in an efficiently run plant, and the criterion of success was the price the finished product could bring in the market place. (p. 50)

**The effects of A Nation at Risk on vocational education.** The publishing of *A Nation at Risk* in 1983 and other reports criticizing the American education, resulted in an intensified focus on the academic performance of students, adversely affecting vocational education (K. Levesque et al., 1995; National Center for Educational Statistics, 2000; Silverberg et al., 2004; Tuma & Burns, 1996). The adverse effects were a result of the increase in the high school graduation requirements from 1982 to 1992 and a push for students to take more academic credits (Delci & Stern, 1999; Houser, 1996; K.
Levesque, Lauen, Teitelbaum, Alt, & Librera, 2000; K. Levesque et al., 1995; Milne, 1998; Silverberg et al., 2004; Tuma & Burns, 1996). During this time period, academic credits earned increased, while the number of vocational credits earned decreased. This trend "lowered vocational education's share of the overall high school curriculum, 21.8% in 1982 to 17.8% in 1990 and 16.2% in 2000" (Silverberg et al., 2004, p. 9). Popular vocational programs during this time period included business, trade and industry and technical and communication programs, and were more likely to be accessed by males, socioeconomically disadvantaged students, and students with disabilities (Castellano et al., 2003; Houser, 1996; K. Levesque et al., 1995; J. Oakes, Selvin, Karoly & Guiton, 1992). J. Oakes, Selvin, Karoly, and Guiton (1992), conducted a study of three high schools in a major West Coast urban center to examine how schools make decisions on which courses to offer and the assignment of the students to these courses. Data was collected over a two year span through observations, conversations with educators and students, and the examination of school documents, including the transcripts from the 1988 senior class. Results showed that at all three schools’ assumptions about the ability, ambition, and needs of students were mostly based on race and socioeconomic status, as the majority of vocational courses were taken by low-income and minority students. This study also concluded that there was lack of attention paid to vocational education and a strong need for integration of vocational and academic curriculum.

The Educational Vocational Act of 1963, reauthorized during this time period as the Carl D. Perkins Vocational Education Act of 1984, Perkins Act, focused on expanding and improving the quality of vocational education programs to meet the needs of the evolving workforce (G. Hayward & Benson, 1993; Milne, 1998; Raizen, 1989;
Urquiola et al., 1997). This legislation targeted individuals who were not adequately served through the vocational education programs, specifically English learners, economically disadvantaged and handicapped students. It also targeted students who were interested in non-traditional gender programs.

**Carl D. Perkins Vocational and Applied Technology Education Act of 1990.** In 1990, Congress passed the Carl D. Perkins Vocational and Applied Technology Education Act, (Perkins II), which according to G. Hayward and Benson (1993), marked the “most significant policy shift in the history of Federal involvement in vocational-technical education funding” (p. 17). For the first time, the focus of vocational education was on all students’ work-related skills, as well as academics. These major changes in the legislation were meant to address the concern that students transitioning to the workforce were lacking critical thinking skills and affecting America’s status in world markets (Castellano et al., 2003; Halperin, 1994; G. Hayward & Benson, 1993; K. Levesque et al., 1995; K. Levesque et al., 2000; Milne, 1998; D. Stern & Stearns, 2006; Stone III & Aliaga, 2003; Urquiola et al., 1997). This legislation required that states, in conjunction with industry partners, develop and implement standards and performance measures for all vocational programs by 1992, but it did not dictate the standards or measures to be used. Awareness was generated for the integration of academic and vocational instruction, as the legislation required the funding to be spent only on programs that integrated vocational and academic education (EdSource, 2005; G. Hayward & Benson, 1993; K. Levesque et al., 1995; K. Levesque et al., 2000; Milne, 1998; D. Stern et al., 1994; D. Stern & Stearns, 2006). However, since Perkins makes-up
a very small portion of a district’s funding, this restriction did not accelerate the integration of vocational and educational courses (Castellano et al., 2003).

Perkins II also included promotion of work-related experiences, development of Tech Prep programs and required the integration of vocational and academic curriculum (Castellano et al., 2003; Stone III & Aliaga, 2003). Vocational programs expanded to include opportunities for students to earn credits through cooperative education, work experience or school based enterprises (Castellano et al., 2003; K. Levesque et al., 1995; D. Stern et al., 1994). These programs consisted of both paid or unpaid employment and students receiving formal training and evaluations from employers. The Tech Prep programs consisted of vertically aligning the vocational courses during the last two years of high school to a post-secondary education, usually through a community college, with the purpose of achieving an associate or technical degree (Castellano et al., 2003; Southern Regional Education Board, 2006; D. Stern et al., 1994; Urquiola et al., 1997). Tech Prep is similar to dual enrollment courses, as students were able to receive college credit for articulated classes completed in high school in specific areas of study, including engineering, technology, applied science, mechanical, industrial, practical art, trade, agriculture, health, or business. Urquiola et al., (1997) explained that the Tech Prep program was developed to “motivate ‘at risk’ students who were disaffected from their educational experiences, by allowing them greater access to postsecondary education while still in high school” (p. 24). Unfortunately, Tech Prep programs were not always implemented with fidelity and did not always ease the transition to a community college (Hershey, Silverberg, Owens, & Hulsey, 1998).
Carl D. Perkins Vocational and Technical Education Act of 1998. The basic approaches from Perkins II, were continued in the Carl D. Perkins Vocational and Applied Technology Education Act of 1998, Perkins III (Castellano et al., 2003; K. Levesque et al., 2000; Silverberg et al., 2004; D. Stern & Stearns, 2006; Stone III & Aliaga, 2003). This included maintaining an emphasis on integration of academic and vocational instruction, linking secondary and post-secondary programs, continuing partnerships with employers, and expanding the focus on technology. Perkins III also attempted to improve the accountability measures by clarifying the four areas in which states had to demonstrate progress. Based on the required evaluation of the impact of Perkins III on vocational education, the National Assessment of Vocational Education reported that vocational education improved the earnings of students at the secondary level and increased both the number of and achievement in academic courses completed by students in vocational programs (Silverberg et al., 2004). The evaluation also revealed that students who take both a strong academic and vocational program of study are more successful than students who focus on only academics or vocational courses (Silverberg et al., 2004). This report concluded that even though Perkins III has shown positive effects on vocational education, the “current legislative approach of encouraging “integration” as a way to move secondary vocational education toward supporting academics has been slow to produce significant reforms” (Silverberg et al., 2004, p. 2).

Carl D. Perkins Career and Technical Education Improvement Act of 2006. Perkins III was once again reauthorized in 2006, but this time as the Carl D. Perkins Career and Technical Education Improvement Act of 2006, Perkins IV (Donnelly, 2015; Kotamraju, 2010; Richmond, 2009). As part of this legislation, the term vocational
education was replaced by CTE. According to Kotamraju (2010), “Perkins IV envisioned CTE as transcending secondary and postsecondary systems through the implementation of programs of study, which combine career-focused CTE content with rigorous academics in a seamless pathway to postsecondary education, industry-recognized credentials and employment” (p. 53). This expanded the focus of vocational education beyond preparing for a specific entry level job, to equipping students with a range of skills including problem-solving, communication and collaboration, in order to be successful in a field of study, such as industrial production instead of welding (American Youth Policy Forum, 2009; Kotamraju, 2010; S. Plank, DeLuca, & Estacion, 2008). The narrow focus of vocational education was previously highlighted in many reports including America's Choice: High Skills or Low Wages, Workplace Basics: The Skills Employers Want, Workforce 2000 and reports of the Secretary's Commission on Achieving Necessary Skills (the SCANS Commission) (G. Hayward & Benson, 1993; Urquiola et al., 1997). The CDE (2016) defines CTE as "a program of study that involves a multi-year sequence of courses that integrates the core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers" (section 1).

**Shift to CTE and School-to-Work-Movement**

The School-to-Work Opportunities Act in 1994 (STWOA), expanded on the “work-related experience” stipulated in Perkins II, by providing funds to states to improve workforce development opportunities for all students (Castellano et al., 2003; Halperin, 1994; Hamilton, 1990; J. Kemple & Rock, 1996; J. Kemple & Snipes, 2000; D. Stern & Stearns, 2006; Stone III & Aliaga, 2003; Urquiola et al., 1997). Through this
legislation, states were to create School to Work systems (STW), that gave students the opportunity to develop a deeper level of knowledge and skills, well-beyond the requirements for entry-level positions. According to Urquiola et al. (1997), the STWOA "challenged localities and states to broaden their view beyond vocational or work-bound students, by creating career majors that would be available to ‘all students’ including the academically talented’" (p. 99). The name associated with this legislation, School to Work, hindered the acceptance of this concept as it was interpreted by some educators and parents as threatening the existence of college-preparatory curriculum (Hughes, Bailey & Mechur, 2001; Urquiola et al., 1997).

In order to receive STWOA funds, STW systems had to integrate vocational and academic curriculum, school-based and work-based learning and link secondary and postsecondary education (Hughes et al., 2001; D. Stern et al., 1994; Urquiola et al., 1997). Work-based learning (WBL), included paid work experience, unpaid internship, service learning, job shadowing and school-based enterprise (Urquiola et al., 1997; D. Stern et al., 1994). An in-depth study of STW programs, geared at reviewing and analyzing previous research was conducted by Hughes et al. (2001). A major conclusion of the research was that STW can improve attendance, grades, and graduation rates of students. It was found that STW students are just as likely, while at times even more likely, to attend college than the comparison-group students. Another major conclusion was that students who participate in STW have more contact with adults both at school and the work-site. According to Halperin (1994) this is one of the key purposes of STW because “youth need active, not passive learning in schools, in worksites, in voluntary
service” (p. 7). STWOA funding was meant only to jumpstart the program, as it was scheduled to end in 2001 (Hughes et al., 2001; Urquiola et al., 1997).

**CTE.** The legislation in the 1990s, reauthorization of Perkins and STWOA, encouraged a broader focus for vocational education. Reports such as *America's Choice: High Skills or Low Wages, Workforce 2000* and the Secretary's Commission on Achieving Necessary Skills (the SCANS Commission) disputed the narrow focus of vocational education and instead advocated for a broad base of knowledge and skills that students should possess to successfully transition to the workforce (G. Hayward & Benson, 1993). This encouraged the transition of the American Vocational Association to the Association for Career and Technical Education (ACTE) in 1998, which also urged the use of the term “Career Technical Education” instead of “Vocational Education” (Richmond, 2009). According to Castellano et al. (2003), “the goal of CTE became for all students to finish high school prepared either to enter the workplace (which had come to demand strong academic skills and other “new basic” skills) or to begin postsecondary education” (p. 244). This meant that vocational educators could not continue to prepare students for a specific occupation, but had to instead expand their practices to include all aspects of the industry. Consequently, to better meet the needs of the workplace, changes to existing programs had to include:

- Strong linkages to workplaces while students are still in high school, learning activities that link experiences at those workplaces with school learning, smaller learning communities with a career focus to help engage students and keep them in school until graduation, and connections to postsecondary institutions to encourage further education. (Castellano et al., 2003, p. 245)
Standards Movement

Even though the standards based reform in CA did not start until the mid-1990s, the need to reform education and increase the academic rigor in schools was initiated a decade earlier with the publishing of *A Nation at Risk* and other reports with similar criticisms (Boers, 2007; Graham, 2005; G. Hayward & Benson, 1993; Milne, 1998; Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Spring, 2012; Urban & Wagoner Jr., 2009). The national attention on the failure of schools led to the United State President and state governors discussing solutions on how to address this issue at educational summits. Solutions included increasing the graduation requirements, implementing accountability measures and developing higher standards for teachers. Vocational education was not viewed as a worthwhile solution at the educational summits in 1989 and 1996 (CalEdFacts, 2016; Graham, 2005; G. Hayward & Benson, 1993; Milne, 1998; Mondale & Patton, 2001). Milne (1998), explains that "the economic problems of poverty, unemployment, productivity and international competitiveness were, under this scenario, to be addressed through raising educational standards and efficiency" (p. 4).

Taking into consideration the discussions at the educational summits, CA embarked on the standards and assessment movement as a means to increase the academic rigor in schools (EdSource 2005; EdSource, 2009; Graham 2005). The focus was on establishing content standards in the four core subject areas. In December of 1997, the State Board of Education adopted the content standards in English Language Arts and Mathematics, followed by Science and History-Social Science in October of 1998 (CDE, 2016). The 1997 English Language Arts Content Standards include a
message from the State Board of Education and State Superintendent of Instruction, explaining that “with the adoption of these English–language arts content standards in 1997, CA set forth for the first time a uniform and specific vision of what students should know and be able to do in this subject area” (Ong & Geeting, 1998, p. ix). The legislature also established the STAR in 1997 (CDE, 2016). The focus, at the turn of the century, was on the new academic content standards, new assessments and new accountability system and not on career technical education, resulting in a decline in CTE related activities (EdSource, 2009; Stone III & Aliaga, 2003). This was further intensified by the accountability measures imposed by the NCLB Act of 2001, requiring all students to be proficient in English language arts and mathematics by 2013-14 (Center on Educational Policy, 2005; Chadd & Drage, 2006; EdSource, 2005).

Although CTE was not at the forefront of education at the beginning of the 21st century, the academic standards movement did influence legislation mandating the creation of CTE standards and framework (American Youth Policy Forum, 2009; EdSource 2005; EdSource 2009). In 2002, Assembly Bill 1412 and Senate Bill 1943, “called on state education leaders to apply what they had learned in developing academic standards to the reform of traditional vocational education" (EdSource, 2009, p. 3). A CTE Advisory Group, representative of key stakeholders from secondary education, postsecondary education and industry sectors, was appointed by Jack O’Connel, State Superintendent of Public Instruction to develop the CTE standards and framework integrating both academic and technical skills (American Youth Policy Forum, 2009; EdSource, 2005). The CTE standards adopted in May of 2005 and the framework in 2009, include 11 skill sets and center on the 15 pathways aligned to state’s labor needs.
According to D. Stern and Stearns (2006), the CTE standards “give CTE teachers something to stand on, but since they are not included in the state and federal accountability measures that currently drive high schools, the CTE standards are irrelevant from the standpoint of academic teachers” (p. 25). D. Stern and Stearns (2006) affirm that the separate standards for academics and CTE perpetuate the idea of two separate paths in secondary education.

**Career Academies**

D. Stern, Raby, and Dayton (1992) created the term “career academy” to describe the Philadelphia academies, California Partnership Academies, and the National Academy Foundation academies, a type of school-within-a-school that integrates a college preparatory and career technical curriculum. Career academies, first established in Philadelphia in the 1960s, have three basic components: a small learning community, college preparatory and CTE integrated curriculum, and career awareness (J. Kemple, 1997; J. Kemple & Rock, 1996; J. Kemple & Scott-Clayton, 2004; J. Kemple & Snipes, 2000; J. Kemple & Wilner, 2008; D. Stern et al., 2000; Urquiola et al., 1997). The small learning community usually consists of a “school-within-a-school” model, where a group of students typically in grades nine through 12 take several classes together each year with the same teachers. The integrated curriculum consists of a “coherent sequence of rigorous academic and technical courses that allow students to learn how to apply their academic knowledge and develop technical skills in a curricular area” (American Youth Policy Forum, 2009, p. 4). The career academies are organized around major industries including agriculture and natural resources; arts, media and entertainment; biomedical and health science; building and environmental design; information technology;
engineering and design; and manufacturing (American Youth Policy Forum, 2009; J. Kemple & Scott-Clayton, 2004; Profiles of the California Partnership Academies 2004-05, 2007; Urquiola et al., 1997). Career awareness is also a key feature of career academies and includes partnerships with businesses to provide the following: curriculum advice, job shadowing and internship opportunities, classroom guest speakers; and mentoring to students (J. Kemple & Rock, 1996; J. Kemple & Scott-Clayton, 2004; Symonds & Gonzales, 2009). J. Kemple (1997), describes the goal of academies as to "promote more constructive relationships between and among teachers and students and thereby to increase students' engagement and success in high school" (p. ES-2).

Originally, the main focus of career academies was on dropout prevention and preparing students to transition into the workforce, however over time the focus has evolved into preparing students for both college and a career (J. Kemple & Snipes, 2000; J. Kemple & Rock, 1996; D. Stern et al., 2000; D. Stern et al., 2010; Urquiola et al., 1997). The first two career academies in CA were privately funded through the Edna McConnell Clark Foundation in 1981 and modeled after the Philadelphia academies (J. Kemple & Snipes, 2000; D. Stern et al., 2000; D. Stern, et al., 1994). One of the original academies was a Computer Academy at Menlo-Atherton High School, and the second, an Electronics Academy at Sequoia High School; both focusing on socioeconomically disadvantaged students with low grades and missing credits. The nonprofit National Academy Foundation has also been sponsoring academies since 1982, with more than 40 career academies in CA and 500 nationally (EdSource, 2009; D. Stern et al., 2000; Symonds & Gonzales, 2009). State funding, geared at replicating the original academies, was made available for up to 10 school districts, through legislation passed in CA in
1984, giving rise to the California Partnership Academies (Profiles of the California Partnership Academies 2004-05, 2007; J. Kemple & Snipes, 2000; D. Stern et al., 2000; D. Stern et al., 2010). CA continued to provide funding to support existing and new academies, with stipulations in the legislation that 50% of the students must be “at-risk” of dropping (Profiles of the California Partnership Academies 2004-05, 2007; Profiles of the California Partnership Academies 2009-10, 2011; EdSource, 2009; D. Stern et al., 2000). In 2004-05, 290 California Partnership Academies submitted reports to the CDE, with this number increasing to 467 in 2009-10, making-up approximately 20% of CA’s high schools and serving 3% of the student population (Profiles of the California Partnership Academies 2004-05, 2007; Profiles of the California Partnership Academies 2009-10, 2011; EdSource, 2009).

According to J. Kemple and Snipes (2000), "Career Academies provide a well-defined approach to creating a more supportive high school environment and increasing students' exposure to career awareness and work-based learning activities" (p. ES-3). Many studies have been conducted to evaluate the effectiveness of academies. Manpower Demonstration Research Corporation has conducted rigorous and in-depth studies of career academies since 1993, spanning a period of 15 years (J. Kemple & Rock, 1996; J. Kemple & Snipes, 2000; J. Kemple & Scott-Clayton, 2004; J. Kemple & Wilner, 2008). The evaluation, funded by the U.S. Department of Education and Labor and 17 private foundations and organizations, consists of 10 small city, urban high schools in CA, Texas, Florida, Washington DC, Maryland and Pennsylvania. These districts serve a high population of socioeconomically disadvantaged students, as well as racially diverse students and English learners. Findings from the first evaluation revealed
that academies may look different because of the conditions and needs of the school, while still possessing the three core features (J. Kemple 1997; J. Kemple & Rock, 1996). The results also indicate that academies appeal to both students who are at-risk of dropping out, as well as those who excel academically. The study did not find any distinct differences in background characteristics between academy and non-academy teachers, but did find that academy teachers collaborate more with each other and were able to pay more attention to their students.

The second Manpower Demonstration Research Corporation evaluation was published in 2000 and over a six-year period focused on the students’ success in nine high schools and their transition to further education or the labor market (J. Kemple & Snipes, 2000). In this study, 1,764 students were randomly assigned to the program group and control group. J. Kemple and Snipes (2000) explain that “on average, these school districts have higher dropout rates, higher unemployment rates, and higher percentages of low-income families” (p. ES-6). Findings from the evaluation showed the following for the academy students versus the non-academy students: increased personal support and career awareness; reduced dropout rates, improved attendance rates, and an increase in academic course-taking; and supported the fact that increased vocational course-taking did not affect the completion of a basic core academic curriculum. The evaluation revealed that the:

High school dropout rates in academies average about 7 or 8% over three years--about half the rate in the general population of CA students, despite the fact that state-funded academies are required to recruit a majority of students who are economically or educationally disadvantaged. (J. Kemple & Snipes, 2000, p. 7)
Academy students, however, did not show improvement on standardized mathematics and reading achievement test scores.

Manpower Demonstration Research Corporation continued their study on academies by evaluating the influence of career academies on the transition of students to the job market or a post-secondary education four years after graduation (J. Kemple & Scott-Clayton, 2004). The results showed an improvement in labor market prospects for young men only, without having an adverse effect on the completion of their academic courses. Even though the results found academies to be a worthwhile option, they did not prove to be more effective than other options available to non-academy students. This evaluation was continued four years later to examine the effects eight years after graduation (J. Kemple & Wilner, 2008). The males in career academies sustained their earnings, averaging 11% or $2,088 more than non-academy students. This also resulted in more young people from the career academies living on their own with a spouse or children. This study, once again, confirmed that career academies are a worthwhile option, but not more effective than other options available. However, J. Kemple and Wilner (2008), explain that career academies are "one of few programs that has been shown to improve labor market prospects of young man" (p. iii) and recommend further research on key components of the academies.

Other evaluations of academies include a study conducted in 1987-88 on 11 academy programs in CA high schools. Even though the results from the study were for the most part positive, “the main lesson that can be derived is that individual academies vary greatly in their measured effectiveness” (D. Stern, Dayton, Il-Woo & Weisberg, 1989, p. 415). An evaluation of the transition and performance of career academy
students from a single high school district to a medium-sized CSU between 1990 and 1997 also revealed positive results. The study found that academy students needed less remediation in English upon entering the university and had higher graduation rates. However, overall data from the high school was not very promising, as 70% of the applicants from the district needed some type of remediation (N. Maxwell, 1999). CDE has also collected data on the California Partnership Academies. Based on the data collected, 96% of California Partnership Academies students in 2009-10 made progress towards graduation by earning at least 90% of their credits, up from 83% in 2004-05. Additionally, 95% of the seniors graduated in 2009-10, compared to 85% statewide, with 57% of students completing a-g requirements versus 36% statewide (Profiles of the California Partnership Academies 2009-10, 2011). Even though studies have produced mixed results on career academies, D. Stern et al., (2000), explain that they "have become the most durable and best-tested component of a high school reform strategy that includes diving large schools into smaller units" (p. 1).

Linked Learning Academies

The California Linked Learning District Initiative, known prior to 2010 as the California Multiple Pathways District Initiative, is led by ConnectEd, California Center for College and Career, and financially supported by the James Irvine Foundation (EdSource, 2009; Guha et al., 2009; Profiles of the California Partnership Academies 2009-10, 2011). The multiple pathways concept was first mentioned in 2002 by a legislature group assigned to work on the new Master Education Plan (Richmond, 2009). This group advocated for the a-g requirements to be the standard curriculum for all students with multiple pathways to complete the requirements. Similar to the idea of the
Master Education Plan work group, the Linked Learning District Initiative is a reform strategy that “pairs a rigorous college-preparatory curriculum with an industry theme while offering the supports and workplace exposure that can be critical to students' success” (Richmond, 2009, p. 1). The following four core elements of the linked learning approach build on the basic components of career academies: (a) rigorous academics, (b) career-based learning in the classroom, (c) work-based learning in real-world workplace, and (d) integrated students supports (ConnectEd, 2011; EdSource, 2009; Guha et al., 2014; R. Hoachlander, Stearns, & Studier, 2008; Richmond, 2009). The additional support services required in a linked learning model refer to providing students with academic and career counseling support necessary for a successful completion of challenging curriculum. The Linked Learning approach refutes the idea of an educational system consisting of two separate paths, academic and vocational, and is instead, “based on the view that college and career are complimentary rather than competing goals and that all high school students should be prepared for both” (EdSource, 2009, p. 1).

In 2009, nine school districts in CA were selected to participate in the Linked Learning District Initiative, with the purpose of operating career pathways using the Linked Learning approach (ConnectEd, n.d.; EdSource, 2009; Linked Learning, n.d.; Richmond, 2009; Warner et al., 2015). The following medium and large, rural and urban districts were chosen: Antioch Unified; Long Beach Unified; Los Angeles Unified; Montebello Unified; Oakland Unified; Pasadena Unified; Porterville Unified; Sacramento City Unified; and West Contra Costa Unified. ConnectEd, which was established in 2006 by the Irvine Foundation, is the primary technical support provider for the districts. Other partners offering support to the initiative include the Stanford Center for
Opportunity Policy in Education, the Center for Powerful Public Schools, the National Academy Foundation, the College & Career Academy Support Network, and The Education Trust—West. A certification tool was also developed by ConnectEd to identify and highlight pathways implementing Linked Learning with quality and fidelity (ConnectEd, n.d.; EdSource, 2009; Guha et al., 2014; Richmond, 2009). The certification tool addresses the following seven elements: (a) Student Outcomes Driven Practice; (b) Culture of High Expectations, Equity, and Inclusion; (c) Industry Themed Program of Study; (d) Inquiry and Project-Based Learning and Teaching; (e) Work-Based Learning; (f) Personalized Student Support; and (g) Distributed Leadership and Engagement Partners. Amongst the nine districts, 27 high schools have certified Linked Learning Pathways, for a total of 39 certified pathways. Linked Learning Pathways can also be certified through NAF.

An expansion of Linked Learning District Initiative occurred in 2013 with the implementation of the CA Linked Learning Pilot Program (ConnectEd, n.d.; Linked Learning, n.d.; Warner et al., 2015). This came as a result of the approval of Assembly Bill 790 in 2011, which recognized that CA, in order to improve graduation rates, close the achievement gap and successfully prepare all students for college and a career, must use innovative approaches to restructure its public high school system (Assembly Bill [AB]790, section 1(f)). AB 790 describes the linked learning approach as being:

One of the most promising high school transformational strategies and can be expanded to play a pivotal role in enabling all of our pupils to be well prepared for life and workforce demands in a 21st century global economy and society.

(AB 790, section 1(f))
Thirty-nine partnerships, consisting of 63 districts and county offices of education, were selected to be part of this program and received a total of $250 million through the California Career Pathways Trust in 2014 (ConnectEd, n.d.; Linked Learning, n.d.; Warner et al., 2015). The purpose of this competitive grant was to expand the career pathway programs in CA through providing the support for a systemic Linked Learning approach, including regional partnerships to provide work-based learning support. The Tulare-Kings Linked Learning Consortium was one of the partnerships selected to be part of the CA Linked Learning Pilot Program.

A limited number of studies have been conducted on the effectiveness of the Linked Learning approach, and mainly include the evaluations conducted by the Center for Education Policy at Stanford Research Institute (SRI) and commissioned by the James Irvine Foundation (Guha et al., 2014; Warner et al., 2015). SRI has conducted six evaluations of the Linked Learning District Initiative, one including the CA Linked Learning Pilot Program. The evaluation revealed that in comparison to non-pathway students, students in certified programs earn more credits and are just as likely to complete the a-g requirements (Guha et al., 2014; Warner et al., 2015). Pathway students were also more likely to be classified as ready or conditionally ready on the Early Assessment Program in English Language Arts, an assessment of college readiness. School engagement was measured through attendance and retention rates, which revealed no differences in attendance rates, but a higher district retention rate for Pathway students. The SRI evaluations show that the Linked Learning approach in certified pathways positively affects the dropout and graduation rates. Additionally, these results
were also found to be true for specific subgroups, such as special education, English Learners and socioeconomically disadvantaged students.

**Core Academic Courses**

The parallel path to vocational preparation consists of preparing students for a seamless transition to college through a sequence of core academic courses (EdSource, 2009; J. Kemple & Wilner, 2008; Kotamraju, 2010; J. Oakes et al., 1992). This sequence of courses was first presented in 1893 by Charles William Elliot, president of Harvard, as he advocated for a curriculum geared toward college preparation (Graham, 2005; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). Elliott’s college curriculum concept has evolved into the current a-g subject requirement, the core academic course sequence designed to prepare students for college.

**College Preparatory Path-UC and CSU Eligibility Requirements**

Preparation for college and the workforce have traditionally been offered as two separate paths in high schools (EdSource, 2009; J. Kemple & Wilner, 2008; Kotamraju, 2010; J. Oakes et al., 1992). In CA, the college preparatory path is defined by the a-g subject requirements, also known as the minimum subject requirements for entrance into the CSU and the UC systems (EdSource, 2009; The Education Trust-West, 2004; D. Stern & Stearns, 2006). According to EdSource (2009), through the alignment of the UC and CSU eligibility requirements in 2003, the “common a–g requirements, which exceed the state’s formal high school graduation requirements, have effectively become CA’s default definition of high school rigor” (p. 2).

The college entrance requirements were first established in the 1930s, as the “a-f” subject area requirements, with the purpose of clearly communicating to high school
educators and students the level of courses necessary for success at the university (D. Stern & Stearns, 2006). The a-g requirements consist of 15 required courses and three optional, in the following areas: (a) two years of history/social science; (b) four years of English; (c) three years of mathematics (four recommended); (d) two years of laboratory science (three recommended); (e) two years of language other than English (three recommended); (f) one year of visual and performing arts; and (g) one year of college preparatory electives (California State University, 2016). The a-g course criteria was established and is regularly reviewed by the UC Board of Admissions and Relations with Schools (BOARS), composed of UC faculty (D. Stern, & Stearns, 2006). The courses recommended by the College Board and ACT Inc. to adequately prepare students for the rigor of college courses, also align with the a-g subject area requirements (ACT, 2005; Southern Regional Education Board, 2006).

Even though studies have found that a rigorous core curriculum benefits all students, not all students are completing a college preparatory curriculum (ACT, 2005; EdSource, 2009; The Education Trust-West; 2004). A disparity exits between the percentage of students who plan on attending college and those identified as college-eligible based on the completion of the a-g curriculum. The Education Trust-West reported in 2004, that 80% of high school students plan on attending college, however only 40% complete a college preparatory curriculum (The Education Trust-West, 2004). This data continues to hold true a decade later, as only 43.4% of the graduating seniors in CA met the a-g requirements (CDE Dataquest, 2015). This indicates that the majority of the students in CA are not completing a college preparatory curriculum, therefore not eligible to directly attend a CSU or UC.
**Goals 2000**

The need for a rigorous core curriculum was brought to the forefront of American politics with the publishing of multiple reports addressing the mediocrity of America’s education, the most well-known being *A Nation at Risk* in 1983 (Heise, 1994; K. Levesque et al., 1995; National Center for Educational Statistics, 2000; Silverberg et al., 2004; Tuma & Burns, 1996). In 1989, President George H. Bush, led the Presidential Summit on Education to discuss with the governors the status of education and how to address the recent criticisms (Heise, 1994; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). The discussion centered on the need for national standards, which resulted in the America 2000 program, the educational agenda for the nation. America 2000 initially consisted of six goals to be accomplished by the year 2000. The goals focused on the following: (a) children starting school ready to learn; (b) increasing the high school graduation rate to 90%; (c) student competency on challenging subjects in grades 4, 8 and 12; (d) adult literacy; and (e) drug-free schools. Even though the Education Summit was described as “historic, because at no other time in this country's history have the president and governors met to establish a set of national educational goals and to reallocate educational policy responsibilities among the federal, state, and local governments” (Heise, 1994, p. 347), these goals did not yield significant accomplishments in education during president Bush’s term.

The emphasis on America 2000 continued into President Bill Clinton’s term because of his interest in the goals (Heise, 1994; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009). Clinton was one of the governors who participated and presented at the Presidential Summit on Education. Therefore as president, he continued to pursue the
goals established through the America 2000 program and in 1994, signed into law the Goals 2000: Educate America Act. Two additional goals were added to the original six goals of America 2000 program; parent involvement and professional education of teachers. The areas addressed by Goals 2000 include: (a) school readiness; (b) school completion; (c) student achievement and citizenship; (d) teacher education and professional development; (e) mathematics and science; (f) adult literacy and lifelong learning; (g) safe, disciplined and alcohol-and drug-free school; and (h) parental involvement. Even though Goals 2000 was “widely herald as a base for educational excellence” (Pulliman & Van Patten, 2013, p. 272), few educators believed that the identified goals could be accomplished in the remaining six years. The goals associated with the new legislation were not accomplished, however they did exert a strong influence on the core curriculum, evidenced through the standards and assessment movement led by individual states (Boers, 2007; Graham, 2005, Mondale & Patton, 2001; Pulliam & Van Patten, 2013; Urban & Wagoner Jr., 2009; Vinovskis, 1999).

**NCLB**

The focus on a rigorous core curriculum for all students intensified with the signing of NCLB Act into law in 2002 (Spring, 2012; Urban & Wagoner Jr., 2009). NCLB mandated that states establish clear learning expectations for all students in English Language Arts and mathematics, as well as a standardized system for measuring the learning. States were held accountable for improving student learning through a set criteria identifying the percentage of students required to demonstrate proficiency each year, known as AYP. Schools who did not make AYP two years in a row were placed in program improvement. Program improvement status gave parents the opportunity to
transfer their students to a higher performing school. The pressure to make AYP, resulted in schools placing a greater emphasis on the core curriculum and ignoring vocational education. This included students who were not proficient in English or mathematics being opted out of electives and placed in two English or mathematics courses.

**Common Core**

The CCSS Initiative has maintained the focus on English and mathematics, but restored a more balanced approach to education through its alignment to both college and a career (Common Core, 2016; CDE, 2016). The development of the CCSS was led by states, specifically through state representation on the Council of Chief State School Officers, CCSSO, and the National Governors Association Center for Best Practices, NGA Center. The CCSS are not only “a set of high-quality academic standards in mathematics and English language arts/literacy (ELA) [but, are also aligned] to the expectations of colleges, workforce training programs, and employers” (Common Core, 2016, “About the Standards,” para. 2). These standards have been adopted by 42 states. CCSS are designed to provide all students with the skills and knowledge necessary for a successful transition to college and a career. This includes supporting students to think critically, analyze and problem solve.

**Integration of Technical and Core Academic Classes**

A century later, our schools continue to be faced with the pressure to increase graduation rates, while simultaneously losing students who are disengaged due to irrelevant curriculum (EdSource, 2009). However, the main difference is that the 20th century approach of different paths for the college- and work-bound students is no longer
the appropriate solution. Educators and labor market experts both argue that students need to have access to rigorous coursework relevant to a future career (EdSource, 2009; Glenn, 2005; Milne 1998; Thornburg, 2006; Urquiola et al., 1997). This coincides with the point of view of cognitive psychologists, who explain that students learn better when skills are taught in context (Hughes, Bailey, & Karp, 2002; Lave, 1988; Resnick, 1987).

Students transitioning directly to the workforce, must also be able to effectively communicate orally and through written communication, collaborate through working as a team and think critically (Casner-Lotto, & Barrington, 2006; Urquiola et al., 1997). Curriculum integration “simultaneously prepares students for skilled jobs and with the incorporation of reformed pedagogy, develops critical thinking and collaboration skills” (Urquiola et al., 1997, p. 72).

Legislation advocating for an integrated approach, supporting both student access to college and a career, has been in place since 1990 (EdSource, 2009; Hudson & Hurst, 1999; S. Plank, 2001; Silverberg et al., 2004; D. Stern & Stearns, 2006). The Perkins Acts of 1990, 1998 and 2006, as well as the STWOA of 1994, “begun to lay the groundwork for breaking down the sharp division” (Urquiola et al., 1997, p. 22) between vocational education and a college preparatory curriculum. Perkins II required a portion of the funding to be used to support vocational programs with a sequence of courses focused on both academics and occupational skills (Castellano et al., 2003; Center on Educational Policy, 2005; Hudson & Hurst, 1999; Milne, 1998; Stone III & Aliaga, 2005). According to Kotmaraju (2010), “Perkins IV envisioned CTE as transcending secondary and postsecondary systems through the implementation of programs of study, which combine career-focused CTE content with rigorous academics in a seamless
pathway to post-secondary education, industry-recognized credentials and employment” (p. 53). However, these policy efforts did not stipulate that the academic and vocational education needed to be integrated in the same course, leaving the details of the integration up to the state and local education agencies (Castellano et al., 2003; Milne, 1998; Silverberg et al., 2004). The choice provided to the states in the legislation, together with the scrutiny of education during this period, resulted in states focusing on strengthening the academic curriculum, while overshadowing the integration efforts (EdSource, 2009; S. Plank, 2001; Silverberg et al., 2004).

Even though educational reform has primarily focused on increasing the academic rigor, studies have shown the power of an integrated curriculum. Based on the analysis of 12 years of longitudinal data, Bishop and Mane (2004), explain that, for many students, applying academic and technical skills to real-world activities, using computers and other tools, and being able to see how their learning is related to the world of work make CTE classes more interesting and motivating and more educationally powerful than standard academic classes. (p. 383)

Multiple studies analyzing the effects of integrated curriculum on student performance and high school completion, show evidence of improved attendance, credit completion and graduation rates (B. Hayward & Talmadge, 1995; J. Kemple and Snipes, 2000; N. Maxwell & Rubin, 1997; N. Maxwell & Rubin, 2000; D. Stern, Dayton, Paik, Weisberg & Evans, 1988). A study analyzing the course concentration of high school students, showed no difference between the test scores of students who completed a mixture of vocational and college preparatory courses and those who took only a college prep curriculum, but a significant difference between those who focused mainly on a
vocational curriculum (Hudson, & Hurst, 1999). Dual concentrators were also as likely to have enrolled in and completed a degree at a postsecondary institution (Hudson, & Hurst, 1999; J. Kemple, 2004; J. Kemple, 2008; N. Maxwell & Rubin, 1997; N. Maxwell & Rubin, 2000; Reller, 1987; D. Stern et al., 1992).

As previously discussed, not all studies have revealed positive results on the integration of academic and vocational education (J. Kemple & Scott-Clayton, 2004; J. Kemple & Wilner, 2008; Milne, 1998). However, there are also varied approaches to integrating the curriculum. Urquiola et al., (1997), describes three ways of integrating curriculum: one-way integration by adding academic content to the vocational classes and vice versa, two-way integration by correspondingly changing the content in both the academic and vocational classes, and work-related integration where projects are used to reinforce academic and vocational concepts. Milne (1998) elaborates on the main integration methods by describing eight different levels of integration based on who is teaching or taking the class, as well as the main focus of the class. Additionally, some schools have created a practice of granting academic credit for vocational classes without making any substantial changes to the curriculum (Ouellette, 1988). Even though there are many integration methods,

blending CTE with college preparation should mean that students would pursue both at the same time, rather than forcing students to choose between them at a time in their lives when they are not well prepared to make seemingly irrevocable decisions. (D. Stern & Stearns, 2006, p. 7)

Teachers also play a key role in the integration of CTE and college preparation courses (Castellano et al., 2003; J. Kemple & Scott-Clayton, 2004; Milne, 1998;
Integrated curriculum requires in-depth instruction emphasizing “learning processes and values that are consistent with sustaining life and work skills—cooperation, team problem-finding and problem-solving; communication; decision-making; commitment; confidence in abilities; and boldness in developing ideas and approaches” (Richmond, 2009, p. 17). Studies have found that vocational teachers are less likely to have a Bachelor’s degree and more likely to have majored in vocational education and worked in a vocational field prior to teaching (Kaufman 1992; K. Levesque et al., 1995). Vocational teachers were also found to have lower reading and mathematics scores compared to non-vocational teachers (Silverberg et al., 2004). Since the teaching methods and strengths of vocational and academic teachers differ, collaboration amongst teachers is necessary for successful integration of CTE and academics (Castellano et al., 2003; EdSource, 2009; Rosenstock, 1991). Studies have found that vocational and academic teachers need professional development and time to collaborate, such as shared planning time to effectively meet the pedagogy expectations required of the curriculum integration (J. Kemple & Scott-Clayton, 2004; Richmond, 2009). This also requires strong support from administrators (Milne, 1998).

**Collaboration**

Collaboration has been identified as a key factor for learning to take place in an organization (Senge, 2006; E. Wenger, 1998; E. Wenger et al., 2002). E. Wenger (1998) uses the term “communities of practice” to describe the interactions that must occur to build unity or foster collaboration in an organization. Communities of practice are defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an
ongoing basis” (E. Wenger et al., 2002, p. 4). E. Wenger (1998) identifies the three fundamental elements of communities of practice as being mutual engagement, joint enterprise and a shared repertoire. These same elements are defined by E. Wenger et al., (1998) as domain of knowledge, community of people, and shared practice. Domain of knowledge is the common ground or identity that communities of practice develop. It emerges from mutual interactions and the sharing of knowledge by individuals, including discussions or conflicts. E. Wenger (1998), explains that we all have “our own theories and ways of understanding the world, and our communities of practice are places where we develop, negotiate and share them” (p. 48). The community of people refers to the development of mutual accountability and learning. This requires mutual trust and respect, and builds on the shared knowledge. E. Wenger et al. (2002) explain that members of a community of practice are “connected by interdependent knowledge, they are committed to exploring the domain and to develop and share relevant knowledge” (p. 43). The shared practices is the knowledge the community develops in order to be effective and includes ideas, tools and information. Also to be effective, communities of practice must measure their progress through goal setting. Furthermore, E. Wenger (1998), explains that:

We form communities not because we fall short of an ideal of individualism or freedom, but because identification is at the very core of the social nature of our identities and so we define even our individualism and our freedom in that context. (p. 212)

In 2006, Peter Senge introduced the term “learning organization” to describe the elements previously identified by E. Wenger (1998) as necessary in building unity and
the capacity to learn in an organization. Senge (2006) defines a learning organization as “people continually expanding their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (p. 3). He uses the term disciplines to identify the five elements that must be present for this type of community to develop: systems thinking, personal mastery, mental models, building a shared vision, and team learning. Personal mastery includes identifying our personal vision and having a need for continuous learning. Mental models build on personal vision through reflecting and being open to new learning. Team learning is described by Senge (2006) as the “process of aligning and developing the capacity of a team to create the results its members truly desire” (p. 218). This, in turn, leads to building a shared vision, which consists of an organization articulating its purpose or what they seek to create. A shared vision defines the purpose and gives rise to the commitments of an organization. The idea that organizations are capable of learning has been adapted by Senge (2006) to schools.

**Collaboration in Secondary Education**

During the 1990s, the concept of communities of practice and learning communities, transitioned from the business sector to the world of education (S. Hord, 2004; Sergiovanni, 1994). This was a huge shift for education, which is typically characterized by teacher autonomy and isolation (Barth, 2001; Sergiovanni, 1994). During a time of major changes in education, specifically the transition to content standards and assessments, conversation not isolation was identified as the instrument capable of reforming schools (Barth, 2001; DuFour, Eaker et al., 2005). Barth (2001),
further explains that conversations about practice, reflection and the sharing of teaching knowledge increases learning and creates a culture that supports educators in taking risks and moving beyond their zone of comfort. This is reaffirmed by John Hattie (2009) who conducted a meta-analysis of 800 research studies over a 15-year period. Hattie’s study revealed that teacher collaboration, or collective teacher efficacy, has the highest effect on student learning. Collective teacher efficacy develops through shared learning and inquiry, a central component of a learning community (Sergiovanni, 1994).

The work of E. Wenger (1998), which focused on communities of practice in a private business setting, was expanded to education by S. Hord (2004). S. Hord (2004) identified five major themes in learning communities: shared values and vision; collective learning and application of the learning; supportive conditions; a shared personal practice; and supportive and shared leadership. S. Hord specifically highlighted supportive conditions and a supportive and shared leadership, both concepts that were embedded in the three fundamental elements of E. Wenger’s communities of practice: mutual engagement, joint enterprise and a shared repertoire.

Blankstein (2013) also contributed to the identification of the key elements of a learning community. He described a collaborative school culture as “professionals fully committed and focused on helping students learn by becoming active learners themselves” (p. 148). He further explained that the principles he identified as the core of a Professional Learning Community (PLC) evolved from the work of Senge (2006) and Sergiovanni (1994), as well the research on effective schools. The six principles identified by Blankstein (2013) are as follows: (a) common mission, vision, values and goals; (b) ensuring achievement of all students through systems for intervention and
prevention; (c) collaborative teaming focused on teaching for learning; (d) data-based 
decisions for making continuous improvement; (e) gaining active engagement from 
group, and community; (f) and building sustainable leadership capacity.

Richard DuFour, a public school educator of 34 years and educational consultant, 
together with Becky Dufour and Robert Eaker, have identified three big ideas necessary 
in the developing and sustaining a learning community culture in schools, referred to as a 
PLC (Eaker et al., 2002). The conceptual framework of the PLC is described as a shared 
purpose, interdependent team and a focus on results. These key concepts once again 
build on the three elements of a community of practice identified by E. Wenger.

Shared purpose. A shared vision is a key component in creating unity or 
collaboration in both the business sector and in an educational setting (Eaker et al., 2002; 
S. Hord, 2004; Senge, 2006; Sergiovanni, 1994; E. Wenger, 1998). It is developed 
through collective inquiry and provides the answer to the question of what an 
organization desires to be in the future. A shared purpose consists of the team’s vision, 
mission, goals and values. A mission establishes the purpose of the organization, while 
values dictate how team members must behave or the behavior expectations. Goals 
identify the necessary steps to take and when to measure progress. Senge (2006) explains 
that a shared vision is “vital for the learning organization because it provides focus and 
energy for learning” (p. 192).

Interdependent teams. Eaker et al., (2002), explain that “the driving engine of 
the collaborative culture of a PLC is the team” (p. 5). It is as interdependent team that the 
staff “engages in learning and collectively seek new knowledge and application of it to 
address students’ needs” (S. Hord, 2004, p. 9). It is also through this process that staff
members work together to establish and accomplish goals (Eaker et al., 2002; S. Hord, 2004; Senge, 2006; Sergiovanni, 1994; E. Wenger, 1998). Norms or commitments made to each other guide the interdependent work of teams. E. Wenger et al., (2002) describe norms as the “key to building the foundation of collective inquiry” (p. 37). Members of interdependent teams support one another through the sharing of strategies and materials, as they seek best practices to use in meeting their goals. It is through interdependent teams that individuals help “each other to be better persons, holding up standards to each other, being able to count on each other” (Sergiovanni, 1994, p. 152).

Focus on results. S. Hord and Sommers (2008) describe a results-oriented culture, another major element of a PLC, as a “community making a decision (based on data or other imperatives) about what they need to learn together (in community) to become more effective in their work with students, so that students learn more successfully” (p. 144). This means that the team is setting goals, analyzing the results and making informed decisions focused on improving student learning (Eaker et al., 2002). Hattie (2009) explains that the:

Lens the teacher uses is critical to success, and it needs to be subject to close scrutiny, considered from an “others” viewpoint, and checked for evidence as to whether all students are learning desirable curricular outcomes at a sufficient rate.

(p. 252)

Summary

The review of literature explains the major occurrences in the history of secondary education and how these events were impacted by the needs of society. The economical demands of society led to creation of two separate paths in education; a path
for students entering the workforce and a path for students transitioning to college

These separate paths consisted of a core curriculum for the college-bound students and a
vocational curriculum for those students transitioning directly to the workforce.

However, the research reviewed identifies many benefits resulting from the integration of
a rigorous core curriculum with CTE (B. Hayward & Talmadge, 1995; J. Kemple &
Snipes, 2000; N. Maxwell & Rubin, 1997; N. Maxwell & Rubin, 2000; D. Stern et al.,
1988). The research shows that career academies have successfully integrated core and
CTE curriculum. Through the research, teacher collaboration was identified as a key
factor in the successful integration of core and CTE curriculum (Castellano et al., 2003; J.
Kemple & Scott-Clayton, 2004; Milne, 1998; Richmond, 2009; Silverberg et al., 2004).

Furthermore, the literature revealed that the development of a community of practice or
collaboration requires the following elements: a shared purpose; an interdependent team;
and focus on results (Eaker et al., 2002; S. Hord, 2004; Senge, 1990; Sergiovanni, 1994;
E. Wenger, 1998). It is these factors from the PLC framework that will be used to
identify and describe the collaboration strategies perceived as having a positive impact on
the integration of CTE and core academic courses.

**Synthesis Matrix**

The synthesis matrix was used to organize the study variables presented in the
review of literature. The matrix includes various research studies and authors that
support the ideas, concepts and variables presented in this study. The matrix supports the
validity of the study variables (see Appendix A).
CHAPTER III: METHODOLOGY

Overview

This chapter explains the methodology used to conduct this study, which focuses on identifying and describing the collaboration strategies perceived as having a positive impact on integrating CTE and core academic courses by teachers engaged in Linked Learning Pathways. A review of the purpose statement and RQs are included in this chapter. The research design, population, sample, research instruments, methods of data collection, and methods of data analysis are also described in detail. The final section of the chapter discusses the limitations of the study, assumptions related to the methodology and the ethical procedures used to protect the subjects of the study. An overall summary of the methodology is also provided. This mixed methods study was approved by the BUIRB.

Purpose Statement

The purpose of this mixed methods study was to determine how teachers in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Another purpose was to identify the impact of the strategies teachers engaged in Linked Learning Pathways use on the integration of career and technical education and core academic courses. The final purpose was to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.
RQs

1. How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses?

2. How do teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used on the integration of career and technical education and core academic courses?

3. What criteria do teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies?

Research Design

A mixed method research design, consisting of both quantitative and qualitative data, was used to conduct this study. According to McMillan and Schumacher (2010):

Researchers have realized that often the best approach to answering research questions is to use both quantitative and qualitative methods in the same study or when using solely a quantitative or qualitative method would be insufficient to provide complete answers that meet the goal or purpose of the study. (p. 395)

Specifically, an explanatory sequential design model was used in this study; meaning the study started with quantitative questions, followed by qualitative. Explanatory sequential designs use “qualitative questions that provide explanations from findings from quantitative questions” (McMillan & Schumacher, 2010, p. 399).
A fixed-choice survey was utilized to collect quantitative data and determine the level of teacher collaboration in integrating core academic and CTE courses in the Linked Learning Pathways (see Appendix B). Based on the level of collaboration indicated through the survey, the researcher conducted interviews with individual pathway teachers (see Appendix C). The open-ended questions used in the interviews produced qualitative data. The data from the survey and interviews was triangulated. According to Patton (2015), “triangulation strengthens a study by combining methods” (p. 316). The triangulation of data is important because studies that utilize only a single method, such as merely interviews, are susceptible to errors and may yield inaccurate findings (Patton, 2015).

Quantitative Research Design

A central concept in quantitative research design is the ability to be objective. According to McMillan and Schumacher (2010), “the research designs maximize objectivity by using numbers, statistics, structure and control” (p. 21). The instrument used to collect quantitative data in this study, consisted of a fixed-choice survey. The numerical data collected through the survey can be statistically analyzed. This research study identified and described the impact of the collaboration strategies perceived as having a positive impact on integrating CTE and core academic courses by teachers engaged in the Linked Learning Pathways in the Tulare-Kings Linked Learning Consortium.

Qualitative Research Design

McMillan and Schumacher (2010), explain that “the sources of information used by qualitative researchers include individuals, groups, documents, reports and sites” (p.
The sources of information used by the researcher in this study consisted of individual interviews. Interviews allowed the researcher to examine deeper the identified collaboration strategies and their impact as perceived by the teachers. This is because “interviews yield direct quotations from people about their experiences, opinions, feelings, and knowledge” (Patton, 2015, p. 15).

**Population**

The population for this study is all public high school teachers working in a Linked Learning Pathway in CA. Population is defined by McMillan and Schumacher (2010) as “a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the results of the research” (p. 129). There are nine districts in California that were awarded the first round of California Career Pathways Trust (CCPT) in the spring of 2014. These nine districts include Antioch Unified, Long Beach Unified, Los Angeles Unified, Montebello Unified, Oakland Unified, Pasadena Unified, Porterville Unified, Sacramento City Unified, and West Contra Costa Unified. Additionally, these nine districts were part of the Irvine Foundation’s launching of the California Linked Learning District initiative in 2009. Seven of these district formed consortiums in 2014. There are 161 high schools and approximately 2,030 teachers from these districts utilizing the Linked Learning Pathways model in CA.

**Target Population**

Due to limited resources, such as time and money, it is unrealistic to include all 161 high schools as part of this study. Creswell (2008) defines the target population as “the actual list of sampling units from which the sample is selected” (p. 393). Therefore,
the target population is the 72 Linked Learning Pathway high school teachers in the 21 high schools in Tulare and Kings County that are part of the 11 districts that make-up the Tulare-Kings Linked Learning Consortium and met the following criteria:

1. CA secondary public school teachers.
2. Located in CA.
3. Teachers must meet the following criteria:
   a) Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
   b) Have two or more years of teaching experience.
   c) Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

Teachers who met the criteria mentioned above were selected for this study.

Sample

The sample is the subgroup of the target population the researcher plans to study. Ideally, the sample of individuals is representative of the entire population (Creswell, 1998; Fraenkel & Wallen, 2009).

Purposeful sampling, using criteria for selection, was combined with convenience sampling, since the researcher lives and works in Tulare County, to identify the Linked Learning Pathways teachers in the Tulare-Kings Linked Learning Consortium that are using the three basic elements in building a culture of collaboration in secondary education; a shared purpose, an interdependent team and a focus on results (Eaker et al., 2002). The Director of the Tulare-Kings Linked Learning consortium works closely with the Linked Learning Pathways in each of the districts, supporting the teachers with the
curriculum and collaboration strategies. In qualitative studies, purposeful sampling is important in identifying a sample that will yield rich information (Patton, 2015). According to McMillan and Schumacher (2010), sampling is an important strategy in qualitative studies because it “increases the utility of information obtained from small samples” (p. 149). A profile of the sample criteria will be used to identify the initial participants for the study. Criteria for the Study Sample were:

1. CA secondary public school teachers.
2. Located in CA.
3. Teachers must meet the following criteria:
   a) Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
   b) Have two or more years of teaching experience.
   c) Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

There were 72 teachers working in the Tulare-Kings Linked Learning Consortium. The 52 teachers who met the criteria mentioned above were selected for this study.

**Sample Selection Process**

The sample selection process occurred as follows:

1. The Director of the Tulare-Kings Linked Learning Consortium, who works directly with districts in collaboration activities, was contacted to determine the teachers that met the selection criteria.
2. The Director of the Tulare-Kings Linked Learning Consortium identified qualified teachers.

3. All qualified teachers in the Tulare-Kings Linked Learning Consortium were sent a Letter of Invitation (see Appendix D).

4. Qualified teachers were also sent an Informed Consent and Confidentiality Assurances notification, as well as a Participant’s Bill of Rights (see Appendix E and F).

5. From the qualified list of teachers, 52 teachers completed the Collaboration Survey. Convenience in the form of access and proximity were considerations in the final selection of the participants for the interviews.

**Quantitative Sampling**

In order to increase the researcher’s access to the target population identified in this study, the researcher worked with the Director of the Tulare-Kings Linked Learning Consortium, an employee of the Tulare County Office of Education, to be able to connect with these individuals. The Tulare-Kings Linked Learning Consortium represents 11 districts and 24 high schools with at least one Linked Learning Pathway. The teachers that make-up this consortium include more than 72 teachers who meet the established sample selection criteria. The Tulare-Kings Linked Learning Consortium is in CA and comprised of secondary public school teachers. Also, the majority of the pathways in this consortium have been in existence since or prior to 2014, meaning that a majority of the teachers have two or more years of teaching experience.

A purposive design was used to identify the Linked Learning Pathways in the Tulare-Kings Linked Learning Consortium that are using the three basic elements in
building a culture of collaboration in secondary education; establishing a shared purpose; an interdependent team; and a results-oriented focus (Eaker et al., 2002). In addition to using a purposive design, convenience sampling was also used. Since the researcher lives and works in Tulare County, subjects were selected on the “basis of being accessible or expedient” (McMillan & Schumacher, 2010, p. 137).

Participants were selected for this study based on the following criteria:

1. CA secondary public school teachers.
2. Located in CA.
3. Teachers must meet the following criteria:
   a) Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
   b) Have two or more years of teaching experience.
   c) Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

Teachers who met the criteria mentioned above were selected for this study.

**Qualitative Sample**

All teachers who participated in the quantitative survey were asked a final question regarding their willingness to be interviewed as a follow-up to the survey. A list of the respondents who indicated a willingness to be interviewed was created from the responses. Fifteen participants who indicated they were willing to be interviewed were selected for the interviews according to convenience for the researcher.

The researcher worked with the Tulare-Kings Linked Learning Director from the Tulare County Office of Education to communicate with the participants selected for the
interviews. The interview participants were selected using access to and convenience for
the researcher. Fifteen participants were selected to participate in the qualitative portion
of the study.

Instrumentation

Two types of instruments were used to gather quantitative and qualitative data in
this mixed methods study. Quantitative data was collected through a survey administered
to the Linked Learning Pathway teachers. Teacher interviews were used by the
researcher to gather qualitative data. The Director of the Tulare-Kings Linked Learning
consortium works closely with the Linked Learning Pathways in each of the districts,
supporting the teachers with the curriculum and collaboration strategies.

Quantitative Instrumentation

McMillan and Schumacher (2010) describe a questionnaire as the “most widely
used technique for obtaining information from subjects” (p. 195), mainly because it is
economical and allows the researcher to anonymously gather information from a large
population. A 12-item survey with a 5-point Likert scale was used to determine the level
of collaboration amongst the teachers in a Linked Learning Pathway. The instrument was
adapted from a survey created by Solution Tree. The instrument questions align to the
elements identified as key elements in collaboration. These elements are a shared
purpose; interdependent team; and a focus on results (see Table 1).
### Table 1

**Alignment of Survey Questions to Collaboration Framework**

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Shared purpose</th>
<th>Interdependent team</th>
<th>Focus on results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The vision statement for our pathway is based on a collaborative effort to develop a shared knowledge about effective schooling practices.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Our pathway team collaboratively identified core values and commitments that would be necessary to fulfill the vision statement.</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Our pathway team has identified team norms and protocols to guide us in working together.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4. Our pathway team engages in an ongoing search for best instructional practices through collaborative research and dialogue, analyzing student work and observing the “teacher next door.”</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5. The pathway grade-level expectations drive the work of my collaborative team</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Team members have collectively agreed on how to best integrate the core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards.</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7. Team decisions are made based on their impact on learning.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>8. My teams has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>9. Teams have agreed on the criteria used in judging the quality of student work related to the learning of each course subject.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

(continued)
Table 1

Alignment of Survey Questions to Collaboration Framework

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Shared purpose</th>
<th>Interdependent team</th>
<th>Focus on results</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Teams practice applying those criteria to ensure consistency.</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>11. Teams use the results of common assessments, program assessments, and</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>district assessments to identify students who need additional time and support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to master grade-level expectations/power standards.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reliability

Creswell (2014) explains that “a sound research plan calls for a thorough
discussion about the instrument or instruments --their development, their items, their
scale, and reports of reliability and validity of score on past uses” (p. 170). The
instrument used to conduct the quantitative portion of this study, consisted of a 12-
question survey aligned to the three basic elements in building a culture of collaboration
in secondary education: establishing a shared purpose, an interdependent team, and a
results-oriented focus (Eaker et al., 2002). The survey questions were adapted from a
Solution Tree survey geared at measuring the implementation of PLCs. Solution Tree is
a professional development company established by Eaker et al. (2002). A pilot test was
also used to make sure that the surveys yielded consistent data. This included making
sure that the questions were clearly worded, interpreted correctly and key terms were
clearly defined. Additionally, repeat questions were used to confirm that the questions
yielded dependable results.
**Pilot Test**

Since the survey was adapted from an existing survey, a pilot test was conducted to ensure that the items used remain clear and aligned to the purpose of the study. The pilot survey was administered to three teachers at Tulare Western High School, with characteristics similar to the teachers who make-up the sample. The survey was modified based on the feedback received from the pilot.

**Validity**

Validity refers to the ability of the researcher to accurately measure the original intent of the study, and consists both of internal and external threats (Creswell, 2014). Internal threats are described as “experimental procedures, treatments, or experiences of the participants that threaten the researcher’s ability to draw correct inferences from the data about the population in an experiment” (Creswell, 2014, p. 174). In order to increase the validity of this study, the same procedures were used in administering the survey to all the participants. The survey was sent electronically through a Google Form to the Linked Learning Pathway teachers. Teachers were provided with a link to administer the Google Form survey. The same directions and purpose of the study were shared with all the participants. Furthermore, the internal threat of history was addressed by making sure that the time period between the completion of the surveys and interviews was as short as possible. This was meant to eliminate the possibility of the time between the collections of data inadvertently affecting the results of the study. Also, in order to address the threats of external validity, the results from this study will only be applied to Linked Learning Pathways in CA.
Qualitative Instrumentation

Qualitative data was collected through interviews conducted by the researcher at the work place of each participant. As explained in Patton (2015) and Creswell (2014), the researcher is the main instrument in qualitative research. This is because “qualitative researchers collect data themselves through examining documents, observing behavior or interviewing participants” (Creswell, 2014, p. 185). Interviews reveal the perspective of the participants (Patton, 2015). The qualitative research questions built on the quantitative survey allowing the pathway teachers to be able to describe the impact of the collaboration strategies. Interviews provide an opportunity “to find out what is in and on someone else’s mind and to gather their stories” (Patton, 2015, p. 426). For this reason, appropriate measures were taken to reduce bias, such as noting one’s biases before creating the interview questions. Intercoder reliability was also used by the researcher as a means to verify the coding technique and identify any initial biases that may be present.

Reliability

Reliability in qualitative research consists of the researcher using appropriate methods to be certain that consistent approaches were used (Creswell, 2014). Qualitative reliability measures used by the researcher include double checking the transcripts for mistakes made during the transcription and possibly affecting the findings of the study. The researcher also accounted for consistency in the codes used throughout the study by creating a list of codes and their definitions. The researcher reviewed the list of codes frequently. Intercoder reliability was also used to check the consistency in coding.
Pilot Test

The interview questions were field tested by the researcher prior to interviewing the participants. The field testing consisted of the interviewer posing the questions to two educators familiar with Linked Learning Pathways. The researcher also asked for feedback from the educators in regards to the process and questions posed. The feedback from the field test participants was used to further refine the interview process and questions. The researcher also asked a colleague to observe the interviews and provide feedback on behaviors exhibited by the researcher that may influence the participants’ responses. The researcher noted the feedback and how to improve the process.

Validity

In qualitative research, validity consists of “determining whether the research findings are accurate from the standpoint of the researcher, the participants or the readers of an account” (Creswell & Miller, 2000). The research utilized multiple precautions to ensure the accuracy of the study. Member checking was used to confirm that the findings are accurate. This consisted of conducting follow up interviews with the participants to share the major findings, themes, and give the participants an opportunity to comment on the findings. Additionally, thorough descriptions were used to present the findings and to give the readers access to the information collected. This detailed description also included sharing the findings that may be considered negative or not completely aligned with the emerging themes. Creswell (2014) also explains that it is important “to clarify the bias the researcher brings to the study” (Creswell, 2014, p. 202). Lastly, the researcher used peer debriefing to ensure the accuracy of the study. Peer debriefing consists of the researcher finding a person to “review and ask questions about the
qualitative study so that the account will resonate with the people other than the researcher” (Creswell, 2014, p. 202).

**Data Collection**

Prior to the collection of data, the researcher was granted approval to conduct the study from the BUIRB. The confidentiality and rights of the participants were protected throughout the study. All data generated during the study was kept in either a password protected electronic file or in a locked physical file cabinet to which the researcher had sole access. At the end of the study, all data were destroyed.

**Quantitative Data Collection**

Quantitative data was collected through a fixed-choice survey administered to the Linked Learning Pathway teachers in the Tulare-Kings Linked Learning Consortium. Data from the survey was used to answer RQ1. Google Forms was used to administer the survey electronically to the participants. Google Forms are password-protected, allowing for the survey information to be collected in a secure manner. Additionally, the Google Forms survey included the purpose statement, confidentiality clause, and an area for the participants’ to acknowledge the understanding of each of these important items.

**Qualitative Data Collection**

The data collected from the surveys was utilized to purposively select the teachers participating in the individual interviews. The interviews were conducted in person by the researcher to gain a better understanding of the collaboration strategies perceived by teachers as having a positive impact on the integration of career and technical education and core academic courses, as well as the criteria used by teachers to determine positive impact (in an effort to answer RQ2 and RQ3).
Data Analysis

Quantitative and qualitative data collection methods were used for this mixed methods study. Quantitative data was collected through surveys administered to the Linked Learning Pathway teachers. The results from the surveys were analyzed prior to conducting the individual interviews. Based on the results from the surveys, teachers were then selected for individual interviews. The interviews were recorded; qualitative data from the interviews was transcribed and analyzed. The survey and interview data was analyzed and triangulated. The connections revealed through the data analysis were used to interpret and explain the findings for this study.

Quantitative Data Analysis

RQ1. A fixed-choice survey was administered to the selected Linked Learning Pathway teachers in the Tulare-Kings Linked Learning Consortium. The survey yielded interval data from a Likert Scale.

Descriptive statistics. Mean scores were calculated for each item in the survey and placed into a table so that the mean scores could be observed and compared for analysis. The Standard Deviation for each mean score was also displayed in the table, so that the amount of variance in the responses could be observed and compared.

Qualitative Data Analysis

RQs2 and 3. Following the analysis of the quantitative data, the researcher once again reviewed the interview questions for validity and relevancy. Questions deemed no longer relevant or valid based on the survey results, were revised. A colleague familiar with the study, but not a part of the study also did an independent review of the data to
compare findings. This inter-coder reliability measure was taken to assure that researcher bias was controlled.

Authentic narratives consisting of “thick description in the narrative, interspersed with brief quotations” (McMillan & Schumacher, 2010, p. 337) were used to document the qualitative data collected from the interviews. The transcribed interviews were then input into NVIVO, a technology-based software. NVIVO was used to code the interviews and identify themes and patterns. Again, a colleague familiar with the study, but not a part of the study also did an independent review of the data to compare findings. This inter-coder reliability measure was taken to assure that researcher bias was controlled.

These patterns and themes were then used to answer RQ2 and RQ3. RQ2 focused on identifying the impact of the collaboration strategies perceived by teachers as having a positive impact on the integration of career and technical education and core academic classes, while RQ3 explored the criteria used by teachers to determine positive impact when identifying collaboration strategies. At this final step, a colleague familiar with the study, but not a part of the study again did an independent review of the data to compare findings. This inter-coder reliability measure was taken to assure that researcher bias was controlled.

Limitations

Limitations can affect most studies. This particular mixed-methods study may have been affected by several limitations. Patton (2015) emphasizes the challenges associated with integrating data from qualitative and quantitative methods. To ensure that appropriate quantitative and qualitative methods were used to conduct this study and
the data was properly integrated, the researcher consulted with experts on both of these methodological approaches.

Another possible limitation is time. Teachers have many responsibilities and duties, therefore time is of great value. Interviews were scheduled by the researcher with advance notice. The researcher also took into consideration the most efficient way to conduct the interviews, in an effort to be respectful of the participants’ time, but still be able to collect rich data.

Additionally, a purposive sample selection may affect the generalizability of the data. This is due to the possibility of the researcher or the researcher’s contact from the Tulare County Office of Education being familiar with the participants and this familiarity affecting the participants’ reaction to the study.

**Summary**

A mixed methods approach, which consists of both quantitative and qualitative data collection methods, was used to conduct this study. This study also used an explanatory sequential design; quantitative data collection used to identify the participants for the qualitative collection. This study focused on identifying and describing the collaboration strategies perceived as having a positive impact on integrating CTE and core academic courses by teachers engaged in the Linked Learning Pathways in the Tulare-Kings Linked Learning Consortium. The purpose statement, research questions and research design were discussed at the beginning of this chapter. This chapter also focused in-depth on the rationale for the research design, population, sample, data collection instruments, methods of data collection and methods used to
analyze the data. Possible limitations and the precautions used to protect the participants who voluntarily participated in this study were also included in this chapter.

Chapter IV thoroughly identifies the research findings revealed through the quantitative and qualitative results. The results are analyzed and discussed in-depth in Chapter V. Significant findings, the conclusions and recommendations for further exploration are also included in Chapter V.
CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

Chapter IV describes the methodology used to conduct this study, the quantitative data collected through surveys completed by the pathway teachers, the qualitative data collected from interviews with some of the teachers who participated in the survey, and the findings from the data. A review of the purpose statement, research questions, population and sample is also included in this chapter. This chapter also includes a review and analysis of the data. The data collected from the quantitative survey addresses RQ1 and is presented both using data tables and in a narrative form. Data from the qualitative interviews was used to answer RQ2 and 3. Trends from the interviews on the impact of collaboration strategies on the integration of CTE and core academic courses are reported through charts, graphs and a narrative.

Purpose Statement

The purpose of this mixed methods study was to determine how teachers in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Another purpose was to identify the impact of strategies teachers engaged in Linked Learning Pathways use on the integration of career and technical education and core academic courses. The final purpose was to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

RQs

1. How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and
focus on results as they are used in the integration of career and technical education and core academic courses?

2. How do teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used on the integration of career and technical education and core academic courses?

3. What criteria do teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies?

**Methodology**

A mixed method research design was used for this study. The Collaboration Survey was used to measure how teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Following the survey, the researcher conducted interviews with individual pathway teachers using open-ended questions. The data from the survey and interviews was triangulated.

The Collaboration Survey was sent to all the pathway teachers in the nine districts that make-up the Tulare-Kings Linked Learning Consortium, over 70 teachers. Sixty-three teachers completed the survey and 52 met the requirements of the study as described in Chapter III. The survey results for the individuals who met the established criteria are reported in this chapter.

Fifteen of the pathway teachers who indicated through the survey a willingness to participate in a follow-up interview were contacted. The interview focused on describing
the impact of the collaboration strategies used in supporting the integration of CTE and core academic courses. A field-test of the interview was conducted by the researcher with a colleague observing. Feedback on the questions, procedures and technique was provided by the observer. After completing the field test, the actual interviews were conducted.

Population

The population for this study is all public high school teachers working in a Linked Learning Pathway in CA. Population is defined by McMillan and Schumacher (2010) as “a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the results of the research” (p. 129). There are nine districts in CA that were awarded the first round of CCPT in the spring of 2014. These nine districts include Antioch Unified, Long Beach Unified, Los Angeles Unified, Montebello Unified, Oakland Unified, Pasadena Unified, Porterville Unified, Sacramento City Unified, and West Contra Costa Unified. Additionally, these nine districts were part of the Irvine Foundation’s launching of the California Linked Learning District initiative in 2009. Seven of these district formed consortiums in 2014. There are 161 high schools and approximately 2,030 teachers from these districts utilizing the Linked Learning Pathways model in CA.

Due to limited resources, such as time and money, it is unrealistic to include all 161 high schools as part of this study. Creswell (2008) defines the target population as “the actual list of sampling units from which the sample is selected” (p. 393). Therefore, the target population is the 72 Linked Learning Pathway high school teachers in the 21
high schools in Tulare and Kings County that are part of the eleven districts that make-up the Tulare-Kings Linked Learning Consortium and met the following criteria:

1. CA secondary public school teachers.
2. Located in CA.
3. Teachers must meet the following criteria:
   a. Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
   b. Have two or more years of teaching experience.
   c. Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

Teachers who met the criteria mentioned above were selected for this study.

Sample

The sample is the subgroup of the target population the researcher plans to study. Ideally, the sample of individuals is representative of the entire population (Creswell, 1998; Fraenkel & Wallen, 2009).

Purposeful sampling, using criteria for selection, was combined with convenience sampling since the researcher lives and works in Tulare County, to identify the Linked Learning Pathways teachers in the Tulare-Kings Linked Learning Consortium that are using the three basic elements in building a culture of collaboration in secondary education; a shared purpose, an interdependent team and a focus on results (Eaker et al., 2002). The Director of the Tulare-Kings Linked Learning consortium works closely with the Linked Learning Pathways in each of the districts, supporting the teachers with the curriculum and collaboration strategies. In qualitative studies, purposeful sampling is
important in identifying a sample that will yield rich information (Patton, 2015).

According to McMillan and Schumacher (2010), sampling is an important strategy in qualitative studies because it “increases the utility of information obtained from small samples” (p. 149). A profile of the sample criteria was used to identify the initial participants for the study. The study aimed to collect data from at least 30 Linked Learning Pathway teachers who met the sample population criteria. Fifty-two teachers participated in the survey and 15 participated in the follow-up interview.

**Demographic Data**

Fifty-two teachers from the Tulare-Kings Linked Learning Consortium met the criteria for this study and completed the Collaboration Survey. The requirements for participation were teachers teaching in a Linked Learning Pathway in Tulare or Kings County in CA with two or more years of teaching experience. Additionally, the teachers are actively involved in collaborative activities that link CTE or career themed education and core academic courses. The average teaching experience of the Linked Learning Pathway teachers who completed the survey is 14 years.

For the qualitative portion of the study, 15 teachers from the Tulare-Kings Linked Learning Consortium were selected for a follow-up interview in order to answer RQ 2 and 3. The 15 teachers consisted of five males and 10 females with an average of 13 years of teaching experience.

**Data by Research Questions**

**RQ1**

_How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on_
results as they are used in the integration of career and technical education and core academic courses?

The Collaboration Survey consisted of 12-items with a 5-point Likert scale used to determine the level of collaboration amongst the teachers in a Linked Learning Pathway. The instrument was adapted from a survey created by Solution Tree and field tested by the researcher. The instrument questions align to the elements identified as key collaboration elements. These elements are a shared purpose; interdependent team; and a focus on results. A mean score and the standard deviation of the mean score was calculated for each survey question. The survey questions with a standard deviation closer to zero indicate less variance in the results of the respondents (Patten, 2009).

The survey included three questions related to the key collaboration element of a shared purpose. This set of questions had the highest mean score and the lowest standard deviation. The mean score for these questions ranged from 4.35 to 4.31. The statement describing the vision for the pathway as being “based on a collaborative effort to develop a shared knowledge about effective schooling practices” had the highest mean score of 4.35 and the lowest standard deviation of .63.

Four questions on the survey were aligned to the key collaboration element of an interdependent team and these questions had the next highest mean scores ranging from 4.25 to 4.00. The standard deviation for these items ranged from .88 to 1.01. The highest mean score was associated with teams having “identified team norms and protocols to guide us in working together.” The highest variance in the responses was associated with the statement that “team members have collectively agreed on how to best integrate the
core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards.”

Based on the survey results the collaboration element with the lowest mean score was a focus on results. This section on the survey included five questions with a mean score range of 4.33 to 3.19. This area also had the highest variability in responses with a standard deviation range of 0.71 to 1.13. This was the only section that had multiple statements with a standard deviation over 1.0 (1.07 and 1.13). Even though, the statement “team decisions are made based on their impact on learning” had a mean score of 4.33, third highest mean score in the survey, it was the only one statement in this section with a mean score over 4.0. The statement with the lowest mean score (3.19) was “my team has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards.” This statement also had a standard deviation of 1.07. Furthermore, this section had the statement with the highest variance (1.13) in responses, “my team uses the results of common assessments, program assessments, and district assessments to identify students who need additional time and support to master grade-level expectations/essential standards.”

The data displayed in Table 2 includes the survey questions, the correlated collaboration element for each question, number of respondents, mean score and standard deviation. The collaboration statements ranked from highest to lowest are as follows:

- The vision statement for our pathway is based on a collaborative effort to develop a shared knowledge about effective schooling practices (4.38).
- The mission of high levels of learning for all students has been clearly articulated by our pathway (4.35).
Team decisions are made based on their impact on learning (4.33).

Our pathway team collaboratively identified core values and commitments that are necessary to fulfill the vision statement (4.31).

Our pathway team has identified team norms and protocols to guide us in working together (4.25).

The pathway grade-level expectations drive the work of my collaborative team (4.17).

Our pathway team engages in an ongoing search for the best instructional practices through collaborative research and dialogue, analyzing student work and observing the “teacher next door” (4.04).

Team members have collectively agreed on how to best integrate the core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards (4.00).

My team has agreed on the criteria used in judging the quality of student work related to the essential standards in our course (3.85).

My team practices applying the above mentioned criteria to ensure consistency (3.75).

My team uses the results of common assessments, program assessments, and district assessments to identify students who need additional time and support to master grade-level expectations/essential standards (3.67).

My team has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards (3.19).
Table 2

Survey Results

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Key Element in Collaboration</th>
<th>N</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The vision statement for our pathway is based on a collaborative effort to develop a shared knowledge about effective schooling practices.</td>
<td>Shared Purpose</td>
<td>52</td>
<td>4.38</td>
<td>0.63</td>
</tr>
<tr>
<td>The mission of high levels of learning for all students has been clearly articulated by our pathway.</td>
<td>Shared Purpose</td>
<td>52</td>
<td>4.35</td>
<td>0.71</td>
</tr>
<tr>
<td>Our pathway team has identified team norms and protocols to guide us in working together.</td>
<td>Interdependent Team</td>
<td>52</td>
<td>4.25</td>
<td>0.88</td>
</tr>
<tr>
<td>Our pathway team engages in an ongoing search for the best instructional practices through collaborative research and dialogue, analyzing student work and observing the “teacher next door.”</td>
<td>Interdependent Team</td>
<td>52</td>
<td>4.04</td>
<td>0.88</td>
</tr>
<tr>
<td>The pathway grade-level expectations drive the work of my collaborative team.</td>
<td>Interdependent Team</td>
<td>52</td>
<td>4.17</td>
<td>0.73</td>
</tr>
<tr>
<td>Team members have collectively agreed on how to best integrate the core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards.</td>
<td>Interdependent Team</td>
<td>52</td>
<td>4.00</td>
<td>1.01</td>
</tr>
<tr>
<td>Team decisions are made based on their impact on learning.</td>
<td>Focus on Results</td>
<td>52</td>
<td>4.33</td>
<td>0.71</td>
</tr>
<tr>
<td>My team has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards.</td>
<td>Focus on Results</td>
<td>52</td>
<td>3.19</td>
<td>1.07</td>
</tr>
<tr>
<td>My team has agreed on the criteria used in judging the quality of student work related to the essential standards in our course.</td>
<td>Focus on Results</td>
<td>52</td>
<td>3.85</td>
<td>0.89</td>
</tr>
<tr>
<td>My team practices applying the above mentioned criteria to ensure consistency.</td>
<td>Focus on Results</td>
<td>52</td>
<td>3.75</td>
<td>0.84</td>
</tr>
</tbody>
</table>

(continued)
Table 2

Survey Results

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Key Element in Collaboration</th>
<th>N</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>My team uses the results of common assessments, program assessments, and district assessments to identify students who need additional time and support to master grade-level expectations/essential standards.</td>
<td>Focus on Results</td>
<td>52</td>
<td>3.67</td>
<td>1.13</td>
</tr>
</tbody>
</table>

RQ2

*How do teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used on the integration of career and technical education and core academic courses?*

Fifteen pathway teachers participated in a follow-up interview to further explore the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results in supporting the integration of CTE and core academic courses in Linked Learning Pathways. The interview questions were field tested by the researcher prior to interviewing the participants to ensure that the questions yielded the information required to answer the research questions and to make sure that the researcher did not show bias during the interview process. The researcher interviewed two educators familiar with the Linked Learning Pathway, a teacher and an assistant superintendent. The researcher asked for feedback in regards to the process and questions posed. The feedback from the field test participants was used to further refine the interview process and questions. The researcher also asked a colleague to observe the interviews and
provide feedback on behaviors exhibited by the researcher that may influence the participants’ responses. The formal interviews with the Linked Learning Pathway teachers were conducted following the completion of the field test process.

Each interviewee indicated on the survey that they were interested in participating in the interviews associated with the study and completed the informed consent. The following four questions were asked of the teachers. The interviews were recorded and transcribed. Once all the interviews were completed, the researcher reviewed the research questions and coded the transcriptions for major themes and patterns.

1. Does having a “shared purpose” have an impact on the collaboration in your academies? If so, can you please describe the impact?

2. Does having an “interdependent team” have an impact on the collaboration in your academies? If so, can you please describe the impact?

3. Does having a “focus on results” have an impact on the collaboration in your academies? If so, can you please describe the impact?

4. What is your criteria in determining that collaboration strategies have a positive impact?

**Shared purpose.** A shared vision or purpose is described by Senge (2006) as being “vital for the learning organization because it provides focus and energy for learning” (p. 192). Each interviewee agreed that the collaboration strategy of a shared purpose has a positive impact on the integration of CTE and core academic courses. There were five themes that emerged from the pathway teachers’ description of the impact of a shared purpose. Table 3 includes the themes that arose as a result of the interviews. Table 4 includes the frequency of each theme, as well as the number of
sources that included the theme. The major themes that arose from the description of the impact of a shared purpose on the collaboration of CTE and core academic teachers is as follows:

- Provides unity through establishing a common focus or direction for the pathway.
- Provides a definition of what student success looks like in the pathway
- Identifies the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning.

The theme, provides unity through establishing a common focus or direction for the pathway, had the highest frequency and was identified in each of the interviews conducted. The following key phrases supported this theme:

- “Our purpose is to have these kids be successful through the pathway.”
- “Sure, we definitely have a kind of vision in mind and that is basically not only preparing our kids for the real world as far as academics go and higher education, but it’s also preparing them for the workforce.”
- “We eventually came to a shared vision and a shared mission that we wanted these kids, no matter what academic level they came to us, we wanted them to find some success.”
- “We have common understanding, a common background language, and common definitions of what you're doing.”

The second most common theme in regards to the impact of a shared purpose on the collaboration of CTE and core academic teachers was providing a definition of what
student success looks like in the pathway. This theme was present in 11 of the 15 interviews. The following statements support this theme:

- “We are willing to make the modifications needed to improve student learning.”
- “We definitely have those conversations, brainstorming even like what can we do for this kid, how we can set up this differently to make it more successful.”
- “Those types of things really help not just us a team work together, but also relate to the kids better and get them to where they need to be better.”

The last major theme that arose from the interviews is that a shared purpose helps to identify the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning. Even though this theme had a slightly lower frequency than the previously discussed theme, it was present in 12 interviews. This theme is supported by the following statements:

- “Working together as a team we bounce ideas off each other so quickly. We've come up with different shared projects.”
- “We all have different strengths so we play off the strengths that we can bring to this project to make it successful. Therefore students are getting the best education they can.”
- “It's been a huge difference from teaching the last fifteen years to now working so closely with other teachers, just collaborating on lessons and who's going to teach which part.”
Table 3

Codes for RQ2: Shared Purpose

<table>
<thead>
<tr>
<th>Codes</th>
<th>Frequency</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing unity through common focus or direction for the pathway</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Allowing teachers to identify connections between CTE and core academic subjects</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Establishing clear expectations of what students should learn in the pathway</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Identifying the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Providing a definition of what student success looks like in the pathway</td>
<td>23</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 4

Frequency of codes and sources for RQ2: Shared Purpose

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing unity through establishing a common focus or direction for the pathway.</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Allowing teachers to identify the connections between CTE and core academic subjects.</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Establishing guiding parameters for what students should learn in the pathway.</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Identifying the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning.</td>
<td>19</td>
<td>12</td>
</tr>
<tr>
<td>Providing a definition of what student success looks like in the pathway.</td>
<td>23</td>
<td>11</td>
</tr>
</tbody>
</table>

Interdependent team. S. Hord (2004) explains that it is as interdependent team that the staff “engages in learning and collectively seek new knowledge and application of it to address students’ needs” (p. 9). Each interviewee responded that the collaboration strategy of an interdependent team has a positive impact on the integration of CTE and core academic courses. Through the interviews four themes emerged through the pathway teachers’ description of the impact of an interdependent team. There was one major theme that arose from the description of the impact of an interdependent team on the collaboration of CTE and core academic teachers and three
additional themes with similar frequencies. The major theme was that having an interdependent team allows teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts. The additional themes with similar frequencies were that an interdependent team allows for: each pathway teacher to engage in open dialogue in regards to how their subject area compliments the goals of pathway; sharing of resources, strategies and best practices in order to meet the needs the whole student; and the creation of lateral accountability amongst the pathway teachers.

The theme with the highest frequency was that an interdependent team allows teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts. This theme was identified in 14 of the 15 interviews. This theme is supported by the following key phrases:

- “They were looking at the bacteria and clean water and all that stuff in their biology class. They were reading articles about pollution and water and drought in their English class. They were looking at structures and waterways and water volume and how things accumulate in the math class. They were seeing a whole picture of the drought, not just one little article or one piece here and there.”

- “They're taking global health right now with me, and then their English teacher who is also part of our pathway, he's emphasizing argumentative writing and one of the things you have to do with global health is write an argumentative letter or take an argumentative stand on a global health issue that should be the main health issue at a health science consortium.”
• “As far as sharing things, we always share things whether it be curriculum, or ideas, or whatever that is.”

• “This is how we do design. Oh, well this is how we do writing. This is a writing rubric. This is a design rubric. How can we marry these 2 pieces together? You're looking at synthesis. You're looking at repetition across different subject areas. Because we're all treating the knowledge as universal and the skills as universal instead of trying to teach English, science, engineering, math, separately.”

As previously mentioned, the other three identified themes had similar frequencies. The theme stating that an interdependent team allows each pathway teacher to engage in open dialogue in regards to how their subject area compliments the goals of pathway had a frequency of 30, but was the only theme found in all sources. A pathway teacher described this as “I'm doing little bits [referring to teaching Copenhagen in the English curriculum] and I'm talking with the chemistry teacher about what pieces are important to bring in and what I can be doing to support his equations and his stuff.”

Another interviewee further supported this theme through the statement, “I think this kind of makes our team a little bit stronger because everyone has a voice in this project.”

The other theme with a similar frequency was that an interdependent team allows for the sharing of resources, strategies and best practices in order to meet the needs the whole student. This theme was present in 10 of the interviews. A pathway teacher explained that they “share documents across [their] Google drive.” Another teacher explained that “when you talk about interdependent teams there's actually two different kinds of things that are going on collaboratively with us, one, is there's the curriculum
collaboration [and] the other is there's wellness and student intervention.” One of the interviewees also shared that their team “looks at each kid holistically. When we were looking at a kid that was struggling in my algebra class, then we would talk about if they were struggling in their chemistry class and their engineering class”. These quotes support the theme that an interdependent team allows for the sharing of resources, strategies and best practices in order to meet the needs the whole student.

The last theme in this area with a similar frequency was that an interdependent team creates lateral accountability amongst the pathway teachers. This theme was present in 11 of the 15 interviews. The following quotes from the pathway teachers support this theme:

- “Every single one of has a design role.”
- “Everyone's working together to make sure that they have a role, they have a responsibility in making sure that everyone adheres to that as well.”
- “We all have our part and like I said, it holds us accountable and we want them to do well.”
- “It makes us all come together and all work towards helping the student put all the pieces together and how each piece works.”

The themes that arose are displayed in Table 5. The frequency of each theme and the number of sources is included in Table 6.
Table 5

*Codes for RQ2: Interdependent Team*

<table>
<thead>
<tr>
<th>Codes</th>
<th>Frequency</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowing teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts</td>
<td>44</td>
<td>14</td>
</tr>
<tr>
<td>Allowing each pathway teacher to engage in open dialogue in regards to how their subject area compliments the goals of the pathway</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Allowing for the sharing of resources, strategies and best practices in order to meet the needs of the whole student</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Creating lateral accountability amongst the pathway teachers</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 6

*Frequency of codes and sources for RQ2: Interdependent Team*

<table>
<thead>
<tr>
<th>Codes</th>
<th>Frequency</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowing teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts</td>
<td>44</td>
<td>14</td>
</tr>
<tr>
<td>Allowing each pathway teacher to engage in open dialogue in regards to how their subject area compliments the goals of the pathway</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Allowing for the sharing of resources, strategies and best practices in order to meet the needs of the whole student</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Creating lateral accountability amongst the pathway teachers</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

**Focus on results.** Eaker et al. (2002) described a focus on results as a team setting goals, analyzing the results and making informed decisions focused on improving student learning. Although, each interviewee agreed that the collaboration strategy of a focus on results should have a positive impact on the integration of CTE and core academic courses, five of the 15 participants described this area as an area of weakness in their pathway. One of the teachers explained that a focus on results is something “I feel we don't do enough of in our pathway...we just look more at their [student] grades in general”. Another interviewee stated, “I would say the focus on results is the weakest
link in our pathways”. Based on the pathway teachers’ description of the impact of a focus on results on their pathways, there were three themes that emerged and are displayed in Table 7.

Table 7

<table>
<thead>
<tr>
<th>Codes for RQ2: Focus on results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codes</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Allowing teams to closely monitor student grades, attendance and progress towards graduation.</td>
</tr>
<tr>
<td>Allowing the pathway teachers to reflect on the integrated projects and make modifications to better support student learning.</td>
</tr>
<tr>
<td>Being able to identify why students are not being successful and implementing interventions such as tutoring.</td>
</tr>
</tbody>
</table>

The major themes that arose from the description of the impact of a focus on results on the collaboration of CTE and core academic teachers is as follows:

- Allows the pathway team to identify why students are not being successful and implement interventions such as tutoring.

- Allows teams to closely monitor student grades, attendance and progress towards graduation.

The theme with the highest frequency was that a focus on results allows the pathway team to identify why students are not being successful and implement interventions such as tutoring. The following key phrases that support this theme:

- “One part of it is their grades. Looking at their grades and figuring out who needs support, who needs the tutoring.”

- “I think really focusing on those students that are low, that really could do it … knowing what they're missing and trying to figure out the reason why they're not achieving.”
• “But because we meet, we go through who are our underperforming students, who are our students who are performing but are having emotional issues or behavior issues?”

• “What we do is we say, okay, now these students here are having a problem. What is their problem? Their problem appears to be x. Is that agreed? Agreed, agreed, agreed, agreed, okay, so what are we going to do?”

Allowing teams to closely monitor student grades, attendance and progress towards graduation was the second most common theme in regards to the impact of a focus on results on the collaboration of CTE and core academic teachers. This theme was identified in 10 of the 15 interviews. The following statements support this theme:

• “We have our list of D and F students.”

• “What are our grades? Who is coming up? Who is going down?”

• “We just look more at their grades in general, and that's one thing that we're trying to tackle right now.”

• “Each week we get an update on their grades, and which students to work with, which students to pat on the back.”

Table 8 includes the frequency of each theme, as well as the number of sources that included the theme.
Table 8

*Frequency of codes and sources for RQ2: Focus on results*

<table>
<thead>
<tr>
<th>Codes</th>
<th>Frequency</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowing teams to closely monitor student grades, attendance and progress towards graduation</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Allowing the pathway teachers to reflect on the integrated projects and make modifications to better support student learning</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Allowing the pathway team to identify why students are not being successful and implement interventions such as tutoring</td>
<td>24</td>
<td>11</td>
</tr>
</tbody>
</table>

In summary, the pathway teachers interviewed all agreed that a shared purpose, an interdependent team and a focus on results all have an impact on the integration of CTE and core academics in Linked Learning Academies. Thirty percent of the interviewees also indicated that the weakest key collaboration element in their pathways is a focus on results. The major themes that arose from the description of the impact of a shared purpose on the collaboration of CTE and core academic teachers was that it provides: unity through establishing a common focus or direction for the pathway; a definition of what student success looks like in the pathway; an identity for the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning. There were four themes associated with the key collaboration strategy of having an interdependent team. The theme with the highest frequency was that an interdependent team allows teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts. The additional themes with similar frequencies were that an interdependent team allows for: each pathway teacher to engage in open dialogue in regards to how their subject area compliments the goals of pathway; sharing of resources, strategies and best practices in
order to meet the needs the whole student; and lateral accountability amongst the
pathway teachers. The major themes that arose from the description of the impact of a
focus on results on the collaboration of CTE and core academic teachers is it allows the
pathway team to identify why students are not being successful and implement
interventions such as tutoring and to closely monitor student grades, attendance and
progress towards graduation.

**RQ3**

*What criteria do teachers engaged in Linked Learning Pathways use to determine
positive impact when identifying positive collaboration strategies?*

The last interview question consisted of each interviewee describing their criteria
for determining that the collaboration strategies of a shared purpose, interdependent team
and focus on results has a positive impact on the integration of CTE and core academic
courses. Nine ideas were shared by the interviewees as evidence that the collaboration
strategies discussed have a positive impact on the work of the pathway teams. The top
criteria shared by the pathway teachers was improvement in student academic
performance, behavior and leadership skills; pathway students outperform their non-
pathway peers; positive feedback from students; and positive connections between
students and their pathway teachers. The criteria is displayed in Table 9.

*Table 9*

*Frequency of codes for RQ3*

<table>
<thead>
<tr>
<th>Criteria used to determine positive impact of key collaboration strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are on track to graduate.</td>
</tr>
<tr>
<td>Positive connections between students and their pathway teachers.</td>
</tr>
<tr>
<td>Positive feedback from industry partners when evaluating student projects.</td>
</tr>
<tr>
<td>Student learning demonstrated through the completion of projects.</td>
</tr>
</tbody>
</table>
Table 9

Frequency of codes for RQ3

<table>
<thead>
<tr>
<th>Criteria used to determine positive impact of key collaboration strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in the number of student’s interest in the pathway.</td>
</tr>
<tr>
<td>Pathway teachers want to continue to work together.</td>
</tr>
<tr>
<td>Positive feedback from students.</td>
</tr>
<tr>
<td>Improvement in student academic performance, behavior and leadership skills.</td>
</tr>
<tr>
<td>Pathway students outperform their non-pathway peers.</td>
</tr>
</tbody>
</table>

Summary

The focus of this chapter was on the data and findings regarding the three research questions used to guide this study. In summary, teachers engaged in Linked Learning Pathways effectively rated the collaboration strategies of a shared purpose, interdependent team and a focus on results as they are used in the integration of career and technical education and core academic courses. The key collaboration element of a shared purpose had the highest mean score and the lowest standard deviation. The mean score for this area ranged from 4.35 to 4.31. The next highest mean score range (4.25 to 4.00) was associated with key collaboration element of an interdependent team, which had a standard deviation range of .88 to 1.01. The collaboration element with the lowest mean score was a focus on results. This area also had the highest variability in responses with a standard deviation of 0.71 to 1.13.

The next set of data presented in this chapter examined how teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used to integrate career and technical education and core academic courses. Fifteen interviews consisting of four open-ended questions revealed that a shared purpose, interdependent team and a focus on results all have an impact on the integration of CTE and core academics in Linked
Learning Pathways. The interview themes were similar to the survey results, and revealed that a focus on results is the weakest key collaboration element in the pathways. The impact of the collaboration strategies of a shared purpose, interdependent team and a focus on results on integration of career and technical education and core academic courses was identified through coding of the interview transcripts. This led to the emergence of major themes in the interviews.

The last section of data focused on the criteria that teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies. There were nine ideas shared by the interviewees as evidence that the collaboration strategies discussed have a positive impact on the work of teachers in Linked Learning Pathways. The top four criteria were an improvement in student academic performance, behavior and leadership skills; pathway students outperform their non-pathway peers; positive feedback from students; and positive connections between students and their pathway teachers.

These findings are discussed in more detail in Chapter V, the subsequent chapter. Chapter V also includes the conclusions, implications for action, and recommendations for further research, as well as concluding remarks and reflections.
CHAPTER V: SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Chapter V includes an overview of the research study including the purpose statement, research questions, methods, population, and sample. The major findings, conclusions, implication for action, recommendations for further research, and concluding remarks and reflections are also included in Chapter V.

Purpose Statement

The purpose of this mixed methods study was to determine how teachers in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Another purpose was to identify the impact of strategies teachers engaged in Linked Learning Pathways use on the integration of career and technical education and core academic courses. The final purpose was to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

RQs

1. How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses?

2. How do teachers engaged in Linked Learning Pathways describe the impact of the collaboration strategies of a shared purpose, interdependent team and
focus on results as they are used on the integration of career and technical education and core academic courses?

3. What criteria do teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies?

Methods

A mixed method research design was used for this study. The Collaboration Survey was used to measure how teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses. Following the survey, the researcher conducted interviews with individual pathway teachers using open-ended questions. The data from the survey and interviews was triangulated.

The Collaboration Survey was sent to all the pathway teachers in the nine districts that make-up the Tulare-Kings Linked Learning Consortium, over seventy teachers. Sixty-three teachers completed the survey and 52 met the requirements of the study as described in Chapter II. The survey results for the individuals who met the established criteria are reported in this chapter.

Fifteen of the pathway teachers who indicated through the survey a willingness to participate in a follow-up interview were contacted. The interview focused on describing the impact of the collaboration strategies used in supporting the integration of CTE and core academic courses. A field-test of the interview was conducted by the researcher with a colleague observing. Feedback on the questions, procedures and technique was
provided by the observer. After completing the field test, the actual interviews were conducted.

**Population**

The population for this study is all public high school teachers working in a Linked Learning Pathway in CA. Population is defined by McMillan and Schumacher (2010) as “a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the results of the research” (p. 129). There are nine districts in CA that were awarded the first round of CCPT in the spring of 2014. These nine districts include Antioch Unified, Long Beach Unified, Los Angeles Unified, Montebello Unified, Oakland Unified, Pasadena Unified, Porterville Unified, Sacramento City Unified, and West Contra Costa Unified. Additionally, these nine districts were part of the Irvine Foundation’s launching of the California Linked Learning District initiative in 2009. Seven of these district formed consortia in 2014. There are 161 high schools and approximately 2,030 teachers from these districts utilizing the Linked Learning Pathways model in California.

Due to limited resources, such as time and money, it is unrealistic to include all 161 high schools as part of this study. Creswell (2008) defines the target population as “the actual list of sampling units from which the sample is selected” (p. 393). Therefore, the target population is the 72 Linked Learning Pathway high school teachers in the 21 high schools in Tulare and Kings County that are part of the eleven districts that make-up the Tulare-Kings Linked Learning Consortium and met the following criteria:

1. CA secondary public school teachers.
2. Located in CA.
3. Teachers must meet the following criteria:
   a. Teach in a Linked Learning Pathway in Tulare and Kings County High Schools.
   b. Have two or more years of teaching experience.
   c. Are actively involved in collaborative activities that link CTE or career themed education core academic courses.

Teachers who met the criteria mentioned above were selected for this study.

**Sample**

The sample is the subgroup of the target population the researcher plans to study. Ideally, the sample of individuals is representative of the entire population (Creswell, 1998; Fraenkel & Wallen, 2009).

Purposeful sampling, using criteria for selection, was combined with convenience sampling, since the researcher lives and works in Tulare County, to identify the Linked Learning Pathways teachers in the Tulare-Kings Linked Learning Consortium that are using the three basic elements in building a culture of collaboration in secondary education; a shared purpose, an interdependent team and a focus on results (Eaker et al., 2002). The Director of the Tulare-Kings Linked Learning consortium works closely with the Linked Learning Pathways in each of the districts, supporting the teachers with the curriculum and collaboration strategies. In qualitative studies, purposeful sampling is important in identifying a sample that will yield rich information (Patton, 2015). According to McMillan and Schumacher (2010), sampling is an important strategy in qualitative studies because it “increases the utility of information obtained from small samples” (p. 149). A profile of the sample criteria was used to identify the initial
participants for the study. The study aimed to collect data from at least 30 Linked Learning Pathway teachers who met the sample population criteria. Fifty-two teachers participated in the survey and 15 participated in the follow-up interview.

**Major Findings**

This study yielded several major findings. The major findings are organized in this section by research question.

**RQ1**

*How do teachers engaged in Linked Learning Pathways rate the effectiveness of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used in the integration of career and technical education and core academic courses?*

The Linked Learning Pathway teachers’ involved in this research study rated the collaboration strategies of a shared purpose, interdependent team and focus on results as effective in integrating career and technical education or career themed education with core academic courses. Each statement on the survey was aligned to key collaboration strategy and had a mean score ranging from 4.38 to 3.19. A five point scale was used with 5 being very true and 1 not being true. The standard deviation for each statement ranged from .63 to 1.13.

The Collaboration Survey, the instrument used to collected the responses, consisted of 12-items; three items aligned to a shared purpose, four to an interdependent team and five to a focus on results. The set of questions aligned to a shared purpose had the highest mean score and the lowest standard deviation. The mean score for these questions ranged from 4.35 to 4.31. The statement describing the vision for the pathway
as being “based on a collaborative effort to develop a shared knowledge about effective schooling practices” had the highest mean score of 4.35 and the lowest standard deviation of .63. The data collected shows that the pathway teachers gave the highest rating of effectiveness to the collaboration strategies of a shared purpose.

The next highest rated strategy was the key collaboration strategy of an interdependent team. The four questions on the survey aligned to the key collaboration element of an interdependent team had mean scores ranging from 4.25 to 4.00. The standard deviation for these items ranged from .88 to 1.01. The highest mean score was associated with teams having “identified team norms and protocols to guide us in working together.” The highest variance in the responses was associated with the statement that “team members have collectively agreed on how to best integrate the core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards.”

The lowest rated strategy based on the survey results was the collaboration element of a focus on results. The range of mean scores for this area was from 4.33 to 3.19. This area also had the highest variability in responses with a standard deviation range of 0.71 to 1.13. This section had multiple statements with a standard deviation over 1.0 (1.07 and 1.13). The only statement in this section with a mean score over 4.0 was “team decisions are made based on their impact on learning” (4.33). This section also included the statement with lowest mean score (3.19), “my team has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards.” The statement with the highest variance (1.13) in responses was in this section, “my team uses the results of common assessments, program assessments,
and district assessments to identify students who need additional time and support to
master grade-level expectations/essential standards.”

RQ2

_How do teachers engaged in Linked Learning Pathways describe the impact of
the collaboration strategies of a shared purpose, interdependent team and focus on
results as they are used on the integration of career and technical education and core
academic courses?_

Interviews were conducted with 15 Linked Learning Pathway teachers who
completed the Collaboration Survey and indicated on the survey that they were interested
in participating in the interviews associated with the study. Through the interviews, the
researcher was able to further explore the impact of the collaboration strategies of a
shared purpose, interdependent team and focus on results in supporting the integration of
CTE and core academic courses in Linked Learning Pathways. Once the teachers signed
the informed consent, the researcher asked each participant four open-ended questions
geared at answering the second and third research questions. The interviews were
recorded and transcribed. Once all the interviews were completed, the researcher
reviewed the research questions and coded the transcriptions for major themes and
patterns.

_Shared purpose._ Each interviewee agreed that the collaboration strategy of a
shared purpose has a positive impact on the integration of CTE and core academic
courses. The major themes that arose from the description of the impact of a shared
purpose on the collaboration of CTE and core academic teachers (in order from the most
common to the least common theme) were provides unity through establishing a common
focus or direction for the pathway, provides a definition of what student success looks like in the pathway and identifies the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning.

**Interdependent team.** The interviewees also agreed that the collaboration strategy of an interdependent team has a positive impact on the integration of CTE and core academic courses. Through the interviews four themes emerged as the pathway teachers’ described the impact of an interdependent team. The major theme that arose from the descriptions was that having an interdependent team allows teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts. The three additional themes with similar frequencies were that an interdependent team allows each pathway teacher to: engage in open dialogue in regards to how their subject area compliments the goals of pathway; share resources, strategies and best practices in order to meet the needs the whole student; and create lateral accountability amongst the pathway teachers.

**Focus on results.** Although, each interviewee did agree that the collaboration strategy of a focus on results has a positive impact on the integration of CTE and core academic courses, 30% of the participants described this area as an area of weakness in their pathway, since the main focus tends to be on overall student grades. The major themes that arose from the description of the impact of a shared purpose on the collaboration of CTE and core academic teachers were that a focus on results allows the pathway team to identify why students are not being successful and implement interventions such as tutoring, as well as closely monitor student grades, attendance and progress towards graduation.
RQ3

*What criteria do teachers engaged in Linked Learning Pathways use to determine positive impact when identifying positive collaboration strategies?*

Each interviewee was asked to describe their criteria for determining that the collaboration strategies of a shared purpose, interdependent team and focus on results have a positive impact on the integration of CTE and core academic courses. The criteria used by teachers to justify that the three key collaboration strategies have a positive impact were as follows: students are on track to graduate; positive connections between students and their pathway teachers; positive feedback from industry partners when evaluating student projects; student learning demonstrated through the completion of projects; increase in the number of students interested in the pathway; pathway teachers want to continue to work together; positive feedback from students; improvement in student academic performance, behavior and leadership skills; and pathway students outperform their non-pathway peers. The top criteria shared by the pathway teachers was improvement in student academic performance, behavior and leadership skills; pathway students outperform their non-pathway peers; positive feedback from students; and positive connections between students and their pathway teachers.

**Conclusions**

This study examined how teachers in Linked Learning Pathways rate the effectiveness and describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used to integrate career and technical education and core academic courses. Furthermore, this study identified and described the criteria used by teachers to determine positive impact in identifying positive
collaboration strategies. This study on collaboration strategies in Linked Learning Pathways produced five main conclusions. The conclusions reached are also supported by the literature and are as follows:

1. The collaboration strategies of a shared purpose, interdependent team and focus on results are effective in integrating career and technical education with core academic courses. This is consistent with the studies that have found that vocational and academic teachers need professional development and time to collaborate, such as shared planning time to effectively meet the pedagogy expectations required of the curriculum integration (J. Kemple & Scott-Clayton, 2004; Richmond, 2009).

2. A shared purpose has an impact on the integration of CTE and core academic courses by providing a common focus or direction for the pathway, a definition of what student success looks like in the pathway and identifying the role of each subject matter in supporting the learning goals of the pathway, including real world application of the learning. A shared vision is a key component in creating unity or collaboration in an educational setting (Eaker et al., 2002; S. Hord, 2004; Senge, 2006; Sergiovanni, 1994; E. Wenger, 1998).

3. An interdependent team allows teachers to share their curriculum in order to create integrated learning experiences for students versus focusing on isolated concepts. S. Hord (2004) explains that it is as interdependent team that the staff “engages in learning and collectively seek new knowledge and application of it to address students’ needs” (p. 9).
4. Even though a focus on results was identified by the pathway teachers as an effective collaboration strategy, it was also described as an area of weakness. A focus on results allows the pathway team to identify why students are not being successful and implement interventions such as tutoring, as well closely monitor student grades, attendance and progress towards graduation. As explained by Eaker et al, the pathway teams are setting goals, analyzing the results and making informed decisions focused on improving student learning (2002).

5. A variety of criteria is used by the pathway teachers to determine that the collaboration strategies of a shared purpose, interdependent team and focus on results have a positive impact on the integration of CTE and core academic courses. This criteria centers on the success and continued interest of both the students and teachers in the pathway.

**Implications for Action**

Based on the conclusion that the collaboration strategies of a shared purpose, interdependent team and focus on results are effective in integrating career and technical education with core academic courses, it is important to provide pathway teams time to focus on and develop these strategies. Pathway teams need to be able to establish a shared purpose. It is a shared purpose that will guide their work as a team. Teams also need to dialogue about the curriculum, their individual strengths and how they can each contribute to the overall goal of the pathways. Time is necessary to implement these strategies. Each interviewee explained that their pathway had a year of planning to develop these strategies. Therefore, it is important for schools who are looking at
implementing a pathway to not bypass the year of planning. Also, beyond the year of planning, it is important for the pathways to periodically review their shared purpose, pathway goals and role of each team member.

Another theme that emerged from the study is that pathway teachers share how the curriculum in their content area can support integrated learning experiences for students versus focusing on isolated concepts. This is an area that can be expanded to include the sharing of not just curriculum, but also content specific strategies. Schools and pathways can build on the sharing of the curriculum by having teachers also share content specific strategies that can be supported throughout each pathway course. An example is literacy strategies. Beyond the English teacher sharing that Copenhagen compliments what the students are learning in chemistry, the English pathway teacher should also be sharing with the team how to use annotating strategies to support reading comprehension throughout all the pathway courses. In addition to content specific curriculum knowledge, pathway teachers are also skilled in specific strategies that can be shared, applied and supported in the learning expectations of all pathway courses.

Another area that emerged from the study as needing further support is the focus on results. One of the major themes that surfaced from the interviews is that pathway teams are focusing on the monitoring of student grades, attendance and progress towards graduation. The focus on results for the most part centers on course grades. It is important for the pathways to not only agree on the overall skills that the students need to be successful as they transition to college and career, but also develop essential standards that encompass these skills and are assessed periodically through common formative and summative assessments. These assessments look different in a pathway since each
teacher teaches a different content area. Therefore, it is important for schools to provide pathway teachers with time and professional development to be able to develop essential standards for the pathway and assessments that collectively assess these skills.

**Recommendations for Further Research**

Based on this study, the following recommendations are made to further expand the research on how teachers in Linked Learning Pathways rate the effectiveness and describe the impact of the collaboration strategies of a shared purpose, interdependent team and focus on results as they are used to integrate career and technical education and core academic courses.

The first recommendation is to replicate the study with the nine original districts that were part of the Irvine Foundation’s launching of the California Linked Learning District initiative in 2009. These districts have the most experience with the Linked Learning approach and include Antioch Unified, Long Beach Unified, Los Angeles Unified, Montebello Unified, Oakland Unified, Pasadena Unified, Porterville Unified, Sacramento City Unified, and West Contra Costa Unified.

The second recommendation is to replicate this study with the seven CA districts that were awarded the first round of CCPT in the spring of 2014 and are now part of a consortium. Since these districts are considered mentor district in their consortiums, it would be interesting to explore how these mentor districts support the collaboration strategies in their consortium.

The third recommendation is to repeat this study in four years to see the difference in impact of the strategies from a teacher’s perspective once all the pathway
teams have the opportunity to complete two full cycles through their progression of courses.

The fourth recommendation is to repeat this study with both administrators and teachers and compare the difference in perspectives on the impact of the collaboration strategies in the integration of CTE and core academic courses in Linked Learning Pathways.

The fifth recommendation is to conduct a study that further explores the collaboration strategy of a focus on results. Specifically exploring the types of assessments used in Linked Learning Pathways, the function of formative and summative assessments and how the assessments relate to the shared purpose of the Pathways.

The sixth recommendation is to conduct a study that compares the perspective of pathway teachers versus the perspective of teachers in Project Based Learning schools, specifically examining the effectiveness and impact of the collaboration strategies of a shared purpose, interdependent team and focus on results.

The final recommendation is to conduct a study that examines the focus on results in Linked Learning Pathways with the focus on results in Project Based Learning schools. Specifically examining the types of assessments used, the function of formative and summative assessments and how the assessments relate to the shared purpose for each of these educational approaches.

**Concluding Remarks and Reflections**

The concept of Linked Learning Pathways is very exciting in education as it bridges the age-old gap between CTE and core academic courses. This concept allows students to be enrolled in academically rigorous courses, while at the same time learning
about a career and receiving technical experience. The Linked Learning approach creates a path for students to be part of a rigorous, integrated and real world applicable curriculum that prepares them for both college and a career. However, in order for the Linked Learning approach to be successful teachers must collaborate.

The topic of collaboration is key to the success of Linked Learning Pathways and should continue to be a focus for educators, including administrators. It is important for administrators to create a culture of collaboration not only in their pathways, but their schools in general. Additionally, teachers need to be supported in their collaboration. This includes providing time for teachers to meet and collaborate. This may require administrators to make sure that teachers do not have too many responsibilities on their plate that keeps them from being able to collaborate with their teams.

Through this process of reviewing the literature and conducting my research, I have learned a great deal about the importance of both CTE and core academic courses and the power of the Linked Learning approach in bridging these two areas. As an educator, I am very excited and impressed with the collaboration that is taking place in the pathways in the Tulare-Kings Linked Learning Consortium. I am impressed by the passion of the teachers and their focus on learning. Their collaboration has resulted in not only creating integrated projects that are engaging and support the needs of the students, but also the creation of a family-like environment in their cohorts. I am inspired by the idea that the pathways are supporting the whole student and making sure that each student finds success.
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### APPENDIX A

#### Synthesis Matrix

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Citation (Full)  
- Ong and Geeting (1998)  
- Ouellette (1988)  
- Frans (2001)  
- Frans and Estacio (2008)  
- Flum and Van Patten (2013)  
- Flum (1999)  
- Flum (1997)  
- Resnick (2009)  
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APPENDIX B

Collaboration Survey

The purpose of survey is to identify the collaboration strategies used by Career Technical Education and core academic courses engaged in the Linked Learning Pathways in the Tulare-Kings Linked Learning Consortium.

As per bill of rights, I have been provided and signed off on the informed consent and confidentiality form.

Name: ____________________________________________________________
High School: ______________________________________________________
Pathway Name: ____________________________________________________
Total number of years teaching: ________________________________
Total number of years teaching in the Pathway: ____________________

Please indicate the extent to which each of the statements below is true by circling one of the choices using the following scale:

1 = Very true 2 = True 3 = Undecided 4 = Somewhat true 1 = Not true

1. The vision statement for our pathway is based on a collaborative effort to develop a shared knowledge about effective schooling practices.

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<th>True</th>
<th>Undecided</th>
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2. The mission of high levels of learning for all students has been clearly articulated by our pathway.

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3. Our pathway team collaboratively identified core values and commitments that would be necessary to fulfill the vision statement.

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4. Our pathway team has identified team norms and protocols to guide us in working together.

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5. Our pathway team engages in an ongoing search for best instructional practices through collaborative research and dialogue, analyzing student work and observing the “teacher next door.”

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6. The pathway grade-level expectations drive the work of my collaborative team.

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7. Team members have collectively agreed on how to best integrate the core and CTE content in the course or unit and have established pacing guides to help students achieve the intended essential standards.

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8. Team decisions are made based on their impact on learning.

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9. My team has developed frequent common formative assessments that help us to monitor each student’s mastery of essential standards.

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10. My teams has agreed on the criteria used in judging the quality of student work related to the learning of each course subject.

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11. My team practices applying the above mentioned criteria to ensure consistency.

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12. My teams uses the results of common assessments, program assessments, and district assessments to identify students who need additional time and support to master grade-level expectations/power standards.

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13. I am interested in participating in the interviews associated with this study.

Yes    No
APPENDIX C

Interview Questions

1. Does having a shared purpose” have an impact on the collaboration in your academies? If so, can you please describe the impact?

2. Does having an “interdependent team” have an impact on the collaboration in your academies? If so, can you please describe the impact?

3. Does having a “focus on results” have an impact on the collaboration in your academies? If so, can you please describe the impact?

4. What is your criteria in determining that collaboration strategies have a positive impact?
APPENDIX D

Invitation to Participate

RESEARCH STUDY INVITATION LETTER
FOR LINKED LEARNING PATHWAY TEACHERS IN THE TULARE-KINGS LINKED LEARNING CONSORTIUM

August 2016

Dear Prospective Study Participant:

You are invited to participate in a research study conducted in Central California. The principal investigator of this study is Lucia Van Scyoc, Doctoral Candidate in Brandman University’s Doctor of Education in Organizational Leadership program. You were selected to participate in this study based on your role in a Linked Learning Pathway. Approximately 72 will participate in this study and your voluntary participation will take no longer than an hour. You may withdraw from the study at any time or opt not to answer specific study questions.

PURPOSE: The purpose of this mixed methods study is to identify and describe the collaboration strategies perceived as having a positive impact on integrating Career Technical Education (CTE) and core academic courses by teachers engaged in a Linked Learning Pathway in the Tulare-Kings Linked Learning Consortium and to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

PROCEDURES: In participating in this research study, you agree to participate in a 12-question survey. The survey will take approximately 15 to 20 minutes. Based on the survey results, participants may be selected to participate in an interview. The interview will take approximately 1 hour and will be audio-recorded. The interview will take place at a location of your choosing. During the interview, you will be asked a series of questions designed to allow you to share your experience in collaborating with CTE and core academic teachers in a Linked Learning Pathway.

RISKS, INCONVENIENCES, AND DISCOMFORTS: There are no known major risks or discomforts associated with this research and the information being collected. The session will be held at a location of your choosing to minimize inconvenience. Some interview questions will require you to reflect on your experience and/or observations in collaboration that takes in between CTE and core academic teachers in your Linked Learning Pathway, which may cause minor discomfort.

POTENTIAL BENEFITS: There are no personal benefits associated with being a study participant; however, sharing your experiences as a Linked Learning Pathway teacher
could collectively contribute to this study and better inform researchers, policymakers, and districts about the collaboration strategies deemed as having a positive impact on the integration of CTE and core academic courses.

**CONFIDENTIALITY:** Records of information you provide for this study and your personal information will kept confidential. It will not be possible to identify you as the person who provided any specific information for the study and any potentially identifiable information you provide will be kept confidential and will not be used.

You are encouraged to ask questions in order to help you understand how this study will be performed and/or how it will affect you. You may contact the principal investigator, Mrs. Lucia Van Scyoc, by phone at (559)679-7192 or via email ferr3001@mail.brandman.edu. If you have any further questions or concerns about this study or your rights as a study participant, you may write or call the Office of the Executive Vice Chancellor of Academic Affairs, Brandman University, and 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641.

Very Respectfully,

Lucia Van Scyoc  
Principal Investigator
APPENDIX E

Informed Consent and Confidentiality Form

RESEARCH STUDY TITLE: Examination of the Collaboration between Career Technical Education and core teachers in Linked Learning Pathways

Brandman University
16355 Laguna Canyon Road
Irvine, CA 92618

RESPONSIBLE INVESTIGATOR: Lucia Van Scyoc, Doctoral Candidate

TITLE OF CONSENT FORM: Research Participant’s Informed Consent Form

PURPOSE OF THE STUDY: The purpose of this mixed methods study is to identify and describe the collaboration strategies perceived as having a positive impact on integrating Career Technical Education (CTE) and core academic courses by teachers engaged in a Linked Learning Pathway in the Tulare-Kings Linked Learning Consortium and to identify and describe the criteria used by teachers to determine positive impact in identifying positive collaboration strategies.

In participating in this research study, I agree to participate in a 12-question survey. The survey will take approximately 15 to 20 minutes. Based on the survey results, I may also be selected to participate in an interview. The interview will take approximately 1 hour and will be audio-recorded. The interview will take place at a location of my choosing. During the interview, I understand that I will be asked a series of questions designed to allow me to share my experience in collaborating with CTE and core academic teachers in a Linked Learning Pathway.

I understand that:

a. There are no known major risks or discomforts associated with this research. The session will be held at a location of my choosing to minimize inconvenience. Some interview questions will require you to reflect on your experience and/or observations in collaboration that takes in between CTE and core academic teachers in your Linked Learning Pathway, which may cause minor discomfort.

b. There are no major benefits to me for participation, however, sharing my experiences as a Linked Learning Pathway teacher could collectively contribute to this study. The information from this study is intended to inform researchers, policymakers, and districts about the collaboration strategies deemed as having a positive impact on the integration of CTE and core academic courses.

c. I understand I will not receive money for my involvement in this study.
d. Any questions I have concerning my participation in this study will addressed to Lucia Van Scyoc, Brandman University Doctoral Candidate. I understand Lucia Van Scyoc can be reached at (559)679-7192 or ferr3001@mail.brandman.edu.

e. I understand that I may refuse to participate or withdraw from this study at any time without any negative consequences. Also, the investigator may stop the study at any time.

f. I understand that my interview will audio-recorded, and the recording will not be used beyond the scope of this study.

g. I understand the audio recordings will be used to transcribe the interview. Once the interview is transcribed, the audio, interview transcripts, and survey will be securely maintained by the principal investigator for a minimum of five years.

h. I also understand that none of my personal identifiable information will be released without my separate consent and that all identifiable information will be protected to the limits allowed by law. If the study design or the use of the data is to be changed, I will be so informed and my consent re-obtained. I understand that if I have any questions, comments, or concerns about the study or the informed consent process, I may write or call of the office of the Executive Vice Chancellor of Academic Affairs, Brandman University, and 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641. I acknowledge that I have received a copy of this form and the Research Participant’s Bill of Rights.

I have read the above and understand it and hereby voluntarily consent to the procedures(s) set forth.

______________________________  __________________________
Signature of Participant or Responsible Party            Date

______________________________  __________________________
Signature of Witness (if appropriate)            Date

______________________________  __________________________
Signature of Principal Investigator            Date

Brandman University IRB September 2016
APPENDIX F

Participant’s Bill of Rights

BRANDMAN UNIVERSITY INSTITUTIONAL REVIEW BOARD

Research Participant’s Bill of Rights

Any person who is requested to consent to participate as a subject in an experiment, or who is requested to consent on behalf of another, has the following rights:

1. To be told what the study is attempting to discover.
2. To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.
3. To be told about the risks, side effects or discomforts of the things that may happen to him/her.
4. To be told if he/she can expect any benefit from participating and, if so, what the benefits might be.
5. To be told what other choices he/she has and how they may be better or worse than being in the study.
6. To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study.
7. To be told what sort of medical treatment is available if any complications arise.
8. To refuse to participate at all before or after the study is started without any adverse effects.
9. To receive a copy of the signed and dated consent form.
10. To be free of pressures when considering whether he/she wishes to agree to be in the study.

If at any time you have questions regarding a research study, you should ask the researchers to answer them. You also may contact the Brandman University Institutional Review Board, which is concerned with the protection of volunteers in research projects. The Brandman University Institutional Review Board may be contacted either by telephoning the Office of Academic Affairs at (949) 341-9937 or by writing to the Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA, 92618.

Brandman University IRB Adopted November 2013