Examining Structure and Culture:

A Case Study of Three Middle Colleges

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Abstract

The purpose of this case study was to examine and extrapolate the primary design elements of early/middle colleges in Minnesota that are most likely to support expanded statewide implementation of the model. These early/middle colleges are presently located in Anoka and Rochester and on the Iron Range in the northeastern region of the state. Through a case study analysis of each location, the cultural attributes of each community or region influencing the structural design of each early/middle college were examined in the context of the common design elements represented in the review of literature. A cross-case analysis examined the themes that emerged as common design elements at each early/middle college in Minnesota.

This qualitative research study found that in all three locations, the early/middle colleges emerged as an expression of a broad-based strategy to increase college and career readiness, strengthen job creation, and enhance the overall economic vitality and competitiveness of the community. By designing and implementing a new structural design promoted expanded access to career and technical education options for students, community leaders and educators asserted that the overall workforce readiness of the community or region was enhanced through the operation of the early/middle college.

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Chapter 1 - Introduction

Background of the Problem

The persistent economic downturn and the slow pace of recovery from the Great

Recession of 2008-2010 created significant employment pressures within the Minnesota

workforce (Carnevale, Smith, & Strohl, 2010; Governor's Workforce Development

Council, 2012). Both the sheer number of chronically un- and under- employed

individuals and the challenge to match the skills of those seeking work with available

jobs are indicative of a growing gap between employer expectations and the credential

level of the current and future workforce. Eliminating this gap and increasing the

preparedness of the workforce must be a collaborative effort between education, industry,

and workforce agencies; given the magnitude of the challenge, it is clear that historic

approaches to post-secondary preparation are inadequate to supply both the number and

level of skilled workers needed to support key occupations and industry sectors across

our state.

Closely related to the credentials gap is the on-going policy debate regarding the

value and efficacy of the final two years of high school (Kisker, 2006). Educators,

policy-makers, pundits and parents question the value of the junior and senior years,

particularly with regard to college and work readiness. Many scholars believe that

students, school and the community would be better served by expansion of creative

school design models that add value to the final two years of high school, offering

students the opportunity to prepare for college or career through partnerships with

colleges that expand access to career pathways and related academic and student support

services (Kirst & Venezia, 2004).

Dual (or concurrent enrollment) and contextualized learning are two of the primary attributes that distinguish the design of the typical early/middle college. Dual or concurrent enrollment is generally understood to encompass specific initiatives offered by cooperating K-12 and post-secondary partners to offer college-level coursework to students while they are still in high school. Usually offered during the junior or senior year, high school students that enroll in dual/concurrent enrollment courses are expected to complete all course requirements and assignments that pertain to the college course, and are awarded a grade upon completion of these tasks. Completion of these courses generally applies towards a student's satisfaction of high school graduation requirements. Grades are recorded on an official college transcript (Edwards & Hughes, 2011, p.1).

Many early/middle colleges offer dual/concurrent enrollment courses that feature contextualized learning as the defining curricular and pedagogical approach. In general, contextualized learning delivery strategies are designed to connect academic and career and technical instruction in ways that will prepare students for further education or training, employment and careers (Baker, Hope, & Karandjeff, 2009; Chernus & Fowler, 2010).

In other states, early or middle colleges have been the strategy used to infuse meaning into the junior and senior year, aligning high school graduation requirements and curricular electives with post-secondary majors and programs (Le & Frankfort, 2011). Most notably, in California and North Carolina, policy-makers and educational leaders have blended contextualized curricular approaches, dual/concurrent enrollment strategies, and early/middle college design elements into a coherent, statewide approach to the elimination of credential gaps and re-invention of the high school experience (Edmunds

et al., 2010; Education Trust – West, 2011).

California's Linked Learning initiative and North Carolina's New Schools Project are leading expressions of the utilization of the early/middle college strategy as the way to increase career and college readiness for a learner segment that typically emphasizes students of color from low-income families (Castellano et al., 2007). Both of these strategies are purposeful, focused on educational and economic opportunity, and well supported by educational and political leaders at the state and local levels. The coherence and comprehensiveness of these strategies is notably missing from Minnesota's existing early/middle college approach.

Even states that are just beginning to advance a more comprehensive approach to early/middle college strategy development evince a more coherent and purposeful approach than has been the case to date in Minnesota. In Texas, for example, educational and political leaders in urban and rural areas are beginning to explore replication and adaptation of these state-level initiatives as a way to boost college and career readiness, particularly for low-income students of color from families in urban and rural areas (Nodine, 2011). The early/middle colleges located in El Paso and rural Hidalgo are leading examples of the expansion of the model to address college and career readiness for first-generation learners from racial and cultural groups that have historically not been well-served by the state's post-secondary institutions—and for whom expanded college and career opportunities are essential for both individual and community well-being and prosperity.

Initial evaluations of middle college models funded by the Bill & Melinda Gates Foundation contain a wide array of emerging *promising practices* and design criteria used

by teachers and school leaders to reach new learner segments and promote their participation in the new model (Berger, Adelman & Cole, 2010). Again, the learners typically targeted by early/middle college planners for expanded access to innovative programs and services are low-income students of color from families that do not have a tradition of college participation and success (Born, 2006). The Gates-funded studies also concluded that these new delivery models positively impact high school graduation rates and college participation; moreover, they have been a useful strategy to align high school and college completion initiatives with existing and emerging workforce needs in key occupations and labor market sectors (Department of Education, 2010; Hughes, Karp, Fermin & Bailey, 2005).

Many of the existing early/middle colleges have identified best practices that guide curriculum development and alignment; academic and student support services; parental, industry and community engagement; and concurrent enrollment protocols between the participating high school and post-secondary partners (Corallo, Redfield, Jordan & Cavalluzzo, 2004; Jobs for the Future, 2008). The literature indicates that these practices have been successfully replicated to the point that they are now serving as the foundation for expanded implementation of the early/middle college model (Kisker, 2006).

Minnesota has experimented with the early/middle college model in three locations: STEP (the Secondary Technical Education Program), a middle college offered by the Anoka-Hennepin school district on the Anoka Technical College campus; the Applied Learning Initiative (ALI), a multiple-district middle college initiative delivered in partnership with the Northeast Higher Education District on the state's Iron Range; and

an emerging partnership between the Rochester public schools and Rochester Community and Technical College.

Anoka's STEP program was launched in 2000, immediately after an unsuccessful move by the Minnesota State Colleges and Universities (MnSCU) Board of Trustees to close its partnering post-secondary institution, Anoka Technical College (ATC). School district, community and business/industry leaders banded together to propose the STEP-ATC partnership as an alternative delivery option that would expand learning opportunities for career and technically-oriented students in the Anoka-Hennepin schools, Minnesota's largest K-12 district. The STEP program opened in the fall of 2001 and immediately was labeled as a 'middle college' by its K-12 and post-secondary partners.

The ALI was intentionally modeled on the STEP program in Anoka, and was catalyzed by target investments by the Minnesota Legislature in 2006 and 2007. The design and delivery of early/middle college programming was significantly adapted, however, to acknowledge and accommodate the multiple K-12 districts and post-secondary partnerships in existence across the Iron Range. The Northeast Higher Education District (NHED), comprised of five two-year MnSCU colleges operating as a coordinated district, provided overall coordination and leadership for the development of the ALI, assisted by a panel of superintendents from across the region. Managing political, transportation and community-based interests and concerns became a defining feature of the planning work that preceded the initial launch of programming in 2006-07.

In Rochester, interest in the early/middle college model had its origins in community-wide concerns about workforce planning and effective educational services for an increasingly diverse community and student population. With the world-renowned

Mayo Clinic located in Rochester, concerns about the future availability of well-prepared workers to fill jobs at Mayo and in related allied heath care areas prompted the regional Chamber of Commerce to launch a community-wide workforce planning effort that focused on the adequacy of college and career readiness programs, courses and services in the Rochester public schools and at Rochester Community and Technical College (RCTC). This work informed the initial development of the Rochester C-TECH (Career and Technical Education at Heintz, referring to a building on the RCTC campus) early/middle college.

All three of these Minnesota early/middle college initiatives focus on career-technical program expansion through implementation of selected career pathways with articulated and aligned curriculum. Participating students can elect concurrent enrollment, allowing them to accumulate college credits while in high school. Wrap-around support services augment academic coursework and are designed to promote high school graduation and college enrollment for all students. At Anoka and on the Iron Range identification of program pathways and program majors reflects analysis of labor market data as well as input from industry leaders. It is anticipated that the Rochester model will emphasize in-demand health careers programs that address the workforce needs of the Mayo Clinic located there, as well as technology and other high-skill areas.

Although each of these initiatives has received enthusiastic support from local educational and political leaders, none has emerged as a platform to catalyze high school reform or workforce readiness initiatives in other Minnesota locations. Given the absence of a coherent policy- and practice-based strategy in Minnesota that simultaneously addresses workforce and achievement gaps, research and analysis to

determine if the state's existing early/middle college models can be expanded to address these gaps is an exercise with practical as well as academic implications. Given the existing and emerging workforce and credential gaps that exist in Minnesota, development of evidence-based strategies that prepare more high school students for college and careers is a policy and practice challenge of immense significance.

North Carolina, California and Texas are concrete examples of states that have utilized the early/middle college as a tool to advance a more broadly-based policy and practice reform agenda that is grounded in expansion of educational opportunities as the means to employment and economic self-sufficiency for groups historically underrepresented and underserved in the typical high school or by post-secondary institutions generally. Although the literature and evidence reveals that each of these three states is at a different point in the development and implementation of the early/middle college strategy (North Carolina is the most evolved, while California is in the early stages of implementation and Texas is just beginning to undertake a coordinated approach), the element each state has in common is a clearly purposeful and strategic approach that unites educational reform with increased economic opportunity and workforce-based outcomes. Unlike these other states, Minnesota has not widely embraced the early/middle college movement, despite the presence of three examples that appear to fit within the working definition of a early/middle college (Hughes, Karp, Fermin & Bailey, 2005). Thus, it is plausible to surmise that particular design elements can influence successful expanded implementation of the early/middle college model; as such, a careful analysis of current design elements is essential.

Purpose Statement

The purpose of this case study was to examine and extrapolate the primary design elements of early/middle colleges in Minnesota that are most likely to support expanded statewide implementation of the model. These early/middle colleges are presently located in Anoka and Rochester and on the Iron Range in the northeastern region of the state.

Research Question

What design practices are most likely to influence successful expansion of the early or middle college approach to other locations in the state of Minnesota?

Significance of the Research

The policy and practice recommendations that resulted from this research endeavor offer educational leaders in K-12 and higher education a cogent blueprint to successfully replicate the early/middle college model at additional sites in Minnesota. Policy-makers in the school board, agency and legislative arenas can also use these research findings to develop a coherent strategy addressing the state's workforce preparation and achievement gaps through a learner-centered high school reform effort focusing on early/middle college expansion to targeted regions and communities. The policy and practice framework that emerged from the review of the literature and the case study should offer a replicable approach for other states to consider when developing similar, blended educational reform and workforce development strategies.

Delimitations and Limitations

The early/middle colleges located in Minnesota were selected for this study based upon their proximity for in-person case study research and their potential to serve as the

foundation for a statewide early/middle college strategy that is distinguished by a strategic statewide purpose and common design elements.

Definition of Key Terms

Contextualized instruction. A form of integrating curricular content to promote a more holistic approach that increases the levels of engagement and achievement for kinesthetically oriented individuals who thrive in a hands-on learning environment.

Dual enrollment. Also referred to as concurrent enrollment, dual enrollment is an instructional practice whereby high school students are afforded the opportunity to enroll in a college credit-bearing course.

Middle (or early) college. A middle (or early) college is generally defined as a structural educational design and enrollment option in which high school students are afforded the opportunity to engage in credit coursework and associated academic and support activities that promote college readiness (Jobs for the Future, 2008). According to Jordan et al. (2006), the fundamental difference between middle college and early college programs is that the latter make dual enrollment an explicit objective and link completion of the associate's degree directly to the high school programs (p. 731). Conversely, although middle colleges provide opportunities for dual enrollment, such opportunities are not always mandated or universal.

Role of the Researcher

Case study analysis of the three existing Minnesota early/middle college locations primarily featured document review and interviews with key individuals as the primary means for data collection. There were limited opportunities to observe teaching and learning in the classroom, laboratory or shop setting during the course of the case study

site visits. In these circumstances, the researcher assumed the role of an impartial and unobtrusive observer.

This researcher had a long-term professional commitment to early/middle colleges in Minnesota. The first early/middle college in the state—the Secondary Technical Education Program (STEP)—was designed and launched at Anoka Technical College during the researcher's tenure as president there. This experience, coupled with extensive professional experience in the career and technical college arena—may reflect a predisposition or bias toward applied or work-based approaches to education as the means to increased individual and community prosperity.

Chapter II – Review of the Literature

A careful and comprehensive review of the literature illuminated the various design elements that influenced development of the early/middle college as a strategy for serving at-risk high school students and increasing their overall preparation for college or career. The analysis and synthesis represented by the review of literature establishes the parameters for the examination of criteria that influenced development of three early/middle colleges in Minnesota. Identifying and defining these design elements with precision and clarity is a also necessary to assess the early/middle college role as a key element of high school completion, post-secondary participation, and workforce readiness strategies in such states as North Carolina, California and Texas.

Examination of the strategy framework established in other states provided the context for analyzing the results of the case study research into the three Minnesota early/middle colleges. This assessment supports the identification of policy and practice recommendations to guide a similar expansion of early/middle colleges to other communities or regions in the state of Minnesota.

Summary

From its origins in New York City in 1974, the early/middle college movement has developed into a robust network of locations across the nation. Distinguished by core design elements that evolved from the experimental efforts at early adopter sites (such as the La Guardia Middle College) and the work of leading national advocacy and philanthropic organizations, the early/middle college emerged as a high school reform option intended to better serve the college and career readiness needs of low-income students of color from families who traditionally faced barriers to graduation and post-

secondary enrollment.

The core components of a successful early/middle college design are typically defined to include contextualized instructional content; dual or concurrent enrollment programs that permit students to accumulate college credit while still in high school; relationship-building activities between students and adults; and comprehensive *wrap-around* student support services. Evaluation reports commissioned by the Bill & Melinda Gates Foundation serve as evidence of the success of early/middle college implementation in those states that received Foundation funding to initiate, expand, and measure the effects of this reform option on student success and overall college and career readiness.

Three of the states that received Gates Foundation funding for the launch of early/middle colleges have now defined comprehensive statewide approaches that utilize the early/middle college as a catalyst for positive and comprehensive policy change impacting both education and workforce development institutions and systems. In these states—North Carolina, California, and Texas—the early/middle college has been tapped as a strategic policy choice for improving high school graduation rates, college participation and success, and overall employment and economic justice for students of color living in poverty.

The potential replication and adaptability of these statewide approaches becomes the fundamental research and application question for states like Minnesota that confront similar policy and practice challenges inherent in the redesign of education and workforce development systems that serve low-income students of color from families that historically have not been well-served by traditional approaches to both high school

and higher education.

History of Early/middle colleges in the United States

During the 1980s and 1990s, faculty and administrators within both K-12 and higher education became increasingly concerned about the growing number of students that graduated from high school ill-prepared for the scope and rigor of academic study at the college level. Noting the real and perceived disconnect between secondary and post-secondary education, practitioners on both sides of the divide began to explore ways to work together to ensure that more young people graduated from high school prepared to enroll in –and succeed-in college-level pursuits (Kirst & Venezia, 2004).

Closely related to the concern regarding college readiness was an equally troubling pattern that revealed low rates of post-secondary participation among high school graduates from low-income households and communities of color (Olsen, 2010). Exploring ways to engage students and families living in poverty, or within communities of color that lacked a historical pattern of post-secondary participation, became a rallying call for innovative efforts to boost high school graduation and post-secondary access and participation, especially in urban areas. This community-based concern was one of the primary considerations behind the creation of the nation's first early/middle college at LaGuardia Community College in New York City in 1974 (Born, 2006; Vargas & Miller, 2011).

The LaGuardia middle college was the brainchild of high school classroom teachers and administrators and their counterparts within the community college (Born, 2006; Glick, 2006; Vargas & Miller, 2011). Building upon LaGuardia's strong launch and early evidence of success, other high school-community college partners began to

look at this experience to determine if it offered a blueprint for successful high school student engagement and success, as well as improved college readiness and participation levels. Partnerships in communities across the country began to emerge, using the LaGuardia approach as the framework for building relationships that bridged the great divide between high school and college, particularly for students of color from low-income backgrounds (Born, 2006; Kisker, 2006; Olsen, 2010). These early adaptations of the LaGuardia approach also experimented with additional design elements as well, addressing the needs of kinesthetic and applied learners (Vargas & Miller, 2011) and developing comprehensive wrap-around student support services (Kisker, 2006).

By the mid-1990s, the continued expansion of middle/ear/y college locations to multiple states caught the attention of several notable national advocacy organizations. These organizations were motivated by concerns about youth engagement, high school reform, elimination of race-based achievement and post-secondary participation gaps (Foley, 2010; Jordan, Cavalluzzo & Corallo, 2006; Kaniuka & Vickers, 2010). At the same time, the increased momentum of the early/middle college movement attracted the attention of prominent foundations and philanthropic organizations. The Bill and Melinda Gates Foundation, the Ford Foundation, and the Lumina Foundation became early champions for the early/middle college movement, providing financial support and high-profile endorsements for this new partnership approach (Berger, Adelman & Cole, 2010; Bruce, 2007; Gates, 2009).

The Gates Foundation in particular became a leading supporter of the middle/college movement, and in 2004 announced a major funding initiative that led to a major expansion of early/middle colleges in selected states such as California, New York,

North Carolina and Texas (Berger et al., 2010). The Gates Foundation support model included resources for intermediary organizations to provide technical assistance for high school-community college partnerships engaged in the creation of a early/middle college design; consulting assistance in the development of standardized early/middle college design criteria by leading advocacy organizations such as Jobs for the Future and the Community College Research Center at Columbia University; and perhaps most importantly, the commissioning of a series of evaluation reports that documented the evolution of the early/middle college initiative and provided evidence of results, both in terms of high school completion and college readiness (Berger et al., 2010).

The sequence of Gates-sponsored research and evaluation reports impacted development of the early/middle college model and provided an important framework for all subsequent academic and action-based evaluation of results (Berger et al., 2010; Edmunds et al., 2011). The analytical framework established by these evaluations permits a cogent review of the literature surrounding the key elements of the early/middle college model: service to at-risk students; alignment with existing and emerging workplace readiness gaps; use as a high school reform strategy; the importance of addressing both college and career readiness; and ultimately, the emergence of common design elements for a successful early/middle college: contextualized instruction, dual (concurrent) enrollment, career academies, and 'wrap-around' support services (American Institutes for Research and SRI International, 2009).

Serving at-risk students. Throughout the initial development of the early/middle college model, primary emphasis was been placed on exploring strategies and techniques that promote participation by students from low-income households, students of color,

students whose primary language is other than English, and students who are the first in their family to pursue post-secondary education (Bruce, 2007; Kisker, 2006; Olsen, 2010; Singleton, 2011). This criterion was the key design attribute for the LaGuardia early college, and it continues to be emphasized as a defining characteristic of the model (Born, 2006; Glick & Jobs for the Future, 2006; Vargas & Miller, 2011).

Early/middle colleges that focused on small class sizes; relationship-building between the student and teacher; academic and student support services to promote student success; and intentional engagement of parents and other family members in the college exploration process frequently reported positive impacts on participation and high school graduation rates for students from low-income backgrounds (Kaniuka & Vickers, 2010; Kisker, 2006; Parsons, 2007; Slade, 2006). Both quantitative and qualitative studies validated the early/middle college's impact on student success, as compared with peers in more traditional high school settings (American Institutes for Research & SRI International, 2009). By focusing on the typical barriers that low-income students with diverse racial, cultural and ethnic backgrounds generally confront when considering college, early/middle colleges became an acceptable alternative, especially in those states that designated early/middle colleges as a the primary strategy for improving high school graduation and post-secondary participation rates for these students (Alliance for Excellent Education, 2011).

Harvard University scholar William Symonds conducted contemporary analyses of interventions that impact the success of students of color from low-income backgrounds. His research appears to align with the early/middle college approach, arguing for continued intentionality in local, state and national efforts to serve students of

color living in poverty (Symonds, 2011). Acknowledging the persistent achievement gaps impacting low-income students of color across the United States, Symonds suggested that college- and career-ready initiatives must take into account such crucial concepts as relationship-building, community support and engagement, and wrap-around academic resources that promote success in the classroom and hopeful attitudes towards life, family, and the student's future (Symonds, 2011, p. 26).

This analysis is consistent with the comprehensive literature review conducted by the U.S. Department of Education in 2010 (U.S. Department of Education, 2010). This review also found that the practices and programs most likely to result in improved high school graduation rates and college participation gains for low-income students of color had the tendency to align with the predominant early/middle college design elements: college and career focus, accompanied by dual/concurrent enrollment options; an intentional emphasis on relationship-building between students adults, especially high school teachers; the presence of essential wrap-around student supports, such as tutoring, mentoring, and advising; and an experiential focus that permits students to apply concepts learned in class to real-life situations through contextualized learning, internships, or job shadowing.

Securing greater levels of high school success and post-secondary participation for low-income students of color is closely related to a curricular focus and institutional mission that values career exploration and occupational experiences.   In addition to providing low-income students with real-life experiences that prepare them for future occupational choices, identifying the early/middle college's curricular focus and demonstrating its relationship to the existing and emerging workforce needs of a

particular community, region or state emerged as a core design element, addressing gaps between existing and anticipated employee skill levels and the expectations of employers for a well-prepared workforce.

Addressing gaps in workforce readiness. By 2010, academic researchers began to pay careful attention to the credentials and skill levels that employers would expect to be present in the post-recessionary workforce. After more than two years of record-high unemployment, the U.S. economy began to show signs of recovery. Scholars like Anthony Carnevale at Georgetown University wrote extensively about the capacity of the post-recessionary workforce to support production and efficiency levels needed to move the American economy to pre-2008 production and prosperity levels. In a 2010 report, Carnevale compared the anticipated post-secondary degree attainment levels among American adults with employers' expectations for workforce readiness, and found a disturbingly large gap between the preparation level of American workers and employers' demand for a properly credentialed pool of potential employees (Carnevale, Smith & Strohl, 2010).

Carnevale offered several explanations for the nation's anticipated credential gap. Demographic changes—an aging American workforce coupled with a smaller post-baby boom potential worker pool—offered a partial explanation. The more pressing problem, according to Carnevale, was found in the declining number of high school students enrolling in post-secondary education, coupled with the post-secondary completion challenge faced by many students who were not well-prepared for the rigors of college work. Simply put, not enough students were entering the post-secondary pipeline after high school; and a declining number of those who enrolled in college were persisting in

their studies and completing a credential (either a certificate, diploma. Associate's or bachelor's degree) (Carnevale & Rose, 2011, Carnevale et al., 2010).

The 'brain drain' resulting from this decline in college participation and degree completion was particularly acute in industry sectors deemed essential to the nation's economic competitiveness: health care; business; and STEM (science, technology, engineering and mathematics). In addition to the potentially damaging consequences for the economy at the national, state and local levels, declining levels of college participation and degree attainment had a negative impact on individual income and prosperity. To illustrate this, Carnevale reviewed historical wage data that demonstrated a consistently high correlation between post-secondary degree attainment and individual income levels, measured both on an hourly wage basis and accumulated lifetime earning potential (Carnevale et al., 2010). The overall analysis confirmed the positive relationship between education and income levels, suggesting the importance of increasing post-secondary participation and completion as a strategy for reversing the rise in poverty levels and increasing individual earning potential through market-responsive wages in demand-based occupational sectors.

Carnevale's national study was subsequently refined for the Midwest region to address anticipated workforce preparation gaps and post-secondary participation/completion levels for the five-state region that included Minnesota (Carnevale & Smith, 2011). The regional conclusions parallel the national results contained in the prior year's study. For Minnesota in particular, the anticipated credential gap was particularly acute, requiring 620,000 more workers with post-secondary credentials by the year 2018 in order for employers to replace retiring workers and build

capacity in key sectors of the economy such as health care, technology innovation and support, and energy-related industries (Carnevale & Rose, 2011, p. 18). Carnevale speculated that this gap would be addressed in two ways: by increased numbers of adults returning to college from un- or underemployment; or more importantly, by more high school students enrolling in college after graduation, and persisting in their studies to receive a post-secondary credential.

Awareness of the potential workforce preparation component of the early/middle college mission influenced both high school and college leaders to consider including career pathways and career exploration as part of the selection of the institution's academic program and curricular array (Huffman, 2008). This alignment was commonly achieved through the intentional inclusion of business/industry input in the design of the early/middle college curriculum, through advisory panels, survey instruments, or focus groups (Castellano et al., 2007). Information gleaned from these systemic data collection efforts was used to identify in-demand jobs and career pathways that would align with the programs that could potentially be offered by the early/middle college. In order for this work to have both immediate and future predictive value as the foundation for increasing the pool of properly credentialed workers, early/middle college planners frequently examined future workforce needs.

Establishing a workforce-preparation focus within the early/middle college also required examination of student interest information and the adequacy of existing career counseling, advising and applied/experiential learning opportunities (Castellano et al., 2007). Surveys, focus groups, and career exploration camps or fairs were frequently cited as examples of techniques used by early/middle college planners to determine

student interest in specific college or career program areas and future employment opportunities. Matching this information with the results of the community- and employer-based data collection efforts was a typical framework for shaping the early/middle college program mix (Bragg, 2006; Kisker, 2006).

With the program mix in place, early/middle college planners generally analyzed existing career counseling and advising efforts offered by traditional high schools, as well as course-based applied or experiential learning opportunities to determine the support services and curricular designs best suited to aiding high school students in their choice to attend the early/middle college, as well as to evaluate their selected career or occupational area of study. The results of these analyses influenced the development of the wrap-around support services model and the emergence of contextualized learning and career academies as defining features of the early/middle college (American Institutes for Research and SRI International, 2007; Kisker, 2006).

Thus, responding to community needs by increasing the number of high school graduates enrolling in college and acquiring a post-secondary credential needed for employment in existing or anticipated jobs and career pathways emerged as a key aspect of the early/middle college mission. This community responsiveness is closely related to another defining characteristic: providing a rigorous, quality alternative experience for students that constitutes a meaningful community-based high school reform effort (Kaniuka & Vickers, 2010).

Use as a high school reform strategy that promotes college and career readiness. Numerous reports and studies document the disconnect between high schools and post-secondary education (Jordan, Cavalluzzo & Corallo, 2006; Kirst & Venezia,

2004; Woodrow Wilson National Fellowship Foundation, 2001; Wright & Bogotch, 2006). This disconnect contributes to the decline in the number of high school graduates pursuing post-secondary education, and is most troubling among low-income students and students of color, as noted above. Explanations of and attribution for the disconnect assumes many forms, from concerns that the senior year has lost its meaning (Peterson, 2003; Woodrow Wilson National Fellowship Foundation, 2001) to more sweeping indictments of the modern public high school and its capacity for preparing young adult for the rigors of college as well as the realities of career and citizenship (Achieve, 2011).

Stanford University scholar Michael Kirst is one of the leading voices on the topic of the high school – college disconnect. The Stanford Bridge Project (of which he served as director for many years) is one of the leading national think tanks addressing strategies that bridge the gap between high school and college. In their work, Kirst and his colleagues examined both practice- and policy-based bridging strategies (Kirst & Venezia, 2004; Kirst, Venezia & Antonio, 2003). They contend that improving high school graduation rates—and post-secondary participation—for all students (and low-income, students of color in particular) depends on the willingness of educational practitioners and policy-makers to embrace creative, student-centered, results oriented approaches that promote systemic changes in practice, policy and governance at the school, district and state levels (Kirst, Venezia & Antonio, 2003).

The overall impact of the reform strategies proposed by Kirst and other scholars is a reexamination of the high school's core mission to prepare students for college and career. Closely related to this scholarly work is the examination of individual college readiness levels and the role of developmental education, especially in the modern

community college (Adelman, 2006). These studies document the increase in the numbers of recent high school graduates requiring remediation work in reading, writing and mathematics in order to acquire the skills necessary to succeed in college-level coursework, both in liberal arts disciplines and career/technical programs (Eddy & Amery, 2011). Although there are a variety of explanations offered to explain this trend, Kirst and Venezia (2004) attributed the increase in developmental education enrollments to the absence of rigorous high school courses in program areas that students consider relevant to their future academic and occupational interests, as well as in the absence of adequate support services (such as tutoring and test-prep) and limited availability of counselors to guide pre-graduation interventions.

Several of the first early/middle colleges emerged from high school reform efforts in their communities, and frequently linked their proposed curriculum choices and student support services to a goal for reducing the number of graduates who would require remedial work when enrolled in college (Hoffman, Vargas, Venezia & Miller, 2007). To achieve these objectives, the early-adopter early/middle colleges experimented with administration of college assessment tests in the 9th, 10th and 11th grades; used college personnel as on-site *transition counselors* or advisors to assist high school students in course selection and program planning; developed articulation agreements that defined core programmatic expectations in a sequential manner to demonstrate the relationship between high school completion and success and post-secondary enrollment, retention and degree completion; prepared comprehensive individual student educational and career plans; used cohort instruction, smaller classes and individualized instruction to build a higher degree of student connection to teachers and course content; and

implemented tutoring, mentoring and coaching programs that intensively focused on individual student achievement and tackled barriers to school success (Hughes, Karp, Fermin et al., 2005).

In addition to promoting college readiness and proactively implementing strategies to reduce the likelihood of remedial work for graduates, the early/middle college planners frequently included specific career readiness activities in their design for a reconnected high school – college experience. Using the results of the data collection activities implemented to measure alignment of early/middle college programs and curriculum with existing and emerging community job outlooks and workforce readiness expectations, planners developed a variety of techniques for infusing students' early/middle college experience with rich career exploration and job preparation activities (Castellano et al., 2007). Several early adopters also began experimenting with program and curriculum design concepts long used by the career-technical education community to promote student engagement and success, such as contextualized instruction, career academies, and tech-prep (Hughes et al., 2005).

The research examining the causes for—and possible solutions to—the high school reform dilemmas and the steady increase in college developmental education enrollments was examined in the context of the emerging early/middle college movement in several scholarly works in the mid-2000s (Bruce, 2007; Kisker, 2006; Parsons, 2007; Slade, 2006).   Interestingly, at approximately the same time several advocacy organizations and private foundations—notably, Jobs for the Future and the Gates Foundation—launched major policy initiatives and investment strategies that would propel the early/middle college movement into the national spotlight, providing a venue

for continued experimentation with the model as well as the development of common design elements to guide future expansion and evaluation efforts.

Emergence of common design elements. As the primary intermediary organization responsible for implementation of the Gates Foundation's early college high school initiative (ECHSI), the national research and advocacy organization Jobs for the Future developed an initial set of guiding principles for use at the various sites receiving Gates support for the development of an ECHS. These five core principles address community engagement; student selection and recruitment (with a particular emphasis on the engagement of minority students); educational program and pathway design that results in the opportunity for participating students to acquire college credits while in high school; related academic, student and co-curricular supports; and performance measurement/evaluation frameworks (Jobs for the Future, 2008). These criteria closely parallel the actual experience at the early adopter early/middle colleges, with the exception of an added criterion that specifically addressed activities that built relationships with and within the community served by the institution. These activities were considered essential to effective student recruitment, and also presented opportunities for resource development, industry engagement, and political support for the emerging new delivery model (Gates, 2009; Jobs for the Future, 2008).

In North Carolina, design and implementation of the state's 71 early/middle colleges was guided by a set of core principles (Edmunds et al., 2011; Slade, 2006). These principles resemble the JFF criteria, but are more purposeful and philosophic in their tone. According to Edmunds et. al. (2010), the North Carolina core principles include purposeful design (small size; autonomous governance; flexible use of time;

location on a college campus; and college integration); professionalism (staff collaboration; collective decision-making; ongoing professional development); personalization (academic and affective supports; supportive relationships); college-ready (articulated programs of study and college readiness activities); and powerful teaching and learning (high quality, rigorous and relevant instruction; student collaboration; formative and multiple assessments; and common standards).

Le and Frankfort (2011) examined institutional design criteria at North Carolina's early college high schools. They described the six design principles common to the North Carolina early colleges as college readiness; powerful teaching and learning; personalization (of curricular content and choice as well as related academic support services); redefined notions of professionalism for faculty and staff; and purposeful design in all aspects of instruction, support services, and school operations. Le and Frankfort suggested adapting the approach implemented in North Carolina in other locations as a way to ensure high school completion and increased college participation rates (2011, p. 20).

In addition to the mission-oriented design criteria and principles developed by advocacy organizations and leasing states, several practitioners and researches presented a more practical approach to guide design and implementation of a early/middle college. Cunningham and Wagonlander (2000) drew on their experience to develop a set of practice steps for designing and implementing a middle college high school. They summarized the sequential steps needed to launch a middle college, from concept development through initial planning to practical matters such as staffing, facility identification, and budgeting (Cunningham & Wagonlander, 2000, p. 45). This approach

is primarily grounded in a K-12 perspective, although post-secondary governance, staffing and political topics are addressed in a summary fashion. The perfunctory narrative pertaining to curriculum design does not comprehensively distinguish the core content areas of the middle college from a traditional high school, nor delineate a career pathway approach to promote increased college readiness and overall participation.

Jobs for the Future also provided early/middle college designers with practical guidance based upon the core design criteria released by the organization in 2008. A leading example is found in a 2010 analysis of STEM-based middle college development in Ohio that focused on the Metro Early College High School (MECHS) in Columbus (North, 2011). MECHS was launched as a partnership between the Gennessee County schools, the Ohio State University, area industries, and Columbus State Community College. The school was created to offer expanded college readiness opportunities for low-income, first generation students in STEM-based disciplines. MECHS used cohort instruction, cooperative and project-based learning, and thematic curricular design to offer a highly integrated and innovative early college design. In addition to this descriptive data, North analyzed key planning, operational and financial considerations deemed essential to the sustainability of a early/middle college. This approach, coupled with a thorough description of the STEM-based instructional design, provided a clear and practical road map for future early college high school designs.

Corallo et al. (2004) also offered a practical guide to assist K-12 and college staff in the establishment of a high school on a college campus. This analysis suggested that six planning steps are essential: assessing the foundation of support for the initiative among all stakeholder groups (including both internal and external constituencies);

engaging the various academic, student support, and community-based (industry as well as parental groups) constituents in the planning work; designing the actual academic program, including curricular, student support, and physical site/location considerations; planning the budget; recruiting and selecting students; and developing a performance management rubric to monitor progress (Corallo et al., 2004). This analysis is a cogent example of a practitioner-centered rubric that contained a carefully constructed and sequential guide to early/middle college development.

Finally, evidence confirms the efficacy and value of the various approaches to early/middle college core design principles or criteria. In a 2010 study, Berger et al. provided a comprehensive summary of evaluation results pertaining to the first five years of the Bill and Melinda Gates Foundation-funded Early College High Schools Initiative (ECHSI). This research focused specifically on the extent to which the ECHSI sites implemented the initiative's core design principles, as developed by JFF and the Gates Foundation. Berger and her colleagues determined that although the various ECHSI's used variable design and implementation techniques, most complied with the core principles (2010, p. 343); moreover, most were able to supply evidence that showed a positive correlation between application of design criteria and student persistence and success (2010, p. 344).

Components of the Early/middle college Model

Both philosophic and practical considerations have influenced the conceptualization and broad contours of early/middle college design. In practice, high school and college leaders have typically conducted additional research into evidence-based best practices to refine a potential early/middle college's curricular focus. Again,

as a practical matter, the results of this analysis supported the selection of those specific program and service elements that best addressed student and community interests. To make informed decisions about these choices, educational leaders and administrators, community and industry representatives, and the K-12 and post-secondary partners engaged in early/middle college development typically examined and applied such strategies as contextualized instruction (including aspects of the career academy movement); dual (or concurrent) enrollment policies, practices, and models; intentional relationship-building (between students and teachers and among early/middle colleges and their host communities); and the wrap-around support services found to promote high school students' participation, persistence, and success in early/middle college programs.

Contextualized instruction and career academies. Perhaps the most influential design criterion for a early/middle college is the choice of a particular programmatic direction or curricular focus. This choice typically involves assessment of multiple options: college preparatory liberal arts coursework; college preparatory courses combined with survey-level content in professional disciplines such as business, nursing, education or engineering; career pathway delivery, with a particular focus on an in-demand occupational or technical program such as information technology, law enforcement, manufacturing, or graphic design; or blended college prep and applied technical content, delivered in a contextualized format (Huffman, 2008). Information from a variety of sources is used to guide decision-making regarding program and curriculum choices: labor market information; business/industry or employer survey data; post-secondary admission, retention, transfer and completion rates; expressions of student interest, from surveys, focus groups, or individual counseling/advising sessions;

and anecdotal information from classroom teachers, parents and family members, or policy/governmental/community leaders (Huffman, 2008; Slade, 2006).

Given the significance of workforce preparation and post-secondary credential gaps in many communities and states, the various occupational-technical curricular design options assumed greater significance. Contextualized learning and career academies are examples of specific curricular strategies selected by early/middle colleges to implement an occupational-technical focus. Both of these approaches link student program choices, curricular content, and co-curricular offerings (such as internships, job shadowing and mentoring) to preparation for a particular job or enrollment in a post-secondary career pathway after graduation (Ausburn & Brown, 2006). Early/middle colleges that use these strategies tended to be a better fit for students who possess applied or kinesthetic learning attributes (Huffman, 2008; Pennington, 2003).

Experts in curriculum and pedagogy have long regarded contextualization as a preferred delivery method for students who learn by doing, or prefer to engage in problem-solving or hands-on activity as the way to grasp meaning and achieve content mastery (Chernus & Fowler, 2010; Prescott, Edling, Loring and the Center for Occupational Research and Development, 1996). In a 2011 briefing document, the Alliance for Excellent Education described contextualized learning as an approach that provided opportunities for high school students to engage in work –and community-based experiences that support their classroom curriculum. These course options reinforce traditional academic content and offer important relevance for those frequently left out of traditional college-readiness programming. Castellano et al. (2007) found that offering all high school students opportunities to participate in age-appropriate experiences that

allow them to apply their learning to real-life experiences promoted better alignment with workplace expectations.

Career academies are one of the most prominent applications of contextualized instructional delivery in the early/middle college context. This curricular option combines the concepts of cohort instruction, small learning communities, and contextualized delivery to develop a highly focused occupational exploration and career pathway option for early/middle college students (Webb & Mayka, 2011). Participating students generally progress through their coursework together as a cohort, building the inter-personal relationships with teachers and classmates essential to retention and success at the same time that they acquire technical skills related to a specific occupation and hone their general education competencies in reading, oral and written communication, and mathematics (Alliance for Excellent Education, 2011; Ward & Vargas, 2011).

Career academy program pathways usually are broader than a single occupational choice (e.g. health care, as opposed to nursing or laboratory technology). The approach also tends to reflect a significant degree of involvement by businesses and industries in curriculum development and establishment of workplace skill expectations for particular jobs and occupational sectors (Ward & Vargas, 2011). Business/industry participation can take many forms, from offering real-life laboratories and work settings for internships and job shadowing programs, to providing adults who hold the degrees and credentials that the high school students are considering as tutors, mentors, or internship supervisors (Ward & Vargas, 2011).

Finally, Mojkowski and Washor (2007) suggested that by increasing rigor,

relevance and industry-based relationships within contextualized programs, greater levels of student success and preparation for the workplace should occur. For this to happen, the contextualized approach should include creation of comprehensive and coherent programs of study; personalized instruction that reflects strengthened ties to real-world learning; contextualized delivery and occupational exploration as a seamless pathway from high school to college (Mojkowski & Washor, 2007).

Mojkowski and Washor's analysis is also a foundational element of the early/middle college's approach to dual (or concurrent) enrollment. In related studies, various researchers similarly asserted that contextualized learning and career academies must embody intellectual rigor as well as occupational relevance in order for the programs and courses offered within these approaches to be legitimately considered as part of dual or concurrent enrollment arrangements with the early/middle college's post-secondary partner (Edwards & Hughes, 2011; Edwards, Hughes, & Weisberg, 2011). Providing high school students with the opportunity to explore a particular job or occupational pathway while acquiring college credit for the course became the predominant feature of the early/middle colleges that emerged within the context of the workforce preparation option for the institution's mission and purpose (Castellano et al., 2007).

Dual (or concurrent) enrollment. In 2005, researchers at the Community College Research Center (CCRC) at Columbia University summarized the research and practice findings from multiple case studies that examined effective pathways into college for high school students from diverse socio-economic backgrounds with a variety of readiness levels (Hughes et al. 2005). Their research specifically included dual

enrollment and early/middle college initiatives (Hughes, Karp, Fermin et al., 2005).

Perhaps most importantly, the research focused on the significance of credit-based

transition programs for high school students with middle- and low-achievement levels,

with a clear finding that the characteristics of credit-based transition programs (CBTP's)

positively impacted high school graduation and post-secondary participation rates for

students that participated in such programs.

A subsequent CCRC study examined dual enrollment strategies at eight locations

in the state of California (Edwards et al., 2011). The CCRC researchers found that

authenticity of experience and integrated student supports are essential to a successful

dual enrollment model. In addition, six program features were identified to guide

subsequent dual/concurrent enrollment program development: location of classes

(preferably, on the college campus); instructor type (college teachers could work with

high school students, assuming the teachers received adequate professional

development); course offerings (a mix of general education, college/study skills, and

career-technical courses was found desirable); student mix (blending dual enrollment

students in classes with regular college students was suggested); type of credit (allowing

students to achieve both high school and college credit was found to save money and

time); and timing of courses (preferably, during the regular school day to alleviate

transportation and authenticity concerns) (Edwards et al., 2011). This report

demonstrated the crucial interrelationship between implementation of the core

early/middle college design elements and the design of an effective dual/concurrent

enrollment option.

Researchers subsequently developed a specific set of design elements to shape

delivery of dual/concurrent enrollment programs. Prepared for the California Career

Academy Support Network (CASN), this report offered recommendations for design and

implementation of successful dual enrollment programs (Edwards et al. 2011). With

comprehensive definitions, implementation criteria, and measurement options, this report

provided a practical guidebook for use by both secondary and post-secondary

practitioners. The definition of dual enrollment ('students are enrolled in a college course,

completing assignments [that] normally would be completed as part of the course,

receiving a final grade on a college transcript that looks like any other college student's

transcript'; p. 1) is especially useful, and the design criteria (establishing a partnership;

identifying and analyzing pertinent regulations; selecting dual enrollment courses;

determining course logistics [where, when, who]; assessing costs; establishing

supplemental activities; developing action plans to promote and sustain dual enrollment)

are particularly descriptive.

When designed and delivered with the necessary rigor and in alignment with post-

secondary degree requirements, dual/concurrent enrollment programs specifically address

the college readiness concerns that served as a primary rationale for the early/middle

college (Foster, 2010; Ward & Vargas, 2011). Students who successfully complete

dual/concurrent enrollment courses accumulate college credits, permitting them to get a

'jump start' on their college career. This opportunity builds confidence and self-esteem,

helping the student to see that a college degree is more than a possibility; it becomes a

reality (Ward & Vargas, 2011). Olsen (2010) wrote eloquently about the impact that

college credit accumulation while enrolled in early/middle college has on students,

especially those from low-or middle-income households. The opportunity to acquire

college credits at reduced cost while in high school is a definite advantage for students from families of limited means for whom college costs are frequently an insurmountable barrier to enrollment (Edmunds et al., 2010).

Although dual/concurrent enrollment programs represent an important bridge from high school to college, they do not fully eliminate the policy or practice barriers that students who enroll in early/middle college programs frequently confront. Developers of the first early/middle colleges confronted the affective barriers to college participation that many students face: diminished confidence levels; low self-esteem; the absence of hope for the future; and the consequences of life in poverty, or the impact of racial, social or cultural bias in the student's home, school or community experience (Olsen, 2010). To address these crucial student concerns, researchers and practitioners have emphasized the importance of building positive, affirming relationships among students and adults as a defining characteristic of the early/middle college model.

The significance of relationship building, especially between teachers and students. A 2006 study by Jordan, Cavaluzzo and Corrallo examined five early college programs delivered on college campuses. Using a case study methodology, the authors explored criteria that made dual-enrollment based early college designs effective and replicable. The specific criteria that appeared to contribute to both student and delivery model success included location on a community college campus (described as *power of the site*); sustained and caring relationships between staff and students; and student services and co-curricular activities that connected students to exploration of various career possibilities (Jordan et al., 2006).

An intentional focus on relationship building became a core principle for

early/middle colleges that took their college readiness mission seriously. This

relationship building activity took many forms: teacher-student; student-staff; student-

mentor; early/middle college – community; early/middle college – business/industry, for

example. The unifying theme in all of these possible pairings is a sense of purpose

combined with a direct connection to a student's chosen program of study at the

early/middle college. In other words, these relationships did not come about by chance or

serendipity; rather, they were intentional pairings of individuals and entities that could

positively influence the student's enrollment, academic performance and overall

satisfaction with the early/middle college experience (Berger et al., 2010).

In a 2011 case study assessment of one of North Carolina's early college high

schools (ECH), researchers explored the relevance of a caring philosophy in the design of

reform-based small learning communities intended to promote student success (Edmunds

et al., 2011). Although the small sample size for the case study tends to mitigate its

overall impact, the researchers did find that the ECH model resulted in more caring

relationships between students and teachers. Notably, the authors also found that the

ECH design promoted improved continuity and support between the ECH and its post-

secondary sponsor. In addition to the analysis of the positive impacts inherent in the

ECH *caring philosophy* approach, the study also described potential barriers to the

advancement of a relationship-based model. These barriers might include testing

pressures; the inherent dichotomy in charting a new course for curriculum and instruction

within established administrative parameters; and incomplete professional development

modules geared to the unique needs of teachers in the ECH setting (Edmunds et al., 2011;

Slade, 2006).

The various early/middle college evaluation studies completed for the Gates Foundation also documented the positive impact and design significance of relationship building (American Institutes for Research and SRI International, 2005 – 2009). These evaluations clearly identify relationship building as a key variable in the determination of college readiness, individual student achievement, and determination of the overall effectiveness of the early/middle college model. Simply put, for an early/middle college to succeed in its mission—whether measured from an individual student or an overall institutional perspective—it appears to be crucially important that the interpersonal and institutional relationships that form the foundation of the delivery model receive thoughtful, purposeful consideration and analysis as part of the institution's comprehensive student support services structure (American Institutes for Research and SRI International, 2009; Edmunds et al., 2011; Slade, 2006).

Wrap-around support services. The design and implementation of related academic and student support services within the early/middle college bears a close philosophical and practical relationship to student retention research and practice within contemporary community colleges. This area of practice is distinguished by a dual focus on comprehensiveness (addressing students' academic, personal, financial, and emotional needs) and ease of access (frequently typified by single point of contact, one stop shop, or cross-functional delivery approaches) (Adelman, 2006). These post-secondary influences on the early/middle college framework resulted in a delivery concept that is referred to as wrap-around service, to denote the holistic and all-encompassing nature of services offered to the early/middle college student (Goodman & King-Simms, 2005; Hughes et al., 2005; Purnell & Blank, 2004; Witt, 2006).

Born (2006) described the cultural and non-academic supports necessary to deliver effective middle college/early college programming at two locations, La Guardia Community College in New York City, and Harbor Teachers Preparation Academy in California. Born found that for early/middle college students to succeed at both locations, careful attention was paid to counseling and advising, mentoring, and student-teacher interactions. Acknowledging the differences in culture within the high school and college settings was found to be equally significant. In particular, the La Guardia example suggested that the quality of the teacher-student interactions was the key determinant of academic success, persistence and retention, and overall completion.

By clearly and effectively defining key student-centered design criteria for early/middle college student support services, Born provided a clear foundation for the wrap-around service approach and created a useful content framework for practitioners to follow when determining the nature and scope of the student services program mix. The 2009 Gates Foundation evaluation also substantiated the relevance and value of the wrap-around delivery model in the early/middle college setting (American Institutes for Research and SRI International, 2009).

The rationale, purpose and design of the early/middle college, both in its early adopter locations and its more recent iterations, has been described as a contemporary expression of a renaissance in career-technical education (Castellano et al., 2007; Huffman, 2008); an elemental high school reform and college readiness strategy (Huffman, 2008; Jordan et al., 2006; Kaniuka & Vickers, 2010; Kisker, 2006); and an essential tool in the battle to eliminate the persistent race- and income-based student achievement and credential gaps that contribute to economic disparities and diminished

hope for the future in many of the nation's communities, regions and states (Bruce, 2007; Huffman, 2008; Singleton, 2011; Slade, 2006).

Three states—North Carolina, California and Texas—have created broad strategies that expand the number, type and size of early/middle colleges throughout each state. These strategies build on the history of the early/middle college movement and use a core principles/design element approach to address the broader educational and societal challenges of occupational and workforce readiness; student-centered institutional change and reform; and elimination of race- and income-based barriers to student achievement, college participation, and individual—as well as community—prosperity.

State-level Strategy Development

Since most early/middle colleges emerged as a community-based response to concerns about high school graduation rates, college participation levels, student achievement and workforce preparation gaps, and chronic levels of poverty (Gates, 2009; Jobs for the Future, 2008; Singleton, 2011; Slade, 2006), they also have been regarded as a strategy option within broader policy development and reform agendas. Three states have strategically used the early/middle college model to comprehensively address policy concerns regarding education, workforce development, and economic justice on a statewide basis: North Carolina, California and Texas.

North Carolina was the first state to develop a comprehensive early/middle college strategy that was directly related to broad education, workforce, and economic competitiveness policy priorities. In 2003 the state launched its conceptual framework and logic model for the North Carolina New Schools Project (NCNSP) (Edmunds et al., 2011; Slade, 2006). A focal point of this initiative was the establishment of more than

seventy early/middle college high schools in urban, suburban and rural locations across North Carolina. All of these schools followed the NCNSP design criteria, although with subtle variations that reflected the unique community and student needs at the site (Edmunds et al., 2011; Le & Frankfort, 2011). For example, some early/middle colleges focused on career-technical programmatic areas (such as STEM) while others took a more traditional college-preparatory approach (Le & Frankfort, 2011).

The pace of early/middle college development within the NCNSP was aided greatly by a significant investment of resources by the Gates Foundation in the state of North Carolina. This broad investment permitted the state to build the strategy to scale, and facilitated research-based evaluation and inquiry as part of the overall assessment of the Foundation's national early/middle college strategy (Le & Frankfort, 2011; Singleton, 2011). Focused scholarly research and reviews of individual North Carolina early/middle colleges also produced preliminary data that tended to validate relatively consistent application of the NCNSP design criteria at the local level, as well as data that substantiated a positive impact on student satisfaction, high school graduation rates, and the intent to enroll in college in a related major or program of study (Bruce, 2007; Singleton, 2011; Slade, 2006;).

Jobs for the Future also examined the efficacy of the North Carolina early/middle college expansion effort. Researchers studied the effort from both quantitative and qualitative perspectives, and concluded that the early evidence supported the positive effects of the early/middle college, whether measured from either a student impact or a community/state return on investment perspective (Le & Frankfort, 2011; Webb & Mayka, 2011). In particular, these analyses offered valuable insights into student

motivation and reactions to their early/middle college experiences. The qualitative study that collected student focus group and interview data demonstrated—in the students' own words—the power and influence that the school, its teachers and staff, and the various community partners (business/industry mentors, for example) had on the students' decision to enroll in the early/middle college, select a program of study, persist to graduation, and consider enrolling in college (Webb & Mayka, 2011).

North Carolina's NCNSP initiative is notable for its coordinated, statewide approach to early/middle college expansion as a strategy to secure improvement and innovation in three of the state's priority policy areas: education, workforce preparation, and economic security and competitiveness. The strategy has matured to the level of on-going implementation and continuous improvement activity (Edmunds et al., 2011), and could serve as a model for other states contemplating similarly purposeful and coordinated strategies for policy reform and innovation.

In California, policy-makers and educational leaders are in the midst of a major strategic shift in educational, workforce and economic competitiveness policy that uses early/middle college expansion and dual/concurrent enrollment as a strategy for innovation and reform. As the state examined strategies for preparing more students for college and career, California policy-makers considered many of the factors supporting the design criteria implemented in North Carolina—but with a notable addition. Acknowledging the rich cultural and ethnic diversity in California, policy reform advocates insisted that any new approaches must embrace emerging practices that promoted college/career readiness for students of color from low-income backgrounds (Education Trust – West, 2011).

To demonstrate the compelling need for this additional priority, the Education Trust- West audited student high school transcripts to determine enrollment patterns in courses that historically prepared for college admission or work after high school. Through this analysis, they detected numerous practices that presented barriers to student readiness for post-secondary education or career entry (Education Trust – West, 2011). Although the ensuing report criticized initiatives that 'track' students into college or career pathways, efforts that promoted integrated readiness strategies and bridged the transition from high school to college were categorized as effective practices that demonstrated a tendency to 'unlock' the doors to college and career readiness. This timely and provocative report offered an important perspective on the need for strategies to address the intersection between high school reform/redesign work and college/career readiness initiatives.

In 2011, the Alliance for Excellent Education, a national research and advocacy organization devoted to school reform causes, released a report describing promising policy- and practice-based interventions that promoted learner success and elimination of achievement gaps (Alliance for Excellent Education, 2011). The report specifically cited career-academy based early/middle colleges in the greater Los Angeles areas as a leading example of an innovative state/local strategy for college and career readiness. Representing California's Linked Learning Initiative, the early/middle college programs highlighted in this report offered expanded learning opportunities that resulted in more options for high school students to engage in work –and community-based experiences that supported their classroom curriculum, reinforced academic content and offered important relevance for those frequently left out of traditional college-readiness

programming (Alliance for Excellent Education, 2011).

California has received high praise for its purposeful statewide strategy promoting opportunities for all high school students to participate in age-appropriate experiences that allowed them to apply their learning to real-life experiences through a variety of applied learning strategies. These efforts—which featured early/middle colleges as a key component of the policy reform agenda--promoted better alignment with workplace expectations and held out the real promise of increased post-secondary participation and degree/credential acquisition, especially for low-income, minority students.

Reform efforts in the state of Texas paralleled California's variation on the statewide policy approach, placing primary emphasis on use of the early/middle college as a strategy for increased high school completion and college readiness among low-income, minority students. As part of the state's College for All Texans strategy (www.collegefortexans.com) high schools and two-year colleges explored new partnerships that led to creation of new early/middle colleges in urban and rural areas. In urban El Paso and rural Hidalgo, Gates Foundation-funded early/middle colleges were launched, primarily with a college-prep focus that utilized dual/concurrent enrollment, wrap-around services and broad community partnerships that encouraged participating students to acquire enough college credits in their program of study so that they could be awarded an Associate degree at the same time that they graduated from high school (American Institutes for Research & SRI International, 2009; Ward & Vargas, 2011).

Students and their parents—as well as school and community leaders—enthusiastically supported the early/middle college approach in both El Paso and Hidalgo (Nodine, 2011; Vargas & Miller, 2011). Analysts from Jobs for the Future confirmed

this support in 2011 case study of the Hidalgo early college. After interviewing students, parents, teachers, school leaders, and influential community members—and completing a review of initial student performance data—the analysts concluded that the early/middle college was addressing its policy objectives, providing a meaningful and rigorous option for high school programming and college readiness for a low-income, minority population that traditionally did not have high graduation or post-secondary participation rates. Through the use of focused college-prep curriculum, purposeful relationship-building between students and adults, careful deployment of wrap-around support services, and frequent interaction with business and community leaders, Hidalgo showed early signs of considerable promise as a community strategy to eliminate race- and poverty-based achievement gaps (Vargas & Miller, 2011).

Hidalgo and El Paso—along with California's Linked Learning sites and the 71 early/middle colleges in North Carolina—are concrete examples of the powerful outcomes emanating from intentional policy- and practice-based efforts to reform educational delivery in ways that bridge the gap between high school and college. These reform efforts express hope and promise for students who come from families where tradition, economics, culture and language historically presented a barrier to post-secondary enrollment. By grounding these efforts in the utilization of early/middle college design elements developed over a decade-long period of trial and error in locations across the country, these three states are in the vanguard of efforts to eliminate achievement gaps and promote increased individual and community prosperity through students' acquisition of skills and credentials related to existing and emerging workforce needs (Carnevale & Rose, 2011; Carnevale et al., 2010; Pennington, 2003).

Chapter 3 – Methodology

Using a case study methodology, data was collected in three unique Minnesota settings to illustrate the application of the emergent design criteria identified in the review of literature as pertinent to the development of early/middle colleges across the country. This methodology and accompanying analysis supported the definition of the broad themes that serve as a framework for the potential replication of the early/middle college model to other sites in Minnesota. In other words, the case study research method offered a concrete context for developing a discrete package of design criteria, practice guidelines, and implementation strategies that can serve as a replication toolkit for community, K-12, and post-secondary leaders interested in bringing this educational reform strategy to life in various locations across Minnesota.

Research Question

What design practices are most likely to influence successful expansion of the early or middle college approach to other locations in the state of Minnesota?

Defining Characteristics

Careful examination of the design and development of the early/middle college model in Minnesota facilitated the identification of themes, practices and design criteria that support continued expansion of the model to additional locations throughout the state. Use of a case study methodology that is grounded in the researcher's constructivist epistemology produced results that are reliable and verifiable, and oriented towards practical applications as well as further research and study.

This research initiative implemented a case study methodology to examine the distinctive design and implementation criteria and practices in use at the three early/middle college locations identified in Minnesota: the Applied Learning Initiative (ALI) on the Iron Range; Anoka STEP (Secondary Technical Education Program); and the Rochester C-TECH (Career and Technical Education at Heinz) program. At all three locations, the researcher used a combination of interviews and review of archival documents and related materials to elicit information essential to the development of data codes and themes (Creswell, 2013). This information was analyzed to determine broad categorical themes that shaped the identification of core design and implementation practices that can support expanded application of the early/middle college model to additional locations in Minnesota. The resulting analysis therefore assumed the characteristics of an instrumental case study (Yin, 2009).

Rationale

An examination of the history and development of early/middle colleges in Minnesota lends itself well to an instrumental case study methodology (Schultz, 1988). According to Creswell (2013), a multiple (or collective) case study is used to illustrate and illuminate a single issue from different perspectives. Given three different geographic locations and variable timeframes for development of the early/middle college in each community, three distinct studies were completed, with the resulting reports integrated through cross-case analysis in order to produce a comprehensive analysis. This approach is consistent with Yin (2009), who suggests that the multiple case study is grounded in a logic of replication, where the researcher uses identical

processes to ascertain the existence of common variables across different contextual settings.

The analysis of data collected through this methodology was distinguished by its descriptive character, illustrated through identification of distinctive issues or themes that emerged through the study (Creswell, 2013). By intentionally and subsequently using these results to define core design principles for subsequent development of early/middle colleges in Minnesota, the essential character of this instrumental multiple case study analysis was validated (Yin, 2009).

Disclosure of the researcher's epistemological foundations and rationale for the research study directly influences the choice of and design for a collective case study methodology (Creswell, 2013). Using a social constructivist perspective, the combination of interview, focus groups and examination of documents and other archival material facilitated the examination of actual experiences of key individuals engaged in the design of the early/middle college in three Minnesota locations. Moreover, this geographic selection represented a criterion-based sampling that shaped the overall framing of the research design, and guided the selection and order of the interviews and document review (Merriam, 2009).

Approaching this qualitative study from the perspective of an attorney-turned-administrator and scholar, it became clear that the epistomelogical foundation of this research was characterized by philosophical inquiry leading to practical analysis of methodology and approach. Given the enduring impact of this researcher's prior training as a lawyer (a resulting worldview that embraces orderly objectivity, reason and precedent as the foundation for the individual's practical advocacy abilities), it was

important to identify the underpinnings of cogent qualitative analysis that emphasized grounding in a deep examination of epistemology, methodology, and scrutiny of attributes and qualities unique to the researcher. This duality (of philosophical analysis combined with careful consideration of practice implications) served as the core of the research design for this dissertation.

The subject matter for this research study is one that the researcher was intimately familiar with as a practitioner, since Minnesota's first middle college (the Secondary Technical Education Program or STEP) was launched during her tenure as president at Anoka Technical College from 2000-2010. Given this background, there was a clear potential for researcher bias. Techniques for mitigating bias and ensuring trustworthiness are described within the instrumentation section, below.

Thus, this research was conducted with a social constructivist's perspective, a lens that allowed the experience and voices of the participants in the study—the superintendents, college presidents and deans, faculty members and community leaders devoted to the design and implementation of an early/middle college in Anoka, the Iron Range, and Rochester—to take center stage in the analysis. The richness and variability in the ways these individuals described their experiences, and the stories document the unique ways that they have brought this new model into being—emerged as a striking example of people working together to create new forms of knowledge that can be applied to actual individual, school and community needs for expanded career and technical education options. By disclosing the researcher's personal interest and stake in the topic and carefully monitoring how that background and expertise can be best used to shape the contours and specifics of inquiry, there was an honest and careful

acknowledgement that the researcher's personal identity is crucial to the active and creative social construction of new reality through the course of the research design (Guba & Lincoln, 2000).

Research Participants

Since the study focused on the development of three early/middle colleges in the state of Minnesota, the research participants necessarily had a connection to or relationship with one of the three sites: the ALI, Anoka STEP, or Rochester C-TECH. To assure the breadth of perspective needed to define context and variables for each of the emergent design criteria that flow from the review of literature, interview participants were identified based on their demonstrated knowledge or expertise related to at least one (and preferably two or three) of those criteria. In particular, interview participants were asked to comment on external community factors contributing to the need or demand for the early/middle college; instructional design matters, including program selection, curriculum and pedagogy; student support structures; and financial or other operational considerations (Huffmann, 2011; Singleton, 2011).

In terms of categories or types of participants, the following individuals (or positions) at each of the early/middle college sites in Minnesota were contacted and scheduled for a structured, 90-minute interview: site-based administrators, both from the high school and post-secondary members of the delivery partnership, as well as a faculty member teaching in the early/middle college program; the partnering school district's superintendent and a curriculum/instruction specialist knowledgeable about career-technical education issues and college readiness programming; from the partner post-secondary institution, the president or designee, as well as admissions and student support

specialists and a faculty member teaching in the early/middle college program; and local community leaders that offered a unique perspective on the design, development and delivery of the early/middle college, particularly with regard to employer or industry need and expectations, and the broad community interests in student persistence in high school and enrollment in college.

Data Collection Procedures

Data for this study was collected through a combination of structured personal interviews with study participants and examination of pertinent archival documentation. Both the personal interviews and document review were guided by a series of questions that related to the emergent practice themes identified in the review of literature: community or employer interest and need; instructional design; student support structures; and financial/operational considerations (Kisker, 2006).

Field research began in May 2013, after proposal approval by the doctoral committee and satisfactory completion of the internal IRB processes at MSU-Mankato. Review of archival and historical documentation took place during site visits to each location during June and July 2013. Individual participant interviews were completed during the three-month period between May and July 2013. Interview transcription and document review summaries were completed on a continuous basis during this time period. Coding and thematic analysis within each case study was undertaken during summer 2013 prior to the completion of the cross-case analysis.

Instrumentation. Structured interviews were conducted in-person or by conference call and were approximately ninety minutes in length, in most cases. The interviews were recorded on an iPad using the iRecorder application. The original

recordings will be retained electronically and individual written transcripts will be prepared for each participant interview. Both electronic and transcription data are retained in accordance with the storage and retrieval procedures promulgated by the Internal Review Board (IRB) at Minnesota State University- Mankato.

Historical and archival documents were obtained from several sources: from the investigator's personal files from service as president of Anoka Technical College; through copies of pertinent documents provided by interview participants during the course of their discussions with the investigator; and through inspection of official files maintained at the three study locations (Anoka STEP; the Northeast Higher Education District's ALI; and the Rochester CTECH program). Copies of these materials are retained in accordance with the data storage and retrieval procedures promulgated by the MSU-M IRB.

Once again, it is important to note that unexamined individual bias or predisposition may present a reason why any research design may run afoul of the academy's general expectations for trustworthiness, rigor and transferability (Creswell, 2013; Merriam, 2009). In this case, the researcher routinely was required to step back and think carefully about *how she will know* what early/middle college design elements tended to support the replicability of the model. Specifically, the framing and construction of interview questions and archival/document review was undertaken in consultation with the dissertation advisor in order to build credibility and mitigate the bias the researcher brings to the exercise as a result of her previous professional experiences.

Data Analysis

The information collected in the course of this study was analyzed in accordance with commonly accepted techniques for qualitative research in the field of education (Creswell, 2013). Separate files were established (both in hard copy and electronically) for each of the three case study sites. Interview transcripts and document review summaries were added to each file on a cumulative basis. To build the descriptive narrative for each of the case study sites, transcripts and summaries were examined on a continuous basis, creating a generative approach to the description of data into codes (Creswell, 2013; Merriam, 2009; Yin, 2008). Since this study involved examination of multiple cases, care was taken to build separate case records for each site (Yin, 2008). The examination and review of the data included in each case study record formed the comprehensive basis for in-depth analysis that served as the predicate to preparation of the emergent themes delineated in Chapter 4.

Within each case study database, information was edited for readability and accuracy; redundancies clarified; and the component parts (post-secondary and K-12 perspectives; internal and external constituent contributions; academic, student support, and financial/operational considerations) sorted and organized in an appropriate topical or chronological manner (Merriam, 2009). Once this organizational effort was completed for each site, the process of intensive examination and analysis to identify primary themes within the case was initiated. In a multiple-part case study, it is crucial to carefully organize and sequence the data analysis to initially complete a comprehensive thematic review of the data within each case (Lightfoot, 1983; Merriam, 2009). This

categorical aggregation was then used to establish themes and patterns, both at the within-case level and as part of the cumulative cross-case analysis (Creswell, 2013).

A within-case analysis was completed separately for the ALI, Anoka STEP, and Rochester C-TECH programs. Emphasis was placed on learning as much as possible about the contextual variables that influenced development of the early/middle college at each location, as well as identification of emerging design themes in such areas as instructional programs, curriculum and pedagogy; student support services and structures; and related financial and operational procedures. The results of the within-case analysis are summarized separately in Chapter 4 for each of the three sites.

Cross-case analysis techniques were then utilized to inductively identify common themes, which were translated into common design criteria consistent with the findings of the literature review (Merriam, 2009). This conceptualization of the data across cases supports the emerging theory of practice, which then can be utilized in future situations to expand the early/middle college strategy at other locations across the state of Minnesota. Careful alignment of the coding categories within each of the separate case studies with the broad topical areas identified within the literature review established the data necessary for definition of key themes and contours during the cross-case analysis phase of the study. Completion of this level of analysis yielded the results that form the foundation of the emergent themes delineated in Chapter 4.

Chapter IV – Emergent Themes

In this chapter the three individual case studies—Anoka STEP, the Northeast Higher Education District Applied Learning Initiative (ALI), and the Rochester CTECH—will be separately analyzed to examine the themes emerging from the research conducted at each of the sites. A summative cross-case analysis concludes this chapter and discusses the findings, practices and themes that occur within each separate case study that may be considered as emergent indices of common cultural or structural design elements impacting the future development of the early/middle college model at other locations in the state of Minnesota.

The Anoka Secondary Technical Education Program (STEP)

Anoka STEP is a early/middle college serving over 2,400 students annually throughout the Anoka-Hennepin school district. Anoka-Hennepin is the largest school district in the state of Minnesota, serving learners from several suburban communities that represent the growing racial, cultural and socio-economic diversity of the northwest Twin Cities metropolitan region. Since its inception in 2000, the STEP early/middle college model has been delivered through a primary partnership with Anoka Technical College, a member of the Minnesota State Colleges and Universities (MnSCU) system. Other MnSCU institutions (for example, Anoka-Ramsey Community College and Hennepin Technical College) have intermittently participated in the delivery of educational programs and services during STEP's thirteen-year existence.

High school juniors and seniors participate on a voluntary basis in both career and technical education and general education courses at STEP, co-located on the Anoka Technical College campus in a separate building. Students participate in the program on

either a full- or part-time basis while maintaining their primary enrollment at one of the Anoka-Hennepin district's five high schools.   Preserving primary enrollment at an existing high school is a critical design element that helped secure broad support from throughout the district. This element permitted the home high schools to maintain student enrollment levels needed to sustain staffing models in all areas but career/technical education, where the emergence of the STEP model facilitated a pooling of secondary-level staffing and instructional equipment resources from throughout the district.

The district provides bus transportation to the STEP site for participating students, although many choose to drive from their home high school. Administrators and faculty serving at STEP are employees of the Anoka-Hennepin district, and their terms and conditions of employment (as well as teaching or administrative credential requirements) are established by district policies and procedures, as well as applicable collective bargaining agreements or state-level policies and rules (e.g. the credentialing standards promulgated by the Minnesota Department of Education).

Although the Anoka-Hennepin school district and Anoka Technical College had worked together for many years to offer collaborative career and technical programs for high school students, by the late 1990s the scope and quality of these programs across the district had declined precipitously. Specific CTE program offerings at the district's five high schools were substantially reduced over time, and as a consequence the resources available to support the partnership with the technical college were reduced.   Moreover, during the 1980s and 1990s a series of program, budget and facility challenges within the technical college also placed considerable pressure on the long-standing CTE partnership.

By 1999 it was unclear if either the school district or the college possessed the resources, space and commitment necessary to support the partnership. The future of the partnership was directly related to the viability of the technical college, which was placed in jeopardy in fall, 1999 when the MnSCU Board of Trustees voted to close the college.

With this action, the stage was set for the development of a new concept for serving the students, families and employers of the Anoka region: the Secondary Technical Education Program (or STEP). Labeled from its inception as *middle place* for students needing additional support to navigate the transition from high school to college to employment or further study, the emerging framework served as the rationale for saving the technical college as well as a foundational educational concept for more effectively meeting the needs of high school age applied learners and leading employers throughout the northwest metropolitan region.

An examination of the key themes that emerged from the analysis of the data collected in this case study suggests that there are five elements that influenced the development of the STEP structural model and its culture--not only within the school but also as it resonates with the broader community that the early/middle college serves. Each of these five themes—the significance of the decision to close the technical college as the impetus for development of the conceptual early/middle college model; the importance of community engagement in the design and on-going sustainability of the STEP program; focusing curriculum development and pedagogy on optimal support for *students in the middle*; promoting college and career readiness for all learners; and ensuring structural integration of site leadership—are separately examined to illustrate their relevance to the overall identification of structural and cultural elements that appear

to influence the effective design and implementation of an early/middle college in Minnesota. Within this analysis, congruence (or divergence) from the commonly identified early/middle college design elements as identified through the review of literature will also be noted.

The STEP model emerged from an extraneous decision to close the partner technical college. Although the steady decline in support for high school-based CTE programming had been taking place in the Anoka-Hennepin schools for more than a decade, the decision by the MnSCU Board of Trustees in 1999 to close Anoka Technical College was cited by all of the individuals interviewed during this research study as the predominant factor prompting the development of the STEP early/middle college concept in the Anoka location. Examination of the contemporary documentation (news reports, meeting agendas, memoranda and correspondence) confirms the causal connection between this extraneous action by the MnSCU board and the subsequent work by school district and community leaders to develop an alternative concept that would not only preserve the CTE-based partnership between the school district and the technical college but expand hands-on learning opportunities for more students throughout the region.

Although contemporary reports list a number of factors contributing to the 1999 decision to close Anoka Technical College, two primary topics appear to have received the most attention by the MnSCU governing board: the declining quality and safety of the college's physical plant and building structure, coupled with a perceived lack of distinctiveness (or niche quality) in its academic programming. Housed in a former sheet-metal fabrication plant, the college was a retrofitted industrial facility that lacked the heating/cooling, electrical and infrastructure elements necessary to support

educational programming involving thousands of students, faculty and staff on site each day. The college had a history of roof-related water leakage issues, with evidence of mold development throughout the building and resulting negative air-quality reports. Aesthetically the college was considered inadequate for instructional and student support needs, with both classroom and lab functions housed in space more suited to manufacturing or other industrial uses.

The inadequacy of the physical space directly contributed to the college's challenges in terms of programmatic development, enrollment growth, and overall fulfillment of its mission of education for employment. Poorly designed spaces placed constraints on development and growth of such typical career and technical programs as machine trades, practical nursing, electrician and automotive repair. Additionally, the absence of suitable lab facilities prevented the college from developing programs in emerging areas (such as information technology) or expanding unique offerings such as firefighter training, occupational therapy assistant, physical therapy assistant or surgical technology and phlebotomy. Moreover, the space constraints facing the campus relegated the career and technical education partnership programs with the Anoka-Hennepin school district to a small, physically substandard wing in the back corner of the campus that over time had experienced some of the most significant water damage from the leaky college roof, as well as the related concerns about overall air quality and building safety.

This combination of physical plant and programmatic challenges at Anoka Technical College was viewed in sharp contrast to the other MnSCU institutions located in the northwest metropolitan region in the late 1990s. In addition to the technical

college at the Anoka site, MnSCU operated three other two-year colleges in the northwest quadrant at this time: Anoka-Ramsey Community College (with campuses in Coon Rapids and Cambridge); Hennepin Technical College (in Brooklyn Park); and North Hennepin Community College (Brooklyn Center). Board meeting minutes from the relevant time period reflect an on-going discussion about the potential for programmatic duplication presented by four two-year colleges operating in a nine-mile radius; as an example, all four of the colleges' academic catalogs in effect at the time listed programs in nursing, business, computer science/technology, and general education/general studies. The perceived program overlap—or put differently, the availability of courses offered at the Anoka site at other campuses within a reasonable driving distance—coupled with the absence of plans to expand programming unique to the Anoka college prompted fundamental questions at the board and MnSCU senior management level about the long-term viability of the campus.

These questions—programmatic viability, access to comparable post-secondary alternatives in the region, and an inadequate physical plant—were placed before the MnSCU trustees for consideration at various times throughout the mid-1990s, but only coalesced as a specific action item in the 1999-2000 school year. This was a bonding year, meaning that the MnSCU campuses, the system's senior management and the governing board were preparing a capital investment list to submit to the Minnesota legislature and governor for approval of funds to make needed facility improvements at the colleges and universities throughout the system.

As part of this process, the Anoka Technical College president proposed a $20 million capital project to resolve the physical plant issues by construction of a new

college campus in the neighboring city of Ramsey, also in Anoka County. The debate

and proposed action that ensued on this request served as the context for the Board-level

debate about the future of the technical college in Anoka. In January 2000 MnSCU

Chancellor Morris J. Anderson recommended to the board that the Anoka campus be

closed in lieu of adding the proposed $20 million bonding request to the system's capital

improvement list; and after multiple hearings, public comment and extended debate, the

Board voted to close the Anoka college.

Not surprisingly, the decision to close the campus rather than make the

investment in a new site or the improvement of the physical plant did not sit well with

local political, business and education leaders in the Anoka region. A broad grassroots

campaign was mobilized to undo the Board's decision at the Minnesota Legislature. This

lengthy process created a new opportunity for school district and community leaders to

define, propose and secure approval for a novel idea—the STEP initiative, or middle

college—that provided a concrete response to the MnSCU Board's concerns about the

future vitality of the technical college and offered a blueprint for a new educational

design to better serve the academic needs and interests of applied, kinesthetic learners

throughout the Anoka-Hennepin school district.

The final resolution of the MnSCU Board of Trustees' decision to close the

technical college was a line item in the 2000 bonding bill that provided $12.5 million to

renovate Anoka Technical College and an additional $6.5 million to support a lease-

purchase arrangement between MnSCU, Anoka County, and the Anoka-Hennepin school

district to finance the construction of a building to house an early/middle college on the

technical college campus. This compromise was the result of a well-organized

community campaign to define, champion and secure an early/middle college educational design that was influenced both by the development of this model at other locations across the nation and a very specific interest in addressing the academic and work readiness needs of students and their families, as well as key employers and industries located in the Anoka region. The depth and breadth of community engagement in the shaping of the model—and its eventual implementation—is a key attribute that impacted not only the structure of the STEP design, but the unique culture that evolved within its walls to impact not only students, faculty and staff but the broader community at large.

The significance of initial and on-going community engagement and leadership in the design and operation of the early/middle college. Throughout the mid- to late 1990s, Anoka's community and school district leaders—elected officials, chamber of commerce members, school board members and superintendent's staff—objected to the MnSCU Board of Trustees' on-going analysis of the future viability of technical education in the region. Contemporary news accounts and correspondence document a palpable degree of impatience and frustration regarding the adequacy and relevance of the Board's analysis. These reports also reveal a sense of anger that the Board of Trustees either neglected or ignored the community's insistence upon the continued availability of career and technical education programming at both the secondary and post-secondary levels in Anoka as fundamental to the continued economic and social vitality of the region.

As the 2000 legislative session unfolded, community and school district leaders initiated efforts to define a solution that would revive the long-standing, CTE-based partnership between Anoka Technical College and the Anoka-Hennepin school district,

establishing it as the foundation for a new middle college model that would serve high school juniors and seniors from throughout the district. Although school district leadership possessed the research and conceptualization skills necessary to shape this model—notably, in the superintendent and the director of career and technical education—the allies needed to broadly communicate these ideas and build the broad coalition among educational, political and business leaders needed to secure legislative support for the middle college proposal came from throughout the Anoka community. Key leaders that emerged to champion the middle college idea included a freshman legislator (who served as the proposal's sponsor in the House of Representatives); the executive director of the local chamber of commerce; the chair of the county board and a retired county administrator; the founding president of the technical college; and the chief executive officer of the regional electrical utility. These individuals eagerly supported the middle college proposal crafted by the school district.

As originally proposed, the middle college (the name 'STEP' would emerge later in the legislative process) represented a both an educational design concept and a physical location; it was conceived as a close collaboration between secondary and post-secondary education whereby students who learned by doing (commonly referred to as applied or kinesthetic learners) could explore high-skill technical careers deemed in-demand throughout the local workforce. This exploratory path would allow students to complete high school graduation requirements while taking rigorous career and technical courses, which would be offered for college credit in a dual or concurrent enrollment model.

Close alignment between the curriculum and the workforce preparation expectations of local employers and industry sectors was also considered of primary importance. Representatives from the Anoka County workforce center offered an essential perspective, sharing labor market and wage data needed to document the existing and emerging workforce development needs of the region that the STEP model would be deployed to address. Additionally, chief executives, human resource directors and line supervisors from leading employers such as MATE Precision Tool, Hoffman Industries and CONNEXUS Energy played leading roles in the conceptualization process, insisting upon opportunities for high school students to engage with college faculty and employer representatives through apprenticeship or internship experiences. Establishing a close alignment with business and industry expectations aligns fully with the early/middle college design frameworks that existed or were emerging at the time in other locations across the country (Born, 2006; Vargas & Miller, 2011).

The middle college designers in Anoka considered a close partnership between the K-12 district and the technical college to be an essential structural element of the new model. Given the curricular challenges facing both partners at the time, the ability to share resources (including physical space, equipment and personnel) would build a common capacity to deliver career and technical instruction, addressing the limitations that each partner faced separately. Specifically, the proposal to locate STEP in a newly-constructed facility on the technical college campus would offer both partners state-of-the-art classrooms, as well as shared access to the college's lab space and equipment.

Structurally, the proposed middle college would represent a sophisticated operating partnership between two separate entities. Delivery of educational programs

and services depended on mutual trust and collaboration. To secure support from key legislative leaders and the MnSCU system, preservation of institutional autonomy within the collaborative structural design was deemed essential. The final structural design approved by the Legislature and signed into law by Governor Jesse Ventura required operational agreements between MnSCU and the Anoka-Hennepin district, with the additional requirement that Anoka County serve as the financing entity for the sale of revenue bonds necessary to finance construction of the new STEP facility on the college campus. The revenue bonds would be repaid over time through a lease-purchase arrangement between the county and the school district, allowing construction of the facility to begin on MnSCU land at the college campus in fall, 2001.

Interviews with community and school district leaders confirmed that the broad support for the STEP proposal during 1999-2000 resulted from its purposeful alignment with the region's workforce and economic development needs. Several interviewees described the predominant blue-collar, industrial, manufacturing-based economy of Anoka County, in existence both at the time of the proposed technical college closure and throughout the early years of the implementation of the STEP model. These leaders viewed the emergence of STEP as an intentional strategy to align educational programming at both the secondary and post-secondary levels with the existing and emerging workforce needs of the region. By focusing on learners who would gravitate to technical jobs and careers, the STEP model—like its counterparts in other states--would help build a pipeline from high school to the technical college to the shops, plants and offices in the Anoka region.

At the time that the STEP model emerged in the Anoka community, there was no other early/middle college (or purposeful educational pipeline structures) extant in Minnesota. The novelty of this idea appealed to community and business leaders, who viewed the proposal as a way to establish a positive reputation and dominant educational leadership position for the Anoka region. Several individuals interviewed during the research phase of this study remarked upon the inherently innovative character of the STEP proposal, and its potential for establishing their community at the forefront of a positive movement for educational change in the state of Minnesota. For a region that often felt left out or left behind when recognition for educational innovation went elsewhere in the Twin Cities, the emergence of the early/middle college in Anoka represented an important opportunity to reposition the community and build a culture that supported educational innovation, better alignment between education and employers, and tailored learning models for middle-class and low-income families that placed premium value on education for employment and a career.

The successful resolution of the college closure challenge—and the establishment of a new way to serve applied learners—built community spirit and pride in the accomplishments of students, schools and employers throughout the Anoka region. This enduring sense of pride—in students, in schools, in the community, in STEP—is a notable cultural consequence of the emergence of the early/middle college in the Anoka region, resonating repeatedly throughout the analysis of the student population served by this design as well as the structural contours of the instructional and student support framework.

Serving *students in the middle*. Several of the individuals interviewed during the research phase of this study described the student cohort that STEP was designed to serve. A college faculty member was especially evocative in his description of the high school students that he worked with in the machine shop:

> [It] would be those students that are eager to learn, haven't really got their niche. You understand that…in math, some students can't see that in a book but once it's applied or applied math, once they see the value of it, it makes more sense. These students, they sit in the classroom and they don't see any rationale why I want to know how tall that tree is or how far this is away from there. But once they start figuring out, "If I'm going to make this part I need to cut it here, I need it to come to there," it starts to click and it starts to make sense. They start seeing value, and that value pays off.

Other interviewees used the phrase *students in the middle* to refer to the cohort of learners that gravitated towards STEP once its doors were opened in the fall of 2002. This concept evoked several connotations: students in the middle of the pack academically, based upon previous high school performance (measured either by grade point average; class rank; or standardized test scores); students from households where the income level tended to be at the middle to low end of the economic spectrum for the Twin Cities metropolitan region; and students whose emotional, intellectual and social maturity was still evolving in mid-adolescence, leaving childhood behind but not yet at the level of young adulthood.

These descriptive terms echo the language used by STEP's founders as they reflected on the nature of the student body that they designed the new middle college

model to serve. The former director of career and technical education for the Anoka-Hennepin district was instrumental in working with district leaders, community members and politicians to create the original STEP framework, and served as the school's first principal. She recalled that the founders wanted STEP to serve students that learned best by doing, who were not confident in their learning and needed a lot of encouragement because they hadn't gotten that in school or at home because they hadn't necessarily been successful in school: "We wanted to serve those who didn't have goals for anything other than just maybe getting a job and making minimum wage or having minimal career goals. Our student in the middle in that lower socio-economic group was never encouraged to consider PSEO, or think about going on to college when they're in high school."

From a post-secondary perspective, the students served by STEP closely resembled the first-generation, low-income, increasingly racially and culturally diverse population that was enrolling at Anoka Technical College in record numbers from 2001 onwards. Like their high school counterparts, many of the college students had to work while enrolled, and increasingly were among the first members of their family to seek a college degree. The technical college—with its emphasis on hands-on instruction that prepared students for jobs and careers—was more satisfying, and aligned better with their personal and family goals. This cultural focus—education for employment for working-class students who were seeking a second chance—was appealing to STEP's leaders, who sought a similar environment to motivate high school age applied learners to explore career choices that would help them discover their full potential as learners, workers and citizens.

According to the college's former vice president, although the average age of the student body at the technical college was 27.8, many of the students had tried some form of college enrollment right after graduating from high school, but did not find that the academic and social focus met their needs. Moreover, many technical college students were high school dropouts whose pathway to higher education came through GED testing programs offered by adult basic education. For these students, the typical high school experience did not meet their needs—they were hands-on, applied learners who learned best by doing, and were motivated more by the desire to get a job after high school than prepare for college. Leaving high school without a diploma left them at a significant hiring disadvantage remedied later by returning to the technical college.

The college vice president and STEP principal reflected that many of these college students had high school counterparts at STEP—hands-on learners who did not fit well into their classes in their home high school, and for whom the new program offered a new and essential option to ensure their graduation from high school and preparation for a career or for college. Like the early/middle college programs in other states, this focus on curricular alternatives for students at risk of dropping out or not succeeding academically became the defining cultural characteristic of the STEP program, and had a related impact on the structure of curricular development and delivery (Glick & Jobs for the Future, 2006).

It is also significant to note that many of the students served by STEP increasingly came from communities of color and immigrant populations that were new to the Anoka region during the period of the early/middle college's launch and infancy. Both high school and college administrators noted that although recruitment of a diverse student

body was not a primary goal for the program, the student body at STEP increasingly possessed the characteristics of a diverse, immigrant population that viewed education for employment as the preeminent path to societal inclusion and economic mobility.

The growth in service to diverse populations as a by-product of the initial focus on applied learners found in the middle of the academic, socio-economic and adolescent maturation spectrums is a key structural difference between STEP and the early/middle college designs that emerged in other urban areas (Bruce, 2007; Kisker, 2006; Olsen, 2010; Singleton, 2011). Although recruitment of students of color was not a specific admission criteria or program design element for STEP, both high school and college administrators and faculty described a steady growth in both the number of racially, culturally and economically diverse students enrolled at STEP and the parental, familial and community satisfaction that resulted from their child's participation in early/middle college programs.

In other words, the absence of a structural criterion related to diversity does not appear to have negatively impacted the emergence of a school culture that included diversity as an element of the concept of students in the middle to be served without distinction by the early/middle college. The research indicates that STEP was increasingly viewed as a program of choice by the 'old guard' Anoka community and the newer, more diverse groups and populations that moved into the region, precisely because the early/middle college's emphasis on serving students that would benefit from a focus on jobs and careers fit both groups' objectives and priorities for the secondary-level education of their children.

The intentionality of focus on students in the middle and the purposeful design of programs, relationships and services that were tailored to their needs created a deep and enduring sense of pride at STEP, and for its students. All of the individuals who participated in this case study emphatically described the development of a sense of pride and motivation, both at the individual learner level and throughout the school, as one of the core elements of the STEP's culture. A former college administrator summed it up best when he described the cultural attribute in this way:

> I am getting college credits. I am accomplishing something. I am worthwhile. I can do this. I think that kind of motivation, especially if you come from a family background or a cultural background where no one else in your family ever had a chance to do this and has never spent a day or an hour in college, is what STEP is all about.

Interestingly, many of the same interviewees commented that the spirit of motivation to succeed and pride in accomplishment that characterized STEP had a spillover effect into the broader community. The community's pride in being first in the state to launch a new and innovative concept—the middle college—was enhanced by a similar pride in what they were now able to offer to students who had been frequently overlooked in high school, or for whom the promise of a high school diploma or enrolling in college was a first for their family. For a blue-collar, working class community like Anoka, being the first to offer a program designed for applied learners, and the first to celebrate the success of the students in the middle was a huge and remarkable community accomplishment.

In the words of one of the college administrators who worked closely with STEP and leaders from throughout the community for nearly ten years:

> Here, they had this program, this high school, this college that nobody else had. We have something here that Bloomington doesn't have or Edina doesn't have or Woodbury doesn't have. Nobody else has got this. We did it. We accomplished something for our families, for our employers, and for our community that nobody else in Minnesota has done.

Designing curriculum and forming relationships with students that intentionally focuses on building confidence and readiness for college and a career. Effectively serving applied learners within the new STEP model was grounded in the pedagogy of career and technical education, which the research suggests was heavily influenced by the concepts of contextualized curriculum design and delivery; industry-based definition of learning expectations and outcomes; intentional development of relationships between students, teachers, families and industry or community representatives to promote relevance, rigor and retention; and opportunities for dual or concurrent enrollment options that permit students to acquire college credit while in high school (see Foster, 2010; Hughes, Karp, Fermin et al., 2005; Ward & Vargas, 2011). The design and implementation of these elements and their specific application within the context of the STEP framework came about through the close working partnership that evolved between high school and college administrators and faculty, suggesting that the presence of a well-aligned structural partnership is a crucial attribute for a successful launch of an early/middle college model.

Moreover, the research in this case indicates that these structural design criteria are consistent with the frameworks utilized at the nation's leading early/middle colleges (Born, 2006; Ward & Vargas, 2011). In particular, the work to align curricular content and student learning outcomes with industry expectations appears consistent with the recommendations made by the Gates Foundation and Jobs for the Future (Berger et al., 2011; Le & Frankfort, 2011; North, 2011), while the dominance of the concurrent enrollment model and the resulting emphasis on acquisition of college credit while enrolled in STEP courses closely resembles the structural design elements present in the leading California (Edwards et al., 2011) and Texas (Ward & Vargas, 2011) early/middle college models. A close examination of the planning approach used by STEP and college leaders to conceptualize and deliver a student- and industry-based curriculum grounded in concepts of rigor and relevance appropriate to career and technical instruction reveals the complex interaction of structural design and cultural elements needed to shape the new framework.

Both high school and college leaders reported that ensuring alignment of curriculum with industry skill expectations and development of a college credit-based course sequence were the foundational structural elements inherent in the STEP academic model. The school district's former director of career and technical education reported that from the beginning, all high school curricular content and course delivery needed to fully align with a college-level program and degree award.   Similarly, the college's vice president for academic affairs explained the deep connection between the high school's expectations for concurrent enrollment options, the academic rigor required for alignment with college curriculum in related programs and degrees, and the foundational

expectations of regional employers regarding the skills and attributes desired within the workforce of the future.

Creating the instructional web that connected student interest and exploration of job and career options while in high school with the rigorous academic preparation expected in college-level courses, while ensuring overall consistency with employer workforce readiness interests became the predominant structural imperative guiding the implementation and evolution of the STEP model. Prior to initiating joint curriculum development activities between college faculty and high school teachers, administrators conducted organized outreach to business and industry representatives to collect quantitative as well as qualitative data such as: existing and emerging job needs; the skills, abilities and attributes deemed essential to effective job performance; and the alignment of academic and technical skill preparation with career advancement opportunities prevalent within a work setting or a broad industry sector.

The STEP partners commonly used industry advisory committees as the vehicle to gather this vital information. Representatives from employers and workforce centers from throughout the Anoka region routinely participated on these committees with both high school and college faculty and staff. Interestingly, the close working relationships that emerged frequently had their origins in the coalition that banded together to save the technical college and launch STEP; this advocacy work took on a new dimension within the advisory committees as the players began to focus on shaping the programs that would be offered by the new early/middle college.

Program development within the advisory committees focused on the industry sectors that formed the economic backbone of the Anoka region: manufacturing, health

care, and information technology. In all three areas, both technical and applied skill development was deemed fundamental, while employer representatives insisted on expanded curricular treatment for communication and computational skills, as well as problem-solving and analysis, coupled with examination of teamwork, cultural proficiency and technological literacy. Blending all of these employer-based expectations required examination of contextualized curriculum development models (Ausburn & Brown, 2006; Huffman, 2008) as well as attention to career pipeline and pathway frameworks emerging at the Federal level and in other states.

Employer and educational representatives alike insisted that the high school courses offered by STEP needed to fully align with post-secondary courses and degrees. This was important for two reasons. First, employers increasingly were demanding more than a high school diploma as entry-level preparation for jobs and as the predicate for advancement along existing and emerging career pathways (Carnevale et al., 2010). Creating a model that allowed students to explore job and career choices while accumulating the courses, credits and credentials needed to actually be ready to work was considered a practical and common-sense solution to the existing and anticipated workforce skills shortages predicted for the Anoka region over time.

Secondly, like their counterparts in other states, Anoka's education and employment leaders wanted to help students and their families better manage the cost of a college education by encouraging accumulation of college credits at no cost while in high school. For a working-class community that historically and significantly lagged behind the rest of the Twin Cities metropolitan region in high school completion and college

participation rates, a no-cost option to encourage students to prepare for college and a career was a practical imperative.

Operationalizing the advisory committees' conceptual design for an aligned curriculum model became the task of the college faculty and high school teachers assigned to work within the STEP program. Faculty members from the machine trades program described this work as a close collaboration, requiring both sides to share their course outlines, syllabi and lesson plans for a side-by-side examination that facilitated a granular walk-through of the learning objectives, pedagogical choices, assessment techniques and academic support services considered essential to delivery of course content. Careful attention to integration of general education competencies (communication, mathematical concepts and computational ability) as well as related workplace expectations (problem-solving, teamwork, analysis and synthesis of information, and cultural competence) with the technical foundations for the program resulted in a distinctive delivery methodology that several individuals cited as a defining characteristic of the STEP model, one that appears to align closely with the early/middle college curriculum development structures analyzed in previous studies (Berger et al., 2010; Born, 2006).

A unique structural element present in the STEP environment—and one particular to the Minnesota post-secondary collective bargaining context—was the requirement that all college-level courses designed for delivery within the STEP program be approved by the technical college's Academic Affairs and Standards (AASC) committee. This committee was established by the college faculty contract to review and approve all curricular offerings. Both college administrators and faculty described this body as

presenting a barrier that they routinely had to overcome in order to successfully develop

programs and courses for students. This presented a challenge precisely because the

change in structural delivery represented by the integrated and contextualized delivery

model for STEP students was a fundamental shift in the way the technical college had

historically delivered academic content. According to the college's former vice president

for academic affairs,

> We needed to change the way that we credited and accounted for credits. As part
>
> of this we needed to make sure that there was a system in place to record these
>
> credits for those students who had completed their current enrollment courses,
>
> that the program was credited with those courses and those credits that were
>
> taught so that there was a benefit on both sides. I think that was a theme that we
>
> always tried to push, was that this had to be mutually beneficial. It had to be
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> beneficial to the secondary side, had to be beneficial to the post-secondary side in
>
> order for it to be something that was going to be viable.

Actual delivery of the integrated and contextualized delivery model in the

classroom and lab was also dependent upon a collaborative instructional model that

evolved over time between high school teachers and college faculty. STEP's current

principal emphasized the importance of finding the right individuals to fit into this

pedagogical strategy, suggesting that teachers with recent and relevant industry

experience fit into this partnership model more smoothly than those who had extensive

experience in a school setting only. To identify these teachers and ensure that they were

assigned to the STEP faculty required constant vigilance, and a deep understanding of the

district's human resources policies and practices, as well as the faculty collective

bargaining agreement and the State of Minnesota's teacher licensure and credentialing requirements.

Seeking out the right faculty within the college to partner with STEP teachers in the integrated and contextualized model was a challenge for college administrators. They were also required to observe and manage pertinent personnel policies and practices, including collective bargaining provisions that dictated teaching qualifications and state-level policies that mandated mentoring of high school faculty teaching in dual or concurrent enrollment programs.

Both of these requirements presented significant barriers to the successful implementation of the concurrent enrollment model during the first ten years of STEP's existence. College administrators described these rules as unnecessarily restrictive barriers that influenced both the ability to assign college faculty to teach in the STEP program as well as the overall cultural belief regarding the validity and utility of these courses. The vice president stated that "I would say that the biggest barrier to moving forward would be overcoming the idea that faculty work was being given up or work was being lost." A college faculty member interviewed for this study described the myriad of structural academic or human resources rules and process requirements prevalent on the post-secondary side of the partnership that governed development and delivery of STEP programming as the 'garbage' that got in the way of effectively teaching high school students, and collaborating with one's high school counterparts to do this work in an effective and professional way.

Overcoming the structural impediments to delivery of the new curricular model that they had designed together became the common goal of teachers, administrators and

industry representatives that were intimately involved in securing the success of STEP students and the early/middle college model overall. These educational pioneers used their intensely passionate belief in the importance of their work providing motivation and inspiration to students who were frequently overlooked in a typical high school setting to catalyze the creation of a STEP culture that promoted positive relationships among students and teachers, seamless use of the shared facilities, and practical, common-sense problem-solving as the remedy for the structural challenges that defined their daily work.

High school and college leaders described the importance of addressing and resolving non-academic issues—sharing of facilities, access to the college cafeteria and parking lots, equipment and technology access—as one of the keys to developing a collaborative and shared culture that afforded them the capacity to overcome the complicated structural challenges inherent within the emerging academic model. Early in the partnership the parties negotiated facility access issues, and agreed to annual fees for use of space and equipment within both the college's footprint and the STEP building. High school students were granted regular access to the college without special identification badges, and they could pass in the hallways to class or the cafeteria for lunch individually, or accompanied by their teacher. Similarly, high school students and staff were able to park on the campus with the same privileges and restrictions as their college counterparts. The result of this work was an environment where high school and college students blended seamlessly, and where discipline reports on the STEP side were routinely (and surprisingly) low, in comparison with their peers at other district high schools.

STEP's current and founding principals attribute this student-centered environment to the work of faculty members on both the high school and college side who served as role models, mentors and guides for students, encouraging them to do their best and behave as adults when on the combined STEP and college campus. Treating students as adults, and supporting them to do their best in rigorous college classes while encouraging continued exploration of career and college options after graduation became the STEP formula for success, and was considered to be a direct consequence of the efforts of faculty, staff and community leaders to create a place in the middle where students came first and the needs of industry and the broader community influenced the design, content and delivery of academic programming. It also was the result of adult college students serving as role models and examples for their high school counterparts, forcing the younger STEP students to behave as adults in order to be fully accepted on the technical college campus.

Structural integration of leadership influenced the scope and pace of STEP's evolution. A final unique characteristic that defines the structural framework of the STEP model is found in the work by both the college and high school partners to informally integrate leadership and decision-making at the campus level. Although the legislation authorizing the creation of the STEP program and construction of the facility made it clear that the school would operate under the jurisdiction of the Anoka-Hennepin district, site-level administrators from the high school and the college confirmed that actual administrative and managerial activities took place in concert, affording a degree of integrated decision-making that the parties considered both relevant and significant to this analysis.

The working partnership between college and high school administrators began immediately after the legislation authorizing the STEP program was approved, and shaped all aspects of the model's early design efforts: site planning for the new facility; work with industry partners to identify programs and career pathways; curriculum development and alignment of student support services (such as libraries and counseling) as well as operational details (parking, cafeteria and food service, maintenance and technology interface); advocacy with community groups such as the local Chamber of Commerce to build visibility and support for STEP; and joint outreach to district high schools, students and families to build enrollment and positive support for the presence of the early/middle college within the community.   The significance of this structural operational partnership was symbolized by the appointment of the STEP principal to the college president's Cabinet in 2001.

Shortly after the opening of the new STEP building in 2002, the school district approached the college with a request to provide financial support for the STEP principal's position for a period of two years. Budget challenges confronting the district resulted in a reduced level of financial support for STEP, and rather than negatively impact the positive momentum of the program, district leadership sought an investment from the college to ensure continued growth of the model, as well as operational stability. STEP's principal at that time described the situation well, and the impact of the close collaboration generally:

> One of the pieces that was always so unique at STEP was that we really were a team and the fact that college supported half of my administrative salary was huge. That was a huge step because the district couldn't afford me and they were getting

heat from principals about STEP. Also, I could use my work with the college as my excuse and my reason for doing things and I think the college could do the same with K-12 to break down some of those barriers…. People wanted STEP to work so badly, and Anoka Tech to thrive. That was their main goal.

Over the years the structural integration between the high school and college expanded to include joint in-service and professional development days and events for faculty and staff; co-sponsored events for students (MLK Day celebrations; campus cleanup for Earth Day; year-end picnics and recognition events for students and staff) and the community (research documented an annual K-14 Symposium for policy-makers, parents and teachers from 2007-2011 that served as a notable example of the policy-level and leadership outcomes that flowed from the partnership between the school district and the technical college). Additionally, the college's foundation annually provided student scholarships for graduating seniors to help defray the future costs of continuing their studies at Anoka Tech.

The most compelling example of STEP culture-oriented structural model is found in the collaborative recognition ceremony for STEP's graduating seniors, held each spring in the college auditorium and attended by representatives from all constituencies participating in the STEP partnership: students; their families; high school and college teachers, administrators, support staff and school board members; local legislators, chamber of commerce executives, and foundation officers; and members of the local media. Symbolically, this event exemplified the tightly knit structure that guided day-to-day operations on-site at STEP; and perhaps more importantly, the student- and community-oriented character of the celebration evocatively demonstrates the dominant

cultural themes that provided the vitality and vigor necessary to launch, shape, and sustain Minnesota's first early/middle college.

The Applied Learning Institute (ALI) on the Iron Range

Minnesota's Iron Range, a collection of distinct communities located in in the northeastern region of the state, has a proud tradition of education-based workforce development innovation. Covering a geographic area the size of the state of West Virginia, the Iron Range (as it is commonly described by residents and non-residents alike) is home to several of the world's leading taconite mining companies. The Cuyuna, Mesabi and Vermilion iron ranges in northeastern Minnesota historically mined raw taconite for mills and factories in the nation's industrial heartland, where this precious natural resource is transformed into iron and steel. For decades, iron ore production in northeastern Minnesota fueled manufacturing, construction and production work across the nation and throughout the world, providing the raw materials needed to both develop 20th century infrastructure and support the successful waging of two world wars.

In addition to taconite mining, the rich forests of the Iron Range supported timber harvesting that supported the mid-19th century construction and development boom throughout the state of Minnesota and across the Upper Midwest. Homes and civic buildings in cities such as Minneapolis – St. Paul, Duluth, St. Cloud and Chicago were constructed with timber from forests in northeastern Minnesota. By the mid-20th century, the lakes, streams, campsites, ski runs and golf courses located in communities throughout the Iron Range supported a lively tourism industry that spanned the four seasons and attracted outdoor enthusiasts from around the globe.

Even with the progressive diversification of the business-industry mix in northeastern Minnesota, the mining industry dominated the economic and community development of the cities and towns along the Iron Range. From Grand Rapids on the west through Hibbing, Chisholm, Eveleth, Virginia in the central range, towns and cities developed that depended on taconite mining, ore distribution and transportation, and related industries as the backbone of employment and overall prosperity, for individual households and entire communities alike. Over time the cultural and geographic dimensions of the Iron Range expanded north to Ely and east to Two Harbors, with forestry and tourism emerging as additional drivers of employment and economic development in those areas.

In all of these communities, life and industry centered on mining, manufacturing, production and transportation, with health care, governmental service, and other service careers rounding out the workforce profile both at the local, county and regional levels. Each community proudly developed its own system of public schools, highlighting educational offerings that prepared young people for work in the mines and related industries, as well as college enrollment in institutions geographically distant from the Iron Range. Although the Iron Range communities were home to five two-year community and technical colleges, there was (and is) not a four-year university with a permanent presence on the Iron Range.

Culturally, the communities of the Iron Range historically (and somewhat paradoxically) placed high value both on independence of thought as well as collective action, usually expressed in trade unionism or high levels of political or electoral interest and engagement. Each town and city was distinctive and unique, reflecting the broad

cultural and ethnic pluralism characteristic of 19th-century immigrant communities. Iron Range residents came from—or were descended from—central and eastern Europe, Russia, the British Isles, and Italy. As working-class, immigrant communities, these cities and towns prided themselves on their distinctive character, yet were unified by a collective sense of purpose on matters of common concern. Education—the building of schools and colleges, promoting opportunities that afforded the children of immigrant households the chance to attend college or develop the skills necessary for successful employment in the mines, shops, or businesses of the Iron Range—was a common value that historically has been central to the cultural ethos and individual aspiration of residents from this region of Minnesota. The mining industry generously funded public education on the Iron Range during its most productive years.

After decades of success and profitability, the taconite industry of northeastern Minnesota suffered numerous setbacks and economic challenges throughout the 1980s and 1990s. By the turn of the century, cities and towns across the Iron Range were suffering from years of economic hardship resulting from mine closures, massive layoffs, and unsuccessful efforts to diversify and expand the economic foundations of the regional industry and workforce mix. The economic challenges faced by industry had a direct and deleterious impact on educational institutions across the Iron Range, with schools and colleges alike experiencing significant budget and staffing reductions.

As a result of the prolonged economic downturn impacting the Iron Range, educational programs that supported career and technical education, historically the backbone and predictor of workforce preparation and supply for the region's industries were virtually eliminated from the curriculum at the middle- and high-school levels.

Those programs and courses that survived suffered from inadequate labs and equipment,

resulting in programming that was not relevant to contemporary employer expectations or

the evolving, more sophisticated technology-influenced interests of high school students.

At the same time and at the post-secondary level, enrollments on the five

campuses of the Northeast Higher Education District (NHED) were declining in both

career and technical courses and pre-transfer programs. For college administrators and

community leaders alike, this pattern was especially alarming in view of the discussions

underway in other Minnesota communities regarding college closures. By 2001, the

financial challenges facing K-12 education and the shrinking number of students

choosing to enroll in college on the Iron Range raised real concern and fears that the

campus closure discussions and proposals being considered for Anoka would next impact

the Iron Range.

Declining resource support, shrinking enrollments in career and technical courses

that historically supplied Range industries with the skilled workers that were the

foundation of the workforce, and the advancing age of employees at the mines and in

related jobs and industry sectors presented a critical challenge for communities all along

the Iron Range. Business, governmental and community leaders were well aware that the

average age of workers in taconite and related industries was increasing; in addition, the

well-publicized plight of leading employers and industries, combined with fewer and

fewer educational and job opportunities for young people, prompted more and more of

the Iron Range's high school and college graduates to leave the area and seek

employment elsewhere. This 'brain drain', combined with an aging workforce and the

challenges inherent in attracting new industries to a geographically remote, weather-

challenged region, created a perfect storm that confronted Iron Range communities and their educational, civic, governmental and business leaders by the middle of the new century's first decade. Responding to these challenges and preserving the way of life many considered unique to the Iron Range soon emerged as a top priority for elected officials, business and industry owners, and educators throughout the region.

In 2006-07, Iron Range leaders responded to this complex mix of economic and cultural threats by launching an innovative workforce and community development strategy, the Applied Learning Initiative (ALI). Like their counterparts in Anoka, Iron Range leaders addressed the 'perfect storm' threatening their livelihood and way of life by entering into a collaborative venture that transformed the way educators and industry leaders viewed their relationship. They promoted a student-oriented culture and devised new operational structures that permanently changed the way schools, colleges, governmental entities and industries would work together to diversify the Iron Range economy and attract new employers; create new jobs; and ensure the continued availability of a well-prepared workforce. Central to this work was the design and implementation of early/middle college programming at multiple locations across the span of the Iron Range.

The ALI was established as a regional strategy to expand and enhance career and technical education for job readiness across the Iron Range. Beginning in 2004, leaders from education, business and government started to meet and build the relationships and resources needed to catalyze a regional approach to education-based economic development and job creation. The foundations of the ALI exist in these sessions. Through many weeks and months of discussion and informal relationship-

building, these leaders engaged in a candid examination of individual community and industry expectations for the training of their young people; the historic mix of industries and economies across the region; the likelihood of common, mutual interests in attracting new businesses to the Iron Range; and the likelihood of developing a regional approach to problem-solving on structural educational and economic challenges that transcended city and town boundaries, the discrete interests of the mining, timber and service industries that historically dominated Range economic and community development, and depended on a clear-eyed assessment of the political will needed to carry out such a transformative venture. Traditionally, the school districts on the Iron Range were extremely independent and fiercely competitive, insisting on going it alone as opposed to working together to serve students and advance regional priorities.

Many of the individuals interviewed for this case study stressed the revolutionary nature of the initial conversations that broached the concept of a regional approach to education-based workforce development. An official from the Iron Range Resources and Rehabilitation Board (IRRRB) stated that

> Many long conversations took place, with trust being built between all the
> stakeholders and behind the scenes as well. It's that convergence of a real grasp
> for a local effort to build the trust between these public institutions that really
> didn't always get along in the past because they're competing for dollars and
> students, particularly if you're talking across K-12.

Under auspices of the nascent ALI and through the personal leadership of the NHED president, 17 superintendents from districts representing the west, central and east Range communities were invited to begin meet with their post-secondary counterparts,

the five provosts of the NHED campuses located in Grand Rapids, Hibbing,

Eveleth/Virginia, International Falls, and Ely. Joining this group of educators would be a

lead staff member from the IRRRB (who eventually was named the ALI's executive

director, a position funded jointly by NHED and the IRRRB). This first group of leaders

met for many weeks and months during 2004 and 2005, shaping the initial contours of a

regional strategy through formal meetings and informal discussions over meals, at

sporting events, and in other venues throughout the various Range communities.

The tenor of these initial conversations focused on exploring a vision for cross-

functional and expanding multi-community cooperation to revive career and technical

education for high school students all across the Iron Range, eliminating disparities in

funding and unequal access to technical courses and programs through a joint effort that

transcended historic and geographic divisions to represent a collective strategy.

Discovering anew that the Iron Range's cultural ethos did indeed support common

purpose and collective action, the educational leaders from both sectors learned how they

could unite in support of the region's students. Superintendents and provosts alike began

to understand that for the region's culture to change, they way they worked together to

serve students and the structures that supported the status quo must be first altered. As

such, the initial result of the ALI leadership's work together was the development of core

principles that would guide the structural development of the early/middle college that

would come to characterize the nascent initiative.

The core principles for the ALI's version of the early/middle college model were

grounded in the values of collaboration, opportunity, and access. Leaders envisioned a

shared decision-making process that would ensure participating K-12 and post-secondary

institutions that the financial resources, curricular expertise, state-of-the-art equipment and industry experts necessary to offer all students a world-class learning experience would be available to all partners, irrespective of geographic location—which represented a fundamental change in the historic practice of fiercely independent school district behaviors. For students, the early/middle college would offer radically different ways to gain exposure to advanced technical careers while still attending their local high school, expanding options for college credits that fully aligned with selected career and technical programs offered within the five colleges of NHED. Finally, by firmly establishing the ALI as a strategy to ensure open and equal access to career and technical programming for all students and all participating school districts and colleges, students and instructors alike would have guaranteed access to state-of-the-art technical equipment and rigorous, college-level curricula that enhanced students' overall readiness for subsequent academic and career pursuits.

Once endorsed by the ALI's founding superintendents and provosts, the stage was set for the development of structures which would add substance to the operating framework implicit in the statement of principles, moving the early/middle college design from an initially symbolic expression of what Iron Range leaders could accomplish collectively to a tangible expression of new ways of doing business that were firmly grounded in a student-oriented cultural foundation. This approach aligns directly with the early/middle college foundations of other models in communities that were similarly confronted with dire economic circumstances (North, 2011).

However, before describing the sophisticated structural and human resources framework that would distinctively characterize the development of the ALI during the

time period from 2007-2013, it is critical to note the significant political leadership that was essential to secure the base-level funding from the Minnesota Legislature that provided the start-up investment needed to support new structures and new ways of working together represented in the ALI's early/middle college design framework.

Key political leaders were the primary advocates for this new concept, both on the Iron Range and across the state, championing the crucial investments needed to permanently alter the way education, business, government and community leaders would shape and deliver learning-based workforce and economic development through the ALI strategy. High school, NHED and IRRRB leaders all emphasized the crucial role played by the Iron Range legislative delegation in the advocacy work needed to secure permanent base level funding to launch the ALI. Although the collaboration and trust engendered in the early planning meetings was in fact enduring, serving as the cultural foundation for the enterprise, the research made it clear that the ALI would not have moved from concept to structural reality without the infusion of new funds. Given the budget challenges facing all of the educational partners at the time (and since), it is doubtful that they would have been able to make sustainable commitments to the new early/middle college concept without a permanent infusion of new dollars from the Legislature.

At the time, the members of the Iron Range legislative delegation acknowledged that cultural and structural change was needed to ensure the presence of a well-prepared workforce, and insisted that they would only advance proposals for new resources that represented new ways to attract businesses to the Iron Range that resulted in job creation, or joint ventures between education and business that enhanced training and development,

and the likelihood of a talented, resident workforce in all Range communities. The ALI appealed to local legislators because it settled once and for all the question of whether the success of new economic and workforce development investments depended on the availability of career-related education and training. Creating a new structural concept that expanded opportunities for career-related education and kept young people on the Iron Range represented a clear example of education serving as the catalyst for economic development, whether measured at the individual employee or industry-sector levels.

By vigorously promoting an education-based workforce development structure and strategy, the region's education, business and civic leaders provided legislators with a new model to promote with their colleagues at the State Capitol in St. Paul. The initial price tag for the ALI early/middle college concept was $1 million, and was framed as the cost to the state to invest in a regional strategy for education-based workforce development. Led by Representative Tom Rukavina (DFL-Virginia), the then-chair of the House of Representatives' Workforce Development and Education Committee, the legislation authorizing funding for the ALI was first approved in the 2008 session, and has been included in each subsequent biennial appropriation to the NHED colleges.

The legislative and political origins of the ALI can clearly be identified as an expression of a carefully-developed political strategy for cultural and structural change, advanced by education, business, governmental and political leaders to overcome traditional notions of civic and school district independence and territorialism by offering the promise of investment of new resources in a structural model that would demand new ways of working together for a common purpose: creating a regional strategy that promoted equal and expanded access to career and technical education opportunity for all

high school students as the pathway to continued economic development and community prosperity. By launching a new concept that symbolized what the Iron Range could promise to its young people and its employers through purposeful collective action—and engaging in a well-crafted political advocacy campaign to secure the investment of new dollars needed to translate ideas into action—Iron Range leaders embarked upon a remarkable exercise in community development through the promise of educational innovation.

Iron Range leaders did not rest upon their laurels, or spend much time celebrating the successful acquisition of base-level state funding to support their new enterprise. They quickly—and nimbly—shifted to the work of developing the operational structures and processes that would support the delivery of the new model across the region, both at participating high school locations and on several NHED campuses. The actual early/middle college design that emerged is distinctive in its delivery of programming over a wide geographic area, with multiple school district and college partners, each with their own operating requirements and processes. The structure that emerged to address this complex environment builds upon the early Anoka STEP framework to offer a sophisticated new K-12/higher education partnership supporting early/middle college development in a rural setting, highly influenced by the evolving economic and workforce demands of regional employers and responsive to the challenges inherent in the delivery of hands-on, equipment-intensive applied instruction in a geographically isolated locations.

ALI's operational structure advanced its mission by promoting cultural change across the region, using collaboration and collective action to catalyze new

ways for K-12 and higher education to work together. After establishing its core set of

guiding principles, ALI leaders set about the work to create a structure to design and

deliver equal access to expanded career and technical education opportunities across the

region. College leaders from NHED stated that they intentionally looked to the STEP

model in Anoka for inspiration and guidance as they began to investigate the specific

parameters for the multi-district early/middle college design that they envisioned for the

Iron Range. NHED officials made multiple visits to the Anoka location, meeting with

students, faculty and community representatives to learn more about the market-driven

design criteria that had been successfully implemented in that location. In addition,

NHED invited STEP's leaders to visit the Iron Range, making presentations to

superintendents and high school principals that put a human face onto the conceptual

model, allowing local partners an opportunity to explore ideas for ways to modify the

STEP approach for multi-district implementation.

A critical structural distinction from STEP that emerged early in the ALI

implementation design process was the need for a more formal governance structure that

would guarantee all participating school districts a seat at the table and a voice in critical

decision-making processes. Unlike STEP, where a single school district and technical

college partnered to offer the early/middle college program, the ALI model would

include 17 school districts, many located in geographically remote areas. The single-

partner, single-site approach successfully implemented in Anoka would not serve the

interests of the Iron Range, where meeting the core principle of equal access to career and

technical education for students implied multiple opportunities for K-12/higher education

partnerships and the possibility of more than one location where early/middle college programming would be delivered.

Shared governance for the early/middle college was also essential to ensure that the permanent investment of dedicated resources were distributed in an equitable manner consistent with the core operating principles of the ALI. Although these funds have been administered by NHED on behalf of the ALI since the initial legislative appropriation in 2007, the annual budgeting and expenditure of these funds occurs through a collaborative decision-making process and structure that reflects the core guiding principles of the organization. This process for resource redistribution appears to serve as one of the fundamental structural priorities of the early/middle college, and influences the collaborative program development that leads to enhanced capacity among high school and college partners alike to offer expanded, innovative career and technical programs for the region's youth. The research suggests that the availability of new dollars to spend for new purposes prompted the development of a new governance and financial investment model that guaranteed that these funds would be spent on the priorities of the early/middle college, and not utilized as replacement or supplemental dollars by any of the participating school districts or colleges.

With the financial model in place, ALI leaders decided to adapt the STEP approach to fit northeastern Minnesota and utilize a three-tiered governance structure. At the ground level was the steering committee, comprised of high school teachers and principals from throughout the region, along with their faculty and instructional administrative counterparts from the NHED colleges. This group was envisioned as the creative catalyzing force within the emerging early/middle college design, the

instructional and community experts that would work closely with industry leaders across the region to identify workforce preparation needs, conceptualize partnership-based programming offered by high schools and colleges that would address those needs, and operationalize programming once approved within the ALI leadership structure. The steering committee became the core of the early/middle college design concept, advancing proposals for new programs, redesigned curricula, concurrent enrollment courses, and equipment needs on an annual basis for funding consideration.

The specific project proposals developed by the steering committee were forwarded to the ALI leadership council, comprised of the superintendents from the 17 participating school districts and the five provosts from the NHED colleges. This group reviewed proposals for consistency with the ALI core operating principles, as well as for alignment with the key workforce readiness priorities of the region (industrial technology; industrial construction; advanced automotive; pre-engineering; and health care). Scrutiny within this layer of the ALI governance model focused on asking the critical questions about whether a specific program proposal would indeed expand access to career and technical education opportunity for all high school students on the Iron Range.

Answering this key question frequently required the leadership council to examine fundamental operational issues. From a human resources perspective, topics included the availability of instructors to offer programming at both the high school and post-secondary levels and the likelihood of new partnerships between institutions to offer curriculum and courses, or collaborative efforts to search out the right teaching talent needed to deliver the program. A typical facilities issue might address whether one of the

17 high schools had suitable classroom or lab space to offer a particular program, or whether delivery should be centralized at a NHED institution or on-site at the workplace of a partnering industry employer. For highly technical programs, equipment availability was always crucial--could a new program proposal access needed equipment through delivery at a centralized college site or industry location, for example, or would ALI resources be used to purchase equipment? Perhaps most significantly, given the geography of the region, student transportation was a paramount concern, forcing the partners to determine whether it was more cost effective for the ALI and participating districts to bus students to a central location or deliver identical programming on both the east and west range to minimize transportation expenditures for the individual districts, ALI, or both. Resolving these practical considerations offered concrete opportunities to further enhance the trust, collaboration and group problem-solving qualities that distinctively characterized the ALI's early/middle college design, contributing to the emergence of a new cultural paradigm for problem-solving and regionalism for northeastern Minnesota.

After completing a detailed analysis of each program proposal forwarded by the steering committee, the ALI leadership council made recommendations for approval of specific requests to the organization's cabinet. Although originally conceived as a communication and legislative liaison body for the ALI, the cabinet gradually assumed dual responsibility for advocacy and final decision-making for the organization. The cabinet, comprised of the NHED president, ALI executive director, an IRRRB representative and a designee named by the Iron Range legislative delegation, made all final approvals on new program initiatives, purchases, and related policy and process

matters for the emerging early/middle college structure. Like the leadership council, the cabinet's final decision-making was guided by the core principles; simply put, the cabinet scrutinized all ALI initiatives to ensure that they supported the core equal access mission, provided opportunities for career and college readiness, and aligned with a post-secondary program at a NHED institution in one of the five market-driven career areas.

Several individuals commented that the key contribution of the cabinet over time was its work to ensure that the early/middle college remained focused on its core mission to provide equal access to career and technical education for all high school students in the region. Given the infusion of new resources represented by the annual base-level legislative appropriation of $1 million, there was a great temptation to use these resources to supplement local investments, while maintaining existing programs and traditional ways of doing business at the local school district and community level. ALI cabinet members insisted that the new funds be consistently awarded to those projects and initiatives that represented exceptionally high levels of collaboration and curricular innovation involving high school, post-secondary, and industry partners. In the early days, the cabinet turned down nearly as many requests as it approved, insisting that new initiatives squarely fit within the core mission of the new organization and its vision for doing things differently to promote a regional strategy for education-based workforce development.

During its first six years of existence, the ALI structure supported the launch of new early/middle college programming at both high school and post-secondary locations. These programs are delivered at Two Harbors High School on the east end of the Iron Range; centrally at Hibbing and Mesabi Range Colleges; and on the west at Deer River

High School and Itasca Community College. In all of these locations, overcoming transportation challenges for students and creating optimal learning environments (including lab space and proper equipment) represented primary challenges, and are continuously being addressed by high school and post-secondary partners through the annual process for proposal development and targeted investment of ALI resources in programming, equipment, transportation, and professional-development areas. By 2013, over 1,400 students participated in early/middle college programs at the various ALI locations across the Iron Range, and work continues to identify additional programmatic options that align with emerging workforce preparation challenges facing both long-time and newly created industries throughout the region.

The actual work needed to design specific instructional programs and delivery by high school and college instructors through the ALI's early/middle college model is an additional structural design element that distinguishes the ALI from its Anoka counterpart. Within the ALI, there is a clear priority placed on the role of the faculty in the identification, development and instructional delivery of market-driven career and technical education for high school students in an early/middle college framework. This priority contributes to the emerging resiliency of this particular expression of the early/middle college movement in Minnesota, and potentially offers insights that may help overcome barriers and strengthen delivery at existing and emerging early/middle college sites (Anoka and Rochester) as well as to catalyze the design work necessary to implement this approach at other locations across the state.

Faculty-led program development and curricular innovation served as the foundation for expanded career and technical education delivery across the Iron

Range. Faculty, administrators and community leaders were all very clear on this point: the development of actual curriculum and programming for the ALI early/middle college framework organically emerged from the efforts of high school and college teachers working in partnership to identify new ways to expand access to career and technical programming for all students in the region. Although the availability of new resources to support these innovative designs certainly provided an important incentive for innovative expressions and examples of collaboration, both faculty and administrators agreed that the structural focus on faculty-led program development was the primary factor supporting the emergence of new instructional models in each of the five core ALI program areas: industrial technology and construction, advanced automotive, pre-engineering, and health care.

High school principals and college provosts described the faculty-initiated and faculty-led strategy and structure for new early/middle college program development within the ALI. Each year since 2008, high school and college instructional leaders approached the faculty at their locations, inviting them to participate in the process of identifying, designing, and preparing new program proposals for presentation and discussion within the ALI steering committee. The principals and provosts emphasized that this collaboration at the instructional level was crucial to ensure an organic model that promoted participatory engagement as the precursor to innovation and collective program development. Since overcoming territorialism and program protectionism was one of the key priorities for the ALI's cultural change strategy, offering opportunities for faculty in participating school districts to work with their college counterparts to

construct a new way for defining and delivering instructional content was considered fundamental to the success of the new venture.

High school and college administrators described an annual process beginning in late summer and fall to engage faculty in all participating early/middle college delivery locations and sites in consideration of new program development, equipment or professional requirements to strengthen existing curricula and courses, or other investments that would enhance the delivery of ALI programming to students across the region. After the launch of this annual process, faculty from high schools and colleges worked cooperatively to build funding proposals that aligned with labor market information regarding occupational demand, industry expectations and the core operating principles of ALI. Of particular importance was the requirement that ALI courses align with post-secondary career and technical program pathways, emphasizing delivery of concurrent enrollment coursework.

The president of NHED emphasized the importance of the faculty-driven program development model for the ALI:

> In our reality you don't get faculty to do anything, they want to do it. They were the ones who became connected to the ALI and to their counterparts. It was an absolute given that they would drive this. We had faculty that didn't believe that there should be concurrent enrollment or PSEO, that high school students shouldn't be taking college courses in high school. We had all of those issues and we didn't force anything; that was a big thing. Instead, it was a natural flow; we said okay, who's interested, who wants to step forward?

All of a sudden the faculty were involved and they saw the benefits of working together. There are only good things happening in terms of helping students achieve at the high school level and giving them a pathway right into college because they know the instructor. The faculty did that themselves.

Nurturing faculty engagement in the creation of ALI programming was essential to overcome the inherent tendency of individuals on the Iron Range to operate within the typical boundaries of their school district or college, preferring the solidarity and predictability of traditional teaching assignments and relationships. Exposure to the pedagogical and instructional foundations of the new forms of partnership and collaboration that were the foundational principles of the early/middle college was essential to create a new operating paradigm and a structural framework that ensured stability and predictability for the faculty's work. The high school principals and college provosts described several strategies to build partnerships and break down traditional barriers between faculty at the different levels, including use of industry advisory committees, mentoring arrangements, and professional development.

Industry advisory committees were a staple element of the post-secondary program development model that historically was deployed on the Iron Range, offering representatives from leading community and regional employers a permanent seat at the table as the NHED colleges explored ways to launch new career and technical programs and secure resources to strengthen existing offerings. In the case of the new early/middle college, however, inviting high school teachers to join advisory committees, and using these committees as a permanent venue where faculty from both institutional types could listen to the workforce development and employee readiness needs expressed by

employers accelerated common efforts to redesign curriculum and instruction to better meet the needs of industry. Establishing the advisory committee as a place for common action in pursuit of the early/middle college's multi-faceted mission to increase the number of skilled workers for jobs across the region by ensuring equal access to career and technical programs for all high school students represented a key structural decision that advanced the goal of keeping faculty at the center of the program design process.

Similarly, making positive use of mentoring relationships also promoted faculty collegiality in pursuit of early/middle college program design and delivery objectives. As the early/middle college evolved, constructive efforts to address the MnSCU requirement that all high school teachers providing instruction in courses offered for college credit be mentored by a college faculty member emerged as a positive and permanent practice that enhanced the program design and delivery model. High school faculty members enthusiastically endorsed this practice, describing it as a way for professional colleagues to work together in pursuit of common goals: effective pedagogy for applied learners, curriculum design to better address industry expectations, or acquisition of financial or in-kind resources to support purchase of lab equipment or common professional development offerings, to name just a few. The research suggests that participating high school and college faculty enjoyed being a part of a mentoring relationship, viewing it as a core element of their professional responsibilities and instructional practice within this new model.

Unlike the situation faced by their Anoka counterparts, where developing peer-based working relationships between faculty was complicated by the application of state-level policies and rules, the high school and college faculty participating in the ALI

welcomed these practices, viewing them not as an imposition of a supervisor-supervisee relationship but as an powerful strategy for building common expertise and commitment around a shared goal. Whether this attitude evolved out of greater time to experiment with this expression of the early/middle college model or was due to the greater distance from the Twin Cities (and the mandatory oversight functions performed by the state-level faculty unions and the MnSCU central office staff) is unclear; what emerged from this study, however, is a distinctly different set of perceptions and attitudes pertaining to the role of faculty mentorship at two early/middle college locations that functioned within the same set of operating rules for high school teachers' delivery of college-level instruction in a concurrent enrollment-type framework.

A possible rationale for the differing faculty perceptions may be found in the delivery of common professional development for high school and college faculty as a funding priority for ALI project proposals. Unlike Anoka, where common professional development appeared to take place only sporadically, it took place within ALI by design—faculty teams were permitted and encouraged to consider professional development as part of their program design and funding proposals; and members of the steering committee, leadership council and cabinet all reported regular and routine approval of proposals that included such requests. There was some suggestion in the research that this interest in professional development was consistent with the cultural ethos of collectivism that paradoxically exists side-by-side with individuality all along the Iron Range; in other words, once these proud individuals and communities found a reason to work together, they enthusiastically explored ways to strengthen their common efforts in pursuit of a position of distinctiveness and leadership for the region as a whole.

This final insight may serve as the preeminent cultural principle that supported the emergence and evolution of the early/middle college model represented by the ALI. The research clearly validated the presence of broad leadership (from education, government, and industry) that acknowledged the need for a cultural shift all across the Iron Range as the precondition for preserving the unique way of life that had existed for decades and supported several key industries as the drivers of individual and community prosperity. The tightly knit, ethnically diverse cities and towns along the Iron Range had historically supported distinct and independent school districts and colleges, that offered the programs needed to supply the mining, forestry and service industries with the workers necessary to remain productive and profitable. By the late 1990s and the turn of the century, however, industries were closing and jobs leaving the Iron Range, and the dominant theme of cultural independence fostered unhealthy competition for new industries and jobs, ultimately resulting in economic instability and hardship that meant fewer dollars to support small school districts and colleges across the region.

ALI's leaders used this urgent need to alter the culture of the Iron Range—to promote collective action to address common concerns—as the impetus for new structural designs that would embody positive examples of collective action and exemplify a regional approach. Their strategy—education-based economic development—found expression in an early/middle college design that resembled the Anoka model in the circumstances that led to its creation and in the broad parameters of its operating framework—but differed in fundamental ways consistent with the cultural change origins of the ALI strategy.

Engagement of political leaders and faculty champions are the key distinctive characteristics of the ALI early/middle college model; and this intentional engagement of individuals with the political capital to secure permanent funding for the initiative (the Iron Range legislative delegation) as well as permanent change in the way career and technical content was to be delivered to students (high school teachers and college faculty) ensured that the structure that emerged catalyzed fundamental cultural change at the operational and community level all across northeastern Minnesota. As such, the ALI is a compelling example of the complex interplay between structural, political, and symbolic factors needed to secure and sustain an innovative educational reform strategy.

At the time of this research study, ALI officials were examining strategies for evaluating the overall impact of the early/middle college and its efficacy as a catalyst for a common regional approach to education-based workforce development. The ALI executive director stated that seeking evidence of ALI's effectiveness as a strategy for inspiring collective action that expanded career and technical education opportunities for high school students across the region was fundamental. The ALI partners also began collecting data that would substantiate alignment between early/middle college programming and the existing and emerging occupational outlook for current employers, as well as those new industries that the IRRRB and political leaders hoped would bring new living-wage jobs to northeastern Minnesota as a consequence of the successful operation of an early/middle college. Measuring results in terms of regional impact and consequences for individual and community prosperity is a tangible and profound expression of the cultural change implications prompted by this innovative redesign of educational structures across northeastern Minnesota.

Rochester C-TECH (Career and Technical Education at Heintz)

The most recent addition to the development of early/middle colleges in Minnesota can be found in Rochester, a growing urban/rural community located 90 miles southeast of the Twin Cities. Home to the world-renowned Mayo Clinic, a branch of IBM, and a host of medically- and technologically-oriented businesses, Rochester is a community with a long tradition of support for educational innovation, at both the secondary and post-secondary levels. Over the past nine years, community and educational leaders have worked in concert to lay the foundations for the design and launch of Minnesota's third early/middle college, Career and Technical Education at Heintz (C-TECH).

C-TECH is a joint initiative of the Rochester Public Schools (RPS) and Rochester Community & Technical College (RCTC). C-TECH programs are currently offered at RCTC's Heintz Center (hence, the program's name), located within the former campus of Rochester Technical College. This facility has both classroom and lab spaces for technical programs in health, technology, the trades, and service careers. Presently students from Rochester's three public high schools attend career and technical courses at C-TECH in a limited number of career program areas, side-by-side with their college-level counterparts. In 2012, Rochester voters approved a sales tax levy that will generate $6.5 million for the construction of a new 20,000 square foot facility that will serve approximately 400 students adjacent to the existing RCTC Heintz Center.

During the past nine years, civic and business leaders from throughout Rochester have partnered with the school district and RCTC to develop a comprehensive blueprint to guide the expansion of C-TECH from its current location to the new facility built

specifically to house an early/middle college program modeled specifically on the design elements they identified in the Anoka STEP initiative. The story of the evolution of this comprehensive strategy offers additional insight into the evolution of early/middle colleges in Minnesota, and further defines the critical role that community-based interests and civic leaders play in the development of an early/middle college model in an additional location in this state.

Analyzing the data collected through interviews with key Rochester civic and educational leaders and examination of pertinent archival documentation suggests that there are three important themes emergent in the initial stages of the evolution of the C-TECH initiative. First, it is evident that C-TECH as an idea (and later, as a strategy) emerged from and was shaped by the implementation of a comprehensive community-based analysis of existing and emerging workforce education and credentialing requirements which in turn prompted the creation (or expansion) of highly cooperative structural strategies to guide the actual design of the early/middle college model. Secondly, the actual design work needed to shape the C-TECH strategy was based in a careful and protracted examination of the specific elements that Rochester leaders determined were critical to the successful Anoka STEP program. Finally, the purposeful research and design work carried out by civic and educational leaders was necessary to symbolically position C-TECH as the leading expression of Rochester's commitment to education and student success as the foundation for economic development and prosperity, for individuals, businesses and the community alike.

The prominence of community-based participation and leadership represented within each of these themes suggests that the emergence of early/middle colleges is

related to the degree of knowledge, engagement and commitment that key civic and educational leaders have in the design, launch and advocacy work necessary to successfully implement reform and innovation strategies of this type in the state of Minnesota. This insight will be explored more fully in the cross-case analysis of the three early/middle colleges, found on page 134.

The C-TECH initiative emerged from a comprehensive community-based analysis of existing and emerging workforce needs in Rochester that in turn catalyzed structural strategies that supported the work to design the early/middle college. Beginning in the fall of 2004, community and educational leaders in the Rochester community began to consider their options for offering expanded career and technical education opportunities for students in the school district's three high schools. Like their counterparts in Anoka and across the Iron Range, Rochester educational officials were dealing with the consequences of decades where insufficient funding had been provided to support career and technical education programs and courses at the secondary level. As a consequence, options for applied learners at the secondary level were limited, presenting a challenge in terms of student engagement, high school graduation, and both college and career readiness for a significant learner segment throughout the community.

In addition to the concerns about students' educational success, civic leaders began to express concern about the impact that the lack of career and technical preparation opportunities would have on the Rochester workforce. Chamber of Commerce executives, leaders from the Mayo Clinic and IBM, and small business owners all expressed a similar concern: the absence of secondary-level career and

technical education would impact the number of students continuing their education in

technical programs at RCTC, which would subsequently have a negative consequence in

terms of the number and quality of skilled workers available to fill current and anticipated

jobs throughout the community.   A chamber of commerce executive described the acute

nature of this concern and the threat to individual and community prosperity that was

posed by an ill-prepared workforce:

> The C-TECH effort started, almost ten years ago. At the time, Rochester was
>
> expected to grow about 8,000-10,000 jobs by the year 2020. We knew that our
>
> businesses were already having a hard time hiring locally. There was also a skill
>
> gap where they were unable to find the workers to address their needs, along with
>
> predictions coming down the pipeline in terms of continued community and job
>
> growth, especially in our skilled trades areas.

After broad consultation with business, civic and educational leaders the

Rochester Area Chamber of Commerce launched its Workforce 2020 initiative.

Described as a holistic strategy to identify, test and support strategies that promoted

workforce readiness across the community, this initiative was dependent upon high levels

of participation by representatives from business and industry; K-12 and higher

education; civic groups; elected officials; philanthropists and non-profit organizations;

and the workforce system. Workforce 2020 provided a venue and the impetus for

Rochester community leaders to collaboratively define a vision for a competitive

workforce that promoted strategies to identify and build talent within individuals from all

walks of life, as well as to support targeted education initiatives that increased the

number and quality of potential members of the workforce.

Workforce 2020 set the stage for the emergence of the C-TECH initiative in a number of fundamental ways. First, the coalition that formed to carry out the work of the initiative developed a definition of workforce readiness to guide strategy development. This definition embraced both the knowledge and skills that high school graduates needed to possess in order to enroll in a two- or four-year college program, as well as to successfully enter a career-track job that paid a living wage and offered pathways of opportunity for advancement and continuous learning. Additionally, this definition stressed the importance of additional employability attributes such as teamwork, agility, innovation and creativity, and interpersonal communication. The comprehensiveness of this definition resembles the criteria and rationale used to establish early/middle colleges in other states (Corallo et al., 2004; Cunningham & Wagonlander, 2000; North, 2011), as well as the Minnesota example extant at the time in Anoka.

Establishing this fundamental priority for the community set the stage for a career and technically oriented educational innovation strategy such as the early/middle college. A member of the Governor's Workforce Development Council from Rochester put it this way:

> We looked at all of the workforce needs and we're trying to anticipate the jobs that are going to be coming up in the future so that we can design curriculum that can cross-pollinate through different careers. We're looking at high-tech jobs, high-wage jobs, high-demand jobs; the community is telling us what the high-demand jobs are and the high-wage jobs are. We do the wage analysis of the jobs that we've cross-developed so that we ensure family-supporting wages. And

really, we want to work hand-in-hand with our community college so that we can develop exactly what we need to fill community needs.

The Workforce 2020 definition of workforce readiness supported the coalition's development of critical success factors within the business/industry and educational sectors. Of particular relevance to the eventual emergence of C-TECH was the explicit inclusion of college and career readiness as a factor essential to the overall competitiveness of the Rochester workforce--as well as individual worker prosperity and the productivity and profitability of employers throughout the community. For the purposes of Workforce 2020 and the development of the C-TECH initiative, college and career readiness was simply—but profoundly—explained as the way that businesses, schools and colleges, and the community enabled students to see the connection between learning and their future. This expression also deeply resonates with the criteria supporting the design and launch of early/middle colleges in similarly situated communities in North Carolina (Le & Frankfort, 2011), Ohio (North, 2011) and Texas (Nodine, 2011).

College and career readiness for all high school students was established as a critical workforce competitiveness factor, and given the increasingly diverse nature of the Rochester community, this emphasis was expected to result in expanded educational opportunity for children of color, as well as those from low-income households or new immigrant families. Although not stated as an explicit design criterion for Workforce 2020 (or C-TECH), several individuals reflected that focusing on jobs and career readiness resonated with communities of color and immigrant groups in particular, thus representing an important shift in emphasis for the evolving model. According to

chamber of commerce executives, the C-TECH programs "will ultimately help students be employable, and help them have real opportunities that pay living wages and help our businesses meet their workforce needs."

Archival documentation reflects a comprehensive planning framework that evolved from the Workforce 2020 definitions and statements of critical success factors. This framework was grounded in detailed labor market information provided by the Minnesota Department of Employment and Economic Development (DEED) that identified jobs and careers that in demand throughout the southeastern Minnesota/Rochester region through 2020; in turn, the analysis of labor market data completed by the coalition supported the identification of specific career pathways (such as health care, manufacturing and trades, technology, and service), jobs and educational credentials that would need to be in place to meet the region's identified employment needs. With this data-driven framework in place, attention shifted to the educational sector, with the following question posed to school district and college leaders in Rochester: How could the number and quality of skilled workers grow to meet the documented needs of employers when the availability and relevance of career and technical education at the secondary level had precipitously declined?

Answering this question—and catalyzing the work to shape the C-TECH initiative and build the community-wide support essential to secure the resources needed to construct a new facility to house the early/middle college—depended on the expansion or initiation of structures that facilitated the continued collaboration between business, civic and educational leaders that was a distinctive element of the cultural ethos in the Rochester community. If Workforce 2020 served as the foundational expression of the

community's expectations for a competitive workforce and the educational innovation necessary to sustain college and career readiness, then the structural elements that were either in place or created specifically to support the design of C-TECH served as the blueprint for translating specific community-based expectations into a coherent plan for innovation and the emergence of the early/middle college in this Minnesota location.

The structural design of the C-TECH initiative was shaped by the work of two groups. The first, Collaboration Among Rochester Educators (CARE), was a group formed in the 1990s to promote cross-sector planning, program delivery and student support services between higher education institutions and the public K-12 schools. The second group was organized specifically to coordinate and provide overall leadership and governance for the C-TECH initiative. This body, the C-TECH Executive Committee, was comprised of the Rochester Public Schools (RPS) superintendent, director of curriculum and instruction, and chief finance officer; and from higher education, the RCTC president, chief academic officer, and finance officer. Together these two groups translated the labor market data and community priorities for career and technical education expansion into a coherent framework for C-TECH's programmatic focus, which in turn influenced the architectural predesign and facility parameters for the new building scheduled to open in fall, 2015.

CARE offered both educators and community members sustained opportunities to shape and influence the programmatic contours of the emerging early/middle college concept in Rochester. The RPS director of curriculum and instruction described the sophisticated, data-driven framework that CARE developed and implemented to identify the specific career and technical programs to be delivered within the C-TECH facility

planned for 2015. This process included analysis by two subgroups: one comprised of faculty and academic administrators from the four RPS high schools and their post-secondary counterparts from RCTC, and a second group consisting of 35 individuals from business, industry and civic groups that represented the breadth and depth of interest in the community- and workforce-driven design essential to secure an academic model that fully aligned with industry expectations for cutting-edge education and training.

The CARE faculty/administrator subgroup launched the programmatic analysis, examining Workforce 2020 priorities in light of current and anticipated labor market demand data and existing career/technical programming at RPS high schools and RCTC. This analysis took place over many months, and was grounded in criteria developed in concert by high school and college faculty, and was informed by curriculum expectations shaped within the applicable program advisory committees extant at RCTC. This deep and highly collaborative process engaged high school, college and industry subject-matter experts in a comprehensive examination of the job, career and curricular choices that made the most sense for the C-TECH program mix, based on their analysis of labor market and student enrollment, retention and graduation data, both from the high schools as well as RCTC.

The RPS director of curriculum and instruction described the process and the criteria used throughout this iterative process to establish preliminary conclusions regarding the potential career and technical programmatic pathways to be offered at C-TECH:

We did brainstorming for generating ideas. From each perspective, what makes sense? What are the pathways that we currently don't have anything from the

educator standpoint that you think would make sense? What are the extensions of

what we already have, that we haven't been able to do? What areas are we

completely missing? We compiled lists and then used weighted criteria to

evaluate the options.

The weighted criteria used by the CARE faculty/administration subgroup included such

items as alignment with local, regional and national job vacancy projections; the potential

for livable wage employment; physical space requirements and specialized equipment or

technology needs for course and program delivery; and potential alternative public or

private (e.g. on-site at specific industry locations) spaces for C-TECH to deliver

instruction. These criteria aligned with those used in similar design work at early/middle

colleges in Ohio and North Carolina (Edmunds et al., 2011; North, 2011) and reflect a

more concrete and specific program design structure than those used at either STEP or

the ALI.

 Once applied, the weighted criteria resulted in assignment of points for each

potential programmatic pathway. These results were summarized and transmitted to the

CARE business/industry subgroup, which independently analyzed the outcomes and

recommendations through a community- and workforce-oriented lens. This group

focused specifically on existing and emergent needs for talent and skills to support job

vacancies in current Rochester industries, as well as in those that the community hoped to

attract to the area to build ever-increasing levels of prosperity, measured both from an

individual employee and a community-wide basis.

To achieve a well-aligned and comprehensive data- and community-driven result,

the CARE subcommittees worked in tandem and used a highly iterative process over a

period of several months in 2011-12. The community subgroup sent questions and comments back to the faculty/administrative group. They in turn provided additional information and refinement of the application of the various criteria for the community group to make more informed judgments regarding the suitability of proposed career pathways, program options and curricular designs for meeting the existing and emerging employment requirements of current (and anticipated) Rochester industries.

The culmination of this highly collaborative and iterative program development structural framework was the identification of proposed career pathways for C-TECH. CARE satisfactorily completed a process which identified career and technical education pathways that reflected both historical (agriculture; health care; information technology; and manufacturing/trades) career pathways deemed in-demand by business and industry, as well as new choices (hospitality and service careers) that would support anticipated business expansion and continued economic development throughout Rochester and its surrounding region. CARE anticipated that the space needed to deliver this mix of program options within the new facility would exceed the 20,000 square foot maximum anticipated for the building. This dilemma presented the first substantive issue for resolution by the new C-TECH Executive Committee in 2012.

The Executive Committee was formed at the onset of the C-TECH design process to serve as the official governance and decision-making body for the new early/middle college. Although the initial meetings and work of this six-person group was primarily informational in nature, establishing effective lines of communication and the degree of confidence and trust necessary for on-going operation of this collaborative venture was deemed essential by both RPS and RCTC officials, and was fully endorsed by the City of

Rochester, the Chamber of Commerce and MnSCU. A highly effective and efficient governance group was crucial to the operation of this complex venture.

Like the Anoka STEP model, funding for the construction of the facility and operation of the early/middle college would come from multiple sources (RPS; RCTC; and the sales tax proceeds from the city of Rochester used to defray the cost of construction); moreover, co-locating the facility on land owned by the State of Minnesota presented legal issues pertaining to building ownership and site access, impacting such practical issues as maintenance, student and public access, and transportation right-of-way. At the time the research was completed, the parties were consulting with their legal counsel to secure permanent solutions to the legal issues in order to facilitate smooth operations and functional efficiency.

All issues relating to governance and operation were determined to be within the purview of the Executive Committee, and by mid-2013 the group had begun to consider the legal issues presented by the imminent design and construction of the new facility. Specifically, the Executive Committee was required to analyze the results of the CARE program development process and make final decisions regarding the specific career pathways and programmatic options that would be delivered within the space available for instructional purposes in the new facility. At the time the site-based research for this study was completed, the Executive Committee had completed its initial assessment of the career pathway and program options, and expected to complete its decision-making responsibilities on this topic consistent with architectural deadlines established for the schematic design of the new facility.

The C-TECH program planning and governance structure represents a significant leap forward in terms of process and structure from the models used to complete similar planning and design work for Minnesota's other early/middle colleges. C-TECH utilized existing structures (CARE) to advance the planning work needed to launch the new early/middle college, and purposefully created a governance group (the Executive Committee), anticipating the need for such a body well before any of the constituents that participated were called upon to make any critical C-TECH related decisions, either individually or collectively.

This thoughtful, planful approach and purposeful emphasis on the use of appropriate structural elements to complete the design of an early/middle college, both in terms of curriculum and facility-related issues, represents a significant evolution in the design model for early/middle colleges in Minnesota, and potentially offers a replicable framework for other schools or colleges to use with their community and industry partners for the design of similar initiatives in other locations throughout the state.

C-TECH was purposefully modeled upon the instructional design elements represented in the Anoka STEP initiative. Research confirmed that the emerging C-TECH early/middle college design was patterned on three key elements represented in the Anoka STEP model: locating the program in a facility adjacent to a two-year college with a diverse mix of career and technical offerings; incorporating dual or concurrent enrollment options that permit participating students to obtain college credit while at the early/middle college; and a specific focus on serving applied or kinesthetic learners. This purposeful approach to replication of core design elements represents an additional structural dimension to the evolution of early/middle colleges in Minnesota that is

distinctly different from the expansion strategies used in other states where this educational model is present.

Members of the CARE committee and Rochester community leaders described their many visits to the Anoka STEP campus to observe the early/middle college model in action. The research suggests that the Rochester leaders experienced an open environment at STEP where their counterparts were willing to freely share information about their experiences and make suggestions regarding potential common practices that might be utilized to shape the emerging C-TECH initiative. Over the nine-year period in which C-TECH emerged as a workforce and educational innovation strategy in Rochester, various educational and civic leaders estimated that they made as many as six to ten visits to the STEP facility. They described these visits and tours as an invaluable opportunity to identify the specific instructional elements that distinguished the early/middle college model, including evidence of market-driven career pathways; course designs that incorporated rigorous career and technical content with general education competencies that met high school graduation requirements; and specific inclusion of dual or concurrent enrollment courses in which students could obtain college credit while enrolled in high school.

Examining the dual and concurrent enrollment options delivered at STEP was a priority for the Rochester delegations that visited the campus. For many years the CARE committee had sponsored expansion of post-secondary options (PSEO) programs in Rochester, offering no-cost opportunities for high school students to take RCTC courses for college credit. CARE members used their trips to STEP to compare the concurrent enrollment model used at Anoka with Rochester's past practices, determining that the

two approaches were compatible; additionally, the time spent at STEP helped academic administrators from high schools and the college alike explore the unique faculty assignment and credentialing requirements that their STEP counterparts were addressing. These insights were particularly important, given that the C-TECH model would be implemented in a similarly complex labor environment, requiring familiarity with school district and RCTC faculty contracts, as well as MnSCU and MDE credentialing requirements that STEP administrators described as "frequently incompatible."

Gathering information about the effective design and implementation of a dual or concurrent enrollment model for an early/middle college in the unique Minnesota academic and labor setting was as critical for the Rochester delegations as it had been for the ALI leaders who also participated in frequent observational visits to the STEP location. Given the complicated interrelationship between labor contracts, academic policies, and credentialing requirements involving multiple school district and post-secondary partners (as well as the added requirements imposed on participants by state-level governance and regulatory bodies such as MnSCU and MDE), utilizing a replication-based structural design criteria in the development of both the ALI and C-TECH models accelerated the incorporation of best practices and helped both locations successfully anticipate and overcome operational barriers that the STEP founders confronted without similar levels of guidance or support. This iterative structural framework is one of Minnesota's most distinctive thematic contributions to the evolution of the early/middle college model generally, and will be explored more fully in the cross-case analysis that concludes this chapter.

In addition to examining design elements that supported the implementation of STEP's concurrent enrollment strategy, the Rochester visitors also assessed the practical advantages of locating the program in a facility adjacent to a college campus. Unlike the ALI, where expanding access to career and technical programming was dependent on an export-type delivery model that took courses and programs out to high school locations across the Iron Range, the Rochester planners were more interested in a program that maximized delivery in a single site within the Rochester city limits. Moreover, given the long-standing relationships and partnerships between RPS and RCTC, an architectural site design that provided opportunities to further maximize space utilization, share specialized technical program equipment and technology, and leverage financial resources held a particular appeal. During their many visits to Anoka, Rochester leaders considered whether a comparable investment to build a co-located or adjacent building for C-TECH made sense from an instructional, financial and community service perspective.

The assessments and insights garnered during these visits helped shape the Rochester community's strategy to pursue voter authorization for the funds needed to construct an early/middle college building adjacent to RCTC's Heintz Center. Like Anoka Technical College, the Heintz Center (the site of the former Rochester Technical College) possessed high bay, laboratory and classroom spaces suitable for career and technical instruction in existing curricular demand areas such as welding. The close proximity to the college also promoted opportunities for closer working relationships between high school and post-secondary faculty, and offered students the critical

intangible advantage of pride and accomplishment represented by attending college while still in high school.

From a purely practical perspective, Rochester leaders learned at STEP that the combined efforts of the high school and college staff and administrators led to effective solutions to such issues as student transportation, computer use and access and food service. Observing ways to anticipate the need for these services and documenting specific actions for their delivery in the Rochester setting helped the CARE designers develop a more comprehensive blueprint for the early/middle college, making it easier for Rochester area community members, parents and students to envision the model in action.

Perhaps the most important reason for visiting Anoka cited by the Rochester educational and civic leaders interviewed during this case study was the opportunity to find out more about the students and families served by the STEP program. The student- and community-centeredness that was top of mind for the Rochester leaders involved in this project prompted them to seek out opportunities to visit with individual students while on site at STEP, purposefully inquiring why this new high school option appealed to them and to their families.

A member of the Governor's Workforce Development Council eloquently summarized what the Rochester leaders learned about the students enrolled at STEP:

> We talked to the high-school kids and there was one boy that I met the first time I was up there who told me if it hadn't been for their welding program, he would not have been in school. He stayed in school because he could weld. And he learned math that way, he learned science and all of the things that you have to know to be a welder; it all made sense to him because he could associate it with

that career. I was so impressed by him, since he was about ready to graduate and move on to college or to work.

Observations like these validated the intuition and insight that Rochester leaders possessed about the student population in their community that they believed would be well-served by an early/middle college model. Like Anoka, they knew that the early/middle college would offer an important educational alternative for the applied and kinesthetic learners who were not being served in the existing high schools, due in great part to the financially motivated elimination of these courses and programs in Rochester's four public high schools. These students were of all levels of academic achievement and ability, from those with high grade point averages and test scores to those in the middle of the pack as well as students with particular remediation or special education needs. C-TECH, like STEP and the ALI, would be specifically designed—using specific structural strategies to create a culture of achievement and pride in students' success in their career and technical coursework—to offer choices for a learner segment that had been deemphasized as a consequence of budget challenges and continued inattention to the needs of applied learners. This intentional student-centeredness resembles the explicit design criteria recommended by Jobs for the Future (Ward & Miller, 2011) and the Gates Foundation (American Institutes for Research and SRI International, 2005- 2009; Berger et al., 2010) in their seminal evaluations of the first early/middle colleges.

Synthesizing the outcomes of the program development processes implemented by CARE with the action-research type outcomes garnered through the many field trip visits to STEP presented Rochester's educational and civic leaders with a solid structural framework to support a groundbreaking effort in 2012 to secure voter approval for an

increase in the local sales tax that would in turn provide the revenues needed to construct and equip the proposed C-TECH facility adjacent to the Heintz Center. This advocacy effort symbolized the community's deep commitment to career and technical education, and exemplified the broad cultural conditions that must be present to successfully launch an early/middle college initiative in Minnesota.

The Rochester community's commitment to educational attainment as the foundation for economic development and individual prosperity is symbolized in C-TECH. In 2012, community leaders from across Rochester—from civic, nonprofit, business/industry, education, government and philanthropy groups and organizations – established a broad-based coalition to implement an advocacy effort intended to garner voter support for a ballot initiative that, if approved, would provide the resources needed to build a new facility for C-TECH adjacent to RCTC's Heintz Center. The formation and work of this coalition symbolized the community's deep commitment to educational innovation aligned with workforce development, and an analysis of this advocacy campaign illuminates the unique cultural conditions present in the Rochester community that supported the development of the early/middle college.

Educational leaders from both K-12 and higher education in Rochester emphasized that the advocacy campaign supporting C-TECH was predominantly conceived, designed and led from their counterparts within the business/industry, civic and governmental sectors. They praised the work of staff and leadership from the Rochester Area Chamber of Commerce who played a significant role in framing the issue for voters and rallying their peers to serve as champions for the cause. The superintendent of schools stated that "I've never been in a community like this that

collaborates and partners with nonprofits, for profit businesses, K-12 and post-secondary education to find ways like C-TECH to fill the jobs that need to be filled." Similarly, the RCTC president reflected that the effort to secure public support for the sales tax referendum was led by the Rochester City Council and a 25-member citizens' group that engaged in a wide variety of advocacy efforts, including nearly 100 formal presentations and informal briefings, as well as community open forums and media coverage.

The overall campaign was entitled Common Sense, and represented a $139.5 million package of potential infrastructure improvements throughout the community. C-TECH was to receive $6.5 million, to fund the costs of construction, furnishings and equipment for an approximately 20,000 square foot facility adjacent to the Heintz Center. The facility would be contiguous with the relocated Rochester Workforce Center, a separate project with an anticipated completion date of 2014. The resulting campus design would integrate career and technical education and workforce planning and job placement services in a single location, offering the community a one-stop location that focused on the needs of employers and job seekers alike. Community leaders emphasized that this increased coordination and alignment between K-12 and higher education, as well as the workforce system, was critical to meet the Workforce 2020 goal of creating up to 35,000 new jobs in Rochester over the next ten years, as well as to ensure that there were highly skilled workers within Rochester that were prepared to fill these jobs.

Community leaders also stressed that the inclusion of the $6.5 million C-TECH proposal in the sales tax referendum package made it much easier to convince voters to cast a 'yes' vote for the initiative overall. A chamber of commerce staff member said

that it was easier for voters to support C-TECH because they could see themselves—or their children, neighbors, or another family member—benefitting from a program that would enhance college and career readiness and prepare for continued employment opportunity in the community where they lived. An assistant principal from RPS noted that it was very smart to market the initiative as a half-cent increase in the sales tax; in other words, it was easier for voters to vote affirmatively for a modest half-cent increase that would have direct and relatively immediate personal educational and employment benefits, as opposed to considering a multi-million dollar referendum for more generalized and remote infrastructure improvements.

The 2012 sales tax referendum in Rochester passed with 65% of the vote, at a time when across Minnesota (and nationally) the outcome of other appeals to increase school levies or raise taxes for other public purposes was more problematic. Rochester leaders attribute the success of this effort to several factors: the overall appeal of the C-TECH project to individual voters; the decision to downplay the role of educators and education-related reasons for the project in favor of business/industry and civic leaders, accompanied by the emphasis placed on jobs and work readiness; marketing the referendum as a half-cent sales tax increase rather than a multi-million dollar public works project; and a collaborative, partnership-driven advocacy strategy that resonated with the "way things got done" in Rochester.

This final element—community culture—emerged in this study as the primary and predominant factor contributing to the successful launch of the early/middle college initiative in Rochester. Notwithstanding the carefully structured planning process developed and led by the CARE committee, the work to plant the seed for the idea of an

early/middle college was completed by community leaders, and the effort to secure broad public support for the facility needed to move this concept from proposal to reality was similarly led by key champions from business and industry, civic groups, elected bodies, and philanthropy. These champions understood that change took place in their community when all interested parties worked together, so they placed primary emphasis on creating a culture where key leaders spoke about, convened, and participated in highly collaborative efforts to promote new ideas and strategies that resulted in an enhanced quality of life for all residents and improved conditions for industry performance and productivity.

Over the past ten years Rochester leaders identified, championed and sustained the close and careful alignment of educational preparation and success with economic and workforce development, developing innovative strategies (Workforce 2020) and initiatives (C-TECH) that would result in more and better-prepared workers to fill the anticipated needs of a growing community. Catalyzed by the vision and growth of the Mayo Clinic, the state's largest private employer, these community-driven initiatives demanded creativity and structural redesign on the part of the community's educational institutions to meet the curricular expectations inherent in a more fully aligned college and career readiness model.

Unlike one-time educational reform and innovation initiatives, the evolution of the Rochester C-TECH early/middle college initiative assumed the characteristics of a sophisticated political, business or marketing campaign. It reflected both the cultural ethos (collaboration, partnerships, and community- as well as student-centeredness) of its environment, as well as careful attention to the structural elements needed to translate

community- or student-based priorities into effective action grounded in data, analysis, and replication of best practices identified at a related location (Anoka STEP). Like the early/middle college model in Anoka and those that exist in other states (Corallo et al., 2004; Jobs for the Future, 2008; Le & Frankfort, 2011), C-TECH offers a comprehensive vision and operational model for providing curricular and student support options tailored to the specific learning needs of applied, kinesthetic learners at all points along an academic achievement continuum.

C-TECH differs, however, in a fundamental way, for it stands as testament to Rochester's dedicated effort to symbolize its deep commitment to educational innovation through a sustained, collaborative venture to launch and obtain voter support for a new educational model that is deeply rooted in the cultural ethos and values of the community it serves. The explicit cultural foundations of this latest expression of the early/middle college development in Minnesota suggest that awareness of and attentiveness to unique cultural conditions, norms, values and traditions may be the predominant element contributing to the successful launch of these models in this state. Developing a greater understanding of these elements—and exhibiting the ability to capture, focus and marshal them on behalf of an educational innovation strategy resembling an early/middle college—may be a crucial professional development imperative for leaders in both K-12 and higher education that are exploring structural redesign of institutions, curriculum, programs and services in pursuit of increased college and career readiness, as well as elimination of achievement and workforce preparation gaps for students from low-income backgrounds.

Analysis of Emergent Themes Across the Three Case Studies

Research demonstrates that the emergence of early/middle colleges in three Minnesota locations is deeply intertwined with the culture of those communities, especially with regard to expectations for a well-prepared workforce and communal aspirations regarding expanded educational options for young people. This complex interplay between cultural conditions and the emergence of the early/middle college as a structural design option for high school reform and enhanced workforce readiness presents a potential strategy for other areas of the state to examine when considering alternative pathways to college and career readiness for students who fit the applied/kinesthetic learner profile—a strategy that explicitly rejects the one-size-fits-all model that predominates existing high school and curricular design across the state.

Moreover, workforce readiness and career development appears to be the primary impetus for the emergence of early/middle colleges in the Minnesota context. The research demonstrates that early/middle colleges in this state are a community-initiated strategy to alter the structure for delivery of career and technical education programming for high school students, resulting in a new cultural ethos of resilience. In the context of the Minnesota early/middle college movement, resilience--building an innate, flexible capacity to withstand and overcome economic challenges--expands personal well-being, career development and job opportunities for individual workers, industry sectors and the entire community.

This heightened flexibility and preparedness for existing and emerging employment opportunities catalyzes broad perceptions of individual and communal well-being and vitality, and has potentially significant implications in terms of individual

earning power and potential; civic or regional prosperity; industrial profitability and entrepreneurism; and the overall economic competitiveness of the state in a global marketplace. Examining the common themes emerging from the cross-case analysis of the three individual early/middle colleges offers key insights into the interdependence of cultural factors, structural design options, and   leadership attributes in the deployment of this model as a catalyst for educational innovation and economic development throughout the state of Minnesota.

The emergence of an early/middle college in the community appears to be shaped by leadership that emerges extraneous to the academic environment. In each of the three locations where early/middle colleges have emerged as an innovative strategy for education-based economic development, the primary leadership for the initial framing of the idea and advocacy for the cultural and structural changes needed to advance the STEP, ALI and C-TECH proposals from concept to reality came from leaders outside the realm of K-12 or higher education. Although superintendents, college administrators, principals and staff all played crucial roles in the day-to-day work to build the early/middle college in each location, the predominant players in the establishment of political coalitions and community-wide efforts to secure support for the emerging models came from business/industry, civic, non-profit and governmental groups and organizations. These leaders recognized the broad community interests that would be served by a new educational structure for applied learners, and used their influence, connections and prestige to build awareness and support for the early/middle college concept, securing the financial, facility, technology and human resources needed to complete the structural tasks required to build out the new model.

The consequences of political, business and civic leaders offering primary leadership for the emergence of early/middle colleges in Minnesota. The educational leaders (superintendents, college presidents and vice presidents, high school principals) participating in this study both individually and collectively emphasized the important role played by community leaders in the conceptualization and implementation of the early/middle college model in each of the three Minnesota locations. In Anoka, the STEP model was the brainchild of a diverse group of legislators; city and county officials; small business owners, industry CEOs and human resource directors, and Chamber of Commerce executives; school board members; and retirees. This group banded together when confronted by the threatened closure of the technical college in Anoka, understanding that the long-standing relationship between the school district and the college could serve as the foundation for a new type of high school structure that would help students acquire the technical skills and attributes they would need to secure employment in an increasingly sophisticated global workforce. Perhaps more importantly, however, this core group of community leaders acknowledged that this new high school model was essential to attract, retain and grow the businesses and industries their community would need to remain economically competitive in the Twin Cities metropolitan region and secure a more prominent regional, national and global leadership presence.

Activating the desire to expand options for students through a workforce development strategy is consistent with the findings in the literature review pertaining to the emergence of early/middle colleges in other states (Ausburn & Brown, 2006; Castellano et al., 2007; Chernus & Fowler, 2010; Huffman, 2008). Accelerating this

work in response to a clearly-identified threat to the well-being of a community (such as the closure of a post-secondary institution) is unique to the Anoka location, and resulted in the development of a new structural model in significantly less time (two years) than for similar projects in other communities across the nation, as well as in comparison to the peer locations in Minnesota (the ALI emerged over an eight-year period, while C-TECH took nine years to move from concept to planned reality). Further research is needed to determine if the dominant role played by community leaders, coupled with a relatively rapid span of time from concept to structural development to launch of the model, contributed to the emergence in Anoka of academically-related issues pertaining to faculty assignment, mentoring, and overall relationships between high school and college instructors—issues that do not appear to exist to the same extent at the other two Minnesota locations.

Both the ALI and C-TECH have been specifically influenced by the community-initiated origins of the STEP model. Civic and political leaders from the Iron Range and Rochester studied the emergence of the Anoka STEP model, looking for lessons learned, best practices, and strategies to support replication of the early/middle college design in their communities. In both instances, these leaders built upon the early success of STEP's community-led origins to establish and support a sustained planning effort that was initiated, shaped and supported by the efforts of civic leaders and employers, and used deep analysis of data and economic trends to examine strategies for enhancing the overall culture and quality of life of the community or region through deployment of a new high school model.

On the Iron Range, launching the ALI was also identified as an action taken in response to a clear and overt threat to regional viability, as described by the confluence of the perfect storm factors: the decline of major industries, the financially-motivated elimination of secondary-level career and technical education, and an aging workforce. Unlike their Anoka counterparts, the Iron Range leaders did not rush to design and implement an early/middle college solution. Rather, they took the time needed to build a coalition among K-12 and post-secondary leaders they considered essential to shape the new structure, which would eventually transform separate school districts and colleges (and their related instructional and operational activities) into a collaborative structural arrangement for career and technical program delivery that would ultimately represent regionalism in action. Regionalism, in the ALI leaders' view, would represent a successful expression of collectivism and interdependence that would permanently alter the planning for and delivery of education and economic development programs and services in northeastern Minnesota.

The ALI's origins resonate deeply with the evaluation studies and commentary produced throughout the early- and mid-2000s by the Gates Foundation and Jobs for the Future (Berger et al., 2010; Edmunds et al., 2010; Jobs for the Future, 2008; Le & Frankfort, 2011), stressing the significance of clear statements of operating principles and overall vision/mission for the effective launch of an early/middle college model. This foundational work was augmented, however, by a sophisticated political strategy that capitalized on the unique state-level leadership positions held by key legislators from the region, using the influence and stature of these individuals to secure the initial financial resources for ALI that were needed to provide incentives for regional collaboration

among K-12 and higher education leaders alike. Although the core principles articulated

early in the ALI's development served as a solid foundation for planning, it is evident

that the new and revised structures for career and technical program delivery contained

within this model emerged only with the added resources needed to initially encourage

participation, subsidize development and eventually sustain this work.

In Rochester, community leaders shaping the C-TECH early/middle college

model expanded the use of data-based discussions to prepare a campaign for electoral

advocacy that led to voter approval for the $6 million sales tax levy needed to begin

construction on a facility on the Rochester Community and Technical college campus.

Like their peers in Anoka and across the Iron Range, the Rochester chamber, workforce

and industry executives championed the concept of a structural change in a high school

career and technical program delivery to address serious workforce readiness challenges

anticipated throughout southeastern Minnesota. Similarly, these executives crafted a

compelling case for the public to secure the support necessary to effectuate a change in

structure, in this case through the construction of a facility devoted to the early/middle

college and its programmatic connectivity to post-secondary education and regional

employers.

Rochester's distinctiveness, however, is found in the purposeful way that

community leaders wove labor market, student achievement and college participation

data into the design of the case for C-TECH support. Chamber of Commerce staff in

Rochester recounted the extensive use of labor market data supplied by DEED and area

employers that substantiated the compelling need for increased numbers of high school

graduates with the skills and credentials needed for successful initial employment and

career advancement opportunity. This information was considered along with historical trend data from the Rochester Public Schools regarding student enrollments and financial support for career and technical education programming in the city's three public high schools, as well as program-level enrollment, retention and graduation data from RCTC for the post-secondary component of critical career pathways. Taken together, the purposeful collection and analysis of labor market and student data shaped a compelling case for educational change, by establishing a community-based rationale for redesigning the high school curricular model to better serve the needs of applied learners and regional employers.

The primary implication of the community-based leadership that catalyzed the development of an early/middle college in three Minnesota locations is found in the increasingly cogent and data-driven rationale for structural change that, in turn, substantiated the need for a cultural shift in each of these communities. Since the paramount need in Anoka, the Iron Range and Rochester was the realignment of structures and resources to produce more high school and college graduates with the skills considered in demand by current and future employers, developing strong partnerships between K-12 and higher education and civic, industry and non-profit leaders was essential to effectuate these changes. For these new ideas to be considered credible, however—and worthy of support by key elected officials and, in the Rochester example, local voters—leadership in each instance came from outside the academy, represented by individuals with long-standing stature and status within the community who emerged as the primary champions for the launch of the early/middle college. In each example, however, the evidence suggests that framing the case for early/middle

college support in primary terms of workforce and economic development—as opposed to educational reform—also contributed to early adoption of the new model.

Connecting early/middle college structures with workforce development priorities contributes to the popularity of the model. The three early/middle colleges examined in Minnesota can be distinguished from their national peers by their broad focus on workforce readiness, as distinct from a more refined or discrete emphasis on acquisition of college credit (Hughes, Karp, Fermin et al., 2005) or preparation for a specific career or discipline (North, 2011).   In each Minnesota location, the research suggests that both community and educational leaders reached the conclusion that economic and cultural forces influenced the structural change in high school curriculum and delivery to expand programming in selected career and technical areas that directly related to future individual prosperity and community vitality. Framing the rationale for an early/middle college in economic and community development terms reinforced the workforce readiness origins of the model generally (see Huffman, 2008; Slade, 2006), and shaped a case for supporting these new initiatives that resonated with Minnesota's populist political, labor, and vocationally-oriented cultural ethos.

Although all three communities demonstrated evidence of connection between the early/middle college's purpose and the workforce readiness requirements of area employers, the ALI was most explicit in its use of education-based economic development as the fundamental rationale for the new model. ALI leaders intentionally used the process to shape the ALI as a strategy to resolve a perennial question regarding program priorities and resource allocation in northeastern Minnesota: what was the

primary catalyst for job growth and community prosperity in this region of the state--investment in education or economic development?

Through the establishment of common design principles and the thoughtful, deliberate process of relationship-building and establishment of mutual trust, ALI leaders demonstrated to their communities and the state as a whole that redirecting resources into a structural redesign of the relationship between K-12 and higher education provided the fundamental answer to the overarching question about priority of investment. They used an organic, cross-institutional faculty-led process for career and technical program redesign as an example of a change in doing business across the Iron Range, which eventually evolved into a tangible structural model for education-based economic development: a regional early/middle college.

The contours of the structure that emerged for the ALI established a road map for future efforts at regionalism in northeastern Minnesota, with both educators and government officials citing the framework as their first step forward in a broader strategy to realign K-12 and post-secondary curriculum, support services and resources around a common theme of learner readiness and success that transcends tradition and geography. To do this, sustaining and reinforcing the core structural elements of the ALI became an on-going priority. Maintaining the three-tiered governance and operational structure (steering committee, leadership council, cabinet); ensuring continued availability of base-level ALI financial resources and augmenting these funds with increased levels of industry support (in-kind donations of equipment and supplies as well as internship/apprenticeship opportunities); continued investment in faculty leadership and professional development; and refining evaluation of learner experiences to document the

overall success of the ALI's early/middle college model all emerged through this study as key indicators of the effectiveness of the new regional delivery structure.

The effort to create and sustain the new business model represented by the emergence of the ALI cannot be overstated. Seventeen school districts representing independent cities and towns with a diverse and ethnically rich history banded together with five colleges to create a regional model for curriculum development, resource allocation, and programmatic expansion, completely within the contextual parameters of career and technical education. That this took place in an exclusively rural area with significant geographic, transportation and climate challenges is also relevant. By identifying a common need to change the way business was done on the Iron Range—and strategically selecting the early/middle college structure as the vehicle for catalyzing these changes—the ALI emerged as a powerful expression of educational and economic innovation for rural communities, both in Minnesota and potentially across the nation.

The learner segment served by early/middle colleges in Minnesota is shifting from a specific emphasis on *students in the middle* to a more generalized definition. Throughout the research into the early/middle college model at each of the three Minnesota locations, participants in the structured interviews consistently and proudly defended the development of these new structures as a more student-centered and student-friendly model for high schools than may have been the case in their communities in the past. In more specific terms, educators (administrators and faculty members) as well as community leaders emphasized the importance of the early/middle college design as a strategy to reach out to and better serve the needs of learners who were more suited to a hands-on, problem-solving, project-based contextualized

curriculum and pedagogy. Financial pressures impacting school districts in all three locations throughout the 1990s led to severe cutbacks and reductions in the availability of programming at the high school level to serve these students, leading to increased dropout rates, enrollment growth in alternative learning centers and programs, and perceptions that the high schools were not graduating students with the skills necessary to succeed in college or, perhaps more importantly, on the job.

The deep cultural interest in meeting the needs of this underserved learner segment became manifest in Minnesota in ways that were both consistent with yet different from the early/middle college designs in other states. Various authors (Huffman, 2008; Pennington, 2003) have described the typical student profile existing at middle colleges in other states; in general, this profile tends to align with the Minnesota models, where these structures emerged to provide a unique set of programmatic options for applied or kinesthetic learners in the middle of the achievement, maturity, or socio-economic spectrum. In general terms, the phrase 'students in the middle' (as used at STEP) adequately describes the target population for the Minnesota early/middle colleges; acknowledging, however, that this label has been typically applied at the three Minnesota early/middle colleges within the context of career and technical programming as well as in connection to each site's emphasis on expanding of this type of education to meet both individual and community demands for increased prosperity, vitality and quality of life.

Evidence of the student-centeredness that distinguishes the early/middle college model can be found in the ALI and C-TECH examples as well, although in both locations educational and community leaders stressed the relevance and importance of the model

for all learners, irrespective of their prior levels of academic achievement or the socioeconomic status of their household. In fact, there appeared to be a growing interest in tailoring aspects of the curriculum at both the ALI and C-TECH to meet the needs of academically exceptional students who might be on a four-year college path, with employment readiness further down on their list of educational preparation priorities. Although this shift is consistent with the community's interest in securing breadth as well as depth in educational preparation needed to attract and retain industries as well as employees, it does alter the 'students in the middle' concept successfully employed at STEP, aligning more directly with the broader definitions of student-centeredness utilized at several of the nation's leading early/middle colleges (Born, 2006; Kirst & Venezia, 2004).

Serving students of color appears to be a by-product of a broader focus on applied learners. The literature also suggests that the prominence of early/middle colleges in states such as California and Texas depends to a great degree in their value as a viable college and career readiness option for students of color, especially those from low-income backgrounds (Foley, 2010; Jordan, Cavalluzzo & Corallo, 2006; Kaniuka & Vickers, 2010). In the Hidalgo (TX) school district, for example, the emergence of the early/middle college as a strategy for increasing high school graduation and post-secondary participation rates among Hispanic youth has been widely regarded as a model approach for eliminating systemic gaps in student achievement and college enrollment between students of color and their white peers (Vargas & Miller, 2011). The Hidalgo early/middle college also draws heavily on community leadership and influences to design a model that is responsive to the particular expectations of a cultural group,

devising curricular and pedagogical structures in consultation with faculty, parents, faith community leaders, and representatives from business and industry (Nodine, 2011; Vargas & Miller, 2011).

The present research suggests that although the three early/middle colleges in Minnesota do attract and enroll students of color, intentionally shaping the model to address the specific expectations of diverse, multicultural students and community groups was not a discrete design consideration. Similarly, although there is ample evidence of broad and continuous consultation with business and industry representatives and parent groups in each location, there is not comparable qualitative data to substantiate specific outreach to or engagement with multicultural groups or organizations, faith communities, or other entities that advocate for the needs and interests of learners from diverse backgrounds.

Although further research is needed to determine whether these outcomes are the result of timing or planning considerations at each location, the results of this study do suggest that service to diverse or multicultural learners was not included as a specific design element at the three Minnesota early/middle college locations. To the extent, however, that race and income level correlate in terms of high school graduation and post-secondary participation outcomes, it is clear, though, that providing expanded opportunities for living-wage employment in each of the three communities where the early/middle colleges emerged was a specific rationale supporting the design of this new educational structure.

Educators and community leaders in each location cited labor market data pertaining to prevailing wage levels and job opportunities as important determinants of

the specific career and technical program areas to be offered by the new early/middle college, frequently suggesting that this focus would have a beneficial impact on students of color. Again, the research suggests that this is an incidental outcome related to the economic development origins of the early/middle college movement in Minnesota, and does not appear to suggest the presence of a clear intention to use this new model as a strategy for eliminating systemic achievement or participation gaps impacting students of color in these communities or across the state as a whole.

The student-centeredness described at each of the three early/middle colleges in Minnesota can best be described as a passionate expression of a cultural aspiration that is deeply embedded in the state's collective cultural ethos: a populist, progressive notion that all students should be afforded the opportunity to succeed, with educational opportunity, hard work and community engagement as the benchmark indicators of economic prosperity. Developing an educational option to better fit students who were not academically inclined but with the latent talent to be successful in high-demand occupations that directly related to the community's overall economic vitality was a popular concept that resonated broadly in Anoka, on the Iron Range, and in Rochester. The fact that these structural options emerged at the same time that two of these communities (Anoka and Rochester) were experiencing significant demographic changes in the student population attending their public high schools and colleges, yet did not acknowledge the potential for the early/middle college to offer a new educational option tailored to meet the needs of these students (generally, from communities of color or children from new immigrant families) is a research finding that distinguishes the emergence of the Minnesota models from their national counterparts.

The presence of the early/middle college influences the cultural and economic development of the broader community. Although the early/middle colleges in Minnesota did not appear to be primarily intended as catalysts for elimination of gaps in achievement and post-secondary participation among various student groups, the early qualitative evidence pertaining to the operation of these new models suggests that the clear focus on job preparation and economic development did create an increased awareness of the need for greater educational inclusiveness and acknowledgement of the benefits of multiculturalism and diversity, particular on the part of K-12 district-level administrators. This change in attitude and early indication of a cultural shift is most apparent in Anoka, perhaps due to the relative longevity of the STEP model and the rate of demographic change in the community and the Twin Cities metropolitan region generally, as compared with the rest of the state. These attitudinal shifts may reflect an increased understanding of the broader consequences and impact afforded by the early/middle college, and the cultural changes that conceivably might result from a change in the structure for high school-college partnerships within the community.

Focusing on the skills and attributes necessary for living-wage employment benefits individuals and communities alike. In Anoka specifically, and to some extent on the Iron Range and in Rochester, the operation of the early/middle college was identified as a key element of an economic development strategy to increase the number of living-wage jobs. Although this strategy was primarily intended to increase overall economic vitality within the community by attracting businesses (and jobs) and increasing both the tax base and tax revenues, it also anticipated individual income-level improvements directly related to expanded opportunities for skill development afforded

by the presence of an early/middle college in the community. The use of census-based demographic data and labor market information acquired from DEED strengthened the data-based foundations of this methodology.

Leaders and officials in Anoka described the importance of the curriculum redesign work undertaken by faculty at STEP, explaining that it exemplified a critical balancing of career and college readiness concepts essential to a well-prepared workforce. This was particularly important in this community, which historically had the lowest number of residents with post-secondary credentials in the seven-county metropolitan area. Thus, the presence of better prepared workers was considered a guarantee that current employers would remain in the community, and also made the area more attractive to new firms, especially those seeking more highly-skilled workers in the technology, manufacturing and health care sectors. These leaders also reasoned that jobs which demanded a higher level of skill would also command higher rates of pay, facilitating the expansion of living wage employment in labor market growth areas, benefitting individuals and communities alike.

Further quantitative analysis is needed to determine if Anoka (or the Iron Range or Rochester) succeeded in expanding the number of living-wage jobs as a result of the presence of an early/middle college in the community. For purposes of this analysis, however, it was clear that generating increases in living wage employment served as a specific rationale for the launch of an early/middle college structure in each location; and moreover, in Anoka both school and community leaders qualitatively detected a connection between the expansion of career and technical education options, growth in

living-wage jobs and deployment of the early/middle college as an intentional strategy

and structure for serving students of color from low-income backgrounds.

In all three communities, the development of the early/middle college permanently altered the way educators, civic and governmental leaders, and elected officials viewed workforce and community development strategies. Perhaps the most fundamental consequence of the emergence of early/middle colleges as a new structural option for delivery of career and technical education is the impact these models have on the design and implementation of workforce development initiatives at the local or regional level. In each location, elected officials and civic representatives (typically from the local chamber of commerce) reported that the emergence and early success of the early/middle college precipitated a reexamination of the way each community (or region, in the case of the Iron Range) approached investment of resources for purposes of workforce development and employment readiness, especially with regard to young adults and high school graduates and dropouts. In all cases, redirecting emphasis (and resources) into the collaborative model represented by the early/middle college emerged as a top priority.

Research substantiated that the STEP model emerged as a solution when the potential closure of the technical college presented a threat to the survival and vitality of the Anoka community's way of life. Similarly, the ALI was launched in response to the 'perfect storm' conditions that permanently threatened the viability of leading industries on the Iron Range and the overall well being of the region's communities, residents, and young people. Likewise, in Rochester community leaders anticipated a critical shortfall in the number of skilled workers needed to support local industries and sustain a vibrant

and multi-faceted regional economy. In each of these cases, the development of a new structural model that emphasized closer alignment between educational programming and the existing and emerging workforce preparation requirements of the regional economy became the new operational norm for workforce development; and as a result, community resilience emerged as a core cultural condition.

Although ALI leaders first defined the concept of individual and community resilience to illustrate a core outcome of the early/middle college structural model in northeastern Minnesota, the research suggests that this attribute is also present in the analysis of the STEP and C-TECH locations. For these communities, establishing a new permanent structure to promote expanded career and technical programming along the educational continuum—from high school through the two-year college with connections to baccalaureate options—offered a solution that addressed immediate threats to individual and community prosperity through education-based economic development. Emphasizing capacity-building processes grounded in the values of collaboration, mutuality, and trustworthiness, the three early/middle colleges redefined the relationship between K-12 and higher education, purposefully aligning curricular development with industry expectations and using labor market data to select areas of programmatic emphasis consistent with market demand. This work established a new framework for workforce development using the notion of education-based economic development as its thematic foundation.

The fundamental consequence of this new framework was a priority emphasis on industry- and faculty-led program development, which further enhanced the capacity of the early/middle college to catalyze organic strategies for relationship-building and trust

that served as the condition precedent to the implementation of actual concurrent enrollment practices, industry internships and other, more generalized forms of college and career readiness activity. This restructuring of instructional activity led to a new way of doing business—a new cultural norm, as it were—between K-12 schools and two-year colleges, which in turn permanently affected the way community leaders, elected officials, and educational administrators viewed the early/middle college's role as a catalyst for workforce development within the culture of the community at large.

In its essence, the notion of resilience represented a cultural shift towards partnership-based capacity-building and permanent structural reform of high schools and two-year colleges, in pursuit of improved economic self-sufficiency and quality of life, both for individual students, employees and residents, as well as the community as a whole. As conceived, designed and implemented, the early/middle colleges in Minnesota reshaped the state's historic delivery of career and technical education to create predictable, market-driven educational pathway structures for high school students that aligned with the workforce development expectations of local industries and the wider community. By promoting predictability and alignment in the preparation of the local workforce, the early/middle college model expanded the community's capacity to withstand and overcome economic shifts, building the capacity needed to ensure the continued availability of skilled workers for existing jobs, as well as those that will be created in the future. This focus on sustainable capacity building is the essence of resilience, as expressed by the community leaders responsible for development of early/middle colleges in Anoka, the Iron Range, and Rochester.

Resilience also has connotations for individual students and their educational and career aspirations as well. By developing models that focused on applied learning opportunities for kinesthetic learners, the early/middle colleges reinstated curricular choices that had disappeared from or eroded over time within each community's high schools. Aligning high school curriculum with post-secondary preparation for jobs and industry sectors considered crucial to the future economic vitality of the community presented these students with tangible choices for their education and employment, symbolizing the continued significance of career and technical education to individual workers' well being and the overall vitality of the Minnesota economy.

The early/middle colleges in Minnesota represent a structural model—with curriculum, finance, human resource and facility dimensions—that emerged as a response to cultural conditions. Through a process of co-creation, educators and community leaders together forged new partnerships grounded in collaboration and trust that expanded career and technical options for students, resulting in a more predictable and resilient approach to workforce preparation demands. For resilience, predictability and sustainability expectations to have relevance and permanence, however, they must become part of the leadership framework for faculty, administrators, community and industry representatives, and elected officials that engage in innovative cultural change initiatives exemplified by the development of an early/middle college.

Leadership implications for Minnesota educators and community members considering the early/middle college structural innovation model. In the final analysis, the examination of the cultural and structural elements influencing the design of early/middle colleges in three Minnesota locations affirmed the significance of personal

and professional leadership as the catalyst for this new educational model. The significance of external leadership and advocacy, as demonstrated by leaders from various community-based constituencies, has been extensively documented and analyzed throughout this chapter. A final word regarding the essential leadership qualities needed for educators—faculty as well as administrators—engaged in the work of early/middle colleges is offered to further delineate the influential role that these individuals assume when working in close cooperation with leaders from throughout the community in pursuit of education-based economic development strategies that simultaneously benefit students and communities.

The significance of broad engagement within the community for effective early/middle college educational leaders. It is clear from the research that the coalition building and advocacy exhibited by community leaders in Anoka, on the Iron Range and in Rochester as they championed the new early/middle college concept would have been ineffective had administrators and faculty members at both the high school and post-secondary levels not supported their efforts. In all three locations, extremely high levels of trust and rapport among educators and community members existed, and was nurtured and developed on both sides of the relationship over a period of years. The various community leaders that participated in the research study uniformly described their working relationships with college officials, principals and superintendents, and faculty as positive and trustworthy; moreover, they appreciated that in the past these educators had invited them personally to participate in prior service or advocacy opportunities at the high school or college level, such as membership on a program advisory committee, a college foundation, or as a volunteer tutor or mentor with students.

It was also clear to these influential community leaders that the invitation to engage with the high school or college came from individuals who believed that close working relationships with external leaders and the organizations they represented could make the difference between a marginal educational experience for students and one that would more suitably prepare them for college and career, as well as life in the community. To accomplish this, several of the educators interviewed for this study stressed the importance of deeply engaging with the community. Expanding involvement with business, industry and civic groups facilitated the growth of personal and professional relationships that nurtured the mutual understanding and trust necessary to catalyze new levels of commitment to causes that might initially be perceived as risky, ambiguous, ambitious or outside the apparent capacities and capabilities of individuals, schools or communities. Launching an early/middle college was identified by several of these individuals as exactly that type of endeavor.

What appears to have made the difference in these communities was the presence of long-standing, friendly, and committed engagements between educators and industry, civic and political leaders. One administrator from Anoka described these relationships as emerging from her efforts to 'work' the community—not only attending meetings of the chamber of commerce and other groups, but volunteering to assist with the annual Halloween parade, and working on electoral campaigns for those local legislators whose on-going support for STEP was absolutely crucial. Similarly, Iron Range educators stressed the importance of the time spent away from formal meetings to the success of educational, civic and political activity—whether spent at lunch at Valentini's in Chisholm, or at a high school football or hockey game, the time devoted to building an

effective working relationship with key community partners served as the foundation for establishing the common ground needed to embark on innovative new ventures such as the ALI. Finally, Rochester leaders acknowledged the existence of the primary value that the community placed on collaboration and joint endeavor; both school district and college administrators admitted that the community was smart and savvy, capable of detecting the presence or absence of mutuality and devotion to the common good in any campaign for their support. This ensured that a genuinely cooperative venture became the essential ingredient for the campaign to secure permanent funding for the C-TECH facility.

The story of the three early/middle colleges in Minnesota can be viewed as a lesson for educators in the qualities and commitments needed to create the cultural conditions within which new ideas like these can emerge, evolve, and flourish.

Possession of a spirit of openness to examine new ideas, and a genuinely collaborative style are essential attributes for leaders in this environment. Perhaps more important, however, is the notion of "working the community"—bringing one's political, personal and professional interests, skills and networks to the table, and deploying them in ways that represented an invitation to others in the community to join in the entrepreneurial work needed to launch, define and assess innovative education-based economic development strategies.

In the final analysis, the reasons why early/middle colleges emerged in these three communities—and not in others—appear to depend substantially on the leadership skills and capacities of educators and community leaders, especially with regard to their individual and collective abilities to grasp the culture of a place, and to diagnose what

structural changes might lead to renewed levels of productivity, vitality and well-being for individuals and entire communities. Early/middle colleges emerged in Anoka, on the Iron Range, and in Rochester because leaders in those communities possessed these critical leadership attributes, and wisely managed their application in pursuit of an education-based economic development strategy devoted to the common good of all students and ultimately, each community.

Potential leadership attributes for educators, industry representatives, and civic officials seeking to champion the early/middle college model. Throughout this study, faculty and administrators from K-12 and higher education who were engaged in the work of the early/middle college in their communities offered their observations and reflections on the nature of leadership required to initiate, guide and sustain these new educational models. In these reflections, the notion of resiliency—being able to rebound from real or perceived setbacks and move forward to carry out an innovative idea or agenda with gracefulness and expeditiousness was frequently noted--as was the quality of patience. Patience was especially critical for the educators working with ALI and C-TECH, since these models purposefully were shaped and implemented over the extended time period needed to build broad coalitions for political and financial support, while concurrently nurturing the new working relationships among high school and college partners that served as the foundation for the new structural delivery model represented within the early/middle college.

In all three locations, however, faculty and administrators emphasized the critical leadership qualities that illustrate the essence of the impact that early/middle colleges can have for students and in the wider community. First, these leaders stressed the

significance of careful, thoughtful risk-taking as well as courageousness--attributes demonstrated in the context of a passionate commitment to students and their success. Faculty and administrators alike from both high school and post-secondary backgrounds reported that they were compelled to advance the concept and structure for a new early/middle college in concert with their community peers because its presence was essential to effectively serve the learning needs of students who had been left out of, left behind, or underserved in the traditional high school delivery models in their communities. For these students—whether described as students in the middle, applied or kinesthetic learners, or all learners who deserved more curricular, college or career options—any risk was worth taking, so long as it also aligned with the broader community interests that the new model was intended to serve.

The educators that shaped the early/middle colleges in Anoka, the Iron Range and Rochester complemented their student-centeredness with a powerful community-mindedness that afforded them the insight needed to identify and comprehend the cultural forces and conditions that would give rise to the new model, as well as influence the design and operation of the delivery structures that would emerge over time. Using an awareness of the community's cultural ethos as their foundation, and in close collaboration and partnership with civic, industry and political leaders, these faculty and administrative visionaries captured the aspirations of the community for its young people in the design elements for a new early/middle college, and established this concept as the rationale for new structures—curriculum, courses, credits—that would enhance college and career readiness in pursuit of a skilled workforce and sustainable economic prosperity.

This complex interplay between cultural traditions and aspirations; structural reform strategies and choices involving high schools and colleges; the leadership attributes of educational and community leaders; and a transcendent commitment to the common good emerged through this research study as the foundational design elements for early/middle colleges in three Minnesota communities. Given the populist traditions of this state, and its historic commitment to educational opportunity, it is interesting to speculate whether the cultural conditions giving rise to the early/middle college model exist at other locations; and if so, whether leaders in those communities will possess the capacity, insight and perseverance necessary to champion this model as a strategy for expanded student success and community prosperity. Should those locations emerge, this research can serve as a detailed roadmap to follow to guide, shape and advance similar endeavors devoted to education-based economic development throughout Minnesota.

Chapter V – Conclusion

The purpose of this study is to examine the cultural conditions and structural elements that influenced the development of early/middle colleges in three separate locations in the state of Minnesota. In all three locations, Anoka, the Iron Range, and Rochester, the early/middle colleges emerged as an expression of a broad-based strategy to increase college and career readiness, strengthen job creation, and enhance the overall economic vitality and competitiveness of the community. By designing and implementing a new structural design promoted expanded access to career and technical education options for students, community leaders and educators asserted that the overall workforce readiness of the community or region was enhanced through the operation of the early/middle college.

Throughout the research phase of this study, many of the persons interviewed commented on the future of the early/middle college movement in Minnesota; expressing interest and offering insight regarding the next locations where the model might emerge; or suggestions for ways that the lessons learned at the three existing locations might be integrated into a state-level blueprint for a purposeful expansion strategy. These questions and insights serve as the foundation for an assessment of the implications of this study, and an indicator of potential research that could further advance the role of early/middle colleges in the state.

The success of organic local community origins of the early/middle college movement in Minnesota presents implications for state-level leaders, in both K-12 and post-secondary education, particularly with regard to the future of career and technical education programming throughout the state. Moreover, an opportunity now exists to

strengthen the structural model that emerged in Minnesota with evidence of successfully

design practices utilized in states like North Carolina and Texas, adapting the

early/middle college to purposefully address systemic achievement and college

participation gaps for low-income students of color.

In addition to the thematic implications of this study, there are several possible

areas for further research related to this topic. Subsequent research can strengthen the

influence that the early/middle college model has on the college and career readiness of

high school students in additional communities throughout Minnesota. Continued

examination of these topics will enhance the culturally based origins of the early/middle

college by promoting a data-oriented, scholarly approach to the refinement and further

expansion of the model.

Implications

As the Minnesota economy continues to recover from the job losses experienced

throughout the state during the Great Recession of 2008-2012, educational leaders are

presented with a unique opportunity: to align curricula and programmatic offerings with

existing and emerging employment opportunities in key industry sectors (Carnevale,

2013; Governor's Workforce Development Council, 2012). Leadership, to expand the

scope and influence of proven models for increasing the number of adults with post-

secondary credentials, is essential for a vigorous economy and individual self-sufficiency

(Carnevale, 2013). Given the community-based origins of the early/middle college

model that emerged through this study, leaders from the state's post-secondary and K-12

systems should consider building upon the momentum established in Anoka, the Iron

Range and Rochester, to expand the early/middle college strategy as a catalyst for increased college and career readiness, and elimination of persistent achievement gaps.

Leadership opportunities for education systems and organizations.
Examination of the origins of the early/middle colleges in three locations demonstrated a deep community commitment to educational innovation, which directly related to, and had an impact on, the success and vitality of the local economy. Local action, to secure political and electoral support for new investments needed to launch and sustain the early/middle colleges in each of these communities, was popular; enjoying broad levels of support from elected officials, opinion leaders and voters alike. When the case was made for educational reform in economic development terms, this study demonstrated that individual and collective support was much easier to achieve. This insight is a key lesson for educational leaders at the local school district and at the state level, as well. It is particularly significant for post-secondary institutional and system administrators interested in addressing persistent student access, retention, and completion challenges.

With the community origins of the early/middle colleges well established, educational leaders should secure the sustainability of these models. Considering academic and student support strategies that increase post-secondary access, retention and success for applied and kinesthetic learners of all abilities is essential. To do this, reframing the contemporary access, retention and completion challenges confronting two-year colleges in Minnesota in the context of the structure of the early/middle college model, would offer a concrete expression of community-based strategies to boost college participation. A strategy such as this would also address successful career preparation in programs and disciplines that align with existing and emerging workforce needs in the

immediate community. Whether expressed as sector-based initiatives, career pathways, market-driven education, contextualized learning, or technical skill assessments, the point remains the same: delivery of career and technical education throughout Minnesota that promotes both college and career readiness for high school students might be best accomplished through unprecedented levels of cooperation between K-12, higher education and industry partners in an institution specifically designed for that purpose.

The thematic findings from this study suggest that there are several common design elements that emerged as the structure for an early/middle college evolved independently at the three locations in Minnesota. These initial findings can be integrated with a state-level leadership strategy to promote expanded career and technical education opportunities for students, and restore programmatic options lost to many school districts and communities through the budget cuts of the 1980s and 1990s. To accomplish these objectives, close collaboration and partnership between high schools and two-year colleges is mandatory. Utilizing an intentional approach promoting application of core guiding principles (as in the case of the ALI); a data-driven assessment of industry need and programmatic selection (as utilized at C-TECH); and a purposeful focus on applied, kinesthetic learners (resembling STEP), the Minnesota Department of Education and the Minnesota State Colleges and Universities (MnSCU) have an opportunity to engage community leaders from across the state in an education-based economic development strategy, a strategy that can reinvigorate career and technical education and build a new cultural emphasis on resiliency that benefits individual learners and communities alike.

Elimination of achievement gaps for students of color as a primary design element. Many of the scholarly works cited in the review of literature make detailed reference to the significance of outreach and service to students of color as one of the predominant design elements at several of the nation's early/middle colleges. In Minnesota, however, the research suggests that this objective was a by-product of the initial structural design priorities established at each of the three early/middle college locations.

Although the emphasis placed on expanding career and technical education options resulted in participation by students of color and learners from immigrant families in Anoka, structuring STEP's recruitment and student support strategies, to specifically serve the unique interests of these learners, was not described as a core principle in the design of this early/middle college model. Similarly, although the ALI's stated purpose was to serve students broadly across the entire Iron Range, the data did not indicate that this scope was tailored in any way to specifically address diverse student populations, due to the more limited evidence of racial pluralism in that region of Minnesota. However, even with the increased evidence of demographic diversity in Rochester, the C-TECH model was explicitly framed as a strategy to expand career and college readiness for all learners, without a specific emphasis on students of color, immigrant families, or low-income households.

Future early/middle college initiatives in Minnesota should examine the successful launch of models in California and Texas that stress the role that the early/middle college can play in community-wide efforts to eliminate achievement gaps for students of color. Given the systemic and structural achievement gaps that persist in

urban school districts throughout the Twin Cities metropolitan region, and the increasing

learner diversity in suburban as well as rural districts, utilizing the early/middle college as

another element in a comprehensive strategy to increase curricular choices, that promote

learner success, is important for several reasons.

First, the early/middle college focus on applied instruction, contextualized

curriculum and alignment with industry expectations, can make school and learning more

tangible and relevant for students; offering concrete examples of college choices and job

options for students who may need to experience a deeper connection between learning

and life. These approaches can be especially valuable for students of color and other

learners, for whom a more tailored and inclusive approach to pedagogy is crucial for

higher levels of achievement and overall success (Bruce, 2007; Rosenbaum & Iwananga

Becker, 2011; Symonds, 2011). Combining a more realistic set of curricular experiences,

with the personal relationships between students and faculty members that also

distinguish the early/middle college model, both in Minnesota and across the nation, may

offer a learner-centered strategy that helps build learner confidence and promotes

progress toward academic achievement, especially when framed in terms of both college

and career readiness.

Secondly, the use of dual or concurrent enrollment as a primary structural design

element in an early/middle college model, can help students and families reduce both the

time and the cost associated with securing a post-secondary credential, in the form of

either a college degree or a job-related certificate or diploma. In all three of the

Minnesota early/middle colleges, implementation of concurrent enrollment programs is a

core element of the structural model, although there are significant variations in the

nature of, and emphasis, placed on the availability of this option in each location.

Future expressions of the model in Minnesota should capitalize on the opportunity

to offer career and technical courses in a concurrent enrollment format; offering students

from low-income households the choice to take courses while in high school that prepare

them for a specific career or college pathway, at no cost to their families. Previous

studies (Edwards & Hughes, 2011; Hughes et al., 2006) have found that this option

accelerates readiness for both rigorous college coursework as well as the workplace:

making expanded availability, in the context of an early/middle college model, tailored to

meeting the needs of diverse learners, an excellent tool to attack systemic achievement

and participation gaps (both post-secondary and workplace) for students of color and

other underserved student groups.

Continued promotion of concurrent enrollment as a strategy for increased college

and career readiness, among diverse student populations, also addresses the financial

considerations that frequently present insurmountable barriers to post-secondary

participation for many low-income students and their families. The early/middle college

structure inherently presents an effective solution to the college cost challenges faced by

many students, offering opportunities to acquire college credits, at no cost, while in high

school. Promoting these options as the primary benefit, for students who choose to enroll

in early/middle colleges, should be a top priority for academic and community leaders

who pursue this new model within their communities throughout Minnesota.

Finally, in light of the findings of this study relative to community engagement

and cultural influences affecting the development of early/middle colleges in Minnesota,

expanded outreach and relationship-building between educators and leaders from communities of color and immigrant groups should serve as an impetus for expansion of the model in other locations throughout the state. Building on the thematic finding pertaining to work, in and with the community, as a catalyzing force for the emergence of an early/middle college structure, educational leaders, in particular, might use the experiences of their peers in Anoka, the Iron Range and Rochester as a blueprint for establishing deep connections with community leaders, essential for the exploration of innovative strategies leading to structural changes in the ways career and technical programs can be offered to learners from diverse populations.

Emphasizing college and career readiness through a contextual, experiential learning model that promotes relevant life and learning skills, while removing cost barriers via concurrent enrollment, may be an appealing framework for a structural approach dedicated to elimination of culturally-based achievement and participation gaps in Minnesota, especially for students of color in the state's urban, suburban and rural communities that are experiencing an increase in demographic diversity. Faculty and administrators from high schools and two-year colleges who commit to work with communities of color or immigrant groups to explore an early/middle college structural design, may find willing partners for this work, given the cultural interests and aspirations they share, especially regarding to establishment of high expectations for all learners (Hoffmann & Vargas, 2010; Symonds, 2011), and promoting strategies for college and career readiness that create pathways from poverty to individual self-sufficiency, and overall community prosperity (Nodine, 2011).

Recommendations for Further Research

By design, the research parameters of this study were limited to three early/middle colleges in Minnesota. This delimitation supported the case study method, essential to examination of the cultural influences that impacted the structural design of the early/middle college model in each location. The overall impact and analysis of the cultural and structural factors that impacted the development of STEP in Anoka, ALI on the Iron Range, and C-TECH in Rochester may be of the greatest significance and practical value to community and educational leaders in Minnesota who confront similar influences, as they contemplate implementation of these models in a similar cultural context. However, despite the strong influence of local culture and historic economic conditions germane to Minnesota communities, this analysis of the close relationship between community engagement and leadership, and the eventual design of an early/middle college model, should offer additional practical guidance to educators in other states and communities who consider this model as a strategy for education-based economic development, leading to increased numbers of adults with post-secondary credentials.

In the course of this study, several additional areas of research emerged that may be examined in the future, to offer practitioners in Minnesota and other states further insight into the culturally-based origins of the early/middle college structure. In particular, examining these research topics can assist Minnesota leaders interested in establishing a statewide strategy for the early/middle college as a catalyst for career and technical education reform, or, as a more localized initiative, to eliminate systemic achievement gaps based on race or socioeconomic status.

Quantitative analysis to determine the impact of the early/middle college on the economy. Measurement of the actual impact that the early/middle colleges have on the economic prosperity of the community or region that they serve would further validate the workforce development origins of this model in Minnesota. At all three of the locations studied, a fundamental connection between the outcomes of the early/middle college (high school graduates prepared for post-secondary education and eventual employment in market-demand occupations) was reflected in the qualitative data. In Anoka and on the Iron Range in particular, additional quantitative research to determine whether the qualitative result is validated by actual employment trends would strengthen the argument relative to the overall workforce development impact of the new educational model (in Rochester the C-TECH model is still relatively new and it is less likely that there is adequate early/middle college or related workforce data to conduct a meaningful analysis).

A subsequent study that examines the correlation between early/middle college outcomes (either high school or college completion rates, or academic achievement data in selected program areas) and pertinent workforce data (employment rates in selected job or industry sectors, or job creation trends, for example) could further illuminate the relationship between the presence of this educational model and the economic vitality of the community. Selection of appropriate variables for analysis might depend on identification of key industry sectors related to programming, offered by the early/middle college, and the availability of multi-year student performance and credential completion data. In Anoka and the Iron Range, the length of time that the early/middle colleges have been in operation, coupled with the discrete geographic parameters of the area served (e.g.

Anoka County and the IRRRB service area), suggest that the data needed for a correlation analysis may be available.

The results of a correlation analysis could offer additional credence for the hypothesis that early/middle colleges do, indeed, provide a positive economic stimulus for a community or region through their impact on employment or job creation rates. Alternatively, greater insight from additional research could illuminate the overall consequences of this model for individual students and communities as a whole. This information would serve as a valuable corollary to the qualitative themes identified in this research study, providing additional justification for the continued expansion of the model, or refinement of existing structures at the three existing Minnesota locations.

Mixed-methods research to examine the actual student achievement outcomes represented at the early/middle colleges in Minnesota. In addition to quantitative analysis of the impact of the early/middle college on a community's workforce and economic development needs, further examination of the relationship between the curricular design components of this structural model and student achievement are needed. Although other organizations (The Bill & Melinda Gates Foundation, 2009; Foley, 2010) have offered insight on the more global implications of the new model, and studies of student performance at early/middle colleges in other states (Edmunds et al., 2010), an independent, scholarly, or evaluative analysis of student performance and completion outcomes at Minnesota's three locations does not exist. Early data collected by STEP and ALI for informal studies tends to suggest that the early/middle college design has a positive impact on high school graduation rates, academic performance, and college enrollment for participating students. However, these

preliminary outcomes have not been independently scrutinized for trend analysis,

possible relationships between variables, or comparisons with different student cohorts

(students from high schools within a school district that have similar academic histories

but do not enroll at an early/middle college).

A mixed-methods study that analyzes selected variables to determine the

relationship between early/middle college enrollment and academic achievement or

school completion would shed further light on the value of this model for applied and

kinesthetic learners. This would also apply to a typical academic profile (in terms of

achievement, learning goals, and career or college aspirations) of students that choose

this option. Many potential variables that could be analyzed for potential relationships:

academic achievement (grade point average or course selection patterns), retention and

completion information (high school graduation rates, college enrollment and retention

data), and student demographics (racial/ethnic as well as socioeconomic status), which

would yield more relevant and practical outcomes, as suggested in comparable studies

elsewhere (Kisker, 2006). Pursuing this analysis, through a combination of quantitative

and qualitative techniques, would give students and their families the opportunity to

personally reflect on this experience, through focus groups, structured interviews, or

survey responses.

Completing this research would support efforts to refine the early/middle college

model in Minnesota, particularly regarding on-going curriculum development and

engagement of communities of color. Grounding this work in additional research—both

quantitatively and qualitatively—would provide an expanded rationale for concluding

that the framers of the early/middle colleges were essentially correct in positing a

relationship between this new structural design and enhanced educational opportunities and achievement levels for high school students in their communities.

In the current study, research confirmed a qualitatively-based thematic impetus for the early/middle college's creation and design, that was grounded in a deep community interest for serving students who had been deprived of educational choices, particularly those pertaining to career and technical programming. Seeking substantiation of this design intent with additional research would measure the extent to which this new model impacts student achievement and success. And, it would serve as an important validation of the cultural origins of the early/middle colleges in Minnesota.

A comparative examination of the influence of faculty unions on the development of early/middle colleges. Throughout the current study, data emerged regarding the possible implications posed by the relationship between faculty contract provisions, school district or state-level policy requirements affecting faculty assignments, and the structural design elements utilized at each of the three early/middle colleges. This issue typically pertained to the operation of dual or concurrent enrollment programs, and the assignment of high school faculty to teach college-level courses. It also applied more generally to the question of faculty qualifications to teach career and technical courses and programs. Although the results of this study are somewhat mixed, at STEP these issues tended to present significant barriers to progress; at ALI and C-TECH, faculty and administrators seemed to have found ways to work through these challenges. This does suggest that additional research may be necessary to determine the impact that faculty roles, rules and responsibilities and, by extension, faculty unions and collective

bargaining agreements have on the development of structural innovations such as early/middle colleges.

Whether conducted at a local, state or national level, research that explores faculty perceptions and attitudes about their role in the development of structural educational reforms and innovations of the early/middle college, could have the practical consequence of strengthening their fundamental role in the design, delivery and sustainability of this new model. Furthermore, examining the extent to which the responsibilities and rules to which faculty must adhere, as expressed in school district or state policy or in collective bargaining agreements, would influence their perceptions of structural innovation in curriculum development and delivery, cultural attitudes regarding the quality and qualifications of peers at the high school or college level, and latent capacity for student-centered innovation and experimentation, would greatly enhance a scholarly and practical understanding of the context for educational reform and innovation involving high schools and their post-secondary partners.

Research of this type is especially important in a state like Minnesota, where the role of the faculty, at both the K-12 and post-secondary levels, has historically been shaped by the elements of the collective bargaining agreement and the parameters of the labor-management relationship. These factors: long-term structural relationships, expression of work rules, and professional responsibilities, tend to resist change, even when community interests or the desire to improve student achievement prompts that change.

Analysis of the extent to which faculty in Minnesota see room for structural change in their working conditions and relationships with their peers, the latitude they

might grant to community-initiated innovation, and reform strategies that purport to expand opportunities for students, should be pursued by educational and community leaders alike as they continue to champion the expansion of the early/middle college model at other locations across the state of Minnesota. Collecting qualitative data pertaining to faculty and analyzing perceptions regarding the structural challenges and conflicts that expansion of this model might present, examining similar data that might suggest ways to overcome or resolve these potential barriers, is an important next step in the continuing work to strengthen the cultural and structural origins of this educational model.

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Appendix A – Interview Questions

- Please describe your position responsibilities and their relationship to the early/middle college.

- A middle (or early) college is generally defined as a structural educational design and enrollment option in which high school students are afforded the opportunity to engage in credit coursework and associated academic and support activities that promote college readiness. Do you agree with this definition? What might be added or stated differently?

- Please describe the circumstances that led to the development of the early/middle college in your community.

  o (Probing) Can you describe a specific academic rationale or need that the early/middle college was intended to address?

  o (Probing) Were there any community needs or interests that were similarly part of the decision to create this model?

- Who (or what entity) made the decision to launch the early/middle college?

  o (Probing)What constituents or groups played a role in the decision-making process?

- Did/do the workforce needs of the community impact the design and development of the early/middle college?

  o (Probing) - Please identify specific jobs or industry sectors that are impacted by the presence of an early/middle college in your community (or region).

- Who (or what entity) is responsible for overall governance and operation of the early/middle college?

- Please describe/comment on the role of the following constituencies in the governance and operation of the institution:

    o faculty;

    o students;

    o parents;

    o business and industry representatives;

    o community groups or organizations; and

    o state-level departments or agencies.

- What are two or three key examples that illustrate how the school district(s) and the college work together to operate the early/middle college?

- How have the early/middle college partners identified faculty, administrative and staff leaders to launch and sustain the model?

    o (Probing) What human resources practices supported this work, and what barriers did you encounter?

    o (Probing) Did you find that there was a need for professional development to build faculty/staff capacity to deliver instructional and support services within this new model?

    o (Probing) Did you identify any staffing-related issues that impacted at-risk, low-income or diverse learners? If so, could you please describe these issues.

- From a curricular perspective, how does the early/middle college define and deliver course content that addresses college and career readiness for its students?

  o (Probing) How does the curriculum align with both industry expectations and post-secondary admission requirements?

- Is dual/concurrent enrollment an element of the early/middle college's curricular model?

  o (Probing) If so, are there specific considerations or criteria that apply to the operation or pricing of this option?

  o (Probing) How does the accumulation of college credits while in the early/middle college impact students' transition into college and parents' perception of the cost and value of higher education?

- Please describe the typical student that the early/model college in your community was created to serve.

  o (Probing) Are there multiple learner segments (applied/kinesthetic; low-income; students of color; at-risk; special needs) represented in the student body?

  o (Probing) Are there any specific student recruitment or participation objectives that influence the development of the student body?

- What student support services are offered to ensure a successful learning experience at the early/middle college?

  o (Probing) Are these services developed and delivered collaboratively by the college and high school partners, or is there a different operating structure?

- What have you done to secure and sustain community engagement with the early/middle college?

    o (Probing) What roles do parents, business/industry representatives, elected officials or other community members play in efforts to build on-going support for your model?

- How do you define success for the early/middle college in your community?

    o (Probing) What evaluative tools do you use and what data do you collect?

    o (Probing) How are the results shared with student, faculty and key constituencies?