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Navigating New Frontiers: A Narrative of CTE Administrators Leading Rural Innovation

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Navigating New Frontiers: A Narrative of CTE Administrators Leading Rural Innovation

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ABSTRACT

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Public school districts play a pivotal role in the well-being of rural communities. To help mitigate the impact of labor market trends, societal shifts, and the skilled labor shortage, rural schools are in the initial stages of expanding innovative career pathways. As such, career and technical education (CTE) administrators serve their rural communities by facilitating robust career pathways to support local labor markets. Due to a skilled labor shortage, a declining labor force participation rate, and a rapidly evolving labor market, there is a lack of qualified and certified personnel to fill industry jobs (Davis et al., 2022). School districts can impact career readiness and CTE administrators are tasked with facilitating robust career pathways, including increasing access to programs of study, developing new partnerships, and expanding industry certifications and early postsecondary opportunities to support local, regional, and national labor markets and community vitality (Kim et al., 2021).

This narrative inquiry investigated how CTE administrators facilitated the development of career programs of study in rural secondary settings. This study explored the journeys of CTE administrators through their stories of career pathway design, facilitation, and improvement in the context of rural secondary education. Narrative interviews were conducted via one-on-one video conferencing with nine rural CTE administrators from one Grand Division of Tennessee, in addition to organizational document reviews and annals. Two levels of data analysis were used to compose the final research text, with the first level of field texts coded with narrative coding and the second level coded through the identification of resonant narrative threads.

Research findings included participant accounts related to resilient and visionary leadership, intentional strategic alignment, ecosystem of collaboration, funding opportunities and barriers, and responsive and adaptive programming. CTE administrators identified systemic changes that when implemented strategically integrate innovative programs of study and partnerships into their rural districts' broader education system. The findings expand the current body of literature and recommendations for practice.

DEDICATION

To my two wildflowers, you fill the world with light, laughter, color, and joy. I did this for you just as much or more than for myself. Know that I will always help you grow.

To those who loved me through this journey. You walked alongside me, encouraging me every step of the way. Without you, there would be no dedication to write.

To Nik, you made all of this possible. I love you.

To Mom and Dad, thank you for always believing in me more than I believed in myself.

To Jenna, Emily, and Caitlin, no words I could write adequately express my gratitude.

To Grandmother and Grandaddy Bass, every time I see a cardinal peep through the window, I know that you are proud.

To a joyful light snuffed out before composing her own dedication, from one mother to another, this is for you, too.

And to me. In the words of Snoop Dogg (2018):

> Last but not least, I want to thank me. I want to thank me for believing in me. I want to thank me for doing all this hard work. I want to thank me for having no days off. I want to thank me for never quitting…I want to thank me for just being me at all times.

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To the mentors who served as inspiration, believed in me, and gently pushed me to where I am today, thank you. Dr. Patricia Robertson and Dr. James Bitter, I still re-read the notes you wrote me with hopes for my future. Mrs. Lori Allen, Dr. Reba Bailey, and Dr. Brandon Williams, thank you for taking a chance on me. Dr. Jason Horne, I am forever grateful for your constant encouragement, you are my go-to person. I would also like to thank the professors of the ELPA department.

And finally, to the nine CTE leaders who took time out of their busy schedules to reflect on their journeys with me, thank you. It was a privilege to learn from you.

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Chapter 1. Introduction

Rural America is not a singular place but a colorful, dynamic patchwork of landscapes, communities, and economies (Clark et al., 2022; Kerlin et al., 2022). From the rolling farmlands of the Midwest to the tight-knit communities nestled in the Appalachian Mountains, the vast spectrum of rural America paints a diverse canvas of cultures and traditions (Showalter et al., 2019). However, beneath this rich tapestry lies concerns of community prosperity. Alongside the disruptive forces of the Great Recession and the Coronavirus (COVID-19) pandemic, rapid technological advancements and automation have reshaped jobs, industry, and the economy of the United States (Rembert et al., 2021). Amid these societal shifts, the working-age population has been decreasing while, at the same time, labor force participation rates declined through the post-pandemic Great Resignation and are expected to continue to do so (Ferguson, 2023; Sanders, 2022). Conversely, employment opportunities are expected to expand along with shifts in needed skills due to the Fourth Industrial Revolution (Industry 4.0) shaping the future of work (McKinsey, 2022; Rembert et al., 2021). In regions like rural Tennessee, the impact of these labor market trends is exacerbated, resulting in skilled labor shortages, underlining the need for workforce development to be a catalyst for ensuring economic and community vitality (Dabson, 2021; Davis et al., 2022; National Skills Coalition, 2020).

School districts play pivotal roles in the well-being of rural communities, with schools not only educating students but acting as community centers and beacons of hope for the future (Marre, 2017; Sipple et al., 2019; Smith & Zimmer, 2022). The rural education system is an influential workforce development partner, with secondary career and technical education (CTE) serving as an on-ramp for students to enter career pathways (Starrett et al., 2022; Stockard, 2019; Warner-Griffin & Liveoak, 2023). At the intersection of education, economic development, and

workforce development, CTE is a critical component of a cohesive and locally relevant education-to-workforce pipeline (Cushing et al., 2019). In Tennessee, secondary CTE is aligned to career clusters, or overarching occupational categories, encompassing career pathways and programs of study sequenced to provide a seamless transition into the workforce or postsecondary options (Potts, 2023). Designed to meet the needs of their rural community and minimize the skills gap between students and industry, secondary CTE programs can be a promising, place-based workforce development strategy (Potts, 2023; Roberts & Grant, 2021). However, disparities exist in and among CTE programs, with barriers to participation for rural students (Rosen & Molina, 2019), misalignment to labor market needs (Wu & Carruthers, 2020), inequitable outcomes depending on the specific career pathway (Malkus, 2019), and inequitable access for female students, students with disabilities, and students of color (Kim et al., 2021; Leu & Arbeit, 2020). Education systems, like CTE, that are not equitably serving their students or mirroring the evolution of labor market needs must be transformed to ensure student success and community prosperity (Kim et al., 2021; Sudderth, 2022; Tennessee Commission on Education Recovery and Innovation, 2022).

Statement of the Problem

Due to a skilled labor shortage, a declining labor force participation rate, and a rapidly evolving labor market, there is a lack of qualified and certified personnel to fill industry jobs (Davis et al., 2022; State Collaborative on Reforming Education, 2023). Societal and evolving technological contexts, such as the COVID-19 pandemic and Industry 4.0, have intensified these trends in rural areas, which can be devastating to local economic and community prosperity (Rembert et al., 2021). In Tennessee, business and industry are relying on the education system as a critical workforce development component to strengthen the local, regional, and state labor

markets (Potts & Pams, 2023; Tennessee Department of Education, 2020). As school districts can impact career readiness and success, CTE administrators are tasked with facilitating robust career pathways, including increasing access to programs of study, developing new partnerships, and expanding industry certifications and early postsecondary opportunities to support local, regional, and national labor markets and community vitality (Kim et al., 2021; Potts & Pams, 2023; Tennessee Commission on Education Recovery and Innovation, 2022).

Statement of Purpose

The purpose of this narrative study was to investigate how career and technical education administrators facilitated the development of career programs of study in rural secondary settings. This study explored the journeys of CTE administrators through their stories of career pathway design, facilitation, and improvement in the context of rural secondary education. Expanding rural career pathways was a pertinent focus as it is an identified priority in the Strengthening Career and Technical Education in Tennessee State Plan and current CTE financial investment initiatives, the Supporting Postsecondary Access in Rural Communities and the Innovative School Models grants (Potts & Pams, 2023; Tennessee Commission on Education Recovery and Innovation, 2022; Tennessee Department of Education, 2020).

Significance of the Study

Schools in the rural setting are in the initial stages of expanding innovative career pathways, and, as a result, guidance for leaders working to strengthen CTE programs has been limited (Chiefs for Change, 2019). This research study was designed to contribute to the exploration and understanding of how leaders in CTE develop and facilitate the expansion of programs of study and career pathways. This narrative inquiry aimed to identify the chronology of program improvement and better understand the elements of career pathway development.

This narrative inquiry sought to provide guidance for current and future administrators leading secondary CTE programs and honor their journey through a better understanding of the stories told of career pathway development. Additionally, this study aimed to close the policy-to-practice gap in rural settings and identify leadership practices and structures to guide CTE budgets and implementation timelines.

Conceptual Framework

The conceptual framework of a qualitative study is a lens through which the research process is guided, organized, and understood (Flick, 2022; van der Waldt, 2020). Emergent and evolving, much like the narrative inquiry design of this study, a conceptual framework can be viewed as a system of beliefs, ideas, and assumptions that informs the entirety of the research (Flick, 2022; Kim, 2016). The foundational framework for this study was centered around Fullan's framework for leaders as change agents (Fullan, 2020). CTE administrators are called to transform rural programs of study to improve career pathways to meet the needs of their students, communities, and local labor markets (Chiefs for Change, 2019). Transformation requires leadership that catalyzes change, and according to Fullan (2020), the onus for creating a culture conducive to change is on the educational leader. Sustainable change must be accompanied by systemic improvement, which can be supported by the framework through which administrators view change leadership. Fullan's Framework for Leadership conceptualizes leading change as attending to the learning community as a system that can be reformed by a shared commitment to moral purpose among members and leaders. Leaders should understand change as a complex process that requires a culture shift through relationship building, coherence making, and knowledge creation and sharing. When leaders exhibit hope, enthusiasm, and

energy and foster a collective sense of responsibility to the organization's moral purpose, sustainable, transformative change can become a reality.

The supporting framework for this study embodied the concepts in the P20 education system and the career pathways approach, a component of these systems that encompasses secondary CTE (Collegiate Edu-Nation, 2021; Hawai‘i P-20, 2020; Kim, 2016). The P20 model views the education system as an aligned, rigorous, and integrated continuum from preschool to postsecondary, be it college or career, that improves outcomes for students and also serves as a model to meet the workforce and economic development needs in the community (Collegiate Edu-Nation, 2021; Hawai‘i P-20, 2020; Jacovo & Norton, 2023). Students in comprehensive P20 systems engage in educational paths that lead to attaining an industry credential or postsecondary degree, preparing them for success in the workforce and life as lifelong learners. The P20 model relies on partnerships among all community systems, including early childhood, K-12, postsecondary, workforce development, and industry sectors, that can make reinvigoration and revitalization of rural areas possible (Collegiate Edu-Nation, 2021; Jacovo & Norton, 2023). With a focus on postsecondary success and community connections, P20 systems share common components, including career exposure beginning in early childhood, articulation agreements, data sharing, place- and project-based learning, and career pathways (Collegiate Edu-Nation, 2021; Hawai‘i P-20, 2020; Jacovo & Norton, 2023).

Another aspect of this P20 conceptual framework is career pathways, an element of P20 models that can be viewed as roadmaps of learning experiences sequenced from secondary education to lifelong workforce success, including multiple entry and exit points to careers and means to advance skills and jobs along the way (Haviland & Robbins, 2021; Hawai‘i P-20, 2020). Career pathways typically begin in middle or high school with CTE programs of study

that progress from less to more specific and integrate opportunities for rigorous academic and technical education, work-based learning, early postsecondary coursework, and industry credentials (Cielinski, 2019; Hawai‘i P-20, 2020). Career pathways share some of the same quality components as P20 models, including cross-sector partnerships, labor market demand alignment, rigorous academics, work-based learning, and college and career advising and counseling (Hawai‘i P-20, 2020). Through career pathways in CTE programs, students should earn stackable industry credentials while, at the same time, system outcomes ideally include sustainable pathways, an increase in credentialed and skilled workers in the labor market, and a reduction of duplicated services across the pathways system (Cielinski, 2019; Haviland & Robbins, 2021).

Research Questions

This narrative inquiry was framed by the following overarching research question: How do CTE administrators expand new career pathways in rural settings? The supporting research questions that guided this inquiry were as follows:

1. How do CTE administrators describe the experience of developing career pathways?
2. What systemic changes were associated with the biggest program improvements?
3. How do CTE administrators facilitate CTE programming for the changing local labor market?
4. How do CTE administrators leverage funding sources to support and sustain the creation of new career pathways?

Definition of Terms

For the purpose of this study, the following terms are defined:

Career and Technical Education (CTE): CTE, as defined by Perkins V (2018), is an educational option that teaches rigorous academic, technical, and employability skills through career-focused standards and coursework at secondary and postsecondary levels, leads to earning an industry-recognized credential, and prepares students for employment and advanced education and training.

CTE Administrators: CTE administrators were defined in this study as any local education leader with an administrative endorsement (e.g., assistant principal, principal, supervisor, director) that provides leadership for CTE programming decisions at the school or district level. State CTE directors were not included in this study.

Career Pathway: Perkins V (2018) legislation deferred to the Workforce Innovation and Opportunity Act (WIOA) of 2014 for the definition of career pathway. The WIOA (2014) defines a career pathway as an integrated approach that aligns education, training, and support services with industry needs relevant to the local economy. Through various educational options, including apprenticeships, career counseling, and workforce preparation activities, a career pathway enables individuals to earn at least a secondary school diploma and a recognized postsecondary credential within a specific career or career cluster.

Program of Study: As defined by Perkins V (2018), a program of study is a structured, nonrepetitive sequence of academic and technical coursework that integrates state academic standards with academic, technical, and employability skills at the secondary and postsecondary levels. Tailored to local or regional industry needs, it offers a progression from broad industry concepts to specific occupational instruction, provides multiple entry and exit points for credentialing, and culminates in a recognized postsecondary credential.

Rural School District: According to the National Center for Education Statistics (2019), a rural locale is one that is not designated as urban by the Census Bureau. The NCES locale framework describes rural areas as three subtypes, fringe, distant, and remote, within the Census-defined rural territory. Rural fringe is a rural territory within 5 miles of an urbanized area or 2.5 miles from an urban cluster. Rural distant indicates an area between 5 and 25 miles from an urban area or between 2.5 and 10 miles from an urban cluster. Rural remote is a territory more than 25 miles or 10 miles from an urban area or cluster, respectively. A rural school district is defined as any school district identified as rural fringe, distant, or remote by NCES on the Common Core of Data (CCD) School and District Navigator map (Common Core of Data, 2023).

Limitations and Delimitations

This narrative inquiry was bounded by the purpose, research questions, research design, and decisions made throughout the research process, all of which can mitigate limitations and delimit the narrative inquiry (Creswell & Poth, 2018). The purpose of the research study was to illuminate stories of rural career pathway development as experienced by CTE administrators. This focus was significant regarding the importance of rural CTE programming. The sample of participants, using specific criteria, was purposefully chosen, and the contexts of the study were indicated through thick, rich descriptions. To focus specifically on CTE administrators' told stories instead of stories told about CTE administrators, only those in an administrative position with CTE duties were selected for the study (Clandinin, 2023). This was a delimitation in that the sampling criteria led to an intentional selection of participants. Additionally, the study was delimited to only public school districts classified as rural in one of the three Grand Divisions of Tennessee.

The positionality of the researcher can be a limitation of a research study, with the worldview of the researcher influencing the research (Holmes, 2020; Kim, 2016). I am a Tennessee resident, an administrator in a public secondary school, and the leader of a school-level CTE department. I was interested in pursuing the present research study, in part, because of my personal lived experience. My lived and told stories have led me to possess insider knowledge about the field of CTE and preconceptions that could impact the gathering, analyzing, and interpreting of stories. Additionally, I am a doctoral student with limited research experience. To mitigate these personal limitations, I practiced reflexivity regularly by keeping a research journal, working closely with the dissertation committee, and intentionally planning the research with other techniques to enhance trustworthiness.

The trustworthiness of findings, including the transferability and credibility of the narrative accounts, narrative threads, and interpretations, was another limitation (Creswell & Poth, 2018). Narrative research is dependent on the integrity and ethics of the researcher, as the researcher is the primary instrument of the study (Flick, 2022; Kim, 2016). Additionally, research decisions like smaller sample sizes impacted transferability. However, I took extensive precautions through planning for trustworthiness, attempting full research transparency, and practicing constant reflexivity (Creswell & Poth, 2018; Kim, 2016). I held research ethics and ethics of care at the center of my research as a relational and moral imperative to the participants with whom I had the privilege to work (Blix et al., 2023; Clandinin, 2023). Additionally, I worked closely with the research methodologist and dissertation committee through expert peer review to enhance trustworthiness.

Using Fullan's Framework for Leadership as the primary conceptual framework, with the P20 and career pathways model as supporting frameworks, further delimited the research study.

Specifically, the study was focused on understanding the experiences of CTE administrators in program improvement through the lenses of the conceptual framework, which delimited the scope of the narrative inquiry, and the interpretative framework of the three-dimensional narrative inquiry space, which provided a bounded perspective through which data was analyzed and interpreted.

Overview of the Study

This study is organized in five chapters. In Chapter 1, the foundation, purpose, and context for the research is provided. Reviewed in Chapter 2 is literature pertinent to understanding how secondary CTE programs and administrators are situated in several contexts, including historical, leadership, rurality, and workforce development. In Chapter 3, the methodology and design for this narrative inquiry is outlined. Presented in Chapter 4 are the findings of this study gathered through told stories. In Chapter 5, the study is concluded with a discussion of findings and recommendations for practice and future research.

Chapter 2. Literature Review

Historical Context

Morrill Act

In the early to mid-1800s, coinciding with the common school movement, there was a growing demand in America for a more practical education that provided skill development opportunities, specifically for agricultural and technical disciplines (Croft, 2022; Dougherty & Lombardi, 2016; Gordon & Schultz, 2020). While common schools provided public education focused on producing literate, moral, and productive citizens through general academic curricula, the agricultural and manufacturing sectors of the economy needed a workforce with technical training, and societal issues, such as urbanization and poverty, required a differentiated education that met the needs of people with varied access to resources (Dougherty & Lombardi, 2016; Gordon & Schultz, 2020; Spring, 2018). As a response to the demand for practical, skills-based education, the Morrill Act of 1862 was passed by the federal government, funding land-grant institutions to promote a broad and liberal education, including teaching agricultural and mechanical arts at the postsecondary level, and creating opportunities for farmers and working individuals who previously did not have access to higher education (Croft, 2022; Gordon & Schultz, 2020). A novel policy, the Morrill Act marked the beginning of the intersection of education and workforce development and was the first act of federal support for vocational education (Croft, 2022; Gordon & Schultz, 2020; Hodge et al., 2020).

Amending the First Morrill Act, the federal government strengthened and increased access to the land-grant institution program through the passage of the Second Morrill Act in 1890 (Croft, 2022; Gordon & Schultz, 2020). Prior to the enactment of the Second Morrill Act, Black individuals could not benefit from land-grant institutions in the former Confederate states,

including the Southern and border states (Lee & Keys, 2013). To receive federal funding through the Second Morrill Act legislation, states were required to prohibit racial discrimination in admissions policies from at least one of their land-grant institutions or establish an institution for Black students with separate but equal facilities (Croft, 2022). While this legislation provided Black students with educational opportunities through the establishment of eighteen public Black colleges that would later be known as some of the Historically Black Colleges and Universities, the Second Morrill Act also signified the persistent parallel but unequal education system for Black students (Croft, 2022; Gordon & Shultz, 2020; Hodge et al., 2020).

Smith-Hughes Act

Like the needs that led to the passage of the Morrill Acts, the economic and societal demands in the early twentieth century led Americans to examine if the existing secondary education system was adequately preparing the workforce for the emerging industrial economy (Gordon & Schultz, 2020; Hodge et al., 2020; Spring, 2018). The general curriculum offered in secondary education was perceived as being too academically focused and not sufficiently focused on the practical skills needed by the American workforce (Barlow, 1976; Gordon & Schultz, 2020). Recognizing these challenges, Congress established the Commission on National Aid to Vocational Education in 1914 to investigate the current state of vocational education and make recommendations for its future in the United States (Barlow, 1976; Spring, 2018). The Commission found an urgent societal and educational need for vocational education throughout the nation and made recommendations, including providing federal aid to support vocational education programs in secondary public schools to prepare students for gainful employment in agriculture and the trades. In the Commission's report, vocational education was advocated as part of the solution to the traditional reliance of American industry on foreign labor by way of

better developing human capital. Through an expanded vocational education, equality of opportunity would mean that students' individual needs would be met to prepare them for their life work.

In response to the recommendations made by the Commission on National Aid to Vocational Education, the Smith-Hughes Act was passed almost unanimously by Congress in 1917, becoming the first federal legislation to promote vocational education in secondary schools (Malkus, 2019; Spring, 2018). Viewed as a social, educational, and economic necessity, vocational education was defined by the Smith-Hughes Act to prepare workers for useful employment in the areas of agriculture, trades, industry, and home economics, which would offer students an alternative to the general curriculum or dropping out of school without work-related training (Barlow, 1976; Gordon & Schultz, 2020). The Smith-Hughes Act appropriated federal funding for vocational education that the states were required to match dollar-for-dollar. Starting with a federal appropriation of 1.7 million dollars, the Smith-Hughes Act increased the amount of funding at regular intervals until the maximum amount of 7.2 million was reached in 1926 (Barlow, 1976). States were required to use a portion of the funding to pay for salaries and training of agricultural, trade, industrial, and home economics teachers, as well as supervisors and directors of agricultural programs (Barlow, 1976; Gordon & Schultz, 2020). To administer the provisions of the legislation of the Smith-Hughes Act, the Federal Board for Vocational Education and subsequent state boards were established. Comprised of the United States Secretary of Commerce, Secretary of Agriculture, Secretary of Labor, Commissioner of Education, and three citizens representing manufacturing, agriculture, and labor, the federal board worked cooperatively with state boards to approve vocational education plans and

programs, to regulate and distribute expenditures, and to investigate vocational education programs and issues (Barlow, 1976; Gordon & Schultz, 2020; Malkus, 2019).

The Smith-Hughes Act defined vocational education for nearly seven decades, with only marginal changes through supplemental legislation and amendments, such as increasing federal appropriations for vocational education, providing funds for state directors of vocational education, and adding occupations to the list of approved vocational programs (Dougherty & Lombardi, 2016; Gordon & Schultz, 2020; Malkus, 2019). Vocational education under the Smith-Hughes Act touted equality of opportunity in that students were provided with differentiation in education determined by their future occupations (Spring, 2018).

However, provisions of the Smith-Hughes Act also contributed to separation in education, both in the dichotomy in curricula and tracking of learners (Gordon & Schultz, 2020; Malkus, 2019; Spring, 2018). While the recently released report, *Cardinal Principles of Secondary Education*, recommended the creation of comprehensive high schools in which the needs of all students would be met through a differentiated curriculum that included vocational education, the narrow definition of accepted vocational education programs separated vocational training from academic training, using federal money to do so (Bureau of Education, 1918; Gordon & Schultz, 2020; Spring, 2018). By separating vocational education from the comprehensive high school curriculum, it inadvertently created a class-based system in which certain children, such as the children of laborers, were assumed to be best served by vocational programs as their futures were likely to join the labor force as semi-skilled workers (Gordon & Schultz, 2020; Malkus, 2019; Spring, 2018).

Vocational Education Act

Prior to the enactment of the Vocational Education Act of 1963, vocational education legislation was primarily concerned with providing and justifying a model of federal funding for vocational programs (Dougherty & Lombardi, 2016). However, events such as the Russian launch of Sputnik in 1957 and the first international comparative assessment conducted in 1960 resulted in U.S. policymakers examining the role of the American education system in their international standing and responded with education reform efforts, which included vocational education (International Association for the Evaluation of Educational Achievement, n.d.; Singer et al., 2018; Spring, 2018). As an attempt to strengthen education to meet national security needs, the emphasis placed on science, mathematics, foreign languages, and other critical subjects in the National Defense Education Act of 1958 was reflected in vocational education through funds appropriated for technical programs aligned to national defense requirements, as well as apprenticeships and work-experience training programs, with the intent to train skilled technicians and workers (Gordon & Schultz, 2020; Spring, 2018).

In addition to new legislation meant to improve America's global standing through education, vocational education reform was addressed through the release of the Conant Report in 1959 and the Panel of Consultants on Vocational Education report in 1963 (Dougherty & Lombardi, 2016; Gordon & Schultz, 2020). In the Conant Report, recommendations were made for providing secondary education for all student's individual needs, including minorities, through comprehensive high schools that offered access to core academic coursework and electives, including vocational courses, and reflected the needs of the community (Conant, 1959; Dougherty & Lombardi, 2016). Making recommendations regarding vocational education, Conant (1959) suggested expanding vocational programs beyond those included in the Smith-

Hughes Act and the National Defense Education Act, providing vocational courses representative of the local labor market, and developing work experience or apprentice programs. Conant cautioned against viewing vocational education programs as separate from the rest of the academic programs and as a track for students with lower academic ability. At the federal government's request, vocational education was further evaluated for improvement and in response to concerns regarding the impact of technological advancements and modernization on workforce development by the Panel of Consultants on Vocational Education (Gordon & Schultz, 2020; Office of Education, 1964). Citing the importance of vocational education in the nation's economic development, the recommendations in the report included expanding vocational programs consistent with local labor market needs, improving access by offering vocational education at more schools, providing training for workers whose skills and technical knowledge needed to be updated, and ensuring equal opportunity for participation be given to all students regardless of race, age, sex, or national origin (Office of Education, 1964).

Influenced by recent education reform and the Panel of Consultants on Vocational Education, the Vocational Education Act of 1963 was enacted, marking the most pivotal legislative milestone for vocational education since the Smith-Hughes Act, changing the focus from the appropriation of federal funding to expanding occupational categories and vocational programming (Dougherty & Lombardi, 2016; Gordon & Schultz, 2020). Though previous vocational education acts, such as the Smith-Hughes Act, were not negated, the Vocational Education Act of 1963 broadened the scope of vocational education to include any training or retraining conducted as part of a program to prepare citizens for gainful employment as a semiskilled or skilled worker in a recognized occupation that did not require a bachelor's degree or higher (Gordon & Schultz, 2020; Office of Education, 1965). Vocational education was to be

accessible in all communities, rural and urban, to all persons high school age or older, regardless of academic, socioeconomic, or other circumstances that may prevent them from succeeding in a vocational program. To ensure access, the Vocational Education Act authorized federal funding for the construction of school facilities for vocational education and the development of work-study programs that would provide financial assistance to students through part-time employment. The Vocational Education Act prioritized high-quality vocational programs that would benefit both students and the economy by mandating that state vocational plans align with labor market needs and establishing provisions for the procurement and maintenance of instructional equipment, as well as for training vocational educators, supervisors, and directors.

The Vocational Education Amendments of 1968 and 1976 further reshaped vocational education by shifting the focus from specific occupations to the individuals pursuing them and to confronting social inequalities (Bureau of Adult, Vocational, and Library Programs, 1969; Dougherty & Lombardi, 2016). The 1968 Amendments required states to use fifteen and ten percent of their annual vocational education allotment to fund programs for persons that were disadvantaged and disabled, respectively, as well as the National Advisory Council on Vocational Education to have members knowledgeable about people who were disabled and socioeconomically disadvantaged (Bureau of Adult, Vocational, and Library Programs, 1969; Gordon & Schultz). Other significant changes introduced by the 1968 Amendments included the requirement for states to formulate both annual and five-year plans and the allocation of funding specifically for the research and evaluation of vocational programs (Bureau of Adult, Vocational, and Library Programs, 1969).

The subsequent amendment to the Vocational Education Act in 1976 not only extended and increased funding for vocational education, but advocated for gender equality in vocational

programs (Gordon & Schultz, 2020; Malkus, 2019). The issue of sex discrimination and stereotyping was addressed by appointing a woman, knowledgeable about discrimination problems in workforce development, to the National Advisory Council on Vocational Education (Congressional Research Service, 2019). Additionally, funds were explicitly authorized to enhance consumer and homemaking education, intended to improve the quality of instruction and attract both males and females to the program. For the first time, because of the Vocational Education Act of 1963 and its amendments, vocational education was mandated to create and evaluate accessible programming in all communities for all students, including women, individuals with disabilities, and disadvantaged students (Gordon & Schultz, 2020).

Carl D. Perkins Act

Noting that American students were last in seven international achievement tests and never ranked first or second out of nineteen international tests, the National Commission on Excellence in Education (NCEE) made the argument in their 1983 report, *A Nation at Risk*, that the American education system was failing, eroding the foundation of American society, and threatening the future of the nation. The harrowing assertions made by the NCEE about American education, though criticized as misleading and inaccurate, spurred reform through the 1980s and 1990s, including the adoption of more rigorous standards and more stringent high school graduation requirements (Park, 2004; Singer et al., 2018). As a result, there was an increase in total and academic credits earned by high school students from 1982 to 1992, rising 11% and 22%, respectively, whereas the average amount of vocational education credits earned decreased by 17% (National Center for Education Statistics, 1995). The percentage of vocational coursework comprising the total coursework completed by high school graduates declined from 21% in 1982 to 16% in 1992. During the same period, there was the question of whether

vocational education provided equitable education for the disadvantaged populations it claimed to serve or if these students were instead tracked to inferior, low-quality vocational programs with limited access to postsecondary opportunities, leading to a growing stigma about vocational education (Hodge et al., 2020; Malkus, 2019). In addition to increasing graduation requirements and the view of vocational education as an inferior track, other factors contributed to the decrease in vocational education enrollment, including a growing focus on college attendance and preparation, the loss of jobs to which vocational programs were aligned, and the reduction of educational funding due to local economic conditions (Malkus, 2019; National Center for Education Statistics, 1995).

Addressing the growing scrutiny of vocational education and the push for more rigorous standards in education, the Carl D. Perkins Vocational Education Act, or Perkins I, was passed in 1984 (Edgerton, 2022; Gordon & Schultz, 2020). Perkins I was significant as the primary focus shifted from expanding vocational education to improving the quality of programs and ensuring access to opportunities for special populations, including students who were economically disadvantaged, students with disabilities, and students in correctional facilities. Under Perkins I, states were required to spend 57% of basic grant funding on creating opportunities for and targeting special populations, while the remainder was to be spent on the improvement of vocational programs.

Amending and extending Perkins I, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, or Perkins II, aligned secondary and postsecondary vocational programs into a coherent sequence of courses, required the development of performance standards and measures, emphasized integration with academic instruction, and promoted a business-labor-education partnership (Edgerton, 2022; Gordon & Schultz, 2020).

Eliminating the 57% set-aside funding for special populations, Perkins II required that local recipients were allocated a minimum of 75% of state funds, essentially removing the ability of the state to allocate funds at their discretion. The changes made from Perkins I to Perkins II marked the beginning of a shift away from the historical separation, isolation, and segregation that was characteristic of vocational education (Gordon & Schultz, 2020; Hodge et al., 2020).

Amending Perkins II and authorizing vocational education programs for another five years, the Carl D. Perkins Vocational and Technical Education Act of 1998, or Perkins III, primarily revised funding and state accountability requirements (Gordon & Schultz, 2020). The requisite allocation of state funds to be distributed to local levels rose to 85%, with the option to reserve up to 8.5% of that funding for rural or other high-need area programs (Edgerton, 2022). Introduced in the expanded state accountability provisions of Perkins III were core indicators for performance, in addition to sanctions or incentive grants for states failing to meet or exceeding performance levels, respectively.

With the enactment of the Carl D. Perkins Career and Technical Education Improvement Act of 2006, or Perkins IV, came a rebranding of vocational education by replacing the term with career and technical education (CTE), viewed as one of the most significant provisions in the legislation (Granovskiy, 2016; Hodge et al., 2020; Malkus, 2019). Another notable change in Perkins IV was the introduction of secondary programs of study, a concise phrase to describe integrating technical and academic skills into a sequence of courses that are aligned to specific career pathways and provide the opportunity for high school students to earn industry-recognized credentials (Granovskiy, 2016). The Perkins IV Act was designed to keep the nation competitive and lead to economic growth by developing students' academic and technical skills through rigorous instruction.

Signed into law in 2018, the Strengthening Career and Technical Education for the 21st Century Act, or Perkins V, is the most recent reauthorization of the Perkins legislation and signifies a century-long commitment to secondary CTE by the federal government (Advance CTE, n.d.-c; Edgerton, 2022). The purpose of Perkins V was to increase employment opportunities for all students, specifically special populations, by developing their academic, technical, and employability skills through CTE programs with rigorous instruction and challenging standards aligned to career pathways (Strengthening Career and Technical Education for the 21st Century Act, 2018). While the basic structure of the legislation is like its predecessors, there are notable changes in Perkins V to innovate, expand, and improve access to CTE (Malkus, 2019). Innovation is encouraged within the Perkins V legislation through provisions such as a national competitive grant program focused on innovation and modernization and funding extending to the middle grades to support earlier career exploration (Gordon & Schultz, 2020; Strengthening Career and Technical Education for the 21st Century Act, 2018). Perkins V requires collaboration among local education agencies, postsecondary, and industry partners to strengthen high-quality CTE programs aligned to in-demand occupations and local labor market needs and introduced a comprehensive local needs assessment to help accomplish this task (Granovskiy, 2018). Under Perkins V, CTE programs are expected to serve all students, which is reiterated with funds set aside for recruiting and serving special populations, the expectation of career guidance and academic counseling, and an increase in the amount states are allowed to reserve for rural CTE programs (Granovskiy, 2018; Strengthening Career and Technical Education for the 21st Century Act, 2018). Reminiscent of the calls for vocational education reform that led to the Smith-Hughes Act in 1917, the Perkins V legislation challenges states to reimagine CTE (Perkins Collaborative Resource Network, n.d.-b.). The

passage of Perkins V has led to state-level initiatives, such as Tennessee's Supporting Postsecondary Access in Rural Communities and Innovative School Model grants, meant to increase the skilled workforce available by developing new career pathways to in-demand careers (Potts & Pams, 2023).

Educational Leadership

In school districts, administrators manage and lead their learning communities, directly and indirectly impacting student learning and outcomes (Connolly et al., 2019; Day et al., 2020). Whereas educational management involves ensuring the school or district functions as a system with effective processes and procedures, leadership requires influencing members of the learning community toward achieving goals aligned with the organizational vision. Educational leaders are tasked with leading learning communities through continuous improvement, involving change that positively impacts all stakeholders involved, including students, educators, and the community (Fabillar & Wang, 2019). Specifically, leaders in both rural education and CTE must foster innovative approaches toward sustainable educational transformation, attending to the unique barriers and challenges of developing CTE programming within the contexts of their rural communities (Heyward, 2019; Imperatore, 2016; Leithwood et al., 2020; Preston & Barnes, 2017). As CTE programs can address the labor market needs of rural communities and, in turn, help sustain local economies, continuous improvement must be both contextually responsive and innovative because stagnation in programming could have economic consequences (Heyward, 2019; Marre, 2017; Serdyukov, 2017; Thompson, 2018). Administrators must embody leadership approaches, such as transformational and distributed leadership, that both catalyze meaningful, complex change within their school communities and mitigate the barriers and challenges they encounter (Heyward, 2019; Northouse, 2021; Serdyukov, 2017).

Transformational Leadership

Transformational leadership is an approach that is well suited for the educational environment and school improvement process (Daniëls et al., 2019; Sergiovanni, 2007). A broad approach, transformational leadership acknowledges and values the contexts of the practice of leadership, including organizational norms and beliefs, the partnerships between leaders and followers, and situational and cultural factors (Daniëls et al., 2019; Northouse, 2021; Sergiovanni, 2007). When employing a transformational approach, leadership becomes a moral process as leaders inspire, empower, and motivate those within the organization to reach their fullest potential as individuals, move beyond self-interest, and work toward the collective good (Northouse, 2021; Sergiovanni, 2007). Transformational leaders, rather than prescribing followers' actions, guide the work of the organization by fostering collective commitment to a shared purpose (Sergiovanni, 2007). To help the organization reach the shared purpose, leaders empower followers by communicating high expectations, attending to needs, fostering intrinsic motivation, distributing ownership, developing efficacy and capacity, and promoting creativity (Northouse, 2021; Sergiovanni, 2007). In times of change and uncertainty, transformational leadership is more effective than directive approaches because transformational leaders value knowledge sharing, risk-taking, collaborative decision-making, and innovative thinking (Goodwin, 2022). A change-oriented leadership approach, transformational leadership is a practice that facilitates both organizational transformation and personal growth, with followers being changed through empowerment to reach their highest potential and leaders, in turn, being changed through their practice of leadership (Northouse, 2021; Schmitz et al., 2023). However, cultivating and protecting this culture of purposeful change is not done by a leader in isolation

but rather through collaboration, collective responsibility, and enabling others to act through distributed leadership (Barbosa & Coneway, 2023; Northouse, 2021; Sergiovanni, 2007).

Distributed Leadership

Distributed leadership is an approach that, like transformational leadership, attends to the context of the leadership process and views leadership as a mutual practice between leader and follower (Daniëls et al., 2019; O'Shea, 2021; Sergiovanni, 2007). Not to be confused with shared leadership, which implies that leadership can be owned and is something to be given, distributed leadership realizes the systems nature of organizations, that leadership is relational and exists among all organizational members, extending beyond formal leadership designations (Day et al., 2020; Northouse, 2021; Sergiovanni, 2007). The leader and followers are bound by a commitment to a shared purpose and collectively participate in leadership as a practice (Harris & DeFlaminis, 2016; Sergiovanni, 2007). When leaders enact distributed leadership, human potential is maximized as organizations become communities of practice in which leadership becomes a collective responsibility as members assume leadership roles dependent on the situation and necessary competencies (Sergiovanni, 2007). Energized by collective commitment to a shared purpose, members of the community of practice step up to lead when their strengths, skills, and capabilities are best suited to accomplish the current goal (Harris & DeFlaminis, 2016; O'Shea, 2021). Through distributed leadership and decision-making, the school improvement process becomes one in which relational trust, shared ownership, cohesiveness, and collaboration are nurtured (Eckert, 2019; Sergiovanni, 2007). Distributed leadership is more than merely delegating tasks; leaders are responsible for providing leadership development and capacity-building opportunities to other members of the community of practice (Eckert, 2019; Harris & DeFlaminis, 2016; Northouse, 2021). As the collective leadership capacity grows, leadership will

continue to be distributed throughout the organization, leading to higher levels of competency, self-efficacy, investment, satisfaction, and performance (Eckert, 2019; Liu et al., 2021; O'Shea, 2021; Torres, 2019). Additionally, when empowered as decision-makers and leaders, members of the learning organization are more likely to support change through risk-taking and creativity, similar to transformational leadership (Eckert, 2019; O'Shea, 2021). Through the lenses of transformational and distributed leadership, educational leaders foster opportunities for all members of learning organizations to transcend expectations and achieve meaningful transformation through empowerment, inspiration, innovation, and commitment to the collective good (Buyukgoze et al., 2022; O'Shea, 2021; Northouse, 2021; Sergiovanni, 2007).

Role of Educational Leaders

Enacting effective leadership practices, such as transformational and distributed leadership, school and district leaders are integral to the success of the education system (Grissom et al., 2021; Levin et al., 2020). Principals and administrators directly and indirectly influence most aspects of their learning community, including student achievement, attendance, and graduation; school climate; working conditions; and teacher motivation, satisfaction, and retention (Grissom et al., 2021; Levin et al., 2020; Levin & Bradley, 2019). The school leader should be positioned to be a lifelong learner, culture shifter, and change agent while creating a vision that guides the work of the school, developing people and capacity, designing a system to support effective practices, and fostering continuous improvement and transformation (Leithwood et al., 2020; Rincon-Gallardo, 2020; Southern Regional Education Board, 2020b).

Fullan's Framework for Leadership

The one constant in education is change, and change requires leadership (Fullan, 2020). School leaders are more than instructional leaders; they are change agents seeking coherence in

the systems they lead (Fullan, 2020; Fullan & Quinn, 2016). When a system, either a school or district, is seeking sustainable and transformational reform, that system must have a culture that allows the change to reverberate throughout (Fullan, 2020). Leadership cannot force meaningful change but can inspire a culture of change in the complex systems they lead by attending to three components of the system—the vision, the members, and themselves. Fullan's framework for leading change identifies leadership capacities necessary for leaders to foster cultures in which members are committed to change, despite the fears, anxieties, and uncertainties accompanying the change process. Additionally, transformational and distributed leadership are supportive of this framework.

When leading as a change agent, a leader must understand the nuances of change, that change is an emotional, relational, complex, non-linear process that requires persistence, courage, and learning (Fullan, 2020). Throughout the change process, moral purpose is the driver and is embedded into every facet of the system, communicated by beliefs, values, and interactions. Relationships are another essential facet of change because leadership, schools, and change do not exist in a vacuum, and moral purpose cannot drive the system toward change without a commitment shared by the members. Shared commitment, however, is not sufficient for the complexity of change, as knowledge must be created and shared to confront the unknowns of change, allowing opportunities for leadership to be distributed as well. No change will be sustained without coherence, defined as the shared experience of being deeply engaged in and understanding the work of the system. Coherence is made on the systems level by leaders who exhibit energy, courage, and hope. When leaders build their capacity for creating cultures of change through the components of this framework, a collective commitment and transforming the system for the better will follow (Fullan, 2020). In addition to change leadership, the roles

and responsibilities of an educational leader are many and varied, continually shifted by changes in education policy and reflecting the contexts of leadership (Day et al., 2020; Eckert, 2019; Grissom et al., 2021).

Policy Context

Federal, state, and local education policy shifts the role of an educational leader, creating new expectations for successful leadership (Grissom et al., 2021). Through the passage of federal legislation, such as the Every Student Succeeds Act, the focus on accountability, continuous improvement, and achievement defined the work of educational leadership, including increasing the time school leaders spent on testing, addressing the needs of subgroups previously overlooked, and identifying improvement strategies to raise test scores. As equity and access became a policy focus, educational leaders found themselves identifying and addressing barriers to opportunity, hoping to improve discipline, attendance, and achievement outcomes for all learners. Additionally, the variety of school choices, including open enrollment, charter schools, and virtual schools, led school and district administrators to compete in the educational marketplace by promoting their schools within their communities through branding, crafted narratives, and success stories.

Though policy contexts determine external measures of school effectiveness and can necessitate change in school, educational leaders can rely on transformational and distributed leadership to inform shifts in practice (Goodwin, 2022; Grissom et al., 2021; Leithwood et al., 2020). Faced with uncertainty in school improvement, transformational approaches, such as communicating goals, fostering a shared purpose, redesigning structures to support change, and providing opportunities for teachers to build capacity, led to learning communities where leaders approached reform more effectively (Goodwin, 2022). When leaders also created cultures of

distributed leadership, teachers participated in knowledge-sharing, risk-taking, shared decision-making, and coherence making, which led to improved teacher morale and satisfaction, even in unfamiliar change processes (Day et al., 2020; Eckert, 2019; Torres, 2019). Educational leaders should allow their learning communities to adapt and respond to external reforms rather than have policies and mandates expressly dictate practices (Leithwood et al., 2020).

Societal Contexts

Societal contexts, specifically the Fourth Industrial Revolution (Industry 4.0) and the COVID-19 pandemic, have created unprecedented circumstances that require innovation and transformation of the education system and, in turn, its leadership (Dare & Saleem, 2022; Prestiadi et al., 2020). The changes brought about by Industry 4.0, an era of disruptive innovation, globalization, and rapid technological advancements, reverberated throughout the economy and impacted the future of the U.S. workforce, requiring a collaborative redesign of education (Prestiadi et al., 2020; Robinson, 2020; World Economic Forum, 2020). School systems play an integral role in preparing students for success in the changing labor market, ensuring the possibility for social mobility by providing them opportunities to gain problem-solving, critical thinking, creativity, global citizenship, interpersonal, and technology skills. However, the shifts required in learning experiences and content delivered by schools to meet the needs of Industry 4.0 would necessitate systemic change (Robinson, 2020; World Economic Forum, 2020). Through a transformational and distributed approach, educational leaders, in collaboration with teachers and industry, must rely on each other's strengths, recognize teachers' innovative potential, and foster a collective commitment to mitigate the challenges of and develop the educational opportunities necessary for Industry 4.0 (Prestiadi et al., 2020; Robinson, 2020).

Similarly, the pandemic exposed weaknesses in the current education system and, even in a time of uncertainty, presented opportunities for system reform through transformational and distributed leadership (Azorín & Fullan, 2022; Harris & Jones, 2020; World Economic Forum, 2022). As a result of the unforeseen COVID-19 shutdown, school leaders had to shift and augment their responsibilities, as they were called to provide and advocate for the resources needed by students and teachers to successfully transition to virtual teaching and learning (Azorín, 2020; Scully et al., 2021; Starkey et al., 2021). Out of necessity, change management became a required skill of educational leaders transforming the conditions of schools, and collective capacity was relied upon by members of the learning community to effectively provide instruction (Azorín & Fullan, 2022; Harris & Jones, 2020). Additionally, throughout the pandemic, leaders leveraged the creativity and adaptability of teachers in a collaborative culture to reform school practices (Harris & Jones, 2020; Starkey et al., 2021). Educational leaders lead shifts in shared vision and approach contexts of dynamic uncertainty through the lenses of transformational and distributed leadership, as they act as catalysts of innovation, collaboration, capacity generation, and connection to improve schools alongside their learning community (Azorín, 2020; Azorín & Fullan, 2022; Fischer et al., 2020; Harris & Jones, 2020).

Community, District, and School Contexts

Rural Educational Leadership. The responsibilities of educational leaders are also predicated by the roles they play in their communities, districts, and schools (Conrad & Watkins, 2021; Wieczorek & Manard, 2018). Due to the uniqueness of rurality, such as geographic isolation, lack of resources, and size of the community, schools are viewed as community hubs in rural areas and, therefore, rural educational leaders play a central and integral role in their schools and community (Barbosa & Coneway, 2023; Henry, 2019; Wieczorek & Manard, 2018).

Rural school leaders are expected to act as a bridge between school and community, be engaged in the social fabric of the community, and meet the needs and expectations of the community through the provision of education (Henry, 2019; Pendola & Fuller, 2018; Wieczorek & Manard, 2018; Zuckerman, 2020). Though their connectedness assisted the development of beneficial community partnerships, the visibility and prominence of rural school leaders often led them to experience poor work-life balance, feeling overwhelmed, and pressured to do and be more for their communities, as if they were personally responsible for the vitality of the area (Henry, 2019; McHenry-Sorber & Sutherland, 2020; Pendola & Fuller, 2018; Wieczorek & Manard, 2018). Additionally, rural administrators faced barriers to feeling effective as leaders due to the smaller size of districts and schools, including an excessive workload with varied and changing responsibilities, lack of administrative support, and teacher recruitment and retention issues (Frahm & Cianca, 2021; Hansen, 2018; Pendola & Fuller, 2018; Wieczorek & Manard, 2018; Zuckerman, 2020). Other educational leadership challenges unique to the rural context encountered by school leaders included insufficient salaries, lack of access to professional development, limited resources, inadequate facilities, tensions with the school board and other local leaders, and less opportunity for career advancement (Hansen, 2018; Levin & Bradley, 2019; McHenry-Sorber & Sutherland, 2020; National Association of State Boards of Education, 2016).

Despite the numerous obstacles to effective leadership encountered by administrators, the rural context also presents strengths and opportunities for leaders to improve education in their communities (Azano & Biddle, 2019). The smaller school size allows for leaders to build deeper relationships and trust among faculty and staff, attend to the professional development needs of teachers, promote collective support, and more actively support student achievement (Barbosa &

Coneway, 2023; Frahm & Cianca, 2021; Zuckerman, 2020). School leaders leverage the centrality of schools in the community to develop partnerships supportive of educational goals, engage families in the learning process, and create collective capacity and support for school reform (Azano & Biddle, 2019; Henry, 2019; Zuckerman, 2020). As communities grapple with the COVID-19 pandemic's lingering impacts, such as educational loss and unemployment, educational leaders bear the responsibility to respond and adapt proactively (Showalter et al., 2023). Educational leaders can contribute to both school improvement and community development by harnessing the strengths of rurality with a transformational and distributed leadership approach, being visionaries and problem-solvers, relying on the collective capacity and individual strengths of faculty and staff, nurturing positive and collaborative relationships, and working within and adapting to the context of community norms and values (Barbosa & Coneway, 2023; Preston & Barnes, 2017; Zuckerman, 2020).

Secondary Career and Technical Educational Leadership. Secondary CTE administrators, ranging from a principal of a comprehensive high school that houses CTE programs to the school district CTE director, are expected to engage in many of the same leadership roles as traditional school leaders; however, administrators leading CTE programs also have responsibilities beyond the scope of their traditional counterparts and that extend outside the high school walls (Clark & Cole, 2015; Gordon et al., 2019). CTE administrators provided leadership for ensuring the development, facilitation, implementation, and improvement of high-quality CTE programs and career pathways, attending to elements such as integrated curriculum that is standards-aligned, engaging instructional practices, student assessment, student career development, and industry and community partnerships (Fleck et al., 2019; Imperatore & Hyslop, 2018; Stubbs & Stubbs, 2017). For example, though both traditional

school leaders and CTE administrators must have up-to-date, research-based knowledge of effective instruction and an understanding of standards-based curriculum, CTE administrators must also be informed about current industry and labor market trends and standards so they can be integrated into the relevant career pathways (Clark & Cole, 2015; Fleck et al., 2019; Gordon et al., 2019). Additionally, while teacher recruitment, retention, and development are a responsibility of both traditional school leaders and CTE administrators, the latter must understand the alternative licensure process for CTE instructors who transition directly into education from industry (Clark & Cole, 2015; Gordon et al., 2019). Other CTE-specific knowledge and skills required of secondary CTE administrators include, but are not limited to, local workforce and economic development, marketing CTE programs, safety and liability in shops and labs, Perkins V funding, industry-recognized credentials, early postsecondary opportunities, work-based learning, and continuous career pathways development to reflect local labor market needs (Clark & Cole, 2015; Conrad & Watkins, 2021; Gordon et al., 2019; Harvey et al., 2022). CTE administrators may feel ill-prepared or lack confidence in their leadership due to the many facets of CTE, as CTE administrators often have a general administrative endorsement and have not received training specific to CTE (Conrad & Watkins, 2021; Gordon et al., 2019). Also, CTE administrators may find their numerous leadership responsibilities overwhelming with both CTE and non-CTE administrative duties.

Given the role that secondary CTE programs play in community and economic vitality, especially in rural areas, transformational and distributed leadership practices are essential to CTE administrators leading, designing, and improving the innovative CTE programs necessary for workforce development for the future (Fleck et al., 2019; Gordon et al., 2019). Fostering a culture of continuous improvement and collaboration is central to creating career pathways

responsive to local labor market needs and removing barriers to participation in those pathways (Hodge et al., 2020; Stearns, 2018; Stubbs & Stubbs, 2017). Developing career pathways can require system-wide transformation, with a shared vision of CTE, all stakeholders feeling empowered to take risks, maximizing support in the school and community through collective capacity, and facilitating teacher efficacy in meeting the needs of students and the greater community. CTE administrators leading cutting-edge CTE programs should inspire trust with stakeholders, challenge conventional educational practices, think creatively when solving problems, promote and communicate a long-term vision, and model ethical behavior and high expectations (Fleck et al., 2019; Gordon et al., 2019; Harvey et al., 2022).

Transformational and Distributed CTE Leadership

Reinventing and expanding robust career pathways are imperative for secondary administrators leading CTE in rural schools and districts (Advance CTE, 2018b; Heyward, 2019). Strengthening career pathways to improve learning opportunities, prepare students for success in a rapidly changing labor market, and nurture the vitality of rural communities is a complex leadership venture that requires secondary CTE administrators to engage in systemic change and innovative reform (Advance CTE, 2017a; Chiefs for Change, 2021; Heyward, 2019; Warner-Griffin & Liveoak, 2023). Specifically, rural CTE administrators seeking to reform programming should focus on garnering collective commitment, using data to identify access barriers and evaluate effectiveness, maximizing local and regional partnerships, using available resources creatively, and cultivating innovation (Advance CTE, 2018b). The challenging yet worthwhile endeavor of improving rural career pathways requires strong, transformational leadership, but also an ecosystem of partnership, commitment, and support, as meaningful change cannot be achieved in isolation (Andreoli et al., 2020).

One of the functions of school leadership is improving the quality of education, and through the lens of transformational leadership, CTE administrators can create conditions conducive to change and innovation necessary to reimagine CTE (Acton, 2021; Prestiadi et al., 2020). As visionary leaders, rural CTE administrators should create a shared vision and build collective commitment, garnering support from within the learning community and among local industry, postsecondary, and community partners (Advance CTE, 2018b; Fleck et al., 2019; Zuckerman, 2020). Transformational leadership approaches can assist CTE administrators in addressing barriers to high-quality career pathway development in rural areas by capitalizing on the existing human potential of the learning community (Prestiadi et al., 2020). For example, teachers within a learning community in which transformational leadership was employed were found to have increased self-efficacy, expressed commitment to the school's vision, improved working conditions, and a greater sense of worth (Hasselquist et al., 2017; Kılınç et al., 2023; Zainal & Matore, 2021). As a result, transformational leadership practices led to teachers being more likely to engage in innovative and creative behaviors, taking risks that could lead to school improvement (Tran et al., 2022; Zainal & Matore, 2021). Additionally, transformational leadership can help rural CTE administrators mitigate the challenges of teacher recruitment and retention as the transformational approach increases teachers' job satisfaction, which, in turn, decreases turnover (Barbosa & Coneway, 2023; Hasselquist et al., 2017; Urick, 2020).

Distributed leadership is a leadership practice that fosters innovation, trust, shared ownership, and capacity for improvement, and, as such, should be employed by rural CTE administrators (Andreoli et al., 2020; Eckert, 2019; Imperatore & Hyslop, 2018). Rural CTE administrators must distribute leadership among instructors as well as industry, workforce development, postsecondary, and community partners to create career pathways specific to their

local economies (Advance CTE, 2017a; Chiefs for Change, 2021; Imperatore & Hyslop, 2018). Distributing leadership throughout community partnerships not only helps sustain improvement through building capacity, connections, commitment, and collaboration, but also mitigates a barrier to rural CTE by creatively leveraging available resources throughout the community, including making industry-standard facilities, equipment, and technologies available; enriching the curriculum through work-based learning; and sharing reform decision-making with industry and workforce advisory committees (Andreoli et al., 2020; Klocko & Justis, 2019; Warner-Griffin & Liveoak, 2023).

Rural schools are a source of leadership for community and economic development, with secondary CTE providing an on-ramp to career pathways for high-skill, high-wage, and in-demand occupations (Collegiate Edu-Nation, 2021; Smith & Zimmer, 2022). Through transformational and distributed leadership approaches, CTE administrators charged with leading career pathways can be catalysts for change and innovation within the contexts of rurality and Industry 4.0 (Prestiadi et al., 2020; Serdyukov, 2017; World Economic Forum, 2020). As industries, technologies, and labor market needs continue to change, educational leaders must respond by creating dynamic and improved learning communities in which students can engage in learning that lays the groundwork for future success (Henry, 2019; Fischer et al., 2020; Robinson, 2020; World Economic Forum, 2020). Rural CTE administrators must approach educational leadership in such a way that promotes access to and reimagines the possibilities of CTE (Chiefs for Change, 2021; Heyward, 2019).

Relevant Federal Legislation

The Workforce Innovation and Opportunity Act (WIOA), a reauthorization of the Workforce Investment Act of 1998, was passed in 2014 with significant bipartisan support

(Perkins Collaborative Resource Network, n.d.-c; U.S. Department of Labor, n.d.). WIOA, aimed at improving the nation's public workforce system, was designed to support job seekers, including youth and those experiencing barriers to employment, in accessing the education, training, and services necessary to be successful in the workforce. The workforce development system was modernized by this legislation in that it required coordination of needs between education, job seekers, and employers, such as a partnership between employers and secondary and postsecondary education, including CTE programs, to develop aligned career pathways (U.S. Department of Labor, n.d.; WIOA, 2014).

The Every Student Succeeds Act (ESSA), signed into law in 2015, was designed to fund and provide all kindergarten through twelfth-grade students with equitable access to a balanced and high-quality education (Advance CTE, n.d.-b; U.S. Department of Education, n.d.). With a broad focus on college and career readiness, rather than college for all, and a definition of a well-rounded education that includes CTE, ESSA demonstrated an unprecedented incorporation and support of CTE (Hodge et al., 2020; Perkins Collaborative Resource Network, n.d.-a.). Allowing states to include CTE in their state plans and accountability systems has provided states the opportunity to build stronger partnerships among secondary CTE, workforce development, and postsecondary education (Advance CTE, n.d.-b).

Opportunity exists with the collaboration of Perkins V and other federal legislation, including ESSA and WIOA, to create and further expand CTE programs of study aligned to career pathways and industry-recognized credentials to which all students have access (Cushing et al., 2019; Perkins Collaborative Resource Network, n.d.-b.). Perkins V, ESSA, and WIOA play complementary roles in CTE improvement and workforce development, each contributing to a different portion of the education-to-workforce pipeline or P20 pathway (Cushing et al.,

2019). In planning and implementing CTE programming, helping students access work-based learning opportunities, for example, is supported through ESSA's college and career readiness focus and WIOA's alignment of career pathways (Southern Regional Education Board, 2019). With shared goals and expectations of rigorous academic and technical standards, employability skills, and industry-recognized credentials or postsecondary attainment, Perkins V, ESSA, and WIOA set the stage for solid partnerships that could be leveraged to improve outcomes and access for all students participating in CTE programs (Cushing et al., 2019; Perkins Collaborative Resource Network, n.d.-b.).

Rural Education

Rurality

Approximately 20% of the nation's population lives in rural America, but this percentage can change depending on the definition used to determine rurality (Cromartie & Bucholtz, 2008; U.S. Census Bureau, 2020). The National Center for Education Statistics defined rural as encompassing three categories, fringe, distant, and remote, dependent on the distance from and size of the nearest urban area (Geverdt, 2019). On the other hand, the U.S. Census Bureau (2020) defined rural by what it is not. According to the U.S. Census Bureau, rural is any area, population, or housing that cannot be considered urban. Rural areas were also defined in terms of municipal and jurisdictional boundaries, population, economic classifications, and in terms of commuting data (Cromartie & Bucholtz, 2008). Rather than using data, rurality was defined characteristically or thematically as areas that are geographically remote with limited access to resources, areas that give one a certain feeling of being rural, or areas that are unique and not like other communities (Farmer et al., 2021; Weiss et al., 2023). Additionally, when determining what makes a setting rural, regional differences should be considered because the population in

rural America is not evenly distributed among regions, with approximately half of the rural population living in the South and only 10% living in the West (Thier et al., 2021; U.S. Census Bureau, 2020). Regardless of definition, classification of and comparing rural areas can be difficult, as even though most of the U.S. land area is considered rural, it ranges from extremely remote areas to areas just outside of large urban centers, and there is a lack of shared language to describe these areas (Geverdt, 2019; Thier et al., 2021).

Rural Strengths

Twenty percent, or over 9.5 million, of the nation's school-aged youth attended school in a rural area, with approximately one-third of the nation's public schools and one-half of the nation's public school districts being rural, meaning a sizable portion of the country's infrastructure supports rural education (Johnson et al., 2021; National Center for Education Statistics, 2022; Showalter et al., 2023). Rural schools, however, are also difficult to define, as the characteristics of rural school districts are as diverse as their communities, from Appalachian to remote Alaska, Mississippi Delta to the Great Plains (National Association of State Boards of Education, 2016; Showalter et al., 2019). The common thread amongst the diversity of rural America is that education represents community vitality (Sipple et al., 2019).

In the rural context, schools educate, provide communities with local identity, relationships, and employment, and inspire hope for the future (Sipple et al., 2019; Smith & Zimmer, 2022; Tieken & Montgomery, 2021). A commonality among all rural communities, no matter how different, is connectedness among people (Showalter et al., 2023). Community social resources were strengths of rural schools, including close relationships within the school, family involvement, and partnerships with the broader community, such as local churches and businesses (Byun et al., 2012; Hargreaves et al., 2015; Jimerson, 2006). Rural children had more

access to publicly funded early childhood education programs than their urban counterparts, and rural third graders' average achievement and learning rates only differed slightly (Drescher et al., 2022; Morrissey et al., 2022). Nationally, the high school graduation rates were higher for rural areas than urban areas and on par with suburban school districts (Jordan et al., 2012; Showalter et al., 2023). Rurality had little to no impact on dropout rates, as rural and nonrural dropout rates were similar. Also, rural high school juniors and seniors were more likely than their nonrural counterparts to take dual enrollment courses (Showalter et al., 2019).

Rural Barriers

The vitality of rural communities is connected to the outcomes of students attending rural school districts, as educational attainment was correlated with regional economic prosperity (Marre, 2017). Higher instances of poverty, child poverty, unemployment, and population loss were more prevalent in rural counties with the lowest levels of educational attainment, and these struggles were intensified during and after the COVID-19 pandemic (Marre, 2017; Showalter et al., 2023). Though rural students often outperformed their urban counterparts in high school graduation rates, there was a significant gap of almost 10% in the graduation rate of rural minority students compared to rural students of all races (Marre, 2017; Showalter et al., 2019). Additionally, rural students tended to have lower postsecondary aspirations than their urban peers, with fewer rural students identifying college attendance as a goal or reporting interest in taking postsecondary classes (Miranda & Rodriguez, 2022; National Center for Education Statistics, 2023b). Rural students who expected to attend college had lower degree expectations than did their nonrural peers, with a higher percentage of rural students desiring to attend college but not complete a bachelor's degree and a lower rate expecting to earn a master's degree or higher (Molefe et al., 2017). This was reflected in postsecondary enrollment and attainment as

well, with rural students not attending postsecondary institutions at the same rate as their urban counterparts, being more likely to attend two-year colleges, and lagging in degree attainment (Byun et al., 2015; Koricich et al., 2018). In 2019, 34%, or the majority, of adults living in rural communities had a high school diploma as their highest level of educational attainment, 31% had an associate degree or some college, 25% had a bachelor's degree or higher, and 11% had less than a high school diploma (National Center for Education Statistics, 2023a). There are several barriers that rural students face in terms of educational attainment, including financial burden, socioeconomic status, and parental expectations (Byun et al., 2015; Koricich et al., 2018; Molefe et al., 2017).

Another barrier to educational attainment for rural students was limited access to rigorous coursework in their rural school district (Byun et al., 2015; Lavalley, 2018). The curricular path taken by high school students was influenced by the coursework available, as engaging in advanced coursework in high school can increase the likelihood of completing postsecondary education and earning a degree and can provide students with more flexibility and cost savings in their postsecondary experiences (Chatterji et al., 2021; Dannenberg & Hyslop, 2019; Song et al., 2021). For rural students, the curricular path they took was less dependent on personal choice, but on access (Lavalley, 2018). Though rural high school students had a higher rate of participation in dual enrollment courses, they had less access to advanced mathematics and science courses, including AP Calculus, AP Statistics, and advanced biology, chemistry, and physics (Anderson & Chang, 2011; Gagnon et al., 2021; Irvin et al., 2017; Saw & Agger, 2021). Additionally, as of 2017, 73% of rural high school students had access to AP coursework in any subject and 62% had access to STEM AP coursework, as opposed to their nonrural peers, of which approximately 90% had access to both AP and STEM AP coursework (Mann et al., 2017).

Rural students who could access AP courses were less likely to pass them to qualify for college credit, with 9.5% of rural students earning AP credit in contrast with 19% of high school students nationwide (Showalter et al., 2019). Barriers including recruiting and retaining teachers, instructional capacity and professional development provided, having a small teaching staff due to a smaller student population, and operating with reduced budgets impacted rural schools' ability to offer advanced coursework (Anderson & Chang, 2011; Irvin et al., 2017; Lavalley, 2018; Peterson, 2017; Saw & Agger, 2021).

The challenges that rural school districts faced in recruiting and retaining strong, highly qualified teachers affected not only the advanced coursework offered but also the educational experience in which rural students participated (Hassel & Dean, 2015; Lavalley, 2018). Though strong relationships, community ties, and the value placed on teachers were benefits to teaching in rural school districts, other factors related to rurality impacted teachers' willingness to work in these areas (Gallo, 2020; Seelig & McCabe, 2021). Factors related to geographic isolation, like lack of access to amenities such as entertainment venues and limited employment options for non-teacher spouses, were a deterrent for prospective teachers (Hassel & Dean, 2015; Nguyen, 2020). Unique characteristics of rural schools also hindered recruitment and retention of teachers as a small school staff led to a lack of support through professional learning communities, and the role rural schools played in their community led to a feeling of increased pressure to be more and do more for the community (Hassel & Dean, 2015; McHenry-Sorber & Sutherland, 2020; Saw & Agger, 2021). Additionally, noncompetitive salaries were another barrier faced by rural school districts in attracting highly qualified educators (Nguyen, 2020; Seelig & McCabe, 2021).

Labor Market

Labor Force Trends

In the past two decades, the American labor market went through tumultuous changes, shifts in industry trends, and an unprecedented labor shortage, all of which have been magnified in rural regions and, when coupled with an aging population, have significant implications for rural economic development (Dabson, 2018; Davis et al., 2022; Ferguson, 2023; Sanders, 2022). Before the Great Recession began in 2007, employment rates of adults nationwide were at 63% and were 80% for prime working-age adults, or adults ages 25-54 (Bureau of Labor Statistics, 2012; Hertz et al., 2014). By the end of the Great Recession in 2009, employment rates of all adults and prime working-age adults dropped by five percentage points to the lowest levels they had been at since 1983 (Cunningham, 2018; Hertz et al., 2014). After growing through 2007, urban employment rates peaked at the beginning of 2008 and fell to five percentage points below that peak by 2010. Rural employment rates, however, had already begun to decline before the recession and had fallen by 5.4% by 2010 (Hertz et al., 2014). Losing approximately 1.5 million jobs, rural employment rates declined at a greater rate and began earlier than in nonrural areas (Sanders, 2022).

Following the Great Recession, labor force participation rates, or the percentage of the working-age population that is either employed or in search of employment, decreased by 2.6% in rural areas, from 76.4% to 73.8%, and 0.7% in urban areas, from 79.5% to 78.8% (Sanders, 2022). Conversely, prime working-age unemployment rates in rural areas decreased from 3.9% in 2007 to 3.7% in 2019. However, this trend was not reflected for Black and African American or Hispanic and Latino adults, as their unemployment rate increased by 0.5% and 0.8% in this period, further widening the racial unemployment gap. While nonrural total employment

comprised 178 million jobs, total rural employment was 23.6 million jobs (Davis et al., 2022). Despite the increase in employed adults by 2019, the decrease in rural labor force participation rates was due to factors stemming from the Great Recession, including slower rural recovery rates, fewer rural jobs post-recession, and rural workers moving to urban areas for employment opportunities (Davis et al., 2022; Sanders, 2022).

The beginning of 2020 marked a nationwide disruption to the labor force and economic activity due to the onset of the COVID-19 pandemic (Ferguson, 2023; Sanders, 2022). Government, businesses, and consumers reacted to the pandemic by enacting precautions to limit the spread, but this also led to steep job loss across the country (Ferguson, 2023). During the pandemic, rural employment rates fell to levels lower than at any point during the Great Recession, whereas urban employment rates remained above 2007 levels even with losing a larger share of jobs (Bureau of Labor Statistics, 2020; Sanders, 2022). With the loss of employment opportunities came the peak of unemployment rates in 2020 to a high of 13%, which was also seen in rural areas, as the unemployment rate doubled to 12.6% in persistently poor rural counties and more than tripled in other rural counties to 13.7% (Dobis & Krumel, 2022; Edwards et al., 2022). By 2021, unemployment rates declined, more so in urban than rural areas, but still did not recover to pre-pandemic levels (Edwards et al., 2022; Sanders, 2022). The job loss induced by the pandemic caused many people to leave the labor force, some retiring early, and though the labor force participation rate increased, it did so marginally and was still lower than pre-pandemic participation (Dobis & Krumel, 2022; Edwards et al., 2022).

The aftereffects of the pandemic were felt from mid-2021 to 2022 during what has been described as the Great Resignation, a period in which more than fifty million Americans quit their jobs, either in search of better employment options or to leave the labor force (Ferguson,

2023; Gittleman, 2022). Although about 50% of people who left a job have also left the labor force since 2020, hiring rates have surpassed quit rates (Ferguson, 2023; Kochhar et al., 2022). As of April 2023, labor participation rates remained below pre-pandemic levels, signifying a labor shortage with more jobs available in the U.S. than there are unemployed workers to fill them (Ferguson, 2023).

Population Trends

The labor shortage and decline in the working-age population have been exacerbated by recent population trends, especially in rural areas (Davis et al., 2022). The U.S. population has been aging, with the median age increasing by 3.4 years and is expected to continue rising, with the projection that by 2034, the population of people 65 years and older will be larger than that of children under 18 (Elliott, 2023; U.S. Census Bureau, 2022). At the same time, the overall population growth has slowed, and the ratio of working-age Americans has been decreasing since a peak in 2007 (Elliott, 2023). The American labor force is expected to experience slow growth, or lack thereof, because of the direct impact of slow population growth and a decline in the labor participation rate (Committee for Economic Development, 2020; Toossi, 2016). The change in labor force participation rates, labor force growth, and inability to fill jobs influence the U.S. economy in several ways, including the ability to produce goods and services and the amount of payroll taxes contributed to the federal budget (Elliott, 2023; Toossi, 2016). The growth of the U.S. labor force has historically contributed to the country's economic growth, so this could, in turn, have a measurable effect on the nation's financial health and economic development internally and internationally (Committee for Economic Development, 2020; Toossi, 2016).

Population trends in rural communities mirrored those observed across the nation but were amplified (Ajilore & Willingham, 2019; Davis et al., 2022). For the first time in history, people 65 and older comprise more than 20% of the rural population, as opposed to 16% of the nonrural population (Davis et al., 2022). The accelerated aging trend observed in rural areas could be due to factors such as the outmigration of young adults and the in-migration of retirees (Davis et al., 2022; O'Dell, 2021). Outmigration, no longer counteracted by birth rates, has contributed to rural population loss, along with natural population change, or the difference in births and deaths (Ajilore & Willingham, 2019). Even though population growth temporarily increased from 2020 to 2021 because of pandemic-related reasons, such as people from nonrural areas moving to an area with less population density, this has not been enough to offset the aging population (Davis et al., 2022). In line with national trends, rural labor force participation rates have declined, even among prime working-age people, but began earlier and have been doing so at a greater rate than in nonrural areas (Ajilore & Willingham, 2019; Davis et al., 2022). With population growth stagnating and the working-age population declining, the rural labor force has not been able to meet the needs of the local labor market and rural industries (Ajilore & Willingham, 2019; Davis et al., 2022; Ferguson, 2023).

Industry Trends

Though the labor force participation rate is expected to continue declining from 61.7% in 2021 to 60.1% in 2031, projected employment trends are expected to do the opposite by adding approximately 8.3 million new jobs by 2031 (DeZarn et al., 2023). Over the next decade, the industry sectors expected to add the overwhelming majority of new jobs are healthcare, food preparation and serving, management, transportation and material, and business and finance. Additionally, as the U.S. infrastructure ages, demand will increase for those who build, maintain,

and repair the infrastructure, such as electricians, plumbers, carpenters, ironworkers, pipefitters, welders, and other skilled trades (Skillwork, 2022; Soricone et al., 2020). Not all industries are expected to grow, as projections indicate that production, sales, and office and administrative support occupations will decline (DeZarn et al., 2023). Technological advancements, such as automation and digitization, have contributed to the current and eventual decline of employment in industries such as sales, agriculture, and manufacturing (DeZarn et al., 2023; Fuller et al., 2014). However, jobs are expected to open in all industries, even those with projected declines, due to workers leaving the labor force or changing careers (DeZarn et al., 2023).

Rural industry has been affected by the same large-scale factors that influence industry trends nationwide (Dabson, 2018; Davis et al., 2022). Service industries, including health care, education, and social assistance, are expected to grow in rural areas, whereas traditional rural industries, such as agriculture and manufacturing, are expected to experience a decrease in job growth (Ajilore & Willingham, 2020; Hanover Research, 2022). The decline in employment growth in agricultural and manufacturing sectors has been accompanied by increased productivity and output because of modern technologies, some labor-saving (Davis et al., 2022; Sanders, 2022). Despite the projection to have less growth than other industries, tradable goods industries and skilled trades, such as agriculture, manufacturing, and construction, will continue to be critical to rural economies, but will require a more diverse skill set that evolves with technological advancements (Ajilore & Willingham, 2020; Davis et al., 2022; Hanover Research, 2022).

Skilled Labor Shortage

Shifts in industry trends and labor force participation rate have compounded the labor shortage in rural industries, especially for skilled labor, as the technological advancements and

sectors that are experiencing growth require an increased number of high- and middle-skill workers (Davis et al., 2022; Hanover Research, 2022; Restuccia et al., 2018). The labor shortage has resulted in a skills gap or mismatch, in which the current workforce does not have the requisite skills needed for available employment opportunities (Association for Talent Development, 2022; Deloitte Monitor Institute & Autodesk Foundation, 2019; National Center for the Middle Market & Brookings Metropolitan Policy Program, 2017). Though a challenge for all employers, this skills gap and labor shortage have most impacted high- and middle-skill positions in skilled trades, often occupied by workers who have specialized job training but not a traditional four-year degree (Deloitte Monitor Institute & Autodesk Foundation, 2019; Ferguson, 2023; National Center for the Middle Market & Brookings Metropolitan Policy Program, 2017; Restuccia et al., 2018). For example, the manufacturing industry expects to have over two million unfilled jobs by 2030, and by 2027, there will be a need for an additional four hundred thousand skilled welding professionals (American Welding Society, 2023; Wellener et al., 2021). Additionally, by the end of 2023, the construction industry will have to hire a half million workers, in addition to the average rate of hiring, to meet labor demands, as contractors reported having to delay projects due to labor shortages (Associated Builders and Contractors, 2023; Associated General Contractors of America, 2023).

According to employers, the skills lacking in the workforce include technical skills, soft skills, and basic literacy and numeracy skills (Association for Talent Development, 2022; Deloitte Monitor Institute & Autodesk Foundation, 2019; National Center for the Middle Market & Brookings Metropolitan Policy Program, 2017; Restuccia et al., 2018). The technical skill set needed for workers in skilled trades has shifted due to automation, requiring skills and knowledge to operate and maintain new, advanced industry-related machinery and technologies

such as robots, cobots, and machine learning (Deloitte & The Manufacturing Institute, 2018; Deloitte Monitor Institute & Autodesk Foundation, 2019). Advanced technologies not only require an updated technical skill set, but also digital fluency, problem-solving skills, and creative, critical, and innovative thinking, as skilled workers must instruct, interact with, and troubleshoot software and machines (Association for Talent Development, 2022; Deloitte Monitor Institute & Autodesk Foundation, 2019; Fuller et al., 2014).

The labor market, both labor force participation and employment opportunities, directly impacts economic growth and prosperity (Committee for Economic Development, 2020; Toossi, 2016). However, due to the skills gap, aging workforce, and decline in labor participation rate, industries have been faced with the unprecedented challenge of being unable to find skilled workers to fill open positions (Ferguson, 2023). Problems facing rural labor markets, including the skilled labor shortage, can devastate rural communities and families, potentially leading to economic stagnation or decline (Ajilore & Willingham, 2019; Davis et al., 2022; Ziliak, 2019). In rural areas, the skills gap and labor shortage require place-based workforce development that is available to the current and future labor force, focused on providing education and training, and responsive to the labor market (Dabson, 2018; Deloitte Monitor Institute & Autodesk Foundation, 2019; Qureshi, 2022; Soricone et al., 2020; Ziliak, 2019). Additionally, workforce development systems should address inequalities of access to these education programs and rely on partnerships among industry, community resources, and education providers to mitigate current labor market trends.

Workforce Development

Since the 1990s and, more recently, the 2014 passage of the WIOA, workforce development has moved beyond the narrow focus of simple job training to encompass a more

holistic workforce system approach, including programs, policies, and institutions, indicative of its connection to community and regional economic development (Giloth, 2000; Schrock, 2013; U.S. Department of Labor, n.d.-b). The workforce development system merges industry- and place-based strategies to bolster the labor market on the demand side by providing industries with a skilled workforce, as well as the supply side by creating opportunities for individuals to develop in-demand skills that lead to employment and sustainable livelihood (Golith, 2000; Hollenbeck, 2023; Ruder, 2019). To support regional economic development, bridge the skills gap, and address the skilled labor shortage, a comprehensive workforce development system should focus not only on the current needs of the workforce and labor market but also on the capabilities needed to meet the demands of the dynamic labor market and rapidly advancing industry technologies through short-term and long-term training (American Institutes for Research, 2021; Hollenbeck, 2023; Jones et al., 2020). Workforce development should create industry-aligned career pathways through strategies such as apprenticeship programs; stackable and industry-recognized credentials; pre-employment and on-the-job training; wrap-around supports for vulnerable populations; and career coaching (American Institutes for Research, 2021; Jones et al., 2020; U.S. Department of Commerce, n.d.; U.S. Department of Labor, n.d.-a).

In rural communities, the goal of workforce development should be to ensure that all community members have access to the resources needed to gain the education and skills necessary to improve their economic well-being (Dabson, 2018). To attain this goal, workforce development systems must respond to the nation's broad economic circumstances and the specific strengths and challenges inherent to rurality. Unique challenges faced by rural communities trying to bridge the skills gap through workforce development include lack of access to high-speed internet, geographic isolation, fewer resources and funding, and

incompatible industry-based strategies (Dabson, 2018; Kures & Deller, 2023). Whereas industry-based initiatives can create more opportunities in metropolitan areas which contribute to out-migration from rural areas, place-based strategies are implemented within the community, build on regional assets, acknowledge that the diversity of rural communities requires different solutions dependent on the needs of the local labor market, and address barriers preventing students, families, and the community from achieving economic prosperity (Bartik, 2020; Giloth, 2000; Dabson, 2018; Dabson,2021; Rodriguez, 2012).

Career pathways, a place-based P20 strategy, provide opportunities for individuals to access, enter, and advance in industry sector jobs through the alignment of education and training requirements between K-12, postsecondary, and industry (Collegiate Edu-Nation, 2021; Warner-Griffin & Liveoak, 2023). Essential to career pathways are community networks and industry-led partnerships among industry, community, and educational institutions (Haralson, 2010; Next Gen Sector Partnerships, 2020; Rumsey et al., 2019; Southern Regional Education Board, 2020a). Through strategic partnerships, labor demand and skills are communicated by industry partners and used to create education-to-workforce pipelines through which students and workers attain employment in a high-demand industry and bridge the skills gap (Cielinski, 2019; Kazis, 2016; Kinder et al., 2021; Warner-Griffin & Liveoak, 2023). By creating industry-responsive and cohesive career pathways, students are provided the progressive levels of coursework and training from high school to employment, with the opportunity to also pursue postsecondary education, while earning industry-recognized certifications and in-demand skills along the way (Collegiate Edu-Nation, 2021; Kinder et al., 2021; Warner-Griffin & Liveoak, 2023). As a workforce development approach, career pathways helped to create access to and equity in high-wage, high-demand industries through transparent disclosure of education options, in-demand

careers, and required skills and competencies for employment (Coffman et al., 2021; Kinder et al., 2021; The Policy Leadership Trust & Jobs for the Future, 2022). As a result, students and workforce members who participated in career pathways had increased educational progress, likelihood of earning an industry credential, and employment in the industry for which they were trained as compared to non-participants (Harmon, 2018; Peck et al., 2021; Schwartz et al., 2021).

Secondary Career and Technical Education

Community development requires mutual responsibility and collaboration among all community institutions, including K-12 school districts, postsecondary providers, and industry, to serve the needs of and enhance the well-being of the residents and community (Schafft, 2016). Education and rural school districts play a critical role in the future of their communities, including economic vitality (Marre, 2017; Sipple et al., 2019; Smith & Zimmer, 2022). Though rural education faces several challenges, including geographic isolation, recruiting and retaining educators, and limited access to resources and academic opportunities, the education system is a crucial workforce development partner in rural communities, and secondary CTE, specifically, can act as an on-ramp to career pathways for students (Showalter et al., 2023; Starrett et al., 2022; Stockard, 2019; Tieken & Montgomery, 2021; Warner-Griffin & Liveoak, 2023). In addition to creating access to pathways for students to attain livable wages through in-demand jobs, high-quality CTE programs can meet the skilled labor force needs of local employers, thus strengthening the regional, state, and national economy (Advance CTE, 2017a; Haviland & Robbins, 2021; Hendricks et al., 2021; Soricone et al., 2020).

Provisioned by Perkins V (2018), high-quality CTE programs provide students the opportunity to participate in learning experiences that integrate academic, employability, and technical skills through programs of study aligned with local labor market needs, early

postsecondary opportunities, and work-based learning (Edgerton, 2022; Haviland & Robbins, 2021). CTE programs of study are intentionally sequenced coursework, becoming increasingly more occupation-specific in targeted skills as students progress through the program, which is organized according to the National Career Clusters Framework into 16 Career Clusters, encompassing 79 Career Pathways (Advance CTE, n.d.-a, 2018a). Including health science, information technology, and manufacturing, the Career Clusters represent broad industries grouped by commonalities and contain multiple career pathways, such as the manufacturing cluster containing production; manufacturing production process development; maintenance, installation, and repair; quality assurance, logistics, and inventory control; and health, safety, and environmental assurance pathways (Advance CTE, n.d.-a; Edgerton, 2022). By specializing in a CTE program of study, students increase career readiness by acquiring industry-specific technical and academic skills in addition to broad employability skills (Association for Career and Technical Education, 2018; Edgerton, 2022). Also, as career pathways connect and align education and training to high-skill, high-wage, and in-demand occupations, secondary CTE programs of study lead to the attainment of industry-recognized credentials, postsecondary credits through dual or concurrent enrollment, or work-based learning experiences by the time of graduation (Advance CTE, 2020a). Students can then continue to follow their career pathways to postsecondary education, apprenticeships, or employment.

As of 2018, CTE was available for students in approximately 98% of public school districts, with most programs offered at comprehensive high schools (Gray & Lewis, 2018). The majority (88%) of students attending public high schools earned at least one CTE credit; however, only 38% of students continued to engage in their program of study through upper-level CTE courses, with 18% and 20% of students completing two and three credits of CTE

coursework respectively (Liu & Burns, 2020). Students who chose to concentrate in specific CTE pathways and enroll in more CTE courses were more likely to have lower levels of achievement in math and reading, have lower socioeconomic backgrounds, receive special education services, and have lower levels of college enrollment (Cheng & Hitt, 2018; Kreisman & Strange, 2020; Lindsay et al., 2021; Xu & Backes, 2023). Additionally, though students in rural areas, particularly the South, earned fewer academic credits than their nonrural counterparts, they were more likely to concentrate in CTE programs of study and earned more CTE credits (Hudson, 2019; Urban et al., 2022).

Secondary Outcomes

Despite any disadvantages that students had as they began their secondary CTE programs, taking CTE courses was also associated with positive educational and employment outcomes (Cheng & Hitt, 2018). Participation in CTE coursework increased student engagement in both academic and CTE courses and demonstrated the relevance of high school courses to postsecondary paths (Gottfried & Plasman, 2018; Plank et al., 2008). Specifically, students with disabilities showed increased engagement in school through reduced absences when concentrating in CTE (Theobald et al., 2019). As students engaged in STEM-related CTE coursework, their math and science self-efficacy increased, as did their interest in taking advanced math and science courses (Gottfried et al., 2016; Sublett & Plasman, 2017). Students who followed secondary CTE programs of study participated in more work-based and contextual learning and reported gaining employability skills, such as problem-solving, communication, project completion, and critical thinking, through CTE-related experiences (Lekes et al., 2007).

In addition to improving outcomes while in high school, concentration in CTE programs of study led to increased graduation and decreased dropout rates for all students (Dougherty,

2016; Solberg et al., 2022). Students were more likely to graduate on time from high school if they participated in any CTE coursework, and that likelihood increased for each credit of CTE earned, especially if the courses were taken in 11th and 12th grades (Brodersen et al., 2021; Cheng & Hitt, 2018; Dougherty, 2016; Dougherty et al., 2019; Gottfried & Plasman, 2018; Miller & Riccardo, 2021; Urban et al., 2022; U.S. Department of Education, 2019). The increase in graduation rate was most notable for low-income students, as low-income students who were CTE concentrators were more likely to graduate than their non-concentrator counterparts at higher rates than higher-income concentrators were compared to their non-concentrator counterparts (Arbeit et al., 2017; Dougherty, 2016; Dougherty, 2018). For students with disabilities, CTE concentration was associated with an increased likelihood of graduating high school and graduating in four years across all disability categories (Carruthers et al., 2022; Dougherty et al., 2018; Theobald et al., 2019). Students with disabilities who participated in a CTE course in 12th grade, as compared to their similar but non-participating peers, were more likely to graduate at the end of the school year (Theobald et al., 2019). Additionally, when students participated in CTE dual or concurrent enrollment offerings, they had an even greater likelihood of graduating high school than other CTE concentrators or non-concentrators, regardless of their backgrounds (Edmunds et al., 2022; Rodriguez et al., 2012; Dougherty, 2016). Concomitantly, secondary CTE course-taking reduced dropout rates, especially when participating students take courses in 11th and 12th grades, attend a comprehensive high school, or engage in career pathways articulated with local industry and postsecondary institutions (Bonilla, 2020; Cheng & Hitt, 2018; Gottfried & Plasman, 2018).

Postsecondary Outcomes

Within eight years of high school graduation, students who participated in CTE enrolled in postsecondary education at marginally higher rates than their non-concentrator peers, especially those concentrating in a specific program of study (Dougherty et al., 2019; Hudson & Boivin, 2016; U.S. Department of Education, 2019). In Tennessee, students with disabilities that concentrated in CTE were also more likely to enroll in postsecondary education, especially students diagnosed with autism; however, this finding was not consistent across the nation (Carruthers et al., 2022). The link between CTE concentration and postsecondary enrollment is dependent on the type of postsecondary institution, as students taking more CTE courses or concentrating in a program of study were more likely to enroll in two-year colleges than non-concentrators, whereas non-concentrators were more likely to enroll in four-year colleges than CTE concentrators (Dougherty, 2016; Dougherty et al., 2019; Kreisman & Strange, 2020; Lindsay et al., 2021; Xu & Backes, 2023). However, Arkansas students concentrating in education and training, health sciences, information technology, and STEM clusters enrolled in four-year colleges at the same rate as non-concentrators (Dougherty, 2016). Additionally, students who participated in dual or concurrent enrollment in their secondary CTE programs were more likely to enroll in both two- and four-year colleges, exhibiting greater persistence and earning more credits during their first two years in a postsecondary institution (Dougherty, 2016; Edmunds et al., 2022; Rodriguez et al., 2012). When students concentrated in STEM-related CTE programs, they were more likely to pursue STEM-related degrees, signifying strengthening STEM pathways from high school to career (Gottfried & Bozick, 2016).

While enrolled in postsecondary education opportunities, educational attainment was improved for students who engaged in high school CTE as well, with concentrating in a CTE

program of study being linked to a greater possibility of earning a postsecondary credential in that career pathway (Xu & Backes, 2023). Compared to their non-concentrator peers, CTE concentrators were more likely to earn an associate degree or an industry-recognized credential, but less likely to transfer to a four-year college (Brodersen et al., 2021; Dietrich et al., 2016; Dougherty, 2018; Xu & Backes, 2023). Additionally, participating in high school CTE programs increased the probability of lower-income students attaining an industry-recognized credential (Dougherty, 2018). Although CTE concentrators tended to earn associate degrees at higher rates than non-concentrators, there was no significant difference in bachelor's degree completion between CTE concentrators and non-concentrators (U.S. Department of Education, 2019).

Employment Outcomes

Participation in secondary CTE programs leading to industry-recognized credentials and aligned career pathways was associated with increased engagement in the workforce, higher rates of employment, and increased earnings, regardless of postsecondary attainment (Dougherty, 2016; Ecton & Dougherty, 2023; Hull, 2015; Kreisman & Strange, 2020; U.S. Department of Education, 2019). CTE concentrators experienced lower unemployment rates and an increased likelihood of full-time employment in at least eight years after high school graduation (Cheng & Hitt, 2018; Dougherty, 2016; Holzwart & Liu, 2020; Lindsay et al., 2021; U.S. Department of Education, 2019). When students did not pursue postsecondary education but completed their CTE program of study and earned an industry-recognized credential, they were more likely to be employed full-time by the age of 26 than their non-concentrator peers regardless of college attendance (Carnevale et al., 2023; Hull, 2015). For students with disabilities, concentrating in CTE was associated with being more likely to be employed full-time, rather than part-time or unemployed, in the year following high school graduation than

their comparable non-concentrator peers (Carruthers et al., 2022; Lee et al., 2016; Theobald et al., 2019; Wagner et al., 2016). Additionally, students from high-poverty communities with specific learning disabilities or intellectual disabilities who participated in CTE for at least one semester had an increased likelihood of being employed within a year following graduation (Rabren et al., 2014).

Employment outcomes related to secondary CTE course-taking also included wages, with CTE concentrators having higher annual earnings and increased wages for at least seven years after graduation as compared to non-concentrators (Cheng & Hitt, 2018; Dougherty, 2016; Dougherty et al., 2019; Ecton & Dougherty, 2023; Lindsay et al., 2021; U.S. Department of Education, 2019). Concentrating in CTE and attaining industry-recognized credentials were associated with earning higher wages even when students did not pursue any postsecondary education opportunities (Ecton & Dougherty, 2023; Hull, 2015; Plasman, 2019). The impact of CTE course-taking on wages grew as students continued progressing through their CTE programs of study, with wage premiums increasing relative to the amount of upper-level course credits accrued in specific CTE concentrations (Cheng & Hitt, 2018; Kreisman & Strange, 2020). However, taking additional introductory-level CTE courses had no wage or labor market benefits (Kreisman & Strange, 2020). The Career Clusters in which students concentrated impacted their wage premiums, with the construction, transportation, manufacturing, technology, and healthcare clusters having greater earnings advantages that persisted the longest and the hospitality, agriculture, and communications having the lowest earnings advantages that subsided quickly (Ecton & Dougherty, 2023). In addition to earnings advantages, CTE concentrators, regardless of which Career Cluster and pathways they followed, were more likely to avoid poverty in early adulthood, as they were significantly more likely to earn above the poverty line. Wage premiums

and poverty avoidance associated with concentrating in CTE remained true for historically marginalized populations, including students with disabilities, lower-income students, and Black and Latino students (Dougherty, 2016; Ecton & Dougherty, 2023).

Place-Based Benefits

In addition to the associated secondary, postsecondary, and employment outcomes, secondary CTE programs can benefit their local communities as a workforce development strategy by mitigating the outmigration of rural youth. The rural brain drain, or the selective outmigration of high school graduates who are higher-achieving and more academically talented leaving rural areas for postsecondary and employment opportunities, has significant impacts on the economic and community development of rural areas (Artz, 2003; Cromartie et al., 2015; Estes et al., 2016). Exacerbating the population trends of rural areas, brain drain has added to the increased aging population, decreased labor participation rate, and widening skills gap, particularly when those who left never return (Clark et al., 2022; Cromartie et al., 2015; Johnson, 2022; Smith et al., 2016). Factors that impacted residential aspirations of rural students and led to outmigration included negative perceptions of current and future employment opportunities, community viability, community resources, and local economic opportunities (Bernsen et al., 2022; Clark et al., 2022; Nelson, 2019; Saw & Agger, 2021; Schafft, 2016). However, students were more likely to have rural residential aspirations and stay in their communities when they had positive perceptions of local economic opportunities, employment opportunities associated with good wages, higher community attachment, strong family ties, and commitment to place (Bernsen et al., 2022; Carrico et al., 2017; Clark et al., 2022; Heinemann & Hadler, 2015). Community attachment was a strong predictor of rural residential aspirations, even in times of economic distress, as students wanted to stay to make significant contributions to their

community (Petrin et al., 2014; Vazzana & Rudi-Polloshka, 2019). Additionally, the highest-achieving students, who most contributed to rural brain drain through outmigration, had the strongest community attachment but believed they must move elsewhere for employment opportunities and financial stability.

Rural schools can support rural economies by improving students' perceptions of local economic opportunities and bolstering community attachment through place-based education (Schafft, 2016; Starrett et al., 2022). Place-based education, or education rooted in the local context, not only improves student achievement but strengthens students' commitment to place and promotes social and economic well-being through school and community partnerships (Place-based Education Evaluation Collaborative, 2010; Smith, 2002). A place-based approach makes education more locally relevant and increases civic engagement and responsibility, which are necessary for community sustainability (Meece et al., 2013; Ruday & Azano, 2019). Though place-based education is not specifically an economic or community development strategy, rural place-based education can lead to a more prepared and skilled workforce (Roberts & Grant, 2021).

Rural CTE and career pathways are inherently place-based, as programs of study should be aligned and responsive to local community and industry needs, promote local high-wage and in-demand employment opportunities, and rely on community, postsecondary, and industry partnerships to provide work-based learning, industry-recognized credentials, and other learning opportunities (Imperatore, 2016; Roberts & Grant, 2021; Schafft, 2016; Wang & Horton, 2021). CTE programs can create more school and community engagement by making a connection between academic and CTE coursework and clarifying the role and worth of education as related to future career opportunities (Gottfried & Plasman, 2018; Plank et al., 2008). Through learning

opportunities embedded in and attentive to changes in local industry and community, including work-based learning, job shadowing, and community-based projects, rural CTE programs act as place-based workforce development by relying on community strengths to create positive outlooks about the local economy, communicate clear pathways to employment opportunities, and empower students to pursue postsecondary and career interests within the local context (Jocson, 2016; Meece et al., 2013; Roberts & Grant, 2021; Schafft, 2016; Starrett et al., 2022). When purposively approached, rural CTE programs not only developed a skilled workforce, but increased students' sense of connection to place, community pride, and belief that the local community will provide them with career opportunities of interest, all of which promoted students' rural residential aspirations and community and economic vitality (Meece et al., 2013; Schafft, 2016; Smith, 2002; Wang & Horton, 2021).

Barriers to Secondary CTE

Though CTE provides opportunities for positive student, community, and economic outcomes, rural school districts face unique challenges in developing and maintaining high-quality CTE programs (Imperatore, 2016). The obstacles impacting rural students' educational aspirations and attainment, including geographic isolation, recruiting and retaining educators, and limited access to resources and academic opportunities, are also confronted by CTE programs in rural districts (Advance CTE, 2017a; Lavalley, 2018). Additionally, challenges specific to CTE impacted students' enrollment and participation in labor market-aligned programs of study (Dougherty, 2023; Kim et al., 2021).

In rural communities, access to high-quality CTE programming that led to high-demand pathways was limited (Advance CTE, 2017a). Due to factors such as high startup costs, limited employers in the community, distance to postsecondary institutions, resource scarcity, and lack

of qualified teachers, schools struggled to develop and implement industry-relevant career pathways. In rural communities, schools tended to offer programs associated with lower wage earnings (Sutton et al., 2016). For programs that were available, advanced CTE opportunities, including work-based learning and dual enrollment, were limited because of geographical isolation and lack of transportation, leading to fewer industry and postsecondary partners (Advance CTE, 2017a; Rosen & Molina, 2019; Showalter et al., 2023; Sutton et al., 2016). Though some districts attempted to mitigate geographic barriers with online options, this led to another challenge of limited access to internet connectivity (Advance CTE, 2017a).

In many rural communities, CTE program offerings were often determined by educator recruitment rather than labor market demand, with at least one-fourth of rural schools reporting that CTE teaching positions were extremely difficult or impossible to fill (Advance CTE, 2018c). High-quality CTE programs depend on qualified educators, but rural districts are often unable to pay competitive wages, making CTE teacher recruitment and retention more difficult (Showalter et al., 2023). CTE teachers reported feeling inadequately prepared to meet the needs of their students, specifically students with disabilities and English language learners (Advance CTE, 2020b; Emerick, 2022). Many CTE teachers joined the profession with an alternative certification, entering the classroom straight from industry and receiving minimal educator preparation (Advance CTE, 2020b; Emerick, 2022; Sugarman, 2023). In rural schools, CTE teachers often do not receive relevant professional development or have a content-area peer in their school or region.

Alignment to local labor market needs also contributed to rural CTE program quality (Soricone et al., 2020). In a study examining the alignment of secondary CTE offerings to high-demand occupations in the region, only half of the CTE concentrators participated in career

pathways leading to high-demand, high-wage occupations, leaving the other half unprepared (Harris et al., 2020). Additionally, only about one-fourth of the industry credentials earned by CTE students were aligned with employer demand (ExcelinEd & Burning Glass Technologies, n.d.). Gaps in alignment between CTE program offerings and labor market demand influence the potential future success of rural students, setting some on the path to low-wage, dead-end employment (ExcelinEd & Burning Glass Technologies, n.d.; Harris et al., 2020; Soricone et al., 2020).

Even when access to locally relevant career pathways was available, barriers to participation existed for students (Kim et al., 2021; U.S. Department of Education, n.d.). Nontraditional students tended to take CTE courses in programs that led to lower-paying fields (Fluhr et al., 2017; Kim et al., 2021). Female students, students with disabilities, and students of color were consistently underrepresented in STEM-related CTE programs, which are typically the career pathways for the highest-paid careers (Dougherty, 2023; Fluhr et al., 2017; Kim et al., 2021; Malkus, 2019). Future wage gaps can be influenced by CTE enrollment and participation (Fluhr et al., 2017).

Disparities in access to CTE programming exist for rural students, particularly nontraditional students, due to a lack of high-quality, locally aligned career pathways (Advance CTE, 2017a; Warner-Griffin & Liveoak, 2023). At the same time, CTE programs are a viable workforce development strategy to improve rural economies and address the skilled labor shortage (Advance CTE, 2017a; Soricone et al., 2020). When responsive and rigorous, rural CTE programs can be sustainable place-based strategies that improve community vitality through preparing the future workforce, closing the local skills gap, promoting local industry, and

positively impacting rural postsecondary aspirations (Jocson, 2016; Roberts & Grant, 2021; Starrett et al., 2022; Vazzana & Rudi-Polloshka, 2019).

Rural CTE Strategies

Despite challenges related to rurality, all students deserve to participate in CTE pathways aligned to local postsecondary and high-wage, high-skill, in-demand employment opportunities (Advance CTE, 2017b; Haviland & Robbins, 2021). To increase access to meaningful CTE programming, leaders can facilitate the development of high-quality CTE programs of study, including components such as early postsecondary opportunities, industry-recognized credentials, community partnerships, and work-based learning (Imperatore & Hyslop, 2018). However, to mitigate barriers unique to the rural context, CTE leaders in rural school districts must take a strategic and innovative approach to programming (Advance CTE, 2017b; Roberts & Grant, 2021; Warner-Griffin & Liveoak, 2023).

Early Postsecondary Opportunities

One facet of high-quality CTE programs of study is early postsecondary opportunities (EPSOs), which are courses, such as dual enrollment, or exams in which students can earn postsecondary credit while still in high school (Advance CTE & College in High School Alliance, 2022; Education Strategy Group, 2019; Imperatore & Hyslop, 2018). Though available for all high school students, one-third of all EPSOs are CTE courses, either offered on the high school campus, at the postsecondary institution, or through online or distance learning (Advance CTE & College in High School Alliance, 2022; An & Taylor, 2019). Students who participated in EPSOs were more likely to graduate high school, matriculate to a postsecondary institution, and complete college (Advance CTE & College in High School Alliance, 2022; Henneberger et al., 2022). To develop opportunities to earn early postsecondary credit, school leaders work with

postsecondary, and often industry, partners to establish articulation agreements and continue to work within the partnerships to further expand and align career pathways (Advance CTE & College in High School Alliance, 2022; Education Strategy Group, 2019). Additionally, to reduce the impact of barriers such as geographic isolation, lack of broadband access, or inadequate transportation on EPSO accessibility, some rural CTE leaders have further leveraged postsecondary and industry partnerships to expand EPSOs by including industry-recognized credentials in articulation agreements (Advance CTE & College in High School Alliance, 2022; Education Strategy Group, 2019; Warner-Griffin & Liveoak, 2023).

Industry-Recognized Credentials

High-quality CTE should provide students the opportunity to earn industry-recognized credentials (IRCs) within their high school program of study (Imperatore & Hyslop, 2018). IRCs are credentials that verify the attainment of general career readiness or industry-specific skills or competencies and are identified as being preferred or required for a career path by multiple employers within an industry (Edgerton, 2022; Giani, 2022). Earning IRCs as a high school CTE student was associated with improved postsecondary enrollment and persistence, and for those who did not attend college, earning IRCs led to short-term increases in employment opportunities and first-year earnings (Giani, 2022; Harris et al., 2021). To create multiple points of entry to rural career pathways, CTE leaders can leverage the impact of EPSOs and IRCs on student outcomes through stackable credentials and micro-credentials (Warner-Griffin & Liveoak, 2023). Stackable credentials, or credentials that build on each other and can be accumulated over time, created entry points into viable career pathways that led to increased wages and decreased the earnings gap between low-, middle-, and high-income individuals (Center for Occupational Research and Development, 2021; Daugherty et al., 2023). Micro-

credentials can be earned in a short period of time by demonstrating proficiency in one small, specific skill area (Tinsley et al., 2022). Rural districts have used online, self-paced micro-credentialing for students as a creative solution to minimize the impact of challenges related to computer science teacher recruitment and retention (Warner-Griffin & Liveoak, 2023).

Work-Based Learning

A crucial aspect of high-quality CTE programs is the variety of work-based learning (WBL) experiences available to students, which provides them with opportunities for to explore careers, build relationships with employers and community members, and practice and further develop skills learned in the CTE classroom (Canney & Mezera, 2020; Imperatore & Hyslop, 2018). WBL exists on a continuum in which students learn about career pathways through career awareness and exploration activities such as career fairs and job shadowing, career preparation activities such as service learning and internships, and career participation activities such as apprenticeships and clinicals (Atterbury, 2021; Canney & Mezera, 2020). Students who engaged in any WBL opportunities, from career awareness to participation experiences, had higher incomes early in their careers as compared to those who did not participate in WBL (Plasman & Thompson, 2023). However, rural districts are less likely than their urban counterparts to offer WBL experiences due to logistical barriers such as transportation and limited numbers of employers (Advance CTE, 2017b; Gray & Lewis, 2018). To provide meaningful WBL opportunities for students, rural CTE leaders have been innovative in their approaches, including using simulated WBL, mobile labs, and virtual WBL (Advance CTE, 2017b; Warner-Griffin & Liveoak, 2023). Through student-led, school-based enterprises, rural schools have simulated an authentic workplace in the classroom. In rural districts without the space or funding to equip shops or lack of local industry, mobile labs were developed through postsecondary partnerships

to provide students with the opportunity to train with the latest equipment and earn IRCs as a means of career preparation.

Community Partnerships

Integral to the aforementioned quality components of CTE programs and to the overall development, implementation, and improvement of these programs are mutually beneficial community partnerships, including postsecondary and industry partners (Imperatore & Hyslop, 2018). As detailed in Perkins V, industry, postsecondary, workforce development, and other community partners serve on regional advisory boards to inform CTE program implementation and evaluation, which, in turn, helps CTE programs meet the needs of their local rural economies (Advance CTE, 2017b; Imperatore, 2016; Strengthening Career and Technical Education for the 21st Century Act, 2018). Furthermore, strategic community partnerships can play a pivotal role in rural CTE programs by providing technical assistance, policy and program advocacy, and necessary resources such as equipment, funding, or instructional support, all leading to increased student opportunities (Advance CTE, 2017b; Advance CTE, 2018b; Imperatore & Hyslop, 2018; Warner-Griffin & Liveoak, 2023).

Place-based strategies, such as rural career pathways, require flexibility and innovation to meet the ever-changing local labor market needs and create sustainability for economic growth and prosperity (Saw & Agger, 2021; Warner-Griffin & Liveoak, 2023). CTE administrators lead the development of new career pathways while also attempting to mitigate the barriers and leverage the strengths unique to the rural context (Advance CTE, 2017a; Dougherty, 2023; Malkus, 2019). With the passage of Perkins V, CTE leaders were challenged to rethink and transform CTE through innovatively expanding career pathways (Perkins Collaborative

Resource Network, n.d.-b.). The change necessary to transform rural CTE requires effective leadership and partnerships, creating a culture of change both in the school and community.

Chapter Summary

This chapter contained an overview of literature relevant to this narrative inquiry focused on exploring the stories of CTE leaders in developing rural career pathways. This review of existing literature laid the foundation for the present study, reviewing relevant historical and current policy, educational leadership, rural education, labor market trends, workforce development, and secondary CTE programming.

Chapter 3. Research Methodology

The aim of this narrative study was to investigate how career and technical education administrators facilitated the development of career programs of study in rural secondary settings. This study explored CTE administrators' experiences through career pathway design, facilitation, and improvement in the context of rural secondary education. By using narrative inquiry, an emergent and collaborative approach, the rich narrative accounts co-constructed with participants gave voice to the lived experience of rural CTE administrators.

Research Questions

This narrative inquiry was framed by the following overarching research question: How do CTE administrators expand new career pathways in rural settings? The supporting research questions that guided this inquiry were as follows:

1. How do CTE administrators describe the experience of developing career pathways?
2. What systemic changes were associated with the biggest program improvements?
3. How do CTE administrators facilitate CTE programming for the changing local labor market?
4. How do CTE administrators leverage funding sources to support and sustain the creation of new career pathways?

Qualitative Research Design

The approach chosen to engage in research should best fit the research purpose and inform the entirety of the research process (Flick, 2022; Leedy et al., 2019). As the intent was to understand CTE administrators' stories of developing career pathways, this study was conducted using a narrative research design. Researchers engaged in qualitative inquiry seek to explore and discover a rich, detailed understanding and to make meaning of phenomena as experienced by

participants within the contexts and settings of their lives (Creswell & Poth, 2018). In qualitative research, the researcher is immersed in the research process alongside participants as co-constructors of meaning and knowledge (Creswell & Poth, 2018; Tunstall et al., 2022). Therefore, the researcher must be constantly aware of their philosophical assumptions and how they impact the research process, including the method of inquiry and framework through which it is interpreted (Creswell & Poth, 2018).

Narrative Inquiry

Narrative inquiry, the specific qualitative approach of this study, can be defined as both the research method used and how the phenomenon being studied is viewed (Clandinin, 2023). Phenomena, or the experiences of participants, are viewed through a narrative lens as lived and told stories that are situated in a three-dimensional space of temporality, place, and sociality, rather than in isolation (Caine et al., 2013; Clandinin, 2023). Lived and told stories must be understood both contextually and across time in each individual's life as well as within larger narratives, including cultural, institutional, and social narratives (Caine et al., 2013). As a qualitative research method, narrative inquiry is used to explore and understand lived experience as a narrative phenomenon through the stories that participants live out, or lived stories, and the stories that they tell about their lives, or told stories (Clandinin, 2023). Narrative inquiry is an inherently relational approach, as researchers enter the research process alongside their participants in the midst of both the researcher's and participant's continually developing life narratives, with the intent of co-constructing meaning about experiences from participants retelling their lived and told stories (Clandinin, 2007; Clandinin, 2023). Through co-composing and reflecting on understandings of experiences from the shared stories, researchers contribute to sensemaking about experiences that are situated chronologically and within multiple contexts of

the participants' lives (Clandinin, 2007). Stories collected by the researcher are interpreted individually and as a collective narrative to identify narrative threads, or patterns that resonate across individual stories, to create the final research text by restorying (Clandinin et al., 2019). Narrative inquiry, with a focus on temporality, sociality, and place, is an approach that is appropriate for exploring stories of change, development, and transformation through lived experiences (Benson, 2021; Clandinin, 2007; Dobroć et al., 2023; Sergeeva & Winch, 2021), and as such, was the qualitative approach chosen to explore rural secondary CTE career pathway development as experienced by CTE administrators.

Philosophical Assumptions

The beliefs of the narrative inquirer about the nature of reality and how reality is known, the ontological and epistemological assumptions, respectively, shape all stages of the narrative inquiry research process and the interpretive framework from which the study is approached (Caine et al., 2013; Clandinin, 2023; Creswell & Poth, 2018). Philosophical assumptions were informed by social constructivism, a view in which individuals come to understand the world subjectively through the social, historical, and cultural contexts in which they live (Creswell & Poth, 2018; Pino Gavidia & Adu, 2022). Ontologically, social constructivism embraces the assumption that there is not one, objective, fixed reality, as meaning is constructed through lived experiences and is continuously influenced and changed by interactions with the people and contexts encountered throughout life (Caine et al., 2013; Creswell & Poth, 2018). Reality then becomes known in the context of lived experiences both relationally, through a co-construction by the researcher and participants, and temporally, as influenced by the past, present, and future of the researcher and participants (Caine et al., 2013; Clandinin, 2023; Creswell & Poth, 2018). Through the lens of social constructivism, the goal of research is to listen to participants' stories

and make meaning from their experiences and perceptions to better understand the phenomenon being explored (Clandinin, 2023; Creswell & Poth, 2018).

This study was also shaped by the three-dimensional inquiry space (Clandinin, 2023; Clandinin & Connelly, 2000). Inspired by Dewey's view of experience through interaction and continuity, the three-dimensional inquiry space is composed of temporality, place, and sociality, also referred to as continuity, situation, and interaction, respectively (Clandinin, 2023; Clandinin & Connelly, 2000; Wang & Geale, 2015). These three dimensions are interconnected, providing an explanation for lived and told experiences as dynamic, with meaning continuously being made and shifted through interactions with self, others, and the contexts of place (Clandinin, 2023; Clandinin & Connelly, 2000). The narrative inquiry space is also one of meaning-making through movement–inward and outward, backward, present, and forward (Clandinin, 2023; Clandinin & Connelly, 2000; Wang & Geale, 2015). When approaching storied experiences through the lens of the three-dimensional space of narratives, the researcher attends to the past, present, and future of the stories' temporality, the personal and social aspects of stories, and the landscape in which the stories are situated. By honoring lived and told stories as experiences flowing through and within the three-dimensional inquiry space, contextualized meanings, knowledge, and understandings are sought through storytelling (Clandinin, 2023).

Role of the Researcher

The researcher plays a participatory role in narrative inquiry research, as qualitative methodologies acknowledge and embrace the humanness and subjectivity of the nature of research (Clandinin, 2023; Flick, 2022). The goal of qualitative research is not to uncover an objective truth but to describe and interpret data in a way that contextualizes experiences and makes meaning to bring greater understanding to the research focus (Flick, 2022; Kim, 2016).

The researcher is embedded in every aspect of the research, from their beliefs of knowledge and reality shaping the research design to co-creating meaning alongside participants in the midst of the research (Blix et al., 2023; Clandinin, 2023). In the process of data gathering and interpretation, the researcher is the instrument as an interviewer, data analyst, and co-constructor of told stories (Clandinin, 2007; Leedy et al., 2019).

Narrative inquiry is a relational research method that leads to learning and change for both the researcher and participants (Clandinin, 2007). When engaging in narrative research, the told stories are restoried within the research process and between the researcher and participants, all impacted by the contexts of their worldview and the spaces they occupy (Clandinin, 2023). In narrative research, the ways of knowing and understanding experience become hinged on interactions within and among the contexts of the participants, the researcher, and the reader. Additionally, because the researcher served as a gatekeeper in the present study, rapport and trust were built and maintained with the research participants. Narrative researchers must stay awake to the emergent narrative inquiry process, participating with integrity, transparency, virtuosity, and care (Blix et al., 2023; Kim, 2016).

The narrative researcher should continually reflexively participate in research (Clandinin, 2023). By taking a reflexive approach, the researcher addressed personal bias by analyzing, acknowledging, and communicating positionality (Holmes, 2020). Positionality refers to the researcher's worldview, including assumptions about the nature of knowledge, social reality, human nature, and values and beliefs. Positionality is shaped by aspects such as gender, race, nationality, culture, geographic location, social status, sexuality, political views, life experiences, and more. All stages of the research process were impacted by the researcher's positionality, including what the researcher chose to explore and the interpretation of findings. Using

reflexivity, the researcher identified their assumptions, values, beliefs, and biases and self-reflected to acknowledge and disclose their positionality in their research. Reflexivity continued throughout the research process as positionality is not fixed and is situationally dependent. Using a reflexive approach, the researcher did not attempt to remove positionality from the research but instead sought to understand how positionality impacted the research process.

Ethics

While engaging in the research process, maintaining ethical standards was imperative to ensure an honest and respectful research environment (Creswell & Poth, 2018). In the present study, ethical behavior was attended to throughout the research process. Prior to active research, permission to conduct this study was obtained by the East Tennessee State University Institutional Review Board (IRB), and all ethical standards were maintained per IRB protocol. At the initiation of participant selection, a letter requesting permission and access was sent to the Director of Schools of each district selected for possible inclusion. The letter included information about the nature of the study, such as the topic, data collection process, reporting procedure, and ethical assurances. Upon approval, each prospective participant was contacted to request participation and share the study's nature. CTE administrators who expressed interest in participating were contacted to schedule interviews at their convenience. Before beginning interviews, the research and ethical standards, such as confidentiality, anonymity, and voluntary participation, were discussed. Signed informed consent was obtained from all participants.

This study posed minimal risks to participants. Assurances of confidentiality and anonymity were central to this narrative study, as were relational ethics (Caine et al., 2020; Clandinin, 2007). Due to the relational nature of narrative inquiry, ethics were viewed as a moral responsibility in the research process (Kim, 2016). In this narrative research, narratives were co-

composed from the told stories entrusted to the researcher by the participants, requiring an ethic of care in interacting within the shared research space and in the interpretation and presentation of final research texts (Caine et al., 2020; Clandinin, 2023). Creating and maintaining a trusting rapport with participants was a priority, as was respecting the collaborative research space. Participants' stories were honored through member checks to ensure accuracy and the use of pseudonyms and masking to remove any identifiable information. All data, including recorded interviews and transcripts, were securely maintained.

Setting

The setting for this study was conceptualized as the space in which the interactions between the participants and researcher took place or the settings of the told stories. Qualitative research should occur in each participant's natural context rather than a contrived setting, as it is essential for participants to feel comfortable while telling their stories to the researcher (Creswell & Poth, 2018). The setting of the stories told by participants was rural school districts in Tennessee. Face-to-face interviews, done through a video conferencing platform, occurred between the researcher and individual participants over time. Though the use of a video conferencing platform can be accompanied by challenges such as technical difficulties, virtual video conferencing is comparable to in-person interviewing, allowing for accessibility, flexibility, rapport building, and accurate data collection (Archibald et al., 2019; Irani, 2018; Khan & MacEachen, 2022; Koppel et al., 2022). Using a video conferencing platform allowed participants to be interviewed from an easily accessible location, a space they identified as comfortable and private, and the participants' natural settings. Additionally, the three-dimensional narrative inquiry space, or temporality, sociality, and place, must be attended to as a setting so the stories of lived experiences can be understood through the broader contexts that

shaped them, such as how they are situated socially, culturally, and historically (Clandinin, 2023; Prosek & Gibson, 2021).

Sample

The aim of the present study was to explore CTE administrators' experiences in expanding new career pathways in rural settings. The participants in this study were CTE administrators, defined as any local education leader with an administrative endorsement (e.g., assistant principal, principal, supervisor, director) that provides leadership for CTE programming decisions at the school or district level. State CTE directors were not included in this study. The administrators in this study led secondary CTE programs in rural school districts in one Grand Division of Tennessee. For the purpose of this study, rural school districts were determined according to the CCD School and District Navigator map, which uses the three NCES rural locale categories: fringe, distant, and remote (Common Core of Data, 2023; Geverdt, 2019).

Sample Size

Due to the depth of interviewing needed to gather detailed descriptions of lived experiences, the focus of narrative inquiry is on the richness of data collection rather than a robust sample size (Mueller, 2019; Staller, 2021). Adequate sample size was not pre-determined by the number of participants; however, the suggested number of participants for narrative inquiry can range from one or two to as many as needed to develop an adequate story (Creswell & Poth, 2018; Kim, 2016; Sarfo et al., 2021). Instead, the sample for this study was chosen based on the purpose of the research and sufficient saturation, though, with the uniqueness of human experience and life contexts, absolute redundancy may never be achieved entirely (Kim, 2016; Staller, 2021). For the present study, the sample was composed of nine CTE administrators

determined by the below sampling strategies and to explore and understand the process of developing career pathways in rural school districts.

Sampling Strategy

As the purpose of the present study was to gain an in-depth understanding of a lived experience, that of developing CTE programs of study within career pathways, purposeful sampling was the sampling strategy used (Patton, 2015). Purposeful sampling strategies were used to intentionally select participants who could tell the stories relevant to the research question (Creswell & Poth, 2018). Sampling strategies used in qualitative research can be dynamic throughout the research process, so researchers should develop a strategy for sampling while allowing for flexibility. The sampling strategy used to identify potential participants was primarily criterion sampling. The specific participant criteria included being a CTE administrator employed in a public rural school district, as defined in Chapter 1, and being in that CTE leadership position for at least three years. Potential participants were selected by identifying rural districts and using the Tennessee CTE Director Directory (Tennessee Directors of Career Technical Education, 2023). Snowball sampling was another technique used to identify possible participants through recommendations provided by colleagues in CTE or through initial interviews, both of whom would know other cases that would be information-rich (Creswell & Poth, 2018).

The primary recruitment strategy was an initial email to all potential participants and then following up with interested respondents to schedule an interview. Snowball sampling was also used as a direct recruitment method (Negrin et al., 2022). Recruitment was dynamic due to the iterative nature of qualitative research and was refined as needed if barriers or opportunities arose.

Data Collection Procedures

In narrative studies, data collection, or data gathering, is the process of uncovering told stories (Kim, 2016; Manankil-Rankin, 2016). The goal of data gathering was to discover sources of data that would illuminate told and retold stories in greater detail, leading to a collaboratively reconstructed story of CTE administrators' experiences within the journey of developing rural career pathways. This study collected data in the field, or relational inquiry space, through interviews, documents, and researcher reflections and memos (Clandinin, 2023). Contexts of the stories, including the three-dimensional narrative inquiry space of temporality, sociality, and place, were embedded in the gathered data (Clandinin, 2023; Creswell & Poth, 2018).

Interviews

Though the qualitative research process was emergent and iterative, successful narrative interviews required ample preparation (Creswell & Poth, 2018; Leedy et al., 2019). For the present study, the primary form of eliciting stories was through semi-structured interviews (Clandinin, 2023). Semi-structured interviews, guided by an interview protocol, were used to allow for the flexibility and freedom necessary for participants to tell their stories in-depth and expand the scope of the interviews (Creswell & Poth, 2018; Kim, 2016). The questions included in the interview protocol were open-ended to activate and shape, but not constrict, the evolving and sometimes unexpected discourse of the participant's narrative accounts (Clandinin, 2007; Gerson & Damaske, 2020; Kim, 2016). Aligned with the research questions, the interview protocol was temporally ordered to identify the paths and experiences of CTE administrators on their journeys of program development, but sequencing was adjusted depending on participant responses (Flick, 2018; Gerson & Damaske, 2020). The protocol was piloted to identify and

provide time to modify any concerns, misunderstandings, or incongruence with the research purpose (Flick, 2022; Gerson & Damaske, 2020).

Interviews are a collaborative meaning-making process between the participant and the interviewer, and the questions posed to participants determine the shared stories (Gerson & Damaske, 2020; Kim, 2016). Interview questions were carefully crafted to avoid asking leading questions and to foster thorough, honest, relevant, and meaningful storytelling (Clandinin, 2007; Gerson & Damaske, 2020; Kim, 2016). When appropriate, follow-up, probing, and clarifying questions were used to elicit more detailed storytelling (Flick, 2018; Kim, 2016). Interviews were scheduled for a minimum of two hours per interview to allow for the depth of storytelling necessary to develop a rich understanding of lived experiences.

Interviews are a relational process between participant and researcher; therefore, developing trust and rapport was critical in the interviewing process (Clandinin, 2007). The first interview fostered the participant-researcher relationship, so care was taken to make space for the unfolding of stories by remaining open-minded, actively listening, and delaying interpretations (Clandinin, 2023; Kim, 2016; Manankil-Rankin, 2016). Additionally, the researcher began the interviews with questions designed to show genuine interest and create conversation as an opportunity to build rapport (Gerson & Damaske, 2020).

Interviews were conducted, recorded, and transcribed via web-based videoconferencing. Although web-based videoconferencing can negatively impact the researcher's ability to read body language and attend to nonverbal cues, using videoconferencing made scheduling more flexible and convenient and allowed for more geographical diversity of participants (Flick, 2022). Also, participants engaged in the interview from a setting they felt afforded the most comfortability and confidentiality (Flick, 2018). Before the follow-up interview, transcriptions

and annals were shared with participants, along with an email to express appreciation for participation (Clandinin, 2023; Gerson & Damaske, 2020). Participants, viewed as co-creators of the research study, were given the opportunity to review the transcript and annals of their narrative accounts (Clandinin, 2023). The follow-up interview was more of an unstructured research conversation to collaboratively transform the transcript through clarifying, adding, omitting, and revising the narrative account. Any necessary follow-up questions were asked to construct a more cohesive and comprehensive story (Gerson & Damaske, 2020).

Documents

Organizational Documents

Stories are not only constructed by an individual but can also be told as a collective narrative (Flick, 2018). CTE administrators are individuals positioned within multiple contexts, including their schools, districts, and communities, with collective stories that influence their personal stories. Documents can be used to supplement interviews and access these collective narratives (Creswell & Poth, 2018; Flick, 2018). Organizational documents both influence and are influenced by the collective organizational narrative and individual narratives within the organization (Flick, 2018; Kim, 2016). Therefore, district funding and planning documents, including the CTE Perkins Basic application, Innovative School Models application, and relevant college and career readiness (CCR) portions of the ePlan, were collected through the publicly accessible Tennessee Department of Education ePlan website to better understand the contexts of stories told by administrators (Tennessee Department of Education, n.d.).

Annals

Annals are sketches that document the movement of experiences through temporal space, such as story plots or timelines (Clandinin, 2023; Clandinin & Connelly, 2000). After the first

interview, rough annals were sketched from the stories and experiences within the transcripts. During the second interview, participants were invited to co-compose the sketch through conversation and clarification.

Researcher Reflections and Memos

In narrative studies, the researcher becomes part of the research process and co-constructs stories alongside participants (Clandinin, 2023). Throughout the study, researcher reflections were kept in a journal as a reflexive practice to address positionality, mitigate bias, and describe my journey as a researcher in relation to the research process (Clandinin, 2023). Additionally, memos, or field notes, were written after each interview to document my initial impressions, details that stood out, and any insights gleaned (Creswell & Poth, 2018; Gerson & Damaske, 2020). When reviewing transcripts, memos, or field notes, were kept notating contexts of the three-dimensional narrative inquiry space within the interview, such as places, people, interactions, feelings, events, and moments of interest, including possible narrative threads, plotlines, tensions, or connections (Clandinin, 2023; Manankil-Rankin, 2016).

Data Management

Throughout the study, all data was meticulously prepared and maintained to ensure ethical standards, such as confidentiality (Creswell & Poth, 2018; Kim, 2016). A master list of information gathered and how it was accessed, including dates of document retrieval and conversations with participants, was kept to account for all data sources and served as an organizational tool. All electronic data, including interview recordings and transcripts, were kept on a password-protected computer. Participants' stories contained identifiable information, so care was taken to protect anonymity. Names of participants, districts, schools, locations, and other identifying information were masked, removed, or coded with pseudonyms, with the

master list being stored separately from the field texts. Documents containing sensitive information, including transcripts, list of pseudonyms, annals, and the researcher's journal, were kept secured or in password-encrypted files.

Measures of Rigor

The objective of narrative inquiry research is not generalizability, but to instead engage in an emergent and relational journey in which a deep understanding of lived experience is discovered through co-constructed stories (Flick, 2022; Kim, 2016; Lessard et al., 2015). However, narrative researchers must still demonstrate trustworthiness and integrity throughout the research process, indicating a rigorous design (Kim, 2016; Leedy et al., 2019). Validation in qualitative research, or trustworthiness, was sought through strategies for credibility, transferability, dependability, and confirmability (Creswell & Poth, 2018).

Credibility

One of the measures of trustworthiness is credibility, which can be defined as the extent to which the research design is reasonable, interpretations are plausible, and findings are believable (Frambach et al., 2013; Korstjens & Moser, 2018; Leedy et al., 2019). Credibility can be enhanced through clear explanations of research design choices, such as methodological approach and data collection. Additional strategies that were employed to address this study's credibility were triangulation and member checking.

Triangulation

Triangulation refers to using multiple data sources, perspectives, or methods to identify consistencies, inconsistencies, confirmations, or contradictions in collected stories or interpretations during the narrative inquiry (Leedy et al., 2019; Flick, 2018; Stahl & King, 2020). Triangulation was used to ensure trustworthiness regarding credibility, dependability, and

confirmability. Using triangulation led to a more comprehensive understanding of the experience being explored. In the present study, triangulation was used throughout the iterative data collection and analysis process. The stories told in interviews with CTE administrators were triangulated with documents from their respective districts, drafted annals, and researcher reflections and field notes. Additionally, a second interview was conducted with participants, and there were multiple opportunities for them to revise and clarify interim field texts.

Member Checks

Member checking is another credibility measure that attends to the accuracy of the research process (Korstjens & Moser, 2018; Leedy et al., 2019; Stahl & King, 2020). Narrative inquiry requires frequent member checks and co-construction to maintain the integrity of participants' storied experiences (Kim, 2016). Member checks occurred when participants reviewed and provided feedback on data collected and research findings. Participants were provided a copy of their interview transcripts and annals to verify the accuracy of their narrative accounts and interpretations of chronology.

Transferability

Transferability, as a trustworthiness criterion, implies the degree to which the research findings may be applicable in other contexts (Frambach et al., 2013; Korstjens & Moser, 2018; Leedy et al., 2019; Stenfors et al., 2020). It is up to the reader of the study to judge if the narrative threads, accounts, and stories discovered in narrative inquiry could expand and transfer understandings to other contexts (Flick, 2022; Stahl & King, 2020).

Thick Description

The use of thick description was one way to improve transferability by making the research findings meaningful through detailed descriptions of interpretations and their contexts

(Creswell & Poth, 2018). Characteristic of narrative inquiry, research texts of narrative accounts were filled with rich details of the contexts of temporality, place, and sociality in relation to participants' lived and told stories (Clandinin, 2023). Thick descriptions of the stories told in this study were provided in the contexts of the three-dimensional narrative inquiry space and interpreted through the conceptual frameworks as a composite narrative. Also, field notes, reflections, and documents provided different perspectives of contexts regarding CTE administrators, with memos adding details about interviews and district documents.

Purposive Sampling Strategy

Purposive sampling contributed to transferability in this study by developing criteria for clearly identifying and choosing participants relevant to the aims of the narrative study (Campbell et al., 2020; Creswell & Poth, 2018). By contextualizing the sample, participants provided stories relevant to the research focus, and judgments of transferability could be made by readers.

Dependability

As a measure of trustworthiness, dependability involves providing an in-depth description of the entirety of the research process, making the procedures used and decisions made transparent to readers (Leedy et al., 2019; Stenfors et al., 2020). Trust was produced in the research findings through dependability strategies like an audit trail and peer reviews.

Audit Trail

An audit trail was constructed and kept updated throughout the entirety of the research process, from field texts to research text (Creswell & Poth, 2018). The research steps and decisions made during the study were documented in audit trail items, including transcripts, field notes, annals, and reflections.

Coding Strategy

Analyzing the field texts, or stories as data, and supporting documents for this narrative inquiry was completed as a continuous iterative and interactive process (Clandinin, 2023; Gerson & Damaske, 2020; Creswell & Poth, 2018). Interview transcripts, documents, and annals were read closely and notated with field notes of emergent ideas. For the first level of data analysis, field texts were coded with narrative coding, using the elements of the three-dimensional inquiry space (Saldaña, 2013). The second level of analysis involved discovering narrative threads that resonated across narrative accounts (Clandinin, 2023; Manankil-Rankin, 2016). Initial codes were developed before searching for narrative threads. Initial codes were reviewed and revised until resonant threads were identified, named, and defined (Creswell & Poth, 2018; Kim, 2016).

Expert Scholarly Peer Review

Peer review was sought continuously to ensure that the research process, including design and data analysis, was accurate, honest, and reliable (Creswell & Poth, 2018). Peer review was accomplished in partnership with the dissertation committee and methodologist through gathering critical feedback and discussing concerns

Confirmability

Confirmability is the link between research findings and data (Stahl & King, 2020; Stenfors et al., 2020). Research findings should be established and interpreted from participant-generated data rather than the researcher's bias (Frambach et al., 2013; Korstjens & Moser, 2018).

Reflexivity

Reflexivity is interwoven with narrative inquiry, embedded in every component of the research process due to the participatory role of the researcher (Pino Gavidia & Adu, 2022). To

engage in reflexivity, a reflective journal was maintained throughout the study to promote self-awareness, protect against personal bias, and document my subjective journey in research. Other reflexive activities, such as field notes, continuous member checks, peer review, and a statement of positionality, were included (Clandinin, 2023; Creswell & Poth, 2018; Holmes, 2020).

Data Analysis

This study was a narrative inquiry that created space for CTE administrators to tell stories of their experiences in developing rural career pathways through two research conversations. The stories gathered became the primary data, or field texts, supplemented by field notes, annals, and district planning documents. The data analysis and interpretation in this narrative inquiry involved an iterative and continuous process of co-construction in the relational research space to move from field texts to interim texts to final research texts, much like the visualization of data analysis as a spiral (Clandinin, 2023; Clandinin & Connelly, 2000; Creswell & Poth, 2018). The data analysis process of restorying involved two levels of analysis, constructing individual narrative accounts through the frame of the three-dimensional inquiry space and the identification of resonant narrative threads across narrative accounts, chosen to best match the purpose of the present study (Clandinin, 2023; Clandinin & Connelly, 2000; Manankil-Rankin, 2016).

The journey from field texts as raw data to final research texts began as an immersive process in the first level of analysis, interacting and becoming familiar with the texts in the three-dimensional narrative inquiry space by reading and rereading transcripts, making field notes in the margins of emergent ideas, curiosities, plotlines, tensions, and threads (Clandinin, 2023; Clandinin & Connelly, 2000; Manankil-Rankin, 2016). Using the three-dimensional space as an analytical frame, narrative accounts were drafted as interim texts. These accounts were reshaped

in accordance with field notes and supplemental documents. Interim texts were then negotiated and co-constructed with participants, facilitating a continued relational engagement in the research process.

The second level of analysis involved looking among individual narrative accounts to identify narrative threads, or plotlines (Clandinin, 2023; Clandinin & Connelly, 2000). Narrative threads are patterns and plotlines that resonate across narrative accounts to interweave a collective narrative (Clandinin et al., 2019). Threads began to emerge during the composition of interim texts and were identified across narratives as commonalities of stories (Clandinin, 2023; Manankil-Rankin, 2016). The resonant threads were then used as key elements of the narrative plotline to construct the final research text (Johnston et al., 2021; Manankil-Rankin, 2016).

Data Presentation

The final research text of this study did not aim to provide final answers, but rather to illuminate the stories of CTE administrators' experiences and invite the exploration of future stories (Clandinin, 2023; Kim, 2016). The presentation of data in the final research text should enhance transparency and rigor, as well as contribute to more profound insight into and evoke the feelings of human experience (Clandinin, 2007; O'Grady et al., 2018). As shared accounts between the researcher and participants, data presentations in narrative inquiry can range from narrative descriptions to creative and innovative representations, including visual timelines, concept maps, word clouds, network maps, photography, poetry, and creative nonfiction (Clandinin, 2007; Levine-Rasky, 2019; Marsh et al., 2018; O'Grady et al., 2018; Pell et al., 2020).

Guided by the research questions and conceptual framework of the present study, a composite narrative was reconstructed by weaving together resonant threads and common

passages from individual narratives (Johnston et al., 2021; Manankil-Rankin, 2016). The composite narrative, co-constructed by the researcher as a visible participant, was told to convey the narrative truth of the participants' storied experiences (Clandinin, 2023; Manankil-Rankin, 2016). Presented through the narrative threads, or emergent themes, in the composite narrative, the reader explored the research findings by engaging in the three-dimensional narrative space alongside the collective narrative account honoring the journey of a CTE administrator transforming career pathways (Clandinin, 2023; Johnston et al., 2021; Manankil-Rankin, 2016). Analyses of the research findings are presented in Chapter 4.

Chapter 4. Findings

The purpose of this narrative study was to investigate how CTE administrators facilitated the development of career programs of study in rural secondary settings. The overarching research question for this study was: How do CTE administrators expand new career pathways in rural settings? The focus questions that guided this inquiry were as follows:

1. How do CTE administrators describe the experience of developing career pathways?
2. What systemic changes were associated with the biggest program improvements?
3. How do CTE administrators facilitate CTE programming for the changing local labor market?
4. How do CTE administrators leverage funding sources to support and sustain the creation of new career pathways?

Participants

There were nine participants in this research study, all of whom are the current leaders of the CTE departments in their rural public school districts in one Grand Division of Tennessee. Of the nine participants, four are employed in a school district considered rural fringe locales, with five in districts considered rural distant locales, according to NCES on the CCD School and District Navigator map (Common Core of Data, 2023). As measured by the Appalachian Regional Commission for the 2024 Fiscal Year, the economic status of the counties where the nine school districts are located is distressed, at-risk, or transitional (Transparent Tennessee, 2024). On average, the participants' years of experience as CTE administrators total 6 years. Four participants are CTE administrators in their district with no other supervisory roles, three of whom are employed full-time and one part-time. The other five participants hold at least one other building- and/or district-level supervisory role in addition to being the CTE administrator.

Of the nine participants, three are female and six are male, with all participants being Caucasian. Pseudonyms were assigned, gendered pronouns were not used, and proper nouns or identifiers were anonymized to protect the confidentiality of all participants.

Emergent Themes

The information in Chapter 4 is comprised of the relevant findings of the interviews, document reviews, and annals constructed with nine CTE administrators facilitating program development and improvement in their rural districts. Six of the nine CTE administrators participated in an initial interview and follow-up interview, with the other three only participating in an initial interview due to time constraints of the participants and the research window. The stories gathered from interviews were triangulated with co-constructed annals and documents from the participants' respective districts, which led to a more comprehensive understanding of how rural CTE administrators expand career pathways. Documents used were the most recent revisions of the following for each district: the district improvement plan, or ePlan; the Innovative School Models (ISM) grant application; and the CTE Perkins Basic application, often referred to as the Perkins plan by participants.

After reviewing all interviews, transcripts, annals, and documents, narrative threads resonated across all participants' stories of expanding rural career pathways as a CTE administrator. In this section of Chapter 4, these resonant threads are described as emergent themes, which include resilient and visionary leadership, intentional strategic alignment, ecosystem of collaboration, funding opportunities and barriers, and responsive and adaptive programming. These narrative threads, however, do not stand alone and are interconnected throughout the stories told by rural CTE administrators. The themes and their subthemes can be seen in Table 1.

Table 1

Overview of Emergent Themes and their Subthemes

Theme	Subthemes
Resilient and Visionary Leadership	Path to CTE Leadership Facing Challenges Upon Entry Developing the Vision Sharing the Vision
Intentional Strategic Alignment	Strategic Symbiosis of CTE and District Goals On-Ramps to Seamless Career Pathways Individual Student Planning Proactive and Purposeful Planning
Ecosystem of Collaboration	Within the District Within the Community With Other CTE Leaders Nurturing the Ecosystem
Funding Opportunities and Barriers	Rural Funding Barriers Innovative Solutions Grants: Catalyst and Inhibitor Sustaining Success
Responsive and Adaptive Programming	Initial Program Evaluation Responding to Feedback Adapting to Rural Challenges

Participant narratives were restoried through the three-dimensional narrative inquiry space. These restoried narratives were then coded into five themes. Participant responses by theme are listed in Table 2.

Table 2

Participant Responses by Theme

Themes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Resilient and Visionary Leadership	X	X	X	X	X	X	X	X	X
Intentional Strategic Alignment	X	X	X	X	X	X	X	X	X
Ecosystem of Collaboration	X	X	X	X	X	X	X	X	X
Funding Opportunities and Barriers	X	X	X	X	X	X	X	X	X
Responsive and Adaptive Programming	X	X	X	X	X	X	X	X	X

Resilient and Visionary Leadership

The stories of transforming career pathways in rural settings shared a central character, the CTE administrator with a resilient and visionary approach to leadership, and were steeped with the impact that leadership had on career pathway development and improvement. Participants shared stories of persistence, resilience, and the ability to inspire others toward a shared vision throughout their journeys into and through rural CTE leadership. The role of participants as resilient and visionary leaders was also integral to other themes. The frequency with which each participant discussed each subtheme of the theme resilient and visionary leadership is shown in Table 3.

Table 3

Participant Responses by Resilient and Visionary Leadership Subthemes

Subthemes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Path to CTE Leadership	X	X	X	X	X	X	X	X	X
Facing Challenges Upon Entry	X	X	X	X	X	X	X	X	X
Developing the Vision	X	X	X	X	X	X	X	X	X
Sharing the Vision	X	X	X	X	X	X	X	X	X

Path to CTE Leadership

Most participants expressed feeling as though they took a non-traditional path into CTE leadership. In fact, three participants explained that education was a second career for them, which required going back to college for an education degree. Participant 4 described returning to college for their master's degree as "very challenging" due to having to teach all day, drive to the college campus, attend class, and return home late at night once a week, all while having two young children. When reflecting on their experiences that led them to CTE leadership, only three of the nine participants expressed having a specific career goal of attaining a CTE leadership position. The other six participants, however, reminisced on aspiring to be an educational leader in some capacity. Before applying for the CTE administrator position, all participants held administrative positions in and outside their school district, ranging from maintenance supervisor to community program director to elementary principal. Recounting their path to the position of CTE leader, Participant 2 demonstrated persistence through applying for and not getting a prior leadership position, then after applying for it again and being given the opportunity in that position, embarking on a steep learning curve due to not having experience in that grade band before. Upon deciding to apply for the CTE administrator position in their district, reasons described by participants were varied, with Participant 1 stating that they desired to be back on the student services side of education and several participants stating that their CTE leadership positions came along with the other district- or building-level administrative positions they wanted.

Though not all participants actively sought a CTE leadership role, they all expressed a passion and commitment to leading CTE in their district and a personal connection to what CTE could mean for students and the community. This commitment, in addition to the personal

connections that participants felt to CTE, served as the two primary factors that attracted participants to the role of rural CTE administrator and why they continued to stay in the position. All participants identified a personal connection through family, past jobs, or hobbies that drew them to CTE. Participant 2 shared their connection to skilled trades through family members:

> But I always liked CTE as far as just the hands-on component of that. My grandfather was a machine shop foreman years ago. My uncle's been a welder forever. My father-in-law was a pipefitter for 40 years. So yeah, I learned how to plumb as a plumber at a young age. My grandparents owned a trailer park. And so, you know, 19 trailers...there's a lot of plumbing to be done, so I kind of had experience with that.

Similarly, Participant 3 explained the impact that their father's career path had on them:

> And I guess I learned a lot from my dad. My dad used to be a guidance counselor. So, I learned a lot from him, and things that he did in guidance. That we really need to, that everybody's got to have a passion in life. And I think that CTE just works. And my dad, when he was a guidance counselor, had one of the first Perkins night schools in the '60s.

In line with both their upbringing and personal interests, Participant 8 stated:

> My Ag. teacher had a lot of influence on me, and growing up on the farm, and I enjoyed it. But way back, I always wanted to farm cause that's what we did all my life. But I knew that wasn't going to cut it. So that's why I had the thought about the architecture, because I loved doing drafting.

Participant 7 explained that their time in the military made them realize the importance of skilled trades. Participant 4 also discussed their employment history that inspired them to pursue a career path in CTE:

> I worked for the Department of Labor and Workforce Development as a counselor and just loved working with people. And I mainly worked with adults. Not a lot of youth in that particular program. But then I got the opportunity to start out teaching in, at the time it was called vocational, vocational education.

Additionally, all participants expressed a passion and commitment to leading CTE programs despite the challenges they encountered. Participant 1 stated:

> To me, CTE is the most interesting, the most fun department to work in in a public education district just because...and I've said this before, a lot of teachers, I think, never truly get to see the product of their effort. And that's not true for CTE teachers. I think that CTE teachers and for us that work in the department, we have the unique advantage of being able to witness firsthand the fruits of our labor... to see a student run a bead in welding, having never turned on a welder before they took the class. To see a student step into a work-based learning placement that's going to literally change their lives.

Participant 2 described why they were passionate about CTE in their rural district:

> People ask, so what's the difference between teaching high school and doing what you're doing now? I say, well, in high school, I taught a lot of environmental science and some social studies, I never taught anybody how to make a living. The people who leave us have job skills. They can go out and make a living. To me, that's the best part of this.

Similarly, Participant 9 expressed their commitment to their position as CTE administrator, regardless of the accompanying stress, was because of the excitement that preparing students for the world brings them:

> People are asking me, why are you still doing this? I mean, it's a high to me. Because, you know, in the grand scheme of things, who do people call when their air conditioner

goes down or when their electricity, something happens with their electricity, who do they call? Do they call an English major? Or do they call one of my certified electricians?

Participant 6 echoed a feeling that Participant 5 also expressed, that leading CTE programs in a rural district is “not just a job” but a commitment to community improvement and motivating individual students. Participant 6 went on to say:

> It's like, I care about this community. I went to these schools. I care about this community. So, I'm going to do everything that I can to try to improve what I felt like we were left out of in school to, you know, to change that pathway. I mean, it's just like, and the reason I feel so passionate about this is, I have 2 brothers, neither one of my brothers graduated high school. But then I went all the way through. But the thing is, one of my brothers, after I ended up getting my bachelor's degree, that motivated them to go back and get their GED. And now he owns his own company.

Facing Challenges Upon Entry

Entering their role as CTE administrators, participants described being met with the biggest challenge inherent to their small, rural school districts, that of having too much on their plates, which is a challenge that has grown over time. Most participants hold other supervisory roles in addition to their CTE administrator role in their district. Participant 5 described how their role as a rural CTE administrator morphed during the pandemic:

> I came on the front end before COVID, alright? And then, you know, everybody at district levels everywhere, especially in rural districts like mine, their job titles grew, changed, morphed into whatever was needed. And that's kind of where we're at right now, and you know what was just CTE Director and [another role] quickly becomes

> [another role], you know, and then [another role], and then [another role]. Our days are busy. Very.

This sentiment was echoed by Participant 8, who also spoke about the pressure they felt from having multiple supervisory roles:

> But everybody's overworked. So, everybody's kind of just doing their own thing. I'm like, sure it gets done. If you want me to be honest about it, everybody's just trying to get by, you know? We don't have the staff of a larger school system, but we still have to get the same things accomplished. And that is, that's the challenge of being in a rural smaller district. I mean just the amount of things on your plate.

Because of this, Participant 8 stated, “The biggest challenge is time management and making sure everything gets done and gets done on time.” Participant 3 explained, “CTE is a full-time job, it really is. It's too much to do both. And that's even compounded more in the last 5 years,” and that in the future, more “manpower” will be needed for CTE leaders to effectively and efficiently do their jobs.

Due to the constantly growing role of CTE administrator and an increasing number of duties, participants reported feeling overwhelmed and stressed, like they were letting down their colleagues, and as though they were juggling too many balls. The three participants who said they were “lucky enough” to have no other supervisory roles made a point of advocating for their overworked counterparts, with one stating, “There's too much at stake in terms of outcomes for the district. But, more importantly, there's too much at stake in terms of outcomes for our students to divide the person who fills this role's attention with other supervisory duties.”

To mitigate the experience of being overworked and overwhelmed, participants demonstrated resilience through developing and implementing strategies to assist with efficiency

and time management. All participants discussed procedures they developed that helped them streamline processes that were initially taking up too much of their time. For example, Participant 5 explained that when schools are typically testing in the springtime, they create a spreadsheet for counselors and building administrators to verify that course codes are correct. Also, they create an annual calendar outlining CTE teachers' roles and responsibilities and listing important due dates. This helps keep teachers informed so Participant 5 does not have to continually ask for documents when they are due. Also, taking advantage of a time of year that is typically less busy, Participant 9 discussed the process they developed for teachers to complete their needs assessment for Perkins funding. Participant 9 explained that, historically, teachers would submit a needs assessment, and Participant 9 would have to wait until school was back in session to get vendor information and requisitions from the teachers. However, they have now combined the needs assessment and purchasing process by requiring that teachers submit pre-filled and signed purchase orders along with their needs assessments, which allows requisitions to be completed during the summer. Participant 8 described realizing that the current process they had in place for collecting and reviewing SSQI portfolios was too cumbersome, so they researched and invested in an online program that would automatically send teachers notifications of what was due and send Participant 8 a notification when a document was submitted for review. In the vein of streamlining processes for teachers, Participant 3 discussed a CTE Teacher Handbook that they are currently making, which outlines district- and CTE-specific procedures step-by-step, including any relevant forms that teachers would need. This will hopefully decrease the amount of time spent answering procedural questions.

The other major challenge that all participants described in leading their rural CTE districts through program improvement was the constant learning curve brought on by frequent

changes within the world of CTE. Participant 7, who was new to the field of CTE when they began their position as a CTE administrator, described the learning curve:

> Whenever I started this job, it was very overwhelming, initially, because it was so different. In this job, I had to learn a whole new lingo. A whole new world, really. Yeah, just learning all the rules that go into CTE, the requirements from the State. They said, it's a 3-year curve in CTE. Don't be overwhelmed because it will take you 3 years to learn everything that you need to know for CTE. You just got to push through. And so I did.

Participant 5 recounted a similar experience of encountering a learning curve as they began their CTE leadership role:

> And, you know, it was vastly different, I think. And I was okay with coming in with a new thing, because I had no training in Perkins, so you know, I was just, you know, I immersed myself in what Perkins V was, what that they were asking for in those initial meetings as far as our advisory committee, our connections into the community, and then also where they were wanting our programs across the state to grow.

Even participants who were not new to CTE described their journey into CTE leadership as a whirlwind that required learning a lot quickly. Participant 1 anticipated that "in the future, I think that each time we do this it'll be slightly different, because things are always changing."

Participant 4 explained that keeping the interest of the students at heart helped them through the ever-changing landscape of CTE:

> You know, the [State's] focus 10 years ago was totally different than today. Their focus 5 years ago, it's totally different than today. So we just again try to keep the student in our best interest, and no matter what...new program they've got or what new challenges they have. We just try to make sure that it's in the best interest of the student.

Participant 3 described a resilient leadership component that they believed was critical to continued success in improving rural CTE programs, a willingness to learn, stating, “We can't sit down and say, oh, well, we know it all, because we certainly don't. Things are always changing. I think we have to be willing to, you know, we’re lifelong learners.” Approaching leadership as a lifelong learner resonated across all the stories shared by participants, with Participant 5 expanding on this component by stating, “Well, we're learning as we go. I'll be honest with you. I have admitted my mistakes on numerous occasions in the last few months.” Indicating that rural CTE leaders must show perseverance in learning, Participant 7 said, “But you know just all that perseverance, being willing to learn and being willing to say, ‘Hey, I'm not an expert, but I'm closer today than I was yesterday, like, I'm working.’”

Developing the Vision

The personal connections and commitments that participants felt as rural CTE leaders not only supported them in persisting through the aforementioned challenges, but also inspired their vision of what CTE could mean for the students and community rural school districts serve. Before becoming CTE administrators, all participants expressed grappling with the widespread perception of CTE as “less than” the traditional academic path. This perception was summed up by Participant 2:

> And as far as the roles of CTE in our county, we have fought, and I have fought the battle now for years. I think we're making some headway. CTE was always seen as a Plan B. If a kid is smart enough, oh, they're going to go to college and they're going to go do, you know, something professional and all of that. And oh, if you're not so smart, you can go down to the vocational school, which I correct people for that term every day, you know. And the vocational school, that's your Plan B... And so, what we're trying to do is blur

> that line between college path and technical path. Because we've got kids, I'll be honest with you, who come through here and go to a [four-year college] and do extremely well.

When they applied for the CTE administrator position, Participant 9 described their goal:

> To bring a different view and respect to CTE. Because when my boys were in high school, CTE was where you sent the kids to get them out of your class...and the classes, looking back, I can't believe I'm saying this, were pretty lame...So, my goal was to get some respectability.

Despite their communities' widely held perceptions about CTE, all participants imagined a different future for CTE. As forward-thinking leaders, participants envisioned a future in which CTE was revered as a viable, respectable, and worthwhile path. This imagined future led to their visions of CTE being a place for all students. Participant 4 further expanded on this vision, stating:

> Well, years ago, you know, students had to choose either the academic pathway or the technical pathway. And it's not that way now. I think CTE is now on the forefront of education, and, like our director says, every student is a CTE student. Every student needs career exploration. Every student needs a career pathway. Every student needs a 6-year plan with career advising and academic advising.

Participant 6 expressed the same idea when they discussed the type of education they were responsible for providing:

> I mean, ultimately, everyone goes into a career. We do say college and career readiness. But even if you go to college, that ends in a career. So, everything flows into careers, whatever that career is. That's what we got to shoot for to try to prepare students.

According to Participant 7, this future-oriented vision required shifting the beliefs surrounding CTE, which was a critical step in improving their CTE programs:

> CTE is not just a fun class for kids to go to. They're really learning important skills and things... Because we believe CTE is for every kid. It's not just for kids who are not going to college, you know, people can still go to college through a CTE program.

On their role in defining the vision for their rural CTE department, Participant 2 explained:

> I'm the vision guy. I try to not only build the vision, but sell the vision. And I try to convince our folks here in the building that our obligation really doesn't end at graduation if we've not prepared them to take that next step.

The vision participants developed for CTE in their rural communities grounded them in their intentional and unyielding focus on improving career pathways within their programs. As Participant 5 stated:

> You've got to maintain a pure and definite focus on the vision of where you want to go, and work through many issues to get there. Because the alternative is, nothing gets done, right? So yeah, I think it is having a definite vision and then developing plans to make the vision a reality. You know, setting that goal, having a plan to get there. And then again...working through setbacks, working through frustrations, things like this, and continually keeping focus on where you want to go. And you know, don't pay too much attention to the stuff that you're going through to get there. Just keep moving forward, and as long as you do that, your days will be productive.

This perspective was reiterated by Participant 6 when they explained that the vision of what CTE can mean for students keeps them from becoming discouraged by the challenges faced by rural CTE administrators:

> So, do not get frustrated by all the paperwork, I think no one outside of CTE realizes the amount. When you think of the Perkins plan, Innovative School Model, all the different documents that need to be completed throughout the year, it can get frustrating. It seems like it never ends, but don't focus on that. Focus on the student, like what's best for the student...what is it you can do to make sure that student is employed, enlisted or enrolled. And if you focus on that, that's the big piece.

Sharing the Vision

Participants reported realizing early into their tenures that having a vision was not sufficient for meaningful change in their CTE departments but that they must also create a culture in which this vision could flourish, which included composing a team of the right people and shifting, collectively, toward a growth mindset. Participant 1 stated:

> I think so much of the opportunity to be successful and to continue improvement and growth, it really does, it comes back to having the right personnel. And I'm going to say that having the right personnel in the right positions has been the single most important thing we've done in my tenure in this position.

When reflecting further on the importance that creating a strong CTE team had on career pathway transformation, Participant 1 added:

> I can think of two positions, three now actually, in particular, that are district level or school level administrative positions, that, when I took the job on day one, I'm not saying that people who were there weren't doing a good job, but I will emphatically say that there were better people to be in those roles. And I'm glad to say that today those people are in those roles. And that has made all the difference...in what we're seeing at the classroom level with our teachers and what we see among our students.

Additionally, Participant 5 explained that having “great people in the right positions, the right people in the right positions” has made an enormous positive impact on CTE program development and growth. This sentiment resonated across all narratives.

A crucial step for all participants as resilient and visionary leaders was creating a culture within these teams of “right people” in which the shared vision for rural CTE could be met with a growth mindset. Participant 2 described the mindset that existed toward change and improvement when they began as a CTE administrator and their perseverance in working to shift that mindset:

> There was a mindset here that anytime we tried to bring in innovation, this is before I got here, and then when I got here, they were more interested in telling you why they couldn't do it, instead of figuring out how they can do it. Cause they don't want change, right? I mean, change, nobody really likes dealing with change. And so, after several conversations I finally said, “Hey, don't tell me why you can't do something, figure out how you can do something, because this is what's good for kids.” And so that, you know, that took a couple of years to kind of get that moving forward. But yeah, I think it's all about that attitude, of you know, figuring out ‘how you can’ instead of trying to figure out ‘why you can't’.

Participant 6 recalled that, when facilitating change in their CTE programs, the factor that made the biggest difference at the time was creating a culture that inspired a shift in CTE teachers to work toward the shared vision:

> I have realized that, I mean, the culture that you create in the beginning, there were some teachers who really wanted to butt heads. But through systematically going through the [change] process, it wasn't me necessarily telling them they had to be on board, but it was

more of a pressure block once other teachers were on board. And you could start to see that some of the others just kind of dwindled out on their own. So, and now, you know, I feel like we're in a really good place. And at the end of day, it's what's best for students.

Similarly, as Participant 7 recollected, the main catalyst in developing and improving career pathways was moving from a perception of "CTE for some" to "CTE for all." Participant 7 explained that, despite the various challenges and barriers faced in their rural context, the change in perception was precipitated by a shift in mindset:

> I think growth mindset changes that because you see the value in failure as much as you do succeeding. And so, helping get other people to have that same mindset. That failure isn't always a bad thing, like, you learn from it, and you grow. And so, I think that has been a huge part of all of this [improvement].

When asked what advice they had for other CTE administrators who desired to transform career pathways in their rural settings, Participant 1 highlighted the importance of a resilient and visionary approach to leadership, stating:

> It's important that we're all on the same page about what we're talking about in terms of improvement. We understand that when we say what our goal is, this is what we mean and here's how we're going to tackle that. So that would be my advice, it's get the right people, get them in the right seats, get them all on the same page. And from there, you know, work your plan. And it, you know, if, unless you've just really made a poor plan, you know, you're going to see improvement, you're going to see growth. And I think, I believe truly, in the case of our [CTE programs], once we did the first few of those things, the growth we've seen, I think it's kind of snowballed.

Summary

The theme resilient and visionary leadership is most aligned with research question one (RQ1) and research question two (RQ2). RQ1, how do CTE administrators describe the experience of developing career pathways, was addressed by participants describing the experience of CTE leadership as a personal one in which they felt stressed and pressured and, at the same time, felt energized by their personal connections, the vision of what CTE can be, and the sense of community responsibility. Participants also explained that one of the changes that impacted their CTE departments most was shifting the mindset and creating a culture of change in their system, which addressed RQ2, what systemic changes were associated with the biggest program improvement.

Intentional Strategic Alignment

Through stories told by all participants and the strategic planning documents from their respective districts, intentional strategic alignment was a cornerstone of facilitating the development and improvement of career pathways in rural settings. The theme intentional strategic alignment focuses on the deliberate and purposeful efforts of CTE administrators to align CTE programs with broader educational goals and career pathways that encompass both postsecondary possibilities and industry needs in their rural communities. This theme includes a strategic symbiosis of CTE and district goals, creating seamless career pathways in the K-12 setting that extend through postsecondary options, aligning to the local labor market with a focus on rural considerations, designing mechanisms for individual student planning, and taking a proactive and purposeful approach to planning. This theme reflects the strategic intentionality behind program development, highlighting the importance of aligning career pathways to prepare students for future success and meet the needs of the district and community. The frequency with

which each participant discussed each subtheme of the theme intentional strategic alignment is shown in Table 4.

Table 4

Participant Responses by Intentional Strategic Alignment Subthemes

Subthemes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Strategic Symbiosis of CTE and District Goals	X	X	X	X	X	X	X	X	X
On-Ramps to Seamless Career Pathways	X	X	X	X	X	X	X	X	X
Individual Student Planning	X	X	X	X	X	X	X	X	X
Purposeful and Proactive Planning	X	X	X		X	X			X

Strategic Symbiosis of CTE and District Goals

All participants discussed that one of the most impactful approaches to planning for improving career pathways has been integrating CTE goals within the broader education system and district goals. When asked about the story of how ePlans, Perkins plans, and ISM plans are developed in their district, Participant 6 explained, “So, up until a couple of years ago, they were pretty much silos, like our district plan versus Perkins plan. I mean, it was like they were in their own little pieces.” However, after stepping into the position of CTE administrator, Participant 6 has worked with their team of district supervisors to develop a strategic planning process that connects district and CTE improvement planning and goals to be mutually supportive. This participant described the process used:

> Currently, the way that we have it scheduled is our district plan, as a group, we get together as supervisors with our district plan and we put together 3 goals that we want for our district plan. And one of those goals centers around CCR. So now, what we do is with that we take, like when we're looking at some of our strategies and things we need to do, our CTE data and see the areas that we're, where we need to show improvement. And

> we'll use some of those as our action steps in the district plan, and then I'll also put those into my CTE plan so that it's fluid. But then the schools take it a step further. And, you know, the school plans are later on. So, whenever the school plans are being done, the principals are involved in the district plans, so that they already know kind of the steps that are going to be taken. So then, within their individual school plans, they develop it out even further. So, it is actually fluid now between the Perkins plan, the district plan and the school plans, it all goes together with the same goals.

When asked about what they believed to be a key factor in program improvement, Participant 1 advocated for developing goals within the district, individual schools, and CTE department that supported each other:

> Our approach to program improvement is centered around the goals that we set within the Perkins plan, the goals that we set within the school level. The right term is escaping me. But the school level improvement plans and those currently for our county are centered around industry credentials and work-based learning.

Reflecting the importance of the symbiotic relationship between CTE and district planning, eight out of the nine participant's school districts included CTE-related goals in their most recent district improvement plans, or ePlans. However, all participants' most recent Perkins plans and Innovative School Model grant applications directly addressed supporting academic and district-wide goals within their CTE programs, primarily focusing on math and science achievement, ACT scores, and graduation rates.

As explained by participants, this alignment of plans allowed for improvement goals to reinforce each other and for resources that can be scarce in rural districts, such as personnel and funding, to be shared and maximized. For example, when developing their district's Perkins

plan, Participant 4 explained how they used staff already employed by the district to support CTE teachers and meet academic goals as defined by the district:

> So, one push this year is to try to provide professional development as far as academic integration. So, we've got our instructional coaches in math, science, and ELA that are going to be working with some of our shop teachers. Where, you know, a shop teacher, I mean, they can measure and cut wood all day long, but [students] may not know systematically how to deliver a math formula, to understand it enough to where they take an EOC in math and pass that math test. So that's really our push this year.

Participant 3 described making the most of Perkins funding by purchasing a math curriculum that both CTE and non-CTE students could use as: "You know, we learned to play the game, everybody does."

Additionally, "knowing how to play the game", or understanding the federal and state accountability metrics against which schools and districts are evaluated and that are associated with district and CTE improvement planning, was described as critical to effective CTE leadership and continuous program improvement by most participants. When describing the experience of navigating CTE accountability, Participant 3 remarked, "Cause, you know, now we have to serve three masters, we serve Ready Grad, and now TISA [Tennessee Investment in Student Achievement], and CCR. And industry certifications are in all three of them, along with dual enrollment." Also, these "three masters" have led to CTE administrators "changing the face of what's important now" when designing and supporting their CTE programs. Participant 7 reiterated this and how it has shifted the focus to CTE in their district, stating, "And now, with the new grading system from the State, CTE, I think, just became more important in that…But you know, industry certifications and dual enrollment, dual credit, all of that stuff just became

even more important." Additionally, Participant 5 explained that CTE has the potential to play an important role in overall school and district performance:

> And, you know, the scoreboard when we're talking about Ready Grads and things like that, or, you know, the grade cards that are all coming out, this is how [CTE] can help, or this is how [CTE] can hurt if we're not doing these things and being very intentional with our actions.

Participant 9 stated that understanding accountability metrics guided strategic planning and the components that they have begun requiring of CTE programs in their district:

> All of our programs come with, all of our programs are either dual credit, dual enrollment, or both. They all have at least one credential attached to them. And so, you're really also hitting most of a Ready Grad indicator, too, within just one program of study. It adds respectability. [CTE] impacts the schools' scores and everything.

All participants shared this sentiment in both their interviews and explanations of where funds are being spent in their Perkins plans and ISM applications. For example, Participant 8 explained why they are now requiring all CTE programs to include an industry certification:

> But one thing, one of the things we're really focusing on right now is our industry certs and dual enrollment. To be honest, our Ready Grad score is not great. That's going to go up leaps and bounds with the things I'm putting in place. For example, requiring all programs of study to have an industry certification. So since taking over as CTE Director, we have more than doubled our industry certs. And we're going to go up again this year, still had some programs last year that didn't offer industry certs.

All participants' Perkins plans and ISM applications included budgets for increasing the number of industry certifications earned by students, through strategies such as professional development

like train-the-trainers for CTE teachers and paying for each student's first industry certification test attempt.

Participants noted a benefit in creating plans that intentionally supported each other, which was how engaging in CTE courses affected academic success in non-CTE classrooms. Strategies to provide academic support for CTE students were evident across all participants' Perkins plans and ISM applications, typically by providing professional development for academic integration for CTE teachers, purchasing programs to use in CTE classrooms for math intervention, and creating structures for cross-curricular PLCs. Participant 7 explained the importance that participation in CTE programs played in students' abilities to make real-world connections to academic concepts, which implied that improving CTE programs can improve overall student success:

> You know, in carpentry, there's so much math in that and fractions. And all of a sudden, you know, the kids found the importance of needing to know that math skill, like they saw it applied. And all of a sudden, [math] was important to them, and they wanted to learn that. So, we saw improvements in the [non-CTE] classroom as well.

The symbiotic relationship between academics and CTE was summed up by Participant 4:

> However, you know, that math student will make a good engineer, that science student will make a good engineer. And I think it's, if you can get a student interested in a hands-on skill and let them know that, as a nurse, you have to know a lot about science, and you have to know a lot about math. So, make sure that you do well in your math and science classes. So, academics and CTE integrate well together. And if we can just get that student to understand that they have to do well in their academic classes to excel in their career technical education classes, then it's a win-win situation.

On-Ramps to Seamless Career Pathways

When asked how they viewed their role in connecting students in high school to the world after high school, Participant 1 replied:

> Well, I would say that is a one-line explanation of my job description. You know, the crux of my responsibility is seeing that we're able to help create, establish, and maintain those seamless pathways for students, whether they're going on into postsecondary education and training, or directly into the workforce. So, my role within that, well, that's a little bit more difficult to describe. But I would say, I'm a facilitator. You know, the work of actually creating those pathways is happening in the classrooms with instructors. But I'm facilitating the planning, managing the budgets.

In accordance with Participant 1's view of their role, all participants identified the creation of seamless pathways for students from K12 to career as their primary purpose and focus of CTE program improvement efforts, particularly to address the skilled labor gap in their rural communities. According to Participant 4:

> There's a lot of moving parts, a lot of parts in these pathways. But one of the biggest gaps right now is from K12 education to postsecondary. And the gap is getting those students those postsecondary credentials for them to move straight into, you know, the workforce. So, we need to know what the workforce needs, and we communicate with them a lot. And so, we're trying to prepare those students to meet those workforce needs so that we can bridge that skills gap right there.

As supported by their Perkins plans and ISM applications, participants reported approaching career pathway development and improvement through extending CTE offerings into middle

school, facilitating alignment with postsecondary education options, and ensuring programs reflect labor market needs and emulate industry standards.

Participant 8 stated that they are working to improve their CTE pathways by "just trying to enhance what we have. And the big way, one of the big ways we're doing that now is through middle school programs that we just started this year." All participants stated that the ISM grant funding has allowed them to begin or expand middle school CTE programs, especially career exploration classes. Participant 6 explained the benefit of beginning CTE in middle schools:

> Like I said, there are different ways of improvement, and I think one way is when you're starting it in a middle school. You know, you're improving upon your program because you're going to be able to have more students flow into those programs when they get to high school.

Participant 4 recounted their thinking behind developing middle school career exploration courses and how they fit into the K12 portion of career pathways:

> So, what we want to try to do is work with those students based on what they're interested in and just inform them more of what is out there as far as careers. And then once they selected a few that they're interested in, we take them down that road of doing research. A lot is going on in sixth, seventh, and eighth grade in career explorations, and once they get ready for high school, it's kind of more of planning and advising them for a pathway in high school. So, if they see that, you know, they're interested in the healthcare field, and they really like nursing or anything medical, we sign them up for those courses, you know, when they go to high school.

According to ISM applications, participants are leveraging that funding to offer middle school CTE in various ways depending on what works best for their school system. For example, some

participants are using funds to build or renovate CTE and STEM centers for middle school students to attend. Other participants are incorporating career exploration classes at each middle school as part of the related arts rotation.

Another critical component of CTE programs in creating seamless career pathways described by all participants was alignment to postsecondary options, both while students are currently in high school and when they leave high school. Participant 1 explained the importance of ensuring secondary CTE programs lead to local postsecondary education institutions:

> Not all of these CTE pathways are, or the careers that students are seeking, they're not going to be able to go into all of them directly out of high school, just with the training we provide. A lot of them are going to require additional training, either at a community college or a TCAT or similar facility. So, we need to work with our postsecondary partners and make sure that programs we're offering, that we have seamless pathways for them to go directly into postsecondary, sometimes prior to them leaving our buildings.

Merely aligning secondary CTE programs with their postsecondary counterparts is not enough; official understandings, such as articulation agreements, must be in place to ensure students are afforded the most opportunity and flexibility out of their pathways as possible. In describing the importance of articulation agreements, Participant 6 gave the following example:

> And what do those industry certifications mean that we are giving out? So, for example, mechatronics. A local community college has a mechatronics program there. And this year, we're having our first students graduate from that community college at the same time they graduate high school with their mechatronics, and a lot of it has to do with [articulation agreements and dual enrollment]. For example, the Microsoft Office certification that counts as a computer apps course. If the student has Microsoft Excel,

> Word, and PowerPoint and they have those certifications, that counts for the computer applications course at the community college. So that's an articulation. If I get those industry certs, that's the course they'll have to take. We have it set to where industrial safety that's in that [mechatronics] program at the community college, a student does OSHA 10 [at the high school], that counts for that particular course. Those things would not be possible if we didn't have our articulation agreements in place. So that's what I'm saying, in every program we're starting to see where students are completing programs while they're in high school.

This participant went on to say that they believe their CTE programs' most considerable evolution is in facilitating opportunities for students to earn their associate degree and high school diploma simultaneously, an opportunity they have seen several of their rural students miss out on historically.

All participants described aligning CTE programs to the local labor market as a requirement through Perkins V and a process they complete at least every 2 years through their Comprehensive Local Needs Assessment. Although this is required, participants explained that it is a crucial process to engage in and one that needs to be approached through understanding the rural context. Participant 3 explained that, when it comes to making strategic planning and programming decisions, “it all goes back to three little statements: high skill, high wage, in demand. That’s what we live by.” Participant 6 described that aligning programs to labor market needs creates stronger partnerships with industry “Because if you're looking for labor market data, you're going to get buy-in from your industry because you're bringing in programs that are going to align to them. So, all of it connects together.” Additionally, Participant 1 explained that, when assessing labor market alignment, more than just entry-level positions need to be

considered within each industry so career pathways can be designed for the benefit of all students' future career advancement and success:

> When we look at our local business and industry partners, we also want to look at if we're looking at entry-level type positions to justify our program offerings. That's fine. There's no issue with that at all, because everybody starts in an entry-level position. Well, not everybody, but a lot of our students are going to start in those entry-level positions. But, you know as well as I do, that those students are probably going to have 10 to 15, maybe even 20 jobs over the course of their career. If they remain in that same sector, whether it be healthcare industry, manufacturing, whatever, are the programs we offer and the programs that are available at the postsecondary level, are they aligned closely enough with the pathways available in our local employers? So that a student can start in an entry-level position and progress along that pathway and continue to advance?

While facilitating alignment between secondary CTE programs and local labor market needs, eight of the nine participants expressed that one of the most significant changes they made to benefit their students due to the reality of their rural setting was to consider not only the local labor market but the regional labor market as well. For example, according to Participant 1:

> I look at local labor market data first, because the hope is we're training the next generation of skilled workers that will be here, in this county, in the surrounding area. But we look beyond that. We do look at some regional labor market data and even statewide. But the nuances come with, you know, we do have some very rural schools where, you know, there may not be an actual business or industry within 15 to 20 miles of the building. Well, we've got to consider that, you know, these students are going to travel. If they remain, if they live where they live now and stay close to home, they're

> going to be traveling to go to work. So, we have to keep things like that in mind, that labor shed in a rural county is just a fact of life. And, you know, we can't necessarily let that be a barrier to looking at a program offering. Because, although we don't necessarily want our students to travel to another county to work, the reality is a lot are going to have to anyway. So, we may as well try to fit that need.

The need to intentionally align programs to the regional labor market was echoed by Participant 6, who stated:

> The biggest thing that's evolved, I believe, is that alignment to what is in the area and even going to neighboring states. Because we are, as far as the district I mean, most of the workers that we have in our county, they travel an average of about 40 miles to go to work. So, it's a pretty good distance for them. And so, we include some of those other [regional] areas. So, with one of our school communities, it's closer to go to one of the neighboring states than anywhere else in Tennessee. So, sometimes we have to include what is in those areas for some of our programs.

Individual Student Planning

As participants told stories of how they have facilitated rural career pathways with CTE programming, they all expressed that career counseling and advising was a significant piece to students finding success within career pathways. However, all participants are still in the beginning stages of designing and implementing robust career counseling programs. Participant 2 recounted their interaction with a previous student about 15 years after that student graduated. Participant 2 said that this student was now a successful business owner, and they asked the student if they took the CTE courses, which at the time were called vocational, aligned to that career pathway while the student was in high school. Participant 2 recalled the student saying,

“No, I didn’t. I didn’t know what I wanted to do until I’d been out of school a year or two.” Participant 2 reflected on that interaction:

> It worked out for him. And it wasn't, you know, it wasn't a tragedy for him to not know what he wanted to do. But I guarantee you that for every one of those [students] that kind of wanders into it, you know, by accident, maybe, we probably got 5 that were graduating and didn't have a clue what that postsecondary life was going to look like. Whether, you know, it's work, what field of work, postsecondary education, whatever that was. And so, you know, my deal was, okay, let's get a vision where we've got a pathway and a plan.

Without the individual student planning component, students may not have the opportunity to engage in a career pathway meaningfully. As Participant 7 expressed, “I think you kind of have to be intentional about it. It’s not going to happen accidentally, students choosing a path that’s going to help them in the future that is.” Participant 1 explained that their CTE program’s new focus on career counseling and advising is “going to be key”:

> It's going to be key to keeping the programs we have filled with students. But more importantly, it's going to be key to making sure that the students are where they need to be. That they're in the program that's most closely aligned with what they want to do, and what's going to help them when they leave us.

The fear of students missing out on valuable, possibly life-changing, opportunities is one of the reasons that all participants have started developing comprehensive career counseling programs.

Participants’ plans for beginning a continuum of career advising and counseling were evident in both the stories they told of CTE program improvement and in Perkins plans and ISM applications. According to interviews and their respective ISM applications, all participants began creating a system for career advising by purchasing a career exploration program that

included career assessments and other activities. The intent was that school counselors or classroom teachers would use this career exploration program to help students, especially elementary and middle school students, learn about possible career options and identify areas of interest that aligned with career pathways available to them in their respective high school CTE programs. Realizing that career advising was still lacking, for reasons such as school counselors not using career exploration programs with fidelity, as mentioned by Participant 8, or school counselors being stretched thin, as mentioned by Participant 3, seven of the nine participants reported budgeting for and hiring specialized personnel, or career coaches and counselors, to take on the task of career advising and counseling. However, one of the two participants that has not yet written career coaches or counselors into their ISM application or Perkins plan stated, "That one's at the top of the list for sure, high-quality career counseling just to connect with students as early as we can and make sure they're matriculating into the programs that make the most sense for them, that they're taking advantage of all the early postsecondary opportunities." Participant 7, who is further along in the process of having a comprehensive career advisement and counseling program, described the continuum of career exploration activities their career coaches facilitate across all grade levels:

> I think it is important to introduce kids to options and careers as early as possible. Kindergarteners don't need to be deciding what they want to do for a living, but they need to see and hear about different careers. It helps them understand how the world works. Often, the only careers they know about are what their parents do, doctors, police officers, and firemen. We start career lessons in elementary school. We start college and career fairs in middle school. Students start taking career interest inventories in middle school. In high school, they continue to take career interest inventories, but we add

> additional things for them. We bring in guest speakers, we take students to tour businesses and industries, we have industry expos where students can meet and talk to different industries, and we try to get students work-based learning opportunities. Last year, we created a Transition Fair. The Transition Fair is a special college and career fair for students with disabilities. It went so well, we decided to expand it to middle school students and students who were targeted as needing extra support in connecting to postsecondary.

Proactive and Purposeful Planning

When asked what made the biggest impact on participants being able to strategically plan for and implement CTE programs aligned with district goals, postsecondary education options, and rural labor market needs, participants' answers were reminiscent of the aforementioned theme, resilient and visionary leadership. Most participants discussed being proactive and forward-looking and shifting the mindset surrounding deliberate planning efforts. Participant 5 described their attitude towards completing district and CTE strategic planning as "just being intentional on what we need to have happen to move forward."

Participant 2 reflected on the approach to Perkins planning that was taken prior to them being hired as the CTE administrator:

> And I'm just going to say this. But when I got here, we were doing a lot of Perkins planning by copying and pasting. We were taking last year's plan and copying it into next year's plan. Adjusting budget based on the allocation and submitting that, and that was going through. And so, that was part of what I was trying to combat.

Continuing, Participant 2 explained that their planning process has evolved, and they believe their current approach to completing Perkins plans and other strategic planning efforts has improved. When asked what they believed caused the improvement, Participant 2 stated:

> I think it has because of the alignment to the vision that we've tried to create. And this is going to sound cliche, but I think it has to do more with commitment to what you're doing rather than compliance. You know, with compliance we're just checking the box, and we're getting it done. And we said that, yeah, we did this. But if you examine it under the microscope of commitment to getting the, you know, being that good steward with your money, but also trying to get the maximum benefit for your kid, then you have to kind of step back and say, "Hey, yeah, I might want to improve this, make it something useful."

Similarly, when asked what Participant 6 thought made the most significant difference in how they approached planning for transforming and improving career pathways, they explained:

> The biggest shift, and this is, I continually talk about this day after day, because this is probably the biggest mind shift that came about, especially when you're trying to change a culture is, in the past it was pretty much a checklist. It was more of a reactive approach. Now, a lot of the things we do is more of a proactive approach.

Summary

The theme intentional strategic alignment is most aligned with RQ2 and research question three (RQ3). RQ2, what systemic changes were associated with the biggest program improvement, was addressed by participants explaining that one of the biggest changes they made that most impacted career pathways was aligning CTE goals to district and school goals because of how it affected accountability metrics and students' CTE and non-CTE success.

Additionally, participants described that aligning career pathways seamlessly from middle school through high school to students' postsecondary plans, especially with individual student planning mechanisms, was how they were able to prepare students for the changing labor market, addressing RQ3, how do CTE administrators facilitate CTE programming for the changing local labor market.

Ecosystem of Collaboration

The theme ecosystem of collaboration reflects the network of partnerships that rural CTE administrators nurture and rely on to facilitate career pathways, improve programming, and enhance student outcomes. This ecosystem is characterized by collaboration with partners within the school district, the community, and, in a specific CORE region, among CTE leaders themselves. At the heart of this ecosystem, CTE administrators are the bridge, nurturing relationships among their rural communities. In these CTE ecosystems, collaboration among stakeholders often leads to innovative solutions that would not be possible with individual efforts alone. The frequency with which each participant discussed each subtheme of the theme ecosystem of collaboration is shown in Table 5.

Table 5

Participant Responses by Ecosystem of Collaboration Subthemes

Subthemes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Within the District	X	X	X	X	X	X	X	X	
Within the Community	X	X	X	X	X	X	X	X	X
With other CTE Leaders	X		X	X				X	
Nurturing the Ecosystem	X	X	X		X	X	X		X

Within the District

Though most participants identified several individuals within their school districts who were key partners in their CTE programs, participants agreed that the Director of Schools and building-level administrators were critical stakeholders in transforming career pathways. Participant 8 stressed, “It’s important, you know, to have the support of your Director of Schools and those folks above you, so they can support what you’re doing.” Participant 3 stated that when it comes to making major program decisions, “I don't do any of it without talking to my Director first and keeping them involved.” Participant 4 explained the importance of their Director of School’s involvement when any changes to programs are being made or initiatives are being implemented:

> You’ve got to have everybody on board, and especially your Director of Schools. Our Director of Schools is very supportive of a new partnership [among counselors to enhance career advising], so he comes to every meeting that he can and encourages the middle school and high school counselors to work together for the betterment of the student. I mean, that's why we do what we do every day.

Participant 6 described the partnership with their Director of Schools as involved but hands-off:

> So, we will have meetings with him, usually have like brief meetings with him about every day. But, like, if we have something very important, like, we'll sit down with him and, together, talk through it and discuss it. And then we have his full support. He will take, if it's not a popular opinion, he will take all the trash from it, and, just, he'll deal with it himself. And that’s, you know, it tells us like, “Hey, I believe in what you guys are doing.” And so, if any backlash comes from any of it, like, he just takes it on.

Building-level administrators are the other partners within their school districts that have been integral to CTE growth and success for most participants. Both Participant 7 and Participant 4 described the role of the building-level administrator as supporting the vision communicated from the district level, which is imperative because "they are boots-on-the-ground with the teachers" and present at the schools every day. Similarly, Participant 6 views building-level administrators as "the go-getter in the building, the one that is with the teachers," so they involve them in all relevant CTE discussions and decision-making processes. Participant 5 explained the importance of building a relationship with the building-level administrators:

> You've got to have buy-in from the administrators before we can get down to the teachers. Because if, you know, I'm here at the board office, so, when I'm [at the schools], they'll listen to whatever I say. But if I walk away, and then an administrator comes by and they're not bought in, then that teacher is not going to be bought in very long.

While reflecting on the recent improvements they have seen in their district's CTE programs, Participant 1 stated with conviction that building-level administrators were the cause of recent improvements:

> Once the school-level administrative positions were filled with what I would consider to be the right person, we started to see that that's caused exponential improvement, because not only was there improved efficiency between my position and that position, but also that person influenced the instructors at their school. And we started to see improvement and growth with instructors that I would say had been stagnant for a number of years. If I had to pinpoint and put my finger on what was the driving force for the bulk of the improvement we made over the past few years, well, that coincides with that personnel

> shift in those administrative positions. So, I'm convinced that's the catalyst for it. Having the right people in those positions can make a huge difference.

Within the Community

Community partners, including postsecondary institutions and business and industry, are inherent to the success of CTE programs. The importance of and support given by community partners was evident in the ISM applications for all participants in that each application had at least three letters of commitment to program goals from these stakeholders. The community partnerships participants reported as most influential in rural career pathway development were mutually beneficial. Participant 9 stated that when they had their recent advisory council meeting, they told partners, "We're not asking for money, we just want your support" and made it clear that "We never request funding from a partner because we don't want them to equate partnership with 'we got to pay money.'" Participant 1 stated that the best advice they could give a new CTE leader would be to foster relationships within the community:

> Have a good network of those people you know. I can't make decisions for programs or program improvement based on my knowledge alone, because there are a lot of programs that we offer that I have almost no knowledge of at all. And I have to, you know, we have to rely on the instructor. We have to rely on industry experts to say, here's what we need, what we've got to have, in a lot of cases. I just wouldn't have the ability to do that by myself.

All participants identified work-based learning as the CTE program component most mutually beneficial for them and community partners. Participant 6 discussed a capstone course in which seniors give a presentation on their post-high school plans to an audience that includes industry partners:

> And it's interesting, because when some of them get up and they start discussing, "Well, I'm going to go on and do this, do that," some of the employers, well, industry partners, they'll be like, "I really want to hire that person when they graduate" or whatnot. So, there's been, it's created some closeness because it's not just, "Hey, here's how you can help us," but then they're also seeing the quality of the students that they can also receive.

This was reiterated by Participant 7 when they stated that industry partners are more apt to support CTE programs "when people see it. When they see the outcome, they're like, 'Yes, I want to be part of that.' And I think they're more willing to help out when they see the outcome."

Leveraging supportive community partnerships was one way participants overcame barriers faced in rural districts, such as lack of resources. For example, Participant 1 shared a serendipitous story of a program startup they led, which developed into a viable career pathway for students due to collaboration between the school district, a postsecondary partner, and a local employer:

> We had a meeting with an industry partner; it's a tremendous partner for us. It's a tremendous industry for our county. And they told us, point blank, "We need about 10 to 15 machinists every year. We're losing them and having a harder and harder time finding replacements." And they wanted to know if we or if the local TCAT would be able to provide a machine tool training program. It was kind of out of the question for the TCAT because they were out of space, and it was immediately out of the question for us, because we had space, but we didn't really have the money for that startup. That's a really expensive startup. But the timing of it worked out really well. We were able to partner with TCAT to take advantage of the GIVE 2.0 funding. So, TCAT did a lot of the heavy

> lifting in terms of the startup cost. Our district's portion of that was to pay for an instructor.

Participant 5 described a partnership with their local TCAT that allowed them to overcome their lack of space and funding for new facilities:

> Got a really, really healthy partnership with our local TCAT. Our schools have been good for them. They've been very, very good for us as well. We have automotive maintenance and light repair on their campus, but with our teacher. Very popular up there. So, we outfit the teacher and the students and the work area with whatever they need there. And it helps alleviate our somewhat cramped campus there at the high school. You know, it's a good relationship there.

Additionally, Participant 3 described a relationship with an industry partner that has blossomed over time. This industry partner began as an advisory committee member for the construction program of study, advising on curriculum development. This partner then started donating supplies and equipment for the construction program when the district and CTE department were tight on funding and donated their time during career fairs. Further into the partnership, this partner took on a couple of work-based learning students. Now, with the ISM grant providing funds for facilities expansion, this partner was consulted about designing a new shop and hired by the contractor to do some of the construction work.

With Other CTE Leaders

Other rural CTE administrators were the most critical partners identified by four participants; however, these four participants all belonged to the same CORE region in Tennessee. For anonymity, the CTE administrators in this CORE region will only be referred to as participants rather than indicate which specific participants they are. These four participants

shared stories of leaning on each other for support, contacting each other for advice on program startups, working together to solve problems with TCAT, and learning from each other. One of these participants shared their beliefs surrounding the CTE leaders in their CORE region:

> Well, I will tell you this, and I truly believe this, the CORE region that includes our county, I feel like we have the strongest CTE Directors in the State of Tennessee. There's not one of them that I couldn't pick up the phone or text, call and say, "Hey, I've got a problem. Can you help me?" And we meet every month, and some of us will even do a virtual call. You know we've got something new coming down the pipes from the State Department. "Hey? What's your idea? What are you implementing? What's your strategy to stay on top of this?" So, I mean, just having those folks as a resource is amazing.

Another one of these participants described the relationship among this CORE region group of CTE administrators:

> It's a united front, though, with CTE, at least in our area. I think here we are like a cohesive unit who supports each other, and most wants everybody to be successful. And that's a blessing. You don't get that everywhere.

Nurturing the Ecosystem

Participant 5 asserted that nurturing relationships is an imperative role of a CTE administrator, particularly in a rural setting:

> You have to make sure you build and nurture the relationships with the people in your system to be able to effectively do your job. And if those relationships deteriorate, you can… And this is just small town, rural. And I'm assuming some of the larger places that you might go, or whatever, might be able to work around this. But, you know, in a small

> rural setting you've got to repair relationships. You've got to work through that to get support.

This belief resonated across most interviews with participants. Participant 1 stated that they believe they were hired into the CTE administrator position not for their previous supervisory experiences but because of their relationship-building abilities:

> I really think that it was, it boils down to the ability to communicate with people and to establish relationships with people and build trust. And that's a big part of this job is building trust, not only inside the system with teachers and students and administrators, but also, probably far more important, is building relationships and trust with outside stakeholders, so that we can bridge that gap from K12 to workforce.

Participant 2 explained, "I'm doing the PR thing with a lot of folks in the community as well. Much more than I ever did as a principal. I mean, I'm actually having to work with business and industry partners." Similarly, when asked the most essential parts of their role as a rural CTE administrator, Participant 7 responded, "It's talking to the businesses and industries and saying, 'How can we help you? Here's how you can help us.' Building those relationships and having those connections within the community, networking. I think all of that is really important."

Summary

The theme ecosystem of collaboration is most aligned with RQ1, how do CTE administrators describe the experience of developing career pathways. RQ1 was addressed by participants describing the facilitation of career pathways as a social experience, one that could not be accomplished in isolation, with the role of the CTE administrator as a bridge amongst partnerships within and outside their school districts.

Funding Opportunities and Barriers

As participants told the stories of their CTE programs and documents were reviewed, navigating funding opportunities and barriers was consistently identified as a pivotal aspect of developing and improving career pathways in rural settings. This theme underscores the nuanced approaches rural CTE administrators must take to address the inherent lack of resources in their rural contexts. It encompasses the strategies participants have employed to address resource limitations prior to receiving ISM grants and then, once participants were awarded this new funding stream, the dual role played by the ISM grants as both catalyst and inhibitor of change. The theme funding opportunities and barriers also addresses the consideration that has remained constant throughout the tenure of all participants, that of sustainability. The frequency with which each participant discussed each subtheme of the theme funding opportunities and barriers is shown in Table 6.

Table 6

Participant Responses by Funding Opportunities and Barriers Subthemes

Subthemes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Rural Funding Barriers	X	X	X		X	X		X	X
Innovative Solutions	X	X	X		X	X		X	X
Grants: Catalyst and Inhibitor	X	X	X	X	X	X	X	X	X
Sustaining Success	X	X	X	X	X	X	X	X	X

Rural Funding Barriers

When asked what factors they consider when creating or improving rural career pathways, most participants identified funding as one of the primary factors. Participant 6 stated, “One of the biggest factors is funding. I mean, some programs require a lot more money than

other programs," and that, at one point, lack of funding even caused them to eliminate a couple of programs of study at one of their smaller high schools. Additionally, Participant 1 responded:

> Finances are always going to be the number one barrier to this stuff. If we're talking about picking up additional personnel, that's going to be where we start. That's the hurdle. We have to overcome that litmus test as to whether it's viable at all.

Participant 3 reported that CTE improvement in their district, particularly updating facilities and equipment, has been minimal in the past due to the lack of funding their CTE department has been allocated, a sentiment that was also echoed by other participants.

Participant 1 elaborated on the fact that the expense of program startups and adding new personnel have historically kept them from starting new programs of study that were much needed in their district. Participant 2 explained that lack of financial resources even impacts their ability to hire quality instructors because "every professional in this building can go and work in industry and make a lot more money. That's a huge issue, that disparity between what my guys can make in industry versus what I can pay them here." Also, Participant 2 stated, "It's just difficult, especially with pay rates. So that's been the biggest obstacle is, you know, rural districts don't pay well."

Innovative Solutions

Creating opportunity in the face of being under-resourced and underfunded, a reality of rural school districts, requires that participants rely on innovation and resilience, as reflected in most participant narratives. For example, Participant 2 recounted a time when they needed to start a culinary program due to labor market needs and student interest but lacked the financial resources to install a commercial kitchen. However, Participant 2 and their new culinary instructor did not let this hinder their ability to provide students with opportunities. Participant 2

stated that they used an old lab classroom already equipped with plumbing and sinks and that "honestly, we started with Coleman Coolers and camp stoves" while also pursuing possible funding sources. Participant 2 described the rest of the process of updating the culinary space:

> But we were able to secure some grant funding first through Perkins Reserve to upgrade the classroom and put a commercial kitchen in. And then through SPARC funding. And so, between those 2 funding sources, we're able to put in around $70,000 to $75,000 into a commercial kitchen and get that up and running. And that was probably an 18-month process we had to actually go through. Hire the architect. You know, the place, the equipment, and the ventilation, and all that, and then the fire marshal has to get involved. So yeah, I never knew how much was involved in doing something like that until I got in the middle of it and just did it.

Like a previous anecdote shared by Participant 5, Participant 9 also gave an example of when they had to creatively find a way to offer a program:

> Well, we used to have a nursing program several years ago. And then the teacher left and went somewhere else. Well, we've had 2 teachers, actually, and they were in-house. Well, trying to get a nurse to work for a teacher's salary, it is pretty tough. So, with the relationships that we have with the TCAT, I was able to work with them to where I supplied the students and the place to meet, and the TCAT sends the teacher, pays the salary, covers that completely. So, we're not out a teacher salary. So that's how we've worked our CNA program. Now, I would still like to have it in-house. But you know, if Plan B is get somebody to come in and do it, I'll go with Plan B, which is actually a cost saver for us, you know. Less teachers we have to pay. Like I said, all I do is supply the students, place to meet, and the textbooks.

To ensure their programs have the equipment necessary to prepare students for career pathways, Participant 3 described working with the district financial officers to "try to find ways, especially with people that were trying to incorporate CTE wholeheartedly the best we could."

For three participants, providing students with opportunities due to funding barriers meant adding a title to their role: grant writer. Participant 5 began writing grant applications for funding beyond what Perkins provided because they believe that "as far as being an effective leader, I would like to think that when our teachers and students need something, we get it. And we get it quickly." Participant 9 explained that when their teachers need something, they find a way to provide it:

> So, you know, that comes with some extra grant writing. So, and I'm very strategic about that, I learned after a couple of times of putting hours into a grant that I didn't get because it was competitive, I no longer write competitive grants. I don't have time to waste. Don't write matching grants. Because I want to operate fully independently.

Similarly, Participant 8 continues to apply for extra grants because they have seen the difference that extra funding makes for their rural CTE programs:

> But over the past few years we have really grown our programs. Particularly, because we've been able to get so many grants. But we don't have a lot of industry here. We have a lot of economically disadvantaged students. So that really helps when we're applying for grants. So, we have received, been on the receiving end of several grants over the past few years which allowed us to upgrade a lot of our programs…our welding program, our machine program, phenomenal. We've added the culinary arts program. Yeah, we've had industrial maintenance at both high schools upgraded. Like I said, just about all of our programs have benefited and we've done upgrades.

Grants: Catalyst and Inhibitor

All participants reported that the new ISM grant opportunities were the catalyst of recent improvements to career pathways in their rural communities, particularly in creating new career pathways. ISM funds made it possible for participants to start or strengthen career exploration courses in middle school, develop career advising and counseling programs, and start new programs of study. With the sheer expense of program startups due to building new facilities and buying the equipment as the most reported reason why new programs of study were not introduced in their CTE departments, all participants explained that they prioritized capital projects and modernizing equipment to match industry standards, which was a finding supported in reviewing all participants' ISM grant applications. Participant 3 reflected on the change that the ISM grants catalyzed:

> Before, we struggled. We just had about the bare minimum. So, it's just amazing what you can do when you have a little money. If you don't have any money, it's hard. With ISM, we actually have the ability to fund them correctly and to modernize our programs from what they were.

When asked about the impact that ISM grants had on their district's CTE programs, Participant 7 recalled how the grant allowed them to open a new program of study:

> Then through the Innovative School Model grant that we got, we had the money to start a program because buying that equipment, it's not cheap. And so, investing in the tools that they need, the equipment that they need, the trainers that they need, getting them what they need to do industry credentials. And so, it takes a lot of funding and work to start a program like that.

Participant 5 described the impact that being able to adequately fund their CTE programs has had on teachers:

> Now the ISM has been a really welcome change, because you can see, you know, teachers who have kind of, you know, I want to word it correctly, you know, in a nice way. Have kind of gotten numb to the process, you know, maybe finding a new breath and getting a little bit more involved because it's something that's different. And you know, [teachers are] getting excited about the potential.

Reflecting on how they felt when their district received the ISM grant, Participant 4 recalled:

> I thought, "Wow, what that's going to do for our programs is just phenomenal." And we're taking that money and putting it exactly where our county mission and vision is: to educate those students and make them productive citizens. The Monday morning after graduation, they're either in school and have a job, or they're going straight to work. They know what they want to do.

Two participants shared that receiving the ISM grant was even the catalyst for leveraging more funding from other sources. When the ISM grant was not enough to cover all capital projects necessary to expand programming, Participant 1 approached their county commission and school board for support:

> We go to the county commission and go to the school board and say, "Look, this is what we're getting in Innovative. And here's what we would like to do in order to accomplish that. However, we need more space. We're out of space to do this. So, this is a great time to pull the trigger and do this." ...We used the 4.2 million dollar Innovative funding to entice our school board to put some skin in the game, and then, after that, used that new total to entice our county commission to put even more local skin in the game. And so,

> you know, just having money helps us, helped us absolutely leverage even more money or secure even more money.

Similarly, Participant 6 described realizing that the capital project they needed to complete to improve several career pathways would require more than the ISM funds they could spend. To alleviate this obstacle, Participant 6 invited one of their major industry partners to expose them to all that their district's CTE program had to offer:

> They didn't realize that we offered mechatronics, and what they're trying to do is switch up to, you know, more of the PLC-type equipment, and they're going through that change right now. So, when they came into our school and was able to see what the students were doing, but at this high school, it's in a classroom setting, we don't really have a shop, either, that we use for some of that stuff. So, I'm telling them about our plans, what we wanted to do. And they're like, "Look, if we can get employees from you, we would want to discuss, you know, possibly helping out with this." And then, a month later, they're cutting us a check.

Upon applying for and receiving ISM grants, all participants were surprised to be met with a new, unexpected challenge. Reflecting on CTE leadership before and after the ISM grant, Participant 2 stated, "Finding the money is always the big [barrier], now with Governor Lee's ISM budget, money's not an issue. Now it's time and people. But before it was always money." Participant 1 discussed the duality of ISM grants, in addition to the several other funding streams they manage:

> Fortunately, you know, in 2023, CTE is at the forefront in terms of what, where funding is being funneled currently. That's good, and we've got a number of streams of funding right now. And it creates a lot of work. But it's also eventually going to create a lot of

> opportunities… There are lots of different pots of money, and unfortunately, not all of them operate under the same rules. So that consumes a lot of our time, you know, dealing with the budgeting and carrying out the plans that are developed for those monies and making sure that we meet all the regulations depending on where the money comes from.

Participant 1 went on to expand on the challenge associated with the amount of time it takes to manage so many funding streams and keep up with the monitoring requirements of ISM:

> I've been stuck in this office a lot more than I would like to be. But that's what comes with, you know, the grants that we're juggling currently, all of those pots of funding that we discussed earlier. Every one of those that comes along is great because it's going to lead to more opportunity for students, but it also, it chips away at the opportunity I have, and some of the other folks that work here have, to be in the classroom, and down to even the building administrator level, I think. Things like that cut into how much time we're able to get with individual instructors and even with students.

Continuing, Participant 1 described how being stuck in their office completing funding-related compliance tasks leads to job-related stress:

> And it's stressful because, you know, the other stuff doesn't stop, and this just adds to it. And really, what that boils down to is, you know, it's not that workload in and of itself is a stress, but it makes me feel like I don't get enough time in the schools connecting with students and teachers. And it concerns me that, you know, [my role is to] drive the vision for the department. It concerns me that I don't get to spend a lot of time in the classrooms with teachers and students anymore because it makes me wonder, am I going to be able to drive the vision if I'm that disconnected? I don't want to be disconnected from what's going on in the department that I'm supposed to be leading.

These sentiments and feelings of stress due to the increased workload stemming from ISM requirements were shared by all other participants. For example, Participant 3 described themselves as a "chair sitter" and said that, with ISM monitoring and compliance tasks, "the State has created a log jam. Instead of making things easier, it's a lot harder." Participant 7 echoed that the workload associated with grant funding was limiting their ability to be involved with teachers:

> Unfortunately, you know what it's like working for the State, the Government. There's lots of compliance work that goes into this job as well. You know, lots and lots of reports and lots of meetings, lots of, you know, all of those things. And unfortunately, that takes a lot of my time. Time that I would much rather be spending with the teachers and the students. But it's also the necessary part of this.

Similarly, Participant 8 acknowledged the necessity of spending time on funding-related paperwork even though it impedes their opportunity to support teachers:

> Of course, all CTE Directors control the purse strings. The implementation of our goals that we have set for that kind of falls on me, getting our, you know, our scores up, whatever it might be. It's challenging. I wish I could spend more time with teachers and helping teachers, but getting all the paperwork done, everything that's required, that's not possible. And you know, that's the part I probably enjoy most, but that's the part I get to do the least. I have to make sure everything gets communicated, along with getting all the paperwork done and budgeting and taking care of the money, so that we don't wear orange jumpsuits.

To alleviate the new challenge that developed from the monitoring and paperwork requirements of ISM grants, all participants reported adding at least one additional CTE-specific

position with ISM funds, which was corroborated with each participant's ISM grant application. Depending on the needs of the participant's district and the goals of their CTE program, participants used ISM funds to hire positions such as CTE counselor, career counselor, career coach, work-based learning coordinator, CTE success coach, industry liaison, and CTE data clerk. All participants stated that the new CTE hires have been a "blessing," a "godsend," and incredibly impactful in their efforts to improve career pathways. Most participants reported being cognizant of the type and number of tasks they assigned the individuals in these new positions because, as Participant 1 discussed, sustainability must be considered regarding positions funded through grants:

> I do my best not to overburden them with things outside the scope of [their position]. Because when it comes down to when the grant period ends, when we justify their position, we're going to look to the data [specific to their position] to do that. And if I, you know, if I throw lots and lots of other stuff at them, and I've been guilty of that, but if I do that too much, and it hampers their ability to fulfill their actual job, I'm not doing us any favors by doing that.

Sustaining Success

Sustainability of changes, developments, and improvements made using funding, particularly grant funding, is a key consideration in the strategic management of budgets because it ensures that the benefits of current investments extend beyond the immediate future and lead to long-term CTE program viability and success. When it comes to sustainability, Participant 8 stated, "You have to think about how you can sustain when you are doing your initial plan." As explained by Participant 1, one of the bigger stressors in facilitating rural career pathways "is the sustainability aspect of starting a new program. I would say that almost all of that's going to land

on my desk in terms of I've got to make sure we have an airtight plan on sustaining this." Participant 7 spoke about the nuances of sustainability and said, "Sustainability is always a puzzle to figure out and it depends on what we are trying to sustain."

However, regardless of initiative, participants identified the primary sustainability strategies across all interviews and strategic planning documents as TISA funding tiered reimbursements and commitment from their Director of Schools. Participant 2 likened using the tiered reimbursements through TISA funding as a sustainability method to a "flywheel," stating that "we get the momentum going with the ISM initial funding. But once it's in place it should be able to sustain itself with that." This sustainability method also aligns with the strategies put in place through ISM applications and goals of increasing CTE enrollment, CTE concentrators, CTE completers, and industry certification attainment because the more CTE administrators can facilitate improved student outcomes in these areas, the more bonus funding they will generate according to the TISA formula. The additional funds generated through TISA bonuses will then be used to sustain the ongoing costs of said strategies written into ISM applications, such as additional personnel, paying for students' industry certification exams, and purchasing high-quality curriculum and career advising programs.

All participants explained that a close, collaborative relationship with the district's Director of Schools will be vital to the TISA sustainability strategy moving forward. For example, when asked how they were planning to approach the sustainability of ISM-funded improvements in their districts, Participant 1 expressed:

> We're fortunate in our county that at current or at present, I should say, our Director and our Board have committed to leaving funding that's generated by CTE in CTE. Now, that could change, of course. But if that remains to be true, that helps us very much. It makes

the sustainability of these programs much easier to achieve. All we have to do at that point is, do some calculations and say, “Okay, as long as we're maintaining this level of enrollment and this level of performance in terms of the CTE bonuses, the industry credentials, and so forth, then right here on paper, we can show you the sustainability of it.”

Summary

The theme funding opportunities and barriers is most aligned with research question four (RQ4), how do CTE administrators leverage funding sources to support and sustain the creation of new career pathways. Participants described supporting the creation and improvement of career pathways through overcoming rural funding barriers by using innovative strategies, such as learning how to write grants, and the strategic use of the new ISM grants. Additionally, as participants planned budgets and facilitated programming, they reported sustainability as a priority consideration.

Responsive and Adaptive Programming

The stories told by participants throughout the research process portrayed the landscape of rural CTE and career pathways in their community as ever-evolving. Therefore, the ability of CTE administrators to be responsive and adaptive is paramount to success, especially in the unique rural context. The theme responsive and adaptive programming details participants' innovative approach to ensure programming is both relevant and effective, guided by labor market trends, student interest, and continuous feedback loops. This theme also addresses challenges inherent to rural communities, such as geographic isolation, showcasing participants' creative solutions to develop accessible, high-quality career pathways. The frequency with which

each participant discussed each subtheme of the theme responsive and adaptive programming is shown in Table 7.

Table 7

Participant Responses by Responsive and Adaptive Programming Subthemes

Subthemes	P1	P2	P3	P4	P5	P6	P7	P8	P9
Initial Program Evaluation	X	X	X	X	X	X		X	
Responding to Feedback	X	X	X	X	X	X	X	X	X
Adapting to Rural Challenges	X	X	X	X	X	X	X	X	X

Initial Program Evaluation

When asked what made them realize they needed to develop new or improve their existing rural career pathways, most participants indicated that there was not one specific event that spurred improvement but that CTE programs must be continuously evaluated to determine effectiveness and inform future strategic planning. Participant 8 illustrated this point:

> But I don't know if there was one point in time where we said, “Hey, we need to change what we're doing.” Just gradually over time, and just as programs of study change at the State level, you've got to adapt to make improvements within, you know, the parameters of whatever it is. Things change as we go along, things are always changing. There's, you know, we just don't wake up and say, “Hey, let's do this or do that.” The need [for improvement] just kind of evolves over time.

Participant 5 stated that making programming decisions, whether to improve upon, open, or close a program of study, requires “an ongoing conversation” with all stakeholders and analysis of relevant data. Participant 6 explained that the process of program development and improvement requires a methodical approach and described why that is the case:

> So, I think you have to approach it really kind of systematically. And it goes back to really defining what your needs are of what is out there right now. And then, what's going to be out there in 10 years from now or 5 years from now. And use that as your guide to developing the programs that you're developing within the schools to really provide students an opportunity when they graduate. So, if there's a freshman right now, by the time they get to be a senior, I mean, technology changes every day. And it's just, we're living in a world where, you know, everything is actually changing by the day. So, it's trying to stay on top of that. I can develop a 5-year plan right now and have it developed out. But in a year from now that 5-year plan might change drastically because of the way technology is, so I think you always have to stay on top of that, and, you know, everything is moving in industry and education.

As participants answered the question asking them to describe their process of implementing program changes or new developments, the majority identified the same first step, which was to evaluate the programs that already existed. For example, Participant 2 explained,

> Well, when I came in my very first year I looked at, you know, tried to evaluate each program of study from a standpoint of, number one, how many concentrators and completers are we producing? What kind of skill sets are they taking with them as concentrators and completers? And how marketable are those? And then, what kind of postsecondary partnerships did we have?

Participant 1 listed the questions they used to do an initial evaluation of their district's CTE programs, which were: "What are we doing? What are we doing well? And where do we need to improve? But also looking at: What are we offering? And how well does that align with what we need to be offering?" Additionally, Participant 5 shared that an initial evaluation of CTE

programming could reveal that improving pathways could be done by adjusting current programs:

> You just got to kind of evaluate what you have now, because there may be things that you're doing right now that you could kind of tweak that would meet whatever needs you're trying to meet. So that's the first thing, you just look at the curriculum. Let's look at the students. Let's see what our advisory committees are saying we need to do. And then there's going to be some conversations with the instructor.

Participants stated that, after they evaluated their existing programs, the next step of initial program evaluation was to analyze their local and regional labor market data and assess student interest. Participant 1 shared:

> So, one thing that I'm careful to tell anybody when we're talking about programming decisions is we can't just make these decisions based on what we want to do or what we think is going to be successful. And it's much more involved than that.

As evident in their Perkins plans and ISM applications, and supported by statements made by participants during interviews, the Comprehensive Local Needs Assessment (CLNA) process and local labor market data guide programming decisions because secondary CTE programs that are a part of a viable career pathway must reflect the employment opportunities in the area. Participant 2 described the thinking that they engage in while evaluating labor market data:

> The first thing you know is, I've got to look at labor market data because I don't want to prepare students for a field that has negative growth. We're actually in the middle of our CLNA process right now, and we were looking through some labor market data. And there's some fields in our area that show negative growth, they don't anticipate having more, they anticipate having less. So, I don't want to set folks up for those positions. I

> want there to be a job market for whatever we're doing. But then, more importantly, I think, even than that is, you have student interest as well.

To illustrate their point about student interest being just as or more important than labor market data in making programming decisions, Participant 2 also shared an anecdote about how they frequently get "dinged" by the State for not offering a program of study aligned with the largest employer in their county. Participant 2 stated that they were getting pressure from the State and this employer to open the program of study that would lead to an entry-level position in this industry. After partnering with the local TCAT, Participant 2 and a leader in this industry teamed up to open the program of study to meet that employer's need. Participant 2 explained:

> We got nobody to sign up. And what I figured out then was, that the problem with that class was, you could take that class and get all their certifications in about 8 months. And you would walk into [an entry-level position] and make the same money as the person who just walked in with no training and experience. So, there was no financial benefit for somebody to go through that. And so, it's a lesson that the [TCAT] president up there and I learned the hard way. I mean, we invested a lot of time, energy, effort, and money to get that going, and it fell flat on its face. So, you've got to have the interest as well as the market data. So, the market, that is just not the only thing you got to consider.

In the case of this anecdote, Participant 2 responded to student interest, or lack thereof, by being, in their words, "smart enough to quit" and find another program that would be more beneficial to the community.

Participant 1 stated that although "it all goes back to labor market data," that "student interest plays a part, of course":

> You know, there could be a program out there that, labor market wise, it makes perfect sense to do it, but if we check interest levels among our students and see that we're just not going to have any enrollment there, then it wouldn't make a lot of sense for us to go full bore into that.

Conversely, Participant 3 gave an example of students being extremely interested in a culinary arts program of study. However, their area does not have the labor market demand to justify this program. Also, if they did choose to offer culinary arts, minimal work-based learning placement options would be available, which illustrated the need to balance student interest with labor market needs. Participant 4 reiterated the need for balancing labor market demand and student interest:

> Any time that we change, add, take away a new program of study, there are several things that we take into consideration like labor market demand, and the first thing, the one that is on the forefront is the interest of the students and what do the students need?

Participants reported gathering information on student interest primarily through surveys and career assessment results.

Responding to Feedback

After initially evaluating the alignment of CTE programs to student interest and local labor market needs, which helps ensure that pathways are relevant and beneficial for the futures of students, industry, and the community, participants employed various strategies to facilitate improvement in their CTE departments. From this point, they began engaging in a continuous cycle of improvement, which involved gathering feedback, assessing pathway effectiveness, and making necessary adjustments. For example, Participant 7 described their continuous

improvement cycle as a way to diagnose problems and identify areas of growth in their career pathways:

> Data is a huge part of our program. We're always tracking as many pieces of information as we can. We do track enrollment, traditional [and] nontraditional enrollment, concentrator status, industry credentials. Because if you have a program where you know, it's like, you got 7 kids in there every semester. Then that's not one that there's a huge, I don't know, attraction to the kids. Why is that? Is it the teacher? Or is it the actual program? What's going on there? You have some teachers who are resistant to doing industry credentials. They just don't see the value in that. So having those conversations with them of like this is how it helps you. It helps the kid, it helps the school system, helping them see that.

Participant 9 also recalled a time in which they had to go through an evaluation process to identify what was negatively impacting their programs and determine a solution:

> Now, we've got work-based learning, the [school-based] enterprise on the inside. And then students going out on the outside and we're going to make a change next year on our work-based learning. Our numbers overall, we're down. And we looked at the data to try to figure out, now, why is that? Why was there such a decrease? And we decided that the [students] that had been doing it were talking and saying, "Hey, you really don't want to do that, you know, you got to do some of this stuff outside, and it's just extra work. And, you know, you don't want to do that." So, to overcome that, my program of study teachers are going to take a really good look at their clientele. They're going to discuss with the students, they're going to say, "I'm going to have an advanced class for you go-getters. And then I'm going to have a standard class for those of you that don't want to

> work so hard." But what [students] don't know is that advanced class is going to be the work-based learning class.

Other approaches to continuous data collection and program evaluation included facilitating focus groups with students, monitoring progress against previously set goals, analyzing CTE concentrator, completer, and follow-up data, and conducting root cause analyses after any strategy implementation, be it successful or unsuccessful.

According to all participants, another form of feedback that drives responsive CTE program offerings comes from evolving business and industry needs and standards, often gathered through advisory committee meetings. Participant 9 explained the importance of considering industry standards:

> Well, I'll listen to the community because our programs are supposed to reflect the needs of the community. So, we listen, my teachers listen to their advisory councils as far as equipment or programs or adding to a program. We always tell [teachers] that, yes, they have their standards that they have to teach, but that's not exclusive, you know. They can add to it. So, whatever they could add to curriculum that would make students more employable, you know, we're always open to that.

Participant 1 shared a story of a community need being the deciding factor when starting a new program of study:

> Within our community, there was, it was a pretty evident need for additional volunteer firemen. And there was a pretty strong push from the community itself. Some organizations within the community, Volunteer Firemen's Association, School Board members, County Commissioners. There were several folks who were very vocally

> supportive of anything we could do to support additional volunteer firefighters in the future. So, we started looking at a fire management services program of study.

Similarly, large welding industries coming into their counties prompted both Participant 8 and Participant 9 to update their welding programs of study. While Participant 8 used grant funding to upgrade the welding shops with welders comparable to industry standards, Participant 9 could not set up welding shops at their high schools due to a lack of space and funding. However, to mitigate this obstacle, Participant 9 and their welding instructors found an innovative solution:

> We purchased virtual welders, welding simulators that operate just exactly like if you were welding. You put on the helmet and there's a screen inside the helmet where you can see what you're welding and the rest of the class can watch it on your big screen TV.

Participant 9 shared that their innovative solution to the lack of proper welding facilities led to industry partners purchasing the same virtual welders too to help train their employees.

Participant 4 shared that, often, industry partners will request that the instructors of the program of study feeding into their specific career pathway provide students with customized training for that industry. Participant 2 said they always honored these requests from industry because "it's all about getting skill sets for kids, so they can take it to the next level." Participant 3 explained that they try to honor industry requests, even if they do not entirely support their strategic planning goals. For example, Participant 3 explained that they are focusing on tier 2 and tier 3 industry credentials in their district, but they also pay for students to earn OSHA 10, a tier 1 certification. Participant 3 stated, "I pay for OSHA 10. The reason I pay for that, because it's not a tier 2 or tier 3 certificate, is because industry has told us they want our kids to have it."

Adapting to Rural Challenges

In addition to responding to industry needs and student interest in making programmatic decisions, all participants provided examples of the importance of flexibility and ingenuity in adapting career pathways to accommodate rural barriers. When adapting CTE programs for the rural context, the obstacles discussed most frequently were geographic isolation, transportation barriers, and lack of local industry. Participants reported that geographic isolation had the largest impact on providing dual enrollment opportunities. Participant 1 stated that for one of the small schools they serve, if "students wanted to be dually enrolled with TCAT, they had to leave and drive about 40 minutes every day to get to the TCAT facility in our county." To mitigate this barrier to early postsecondary opportunities, all participants discussed partnering with their local TCAT to train their CTE instructors to provide dual enrollment opportunities on high school campuses rather than requiring students to travel. Participant 7 explained why they began this partnership with TCAT:

> We want to provide the same opportunity to all of our students. I contacted our TCAT's Vice President and asked if we could put some dual enrollment classes on the high school campus of one of our schools. It would remove the barrier of transportation and proximity if students didn't have to leave their campus. He agreed and we are working to get some classes on their campus.

Participant 2 explained that they have successfully implemented dual enrollment courses on their secondary CTE campus and that "we teach seven programs of study dual enrollment in our building. Our kids don't have to leave and go somewhere else and go to college. They can go to college right here."

Participant 6 and Participant 3 presented another innovative strategy to combat the effect of geographic isolation on early postsecondary opportunities. Rather than having CTE teachers at their schools teach dual enrollment on the high school campus, they provide dual enrollment opportunities virtually. Participant 6 explained that the agriculture teachers at their schools allow students to engage in a virtual agricultural business dual enrollment course while sitting in one of their classrooms as an independent study, even if they are teaching another in-person agriculture class at that time. Similarly, Participant 3 explained that, recently, students showed interest in a dual enrollment program that was not available at their local TCAT, so this participant is currently working with a TCAT in the region that provides this program to develop an online course for students. Participant 5 noted, however, that for virtual options to be effective, a partnership should be formed with others in the school district to ensure all students have technology and broadband access.

All participants lamented that transportation barriers and lack of local industry impeded their ability to provide meaningful work-based learning experiences for students aligned to their chosen career pathway. According to Participant 7:

> Basically, all of the obstacles and barriers that we have are related to being rural and small towns, in that we don't necessarily have a lot of opportunities for kids to participate in every program of study we have as part of, like, work-based learning.

Participant 1 expanded on this commonly shared concern:

> I think the challenge of being a rural CTE Director now is, as we continue to improve in terms of linking students with employers to work with them while they're in high school… In our situation, fortunately, we're not running out of partnerships yet, but there will come a time when the number of additional placements for students that we can pick

> up is limited to… you know… we just don't have any additional business or industry close enough for that to happen.

Two participants described strategies they are implementing to provide transportation for students, including purchasing two CTE vehicles and running a bus to a huge employer nearby for students to work. However, the strategy mentioned by all participants to combat these work-based learning barriers was school-based enterprises. For example, Participant 4 explained that their CTE classrooms are showcase classrooms:

> And those classrooms, they usually have their own work-based learning practicums. And it's usually entrepreneurship. So digital arts or graphic arts, for example, it's a showcase classroom. It's all glass, you can see in, students are sitting on their computers, working on Adobe Creative Cloud. And they're designing logos. They're designing any type of graphics that will go on a t-shirt, a mug, a mouse pad, a keychain, a banner. And so, they design it from the computer all the way up to printing it on one of the machines. And then they actually have a place where they can display, you know, any apparel they do, any product that they create. So, they're doing it from the beginning to the end. So, it's a mini business. And they sell those products at the football games. They sell those products when they have any type of event at the school as a fundraiser.

Several participants mentioned that school-based enterprises were a way to help CTE programs of study be self-sustaining.

All participants also identified, either in interviews or in their planning documents, that shop foreman positions, or advanced-level students helping CTE teachers in their classrooms as teaching assistants, are how they have created opportunities for work-based learning despite barriers.

Also, Participant 7 provided an example of a unique way they have approached work-based learning and alleviated another rural challenge, being understaffed:

> And so, one of the programs we started was a tech crew program. Our district was one-to-one very early on. One of the issues we had was if there was an issue with a computer, you sent it to your tech guy, and you might not get it back for weeks or months or never, and you're without that device. And so, we were just willing to try crazy things. We asked our tech guy to come down and train some of our students on the most common fixes that they had to do. They came down or spent a couple of days with our kids and worked with them. And so, we started a tech crew. If you had a problem, you sent it to them, and if they could fix it, great, you got it back that day or the next day. And if they couldn't, then they would, you know, search online, try to find something that would show them how to do it. And then, if they couldn't fix that, after that, then we would send it to the tech department. But they can fix broken screens. They can run updates. They can troubleshoot. They fix about 95% of all computer issues now. And so, every school in our district, middle school and high school now has a tech crew.

Summary

The theme responsive and adaptive programming is most aligned with RQ2, what systemic changes were associated with the biggest program improvements, and RQ3, how do CTE administrators facilitate CTE programming for the changing local labor market. RQ2 was addressed as participants discussed the impact it made on their districts' CTE programs as they began approaching programming decisions through balancing local labor market needs with student interest and as a continuous cycle of improvement. Additionally, RQ3 was addressed as participants emphasized the importance of continually evaluating and updating CTE programs in

accordance with technological changes, local and regional labor market changes, and input from industry partners.

Interconnectedness of Emergent Themes

This narrative inquiry into how rural CTE administrators expand new career pathways identified the following emergent themes: resilient and visionary leadership, intentional strategic alignment, ecosystem of collaboration, funding opportunities and barriers, and responsive and adaptive programming. Though these emergent themes, or narrative threads, were described in isolation, they appeared across narratives and stories shared by participants as interwoven. As participants told their stories of facilitating career pathways in rural districts, threads of resilience and visionary thinking emerged when discussing creating, improving, sustaining, and adapting viable career pathways. This resilient and visionary leadership was the keystone of developing and implementing intentional strategic alignment, both within and outside the school district. Intentional strategic alignment, however, does not exist in a silo, but rather in an ecosystem of collaboration, which is essential to the implementation of strategic plans. Within these collaborative partnerships, funding opportunities and barriers hold a dual role, acting as both catalysts and inhibitors for innovation, growth, and improvement in CTE programming. Leveraging funding sources, in combination with supportive partnerships, allows for career pathways to stay responsive and adaptive to the changing world. This adaptive programming is continuously refined through a cycle of evaluation, monitoring, and improvement, considering various factors, including student interests, labor market trends, industry standards, and the realities of rural contexts. Altogether, these narrative threads form a cycle of development and growth, showing the interconnectedness of leadership, strategic alignment, collaboration, funding dynamics, and adaptability in shaping future rural career pathways.

Chapter Summary

The purpose and guiding research questions for this narrative inquiry research study were examined in Chapter 4. The demographics of the nine rural CTE administrators who participated in this research study were reviewed. The narrative threads were identified as five emergent themes: resilient and visionary leadership, intentional strategic alignment, ecosystem of collaboration, funding opportunities and barriers, and responsive and adaptive programming. The themes that emerged were found to be interconnected but were discussed independently to allow for a more comprehensive understanding of each theme. This chapter described the emergent themes, or narrative threads that resonated across participants' told stories of expanding career pathways as a rural CTE administrator, using quotations from participant interviews that served as vivid examples of emergent themes. In Chapter 5, the summaries of emergent themes and narratives are presented in connection to existing literature, and recommendations for practice and further research are given.

Chapter 5. Conclusions

The purpose of this narrative study was to investigate how career and technical education administrators facilitated the development of career programs of study in rural secondary settings. Exploring the journeys of CTE administrators, this study sought to better understand the elements of career pathway development and how CTE administrators engage in leadership while transforming rural CTE programs. Developing and improving career pathways in rural communities is a crucial responsibility for CTE administrators because, due to a skilled labor shortage, declining labor force participation rate, rapidly evolving labor market, and the amplification of these trends in rural areas, there is a lack of qualified and certified personnel to fill industry jobs (Davis et al., 2022; Rembert et al., 2021; State Collaborative on Reforming Education, 2023). As a critical partner to workforce development, rural secondary CTE programs can directly impact local economic and community prosperity (Kim et al., 2021; Potts & Pams, 2023; Tennessee Commission on Education Recovery and Innovation, 2022).

The overarching research question for this study was: How do CTE administrators expand new career pathways in rural settings? The supporting questions that guided this inquiry were as follows:

1. How do CTE administrators describe the experience of developing career pathways?
2. What systemic changes were associated with the biggest program improvements?
3. How do CTE administrators facilitate CTE programming for the changing local labor market?
4. How do CTE administrators leverage funding sources to support and sustain the creation of new career pathways?

Stories were collected from nine rural CTE administrators through a first interview session, a follow-up interview session with six of the nine participants, annals, and document reviews to explore CTE administrators' experiences through career pathway design, facilitation, and improvement in the context of rural secondary education. Interwoven throughout these rural CTE transformation stories were narrative threads presented as emergent themes of resilient and visionary leadership, intentional strategic alignment, ecosystem of collaboration, funding opportunities and barriers, and responsive and adaptive programming. These identified themes addressed the four supporting research questions for this narrative inquiry, the alignment of which is shown in Table 8.

Table 8

Alignment of Themes to Research Questions

Themes	RQ1	RQ2	RQ3	RQ4
Resilient and Visionary Leadership	X	X		
Intentional Strategic Alignment		X	X	
Ecosystem of Collaboration	X			
Funding Opportunities and Barriers				X
Responsive and Adaptive Programming		X	X	

Discussion

Research Questions 1

RQ1 was: How do CTE administrators describe the experience of developing career pathways? The themes most aligned to RQ1 were resilient and visionary leadership and ecosystem of collaboration, as developing career pathways were both an intrapersonal and interpersonal experience for participants, respectively.

Resilient and Visionary Leadership

One way in which participants described the experience of developing rural career pathways was as a personal mission, which drove their commitment and vision. Though most did not begin their journey into educational leadership with the intent to be a rural CTE administrator, all participants found themselves deeply invested in their roles as CTE leaders in their rural districts despite encountering numerous obstacles as they entered the profession. Challenges faced by participants, such as the rural challenge of being overburdened with administrative duties, often leave rural administrators feeling ineffective, according to Hansen (2018). However, participants demonstrated a resilient commitment to leading CTE programming, regardless of the frustration, stress, and pressure met along the way, which stemmed from feeling a personal connection to CTE, often reflecting on how the skilled trades had sustained their families for generations. In addition to personal experiences, passion for and commitment to CTE leadership was also fueled by a feeling of responsibility to their rural community in providing pathways for future student success and strengthening the community, a finding supported by descriptions of rural leaders as feeling pressured to do more and be more for their rural communities given by Pendola and Fuller (2018) and Wieczorek and Manard (2018).

A keystone for how participants engaged in CTE leadership, their experiences of developing rural career pathways were steeped with resilience and passion, which inspired the visions they developed for CTE within their districts and communities. All participants viewed CTE as more than just a “Plan B” or an option for students who were not “college material.” Instead, participants believed in the potential for CTE to be an on-ramp to success in both the

postsecondary world and the workforce and embarked on a relentless pursuit of achieving this vision, an important facet of CTE leadership identified by Fleck et al. (2019).

Ecosystem of Collaboration

According to participants, developing rural career pathways was not a solo venture but a collaborative effort, which supports the importance of collaboration in rural education as described by Preston and Barnes (2017), especially as the needs of students continue to change and grow, as described by Azorín (2020). As leading rural school improvement cannot occur in isolation (Andreoli et al., 2020), participants relied on colleagues, stakeholders, and community members to persist through endeavors of CTE improvement and navigate the complexities of rural education, where resources can be scarce and the need for innovative solutions is paramount. District- and school-level leaders were integral in helping implement changes and supporting the CTE vision alongside participants, with the Director of Schools voicing their support and building administrators being the “boots on the ground." Community partnerships played a significant role in the ecosystem of collaboration when participants were working to provide real-world opportunities for students, which is a finding supported by Imperatore and Hyslop’s (2018) framework for high-quality CTE programming. Though participants explained that community partners donated funding or equipment, which helped alleviate funding barriers, the donations they appreciated most were those of time and expertise. By donating their time and expertise, community partnerships became mutually beneficial, such as through work-based learning or industry-specific skill development using a specialized curriculum. Additionally, in a certain CORE region, or a designated group of school systems in a geographic area working collaboratively, the solidarity among participants led to shared knowledge and the development of collective capacity to improve CTE programming, which served to mitigate feelings of

unpreparedness or lack of confidence by new CTE administrators due to the many facets of and specialized knowledge required in CTE leadership (Conrad & Watkins, 2021; Gordon et al., 2019).

Summary

These findings suggest that, when it comes to the experience of developing rural career pathways, CTE administrators navigate the personal and social realms of experience through resilient leadership and collaborative engagement. Their journey was marked by a personal commitment to the mission of CTE, driven by a deep-seated passion for skilled trades and a sense of responsibility towards their rural communities, which creates a foundation for their leadership approach. This intrapersonal experience of leadership was characterized by an unwavering resilience in the face of inevitable rural challenges and a visionary outlook that transcended traditional perceptions of CTE. Also an interpersonal journey, rural CTE administrators realized early in their roles that meaningful development and improvement of career pathways could not be achieved without the support of partners in the district and community. Through dedication, resilience, and partnerships, CTE administrators balanced individual leadership and collective action to share and fulfill the vision for rural CTE programs.

Research Questions 2

RQ2 was: What systemic changes were associated with the biggest program improvements? The themes most aligned to RQ2 were resilient and visionary leadership and intentional strategic alignment, as planning seamless career pathways from K12 to industry in ways that also supported the CTE vision and district goals were critical to CTE program improvement.

Resilient and Visionary Leadership

The systemic changes made by participants that were foundational for any future program improvements were the mindset and culture shift of those involved in CTE programming in their rural districts, which Stearns (2018) identified as necessary in creating effective career pathways. Participants played a pivotal role in changing the perceptions of CTE within their districts, advocating for its importance in preparing all students for success beyond high school. This perceptual shift was essential in garnering support for rural CTE programs, moving away from the traditional academic versus vocational path dichotomy. Additionally, as identified by Fleck et al. (2019) as essential to CTE leadership, participants not only encouraged an innovative growth mindset but modeled it through their creative approaches to rural challenges. In doing so, participants showed a commitment to vision, which inspired others to develop it too. As the shared vision and mindset permeated the system, participants crafted teams of "the right people" to work toward improving CTE programming and career pathways, echoing the findings of Eckert (2019) when describing distributed leadership in rural schools.

Intentional Strategic Alignment

Another systemic change made by participants vital for program improvement was strategically integrating CTE into their rural school districts' broader education systems. As district leaders, participants were integral in spurring a shift from siloed planning to a cohesive approach in which district, school, and CTE goals were not only aligned, but mutually reinforcing. A strategy supported by Advance CTE (n.d.-b), this alignment of goals led to a strategic symbiosis between districts and CTE in which resources could be used more efficiently, accountability metrics could be improved, and student success could be catalyzed in both CTE and non-CTE classrooms. The mutually supportive CTE and district plans, goals, and strategies

also allowed for the vision of ‘CTE for all’ to continue to ripple throughout the district and community because planning moved beyond compliance to a commitment-oriented approach.

Summary

These findings suggest that CTE leadership is paramount in driving systemic changes and CTE program improvements. Transformation within rural districts was catalyzed by CTE administrators who reshaped the mindset toward CTE and integrated CTE goals within the broader goals of their districts. This dual approach facilitated a perceptual shift in which CTE could be viewed as a viable pathway. With CTE administrators working in harmony alongside CTE and district colleagues toward a unified vision, CTE planning efforts became more intentional and strategic, transitioning from siloed compliance to a comprehensive and collaborative approach in which CTE and non-CTE goals reinforced each other. The visionary leadership demonstrated by CTE administrators inspired innovation and a growth mindset within the CTE department, which fostered an environment in which creativity was valued. Additionally, leadership fostered a culture in which strategic planning became a shared endeavor, one that enhanced the efficacy of CTE programs and the district.

Research Question 3

RQ3 was: How do CTE administrators facilitate CTE programming for the changing local labor market? The themes most aligned to RQ3 were intentional strategic alignment and responsive and adaptive programming, as the facilitation of seamless career pathways required alignment to postsecondary offerings and labor market needs in addition to continuous monitoring and evaluation.

Intentional Strategic Alignment

According to participants, CTE administrators strategically and proactively facilitate CTE programs in alignment with postsecondary and employment opportunities in their rural communities and surrounding areas, which was a CTE leadership imperative identified by Heyward (2019). As a P20 education system (Collegiate Edu-Nation, 2021), rural career pathways should be seamless from K12 into employment, with opportunities for postsecondary training and education along the way. Career pathway components, as described by participants, were supported by Haviland and Robbins (2021) and Cielinski (2019). To ensure students select the most appropriate secondary CTE program, career pathways were extended into middle school through career exploration classes and more rigorous career counseling is being developed, and effective individual student planning mechanisms are in place. As students progress through these pathways, opportunities for industry certifications and earning early postsecondary credits have been made possible through articulation agreements, providing students the opportunity to simultaneously earn an associate degree and a high school diploma, which helps mitigate rural barriers. CTE programs were designed to lead to local postsecondary and employment opportunities. However, in understanding the realities of rural areas, including labor shed and geographic isolation, participants aligned career pathways with regional labor markets as well, a strategy impacting rural residential aspirations due to the perception of the availability of employment options (Bernsen et al., 2022; Saw & Agger, 2021). Additionally, participants developed technology-enhanced labs to provide access to students for career investigation beyond the limited local offerings, further mitigating the barrier of geographic isolation when facilitating career awareness and exploration opportunities.

Responsive and Adaptive Programming

In addition to being proactive and strategic in planning career pathways, rural CTE administrators played a crucial role in ensuring CTE programs remain responsive and adaptive to the dynamic local labor markets through continuous evaluation and innovative problem-solving. According to Jocson (2016), Roberts and Grant (2021), and Starrett et al. (2022), for rural CTE programs to be effective place-based workforce development strategies, they must rely on community strengths and be attentive to changes in local industry and the community. To ensure CTE programs adapted to community and student needs, participants began their CTE administrator careers with an initial program evaluation followed by a continuous cycle of assessment, considering industry demands, student interest, and stakeholder feedback. As student interest was vital to program success and sustainability, feedback was gathered through interest surveys, focus groups, and enrollment data. Engaging with advisory committees allowed programming to adapt to changing industry needs, such as equipment used and skills taught, which enhanced the relevance and impact of CTE pathways. Additionally, to meet the unique challenges of rural settings, which impact accessibility to high-quality CTE programming (Kim et al., 2021), CTE administrators facilitated creative solutions to provide students with meaningful opportunities, such as leveraging technology for virtual dual enrollment courses and developing school-based enterprises for work-based learning.

Summary

These findings suggest that, to meet the dynamic needs of the rural labor markets, CTE administrators must facilitate strategic alignment and adaptive programming within career pathways. By intentionally aligning CTE programs from middle school through high school to postsecondary and employment opportunities, participants created career pathways that were

seamless and relevant from K12 through to the workforce. This strategic alignment was complemented by a responsive and adaptive approach to programming made possible through continuous evaluation, stakeholder feedback, and innovative problem-solving, which, in turn, aligned programming to community and student needs. Through strategies such as career exploration, career counseling, and school-based enterprises, CTE administrators navigated the unique challenges of rurality, enhancing the relevance and accessibility of CTE programs and preparing students for successful transitions into life after high school.

Research Question 4

RQ4 was: How do CTE administrators leverage funding sources to support and sustain the creation of new career pathways? The theme most aligned to RQ4 was funding opportunities and barriers, as how CTE administrators approached financial management was essential in harnessing opportunities and overcoming barriers presented by funding or lack thereof.

Funding Opportunities and Barriers

Participants underscored the importance funding played in creating and improving rural career pathways, identifying it as a primary factor. The lack of adequate funding was a significant barrier to facilitating career pathways, as identified by participants and relevant research (Advance CTE, 2017a; Lavalley, 2018), resulting in some CTE programs being stifled or eliminated due to budgetary constraints. Nonetheless, CTE administrators exhibited resilience and creativity in securing alternate funding sources, leveraging partnerships, or managing current grants to enhance CTE programs. ISM grants were viewed as particularly transformative for rural CTE programming, finally providing enough funding for much-needed CTE courses, specialized personnel, capital projects, and equipment upgrades, which enhanced the quality, relevance, and industry alignment of career pathways. However, alongside the opportunities

presented by ISM grants, new barriers were created by managing multiple funding streams, including the decreased amount of time participants could spend supporting CTE teachers and increased grant-related workload. A key consideration of all funding and programming decisions was sustainability, supported by Haviland and Robbins (2021) and Imperatore and Hyslop (2018). To extend current investments beyond the immediate future, CTE administrators relied on TISA funding tiered reimbursements and commitment from the Director of Schools to reinvest CTE-generated funds back into CTE programs, with the goal of long-term viability and success of rural career pathways.

Summary

These findings suggest that rural CTE administrators must understand the intricacies of multiple CTE funding streams and broader educational funding formulas to capitalize on opportunities for and mitigate barriers to rural CTE programs. When supporting and sustaining the creation of new rural career pathways, CTE administrators leveraged innovative strategies and strategic partnerships to maximize the impact of funding and overcome constraints that had historically limited program development. The transformative impact of ISM grants highlighted the role of targeted funding in enabling advancements in CTE programming, from developing new programs to modernizing facilities and equipment. However, though increased funding positively impacted overall CTE programming, it had a perceived negative impact on CTE administrators' abilities to lead efficiently and effectively. Through purposeful financial management and sustainability planning, CTE administrators ensured that the benefits of their improvement efforts extend into the future, laying a foundation for the ongoing viability and success of career pathways for students and their rural communities.

Recommendations for Practice

Throughout the research process and gathering told stories of rural CTE administrators' experiences, recommendations for practice emerged from participants' responses and a review of existing literature. The recommendations are as follows:

- Rural CTE administrators should align leadership practices to that of a resilient and visionary leadership philosophy to navigate the complexities of rural education, inspire innovation, and drive the vision of CTE programming. Fullan's (2020) Framework for Leadership is a lens through which CTE leaders can determine these leadership practices, as this framework attends to the transformative power of leaders exhibiting hope, enthusiasm, and energy while fostering a collective commitment toward a shared vision.
- Rural CTE administrators should have no additional supervisory or administrative duties, as the work of a CTE leader is integral to sustaining career pathways that impact student success and community vitality (Fleck et al., 2019; Gordon et al., 2019). Additionally, CTE administrators have responsibilities, knowledge, and skill requirements beyond the scope of their traditional educational leader counterparts, including understanding the alternative licensure process for CTE instructors, how to market CTE programs, safety and liability of shops and labs, local workforce and economic development, and Perkins V funding (Clark & Cole, 2015; Conrad & Watkins, 2021; Gordon et al., 2019; Harvey et al., 2022). For example, a rural CTE administrator should not also be a district-level supervisor, such as the secondary supervisor, or hold building-level administrative duties outside the scope of CTE, such as schoolwide discipline or attendance. However, observing and supporting CTE teachers would be an appropriate duty as it requires instructional leadership beyond that of the traditional educational leader to not only

support general pedagogy development but also attend to specific needs of CTE teachers, such as industry-alignment, nuances of alternative licensure, and shop safety. District leaders should analyze assigned duties to CTE administrators and limit the scope of responsibilities to provide intentional time to craft, implement, and sustain viable rural career pathways.

- To maintain strong partnerships, rural CTE administrators should not solely rely on community partners as financial donors for CTE programs. Instead, CTE leaders should cultivate expertise in financial management and grant writing to secure and manage diverse funding sources (Clark & Cole, 2015; Fleck et al., 2019).
- Due to the extensive responsibilities of rural CTE administrators (Fleck et al., 2019; Gordon et al., 2019), including managing multiple funding streams and the Perkins planning process, district leadership should ensure CTE leaders are allowed time to complete these. Suggestions from participants included working from home or remotely when needed, hiring CTE-specific personnel to assist with monitoring and budgetary tasks, and restructuring district- or building-level roles.
- Rural district leadership should adopt a strategic planning process in which district, school, and CTE goals are integrated and mutually reinforcing to ensure a cohesive approach and maximize resources. Intentionally aligning strategic plans allows for shared goals and expectations of rigorous academic and technical standards and skills, setting the stage for improved student outcomes (Cushing et al., 2019).
- Working in tandem with their ecosystem of collaboration, rural CTE administrators can use the P20 model to develop seamless career pathways from K12 to the workforce, as students in comprehensive P20 systems engage in educational paths that lead to obtaining

an industry credential or postsecondary degree, preparing them for success in the workforce and as lifelong learners (Collegiate Edu-Nation, 2021; Hawai‘i P-20, 2020; Jacovo & Norton, 2023). As described by participants when developing career pathways, the P20 model similarly relies on postsecondary and community partnerships and includes components such as early career exposure, articulation agreements, and place-based learning.

- Due to the requirements of CTE administrators to have knowledge and skills beyond that of a traditional educational leader (Gordon et al., 2019; Harvey et al., 2022) and the unique barriers related to rurality such as limited industry and geographic isolation (Imperatore, 2016), intentional professional learning to support leadership growth and instructional research-based practices should be provided to rural CTE administrators during onboarding and through their tenure as leaders.

Recommendations for Future Research

The purpose of this narrative study was not to provide definitive answers, but rather to illuminate the stories of rural CTE administrators' experiences of developing and improving career pathways and invite the exploration of future stories (Clandinin, 2020; Kim, 2016). The stories told by participants led to other journeys yet to be uncovered. Recommendations for future research are as follows:

- Replication of studies like this one could be conducted in different rural geographic locations to confirm the findings of this study.
- Comparative research on how CTE administrators facilitate career pathways in rural and urban districts could be conducted to better understand the narrative threads and tensions among a broader demographic of CTE leaders.

- Longitudinal studies on the impact of leadership practices in rural CTE programs could be conducted to examine how different approaches to leadership among CTE administrators influence the development, sustainability, and success of CTE programs in rural areas over time.
- Research could be conducted to better understand the effectiveness of educational leadership programs in preparing leaders for rural CTE administrator positions.
- Research could be conducted to investigate factors that positively or negatively affect resilience in rural CTE administrators.

Chapter Summary

As the school goes, so goes the community.

-Dr. Kim Alexander, Collegiate Edu-Nation

Rural America is a diverse canvas speckled with tight-knit communities that share a common thread, that of education representing community vitality (Sipple et al., 2019). Serving 20% of the nation's school-aged youth, public schools are beacons of hope for the future of rural communities despite disruptive forces felt throughout (Sipple et al., 2019; Showalter et al., 2023). Amid the societal and industry shifts spurred by the Great Recession, COVID-19, and Industry 4.0, in addition to declines in the working-age population and labor force participation rate, rural regions are grappling with skilled labor shortages (Ferguson, 2023; McKinsey, 2022; Rembert et al., 2021). The rural education system, however, can be a powerful workforce development partner and catalyst for economic and community prosperity (Davis et al., 2022; Stockard, 2019). At the nexus of education, economic development, and workforce development, rural CTE programs are an essential, place-based component of seamless career pathways in the education-to-workforce pipeline (Cushing et al., 2019; Roberts & Grant, 2021).

The purpose of this narrative inquiry study was to investigate how CTE administrators facilitated the development of career pathways in rural secondary settings. Nine rural CTE administrators told stories of their journeys into and in the midst of CTE leadership, through which narrative threads were interwoven among narratives. Through the stories told by the nine rural CTE administrators in this study, threads were found across narratives, leading to the identification of the following five themes: (a) resilient and visionary leadership, (b) intentional strategic alignment, (c) ecosystem of collaboration, (d) funding opportunities and barriers, and (e) responsive and adaptive programming. In relation to the supporting research questions, these emergent themes were summarized and compared to the extant literature in this chapter, which informed the recommendations for practice and future research.

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APPENDICES

Appendix A: Interview Guide

Introduction Questions:

- Tell me about your leadership journey and how you got to your current position in CTE.
- Tell me the story of your district's CTE programs.

Interview Guiding Questions:

1. Describe CTE in your district at the time that you realized you were interested in making program changes, either developing new pathways, improving current ones, or both.
2. Walk me through the process of implementing program changes or development. Can you explain your role in the process of implementing the change?
3. Walk me through the process of how you identify and create new rural career pathway opportunities. What factors do you consider?
4. What were the key steps, activities, funding, and partners involved at each stage in the change process?
5. What systems, processes or protocols needed to be changed to enable these improvements? How did you navigate that process?
6. Looking back, which systemic changes were most critical in program changes?
7. Tell me about a time when you encountered obstacles, setbacks, or challenges in developing a new program or pathway in a rural environment. How did you work through those challenges? What did you learn?
8. How did you monitor outcomes associated with the changes and if they were working as you thought they would?
9. How has your approach to program improvement evolved over your tenure as a CTE administrator?
10. What advice would you give to other CTE administrators who want to drive program improvements based on your experiences?

Conclusion:

- Is there anything else about your experiences as a CTE administrator in a rural school district that you think would be helpful for me to know? Do you have anything else you would like to add?

Appendix B: Letter to Request Permission

Dear Director of Schools,

My name is Claire Bass, and I currently serve as the Assistant Principal and CTE building-level administrator at Volunteer High School in Hawkins County School District. I am also a Doctoral Candidate with the Department of Educational Leadership and Policy Analysis at East Tennessee State University. I would like your permission to contact the individual supervising and facilitating CTE programming within your school district to request their participation in a research study.

I am interested in interviewing these individuals to investigate the experiences of CTE administrators in developing CTE programs in rural districts, with the goal of discovering information that will help guide the practice of rural career pathway development and program improvement. Additionally, I hope to help close the policy-to-practice gap in rural settings and identify leadership practices and structures to guide CTE budgets and implementation timelines. Data collection for the study will be in the form of individual interviews via Zoom. Interviews will be scheduled at a time convenient to the participants and will not be scheduled at a time that would interfere with their work responsibilities. Interviews will be audio-recorded so that accurate transcriptions can be produced for data analysis purposes. I will also review relevant documents that are accessible to the public for the purpose of corroboration during data analysis. All interview recordings and transcripts will remain confidential. The school district and participants will remain anonymous throughout the reporting of the study. I will assign pseudonyms for the name of the school district, the participants, and any other identifiable information. Furthermore, no quotations from publicly accessible documents will be used in the study manuscript. Finally, participants will be asked to sign an informed consent document before any data is collected.

If you have any questions or concerns about my request, feel free to contact me at XXXXXX@etsu.edu or XXX-XXX-XXXX. Please respond to this email to express or deny your consent for me to contact the individual.

Thank you so much for your time,

Claire Bass
Doctoral Student
East Tennessee State University

Appendix C: Outreach Letter

Good (morning/afternoon/evening),

My name is Claire Bass, and I currently serve as the Assistant Principal and CTE building-level administrator at Volunteer High School in Church Hill, Tennessee. I am also a Doctoral Candidate with the Department of Educational Leadership and Policy Analysis at East Tennessee State University (ETSU) conducting a research study about rural CTE administrators. I am conducting a research study that investigates the experiences of CTE administrators in developing CTE programs in rural districts, with the goal of discovering information that will help guide the practice of career pathway development and program improvement.

I am looking for leaders who have been CTE administrators in their rural school districts for at least 3 years, and you were referred or identified as someone who would be ideal for my research. This study involves two interviews, which will be scheduled for up to two hours to allow for ample time to wrap up the conversation. I will share the results of my study with you upon completion and your confidentiality will be strictly maintained. The interviews will take place at a date and time that is most convenient to you, via Zoom. Please consider participating. Participation is voluntary. If you have any questions, please contact me at XXXXXX@etsu.edu or XXX-XXX-XXXX.

Thank you so much for your consideration,

Claire Bass
Doctoral Student
East Tennessee State University

VITA

CLAIRE BASS

Education:	Ed.D. Educational Leadership, East Tennessee State University, Johnson City, Tennessee, 2024
	M.A. Elementary & Secondary School Counseling, East Tennessee State University, Johnson City, Tennessee, 2013
	B.S. Psychology, The University of Alabama, Tuscaloosa, Alabama, 2011
Professional Experience:	Assistant Principal (CTE), Volunteer High School, Church Hill, Tennessee, 2022-Present
	Counselor Leader, Hawkins County Schools, Rogersville, Tennessee, 2021-2022
	Elementary School Counselor, Church Hill Elementary School, Church Hill, Tennessee, 2020-2022
	Elementary School Counselor, Joseph Rogers Primary, Rogersville, Tennessee, 2016-2019
	Elementary School Counselor, Coopertown Elementary School, Springfield, Tennessee, 2014-2016
Licensure and Certifications:	Beginning Administrator PreK-12 (442)
	Supervisor of Attendance (094)
	School Counselor PreK-12 (487)
	Trauma-Informed Teaching and Learning Micro-credential
	School Counselor Leadership ASCA Specialist Certification

School Counselor Data ASCA Specialist Certification

Legal & Ethical ASCA Specialist Certification

Professional Presentations:

Bass, C., & Hughes, C. (2023). Accountability for all: Grading for success. Presentation for Learning Together Day, Niswonger Foundation, Kingsport, Tennessee.

Rhoton, S., & Bass, C. (2023). Implementing a work-based learning continuum. Presentation for Principal Study Council, Niswonger Foundation, Tennessee.

Bass, C. (2022). Building a cohesive school counseling program through MTSS & data. Presentation for Hawkins County School Counseling Collaborative Professional Development, Rogersville, Tennessee.

Bass, C. (2022). RTI2B: The road to tier 1 implementation & integration with MTSS. Presentation for Church Hill Elementary School Professional Development, Church Hill, Tennessee.

Bass, C. (2019). Building strong brains and understanding ACEs. Presentation for Hawkins County Schools Professional Development Day, Rogersville, Tennessee.

Bass, C. (2019). Understanding and responding to challenging behavior. Presentation at the Kindergarten Readiness Conference, Hawkins County Schools, Rogersville, Tennessee.