8-2023

The Relationship Between Career Choice and Indecision Within the Career and Technical Education Pathway Model

Zak A. Konakis
Utah State University

THE RELATIONSHIP BETWEEN CAREER CHOICE AND INDECISION WITHIN THE CAREER AND TECHNICAL EDUCATION PATHWAY MODEL

by

Zak A. Konakis

A dissertation submitted in partial
fulfillment of the requirements for the degree

of

DOCTOR OF PHILOSOPHY

in

Career and Technical Education

Approved:

Michael L. Pate, Ph.D. Major Professor	Gary Straquadine, Ph.D. Committee Member
Bruce Miller, Ph.D. Committee Member	Rebecca G. Lawver, Ph.D. Committee Member
Lacee Boschetto, Ph.D. Committee Member	D. Richard Cutler, Ph.D. Vice Provost College of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

2023

ABSTRACT

The Relationship Between Career Choice and Indecision Within the Career and Technical Education Pathway Model

by

Zak A. Konakis, Master of Public Health

Utah State University, 2023

Major Professor: Dr. Michael L. Pate
Department: Applied Sciences, Technology, and Education

The United States is shifting the public education model toward one that favors increasing skill complexity to lead students into future careers. It is uncertain, however, if these changes are benefiting students and having the desired impact on the future workforce. Utilizing the Swiss and German dual apprenticeship and work-based learning model, Utah is attempting to bring more practical and hands-on experiential learning opportunities to students across the state. This study intended to understand if these changes are accomplishing the intended result in students in rural eastern Utah.

Furthermore, the study found that students who engage in early experiential learning opportunities in these rural counties were more likely to begin planning their career decisions. Individual career pathways were not a significant indicator of career decision-making ability for rural Utah students. However, the perceived difficulty and awareness of career choice anxiety was the most significant indicator for career-choice dysfunction within the model.

Future research will expand the research group and identify if characteristics indicate Carbon and Emery County school districts or are symptomatic across the secondary education system. Additional research on ameliorating choice anxiety will be undertaken with the intention of positive intervention strategies that lead to confident career choices.

(151 pages)

PUBLIC ABSTRACT

The Relationship Between Career Choice and Indecision Within the Career and Technical Education Pathway Model

Zak A. Konakis

The United States is shifting the public education model toward one that favors increasing skill complexity to lead students into future careers. It is uncertain, however, if these changes are benefiting students and having the desired impact on the future workforce. Utilizing the Swiss and German dual apprenticeship and work-based learning model, Utah is attempting to bring more practical and hands-on experiential learning opportunities to students across the state. This study intended to understand if these changes are accomplishing the intended result in students in rural eastern Utah.

Furthermore, the study found that students who engage in early experiential learning opportunities in these rural counties were more likely to begin planning their career decisions. Individual career pathways were not a significant indicator of career decision-making ability for rural Utah students. However, the perceived difficulty and awareness of career choice anxiety was the most significant indicator for career-choice dysfunction within the model.

Future research will expand the research group and identify if characteristics indicate Carbon and Emery County school districts or are symptomatic across the secondary education system. Additional research on ameliorating choice anxiety will be

undertaken with the intention of positive intervention strategies that lead to confident career choices.

ACKNOWLEDGMENTS

I would like to express my gratitude and acknowledge the following individuals who have played a significant role in completing this dissertation. This endeavor would not have been possible without their considerable support, encouragement, and guidance.

First and foremost, I am eternally grateful to my wife, Liz. Your love, understanding, and endless patience have been recognized by all and appreciated by me throughout this journey. You have stood by my side, offering unwavering support, and the time spent reading my work back aloud to me has been crucial. Your sacrifices and understanding have been instrumental in allowing me to devote countless hours to this research.

To my three children, Asher, Quin, and Milo, you have brought immense joy and inspiration into my life. Thank you for understanding when I prioritized my work above everything else, but still reminded me of the need to find balance. I love you.

I would like to extend my heartfelt appreciation to my parents. Your unconditional love, guidance, and sacrifices have been the foundation upon which I have built my academic pursuits. You instilled in me a thirst for knowledge and a strong work ethic that has been invaluable throughout this journey. I am forever grateful for your unwavering belief in me.

I am deeply indebted to my graduate advisor, Michael Pate, for their invaluable guidance and mentorship. Dr. Pate's expertise, dedication, and passion for research and students have shaped my academic and professional development. His encouragement, insightful feedback, and willingness to invest his considerable time and expertise have been instrumental in shaping the direction of this dissertation. I am forever impressed by

Dr. Pate's ability to say the exact thing I needed to hear to bring clarity to issues. I am truly fortunate to have had the opportunity to work under your supervision.

I would like to express my sincere gratitude to my dissertation committee for their valuable contributions and feedback. Dr. Straquadine, Dr. Miller, Dr. Lawver, and Dr. Boschetto have provided invaluable guidance, constructive criticism, and insightful suggestions, significantly enriching this research. Their expertise and diverse perspectives have broadened my understanding and helped shape the outcome of this work. I am grateful for their time, expertise, and commitment to my academic and personal growth.

I would also like to thank my colleagues and friends who have supported and encouraged me throughout this journey. Namely, Dr. Cano, Dr. Lamoreaux, and Dr. Warnick, your camaraderie, intellectual discussions, endless drafts and corrections, and shared experiences have been a constant source of inspiration. Your friendship and support have made the long hours of research and writing more manageable, and I am thankful for the opportunities I have had to learn from you.

Zak A. Konakis

CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Career and Technical Education

Consistent shifting of priorities and educational goals, necessitated by legislative action, has frustrated teachers and industry partners with the ubiquitous task of preparing a qualified workforce that keeps pace with changing technological demands (Pilz, 2007). These frustrations are felt not only by liberal arts education in arts and science but also in technical education, workforce training, and apprenticeship models. This frustration was apparent with the insertion of regulatory oversight precipitating changes in European apprenticeship models during the early 2000s. The lack of skilled workers, the cumbersome processes of governmental agencies, and their effects on educational institutions that followed these changes led many employers to abandon the apprenticeship model altogether.

Similarly, America is experiencing analogous frustrations to their European counterparts (Christo-Baker, Sindone, & Roper, 2017). Companies have sought a nimbler process that immediately impacts workforce development by utilizing business-specific processes and equipment. As a result, many companies train their employees internally and have opted to hire curriculum specialists, develop internal certificates, and customize training, so employees have a clear pathway within the organization. These shifts in industry's activities have led to a decrease in student participation across traditional post-

secondary educational institutions, which have been historically slow to react to industry demands for career-ready employees.

"College and Career Readiness" is a phrase that has been touted in America for over 20 years (Camara, 2013). However, problematically, the terms that the literature defines as "College and Career Ready" were focused primarily on college enrollment and persistence. Rather than the more difficult metric for what defines a secondary student as "career ready" (Camara, 2013). However, this shift in career and college consciousness began in 1990, as Utah required all secondary students to complete a Technology, Life, and Career (TLC) course before graduation. This course was updated into the current College and Career Awareness (CCA) offering for middle school students. These courses intend to emphasize the job-essential skills and tasks in the workplace and define human-skills for continued success within their community (Utah State Board of Education, 2022). Students explore pathways, clusters, and career goals within the standards. Many districts supported the collaboration between district counselors and course faculty and the degree and career exploration of this course; however, some rural districts lacked the personnel to deliver the content in this manner.

However, in implementation, CCA focus has become more fixated on college preparation and degree planning over the more challenging task of defining career preparation. For example, sample programs are proposed based on prior academic success once a student determines a career path through various career screenings. Students are advised on their path through education that aligns with the fourth strand of the CCA curriculum (Utah State Board of Education, 2022). Degree planning practices are helpful when emphasizing academic success measurements such as first to second-

year college retention, GPA, and time to completion of a degree. However, these outcomes are indicators for determining student attainment of educational standards but give little evidence to the ability of a student to perform career-essential skills.

The lack of Career and Technical Education standards directed at specific career-readiness skills leaves many students to assume that college readiness and career readiness are synonymous (Roberts & Grant, 2021). For many researchers, this is more convenient as career readiness has not been defined as a measurable construct in many academic areas (Camara, 2013). A career is an occupation with intended permanence and mobility within the field. When speaking on career readiness, skill and competence building will serve a student for their intended trajectory. The recent push for the inclusion of problem-based and project-based learning into the CCA curriculum has aimed to solve this issue and embed critical thinking, teamwork, and grounded skill development. However, this curriculum shift has highlighted some of the teacher's knowledge gaps and has failed to meet the requisite rigor within the class.

Additionally, secondary teachers must continually develop additional curricula and skills in response to educational standards legislation. These policies result in a continued shift away from career competencies and became more entrenched in measurable outcomes. For example, seventh-grade teachers must meet the Utah State Board of Education (USBE) standards, centered around the instruction of the College and Career Awareness (CCA) course, which are attached to their individual and school performance measures (Edgerton & Desimone, 2018). Unfortunately, many of these standards do not associate well with career readiness, resulting in a drift away from graduates' skill development and job readiness. By default, college readiness became the

focus. This continual drift has resulted in the frustration of industry partners looking for competent employees.

When defining college and career readiness, Conley (2012) has proposed a four key system for assessing a student's college and career readiness: (1) key cognitive strategies, (2) key content knowledge, (3) key transition knowledge and skills, and (4) key learning skills and techniques. Conley has simplified this into think, know, act, and go, emphasizing problem formulation, technical skills, technical knowledge, learning techniques, and role and identity. As it stands, using career readiness as embedded into college readiness leaves ambiguity for many. However, shifting away from dichotomous thinking about choosing between a career or post-secondary education is needed. Instead, moving toward a continuum approach of degree options and post-secondary training for career options may help to bridge the gap for many individuals looking at their school-to-work transitions (Roberts & Grant, 2021).

The Pathway Model

The paradigm guiding Secondary Career and Technical Education includes career exploration, concentration, and completion/commitment. At the surface level, the underlying framework was built upon Vygotsky's scaffolding (Vygotsky & Cole, 1978) as it guides students from novice to proficient by increasing task complexity. Students developed technical skills in various career clusters with little cross-pollination between the concentrations. Such practice leads to a more logical pathway for those who commit to completing the different requirements for each curriculum focus.

The renewal of the Carl D. Perkins Vocational Education Act in 2018 has driven the USBE's current effort to emphasize secondary technical education and performance metrics. These metrics are developed to align pathway completion along the three stages of career exploration: (1) explorer, (2) concentrator, and (3) completer.

For educators to document and designate a student as a Career and Technical Education Completer, students must complete pre-defined coursework within an area of study. The base framework for the pathway model along these three levels of career development is a scaffolding structure of increasing complexity, as laid out by Lev Vygotsky (Vygotsky & Cole, 1978). As an option for pathway completion, all students may complete an industry internship with local businesses supervising and sponsoring the student's learning objectives. An internship has less communicated structure and perception of permanence. Still, internships allow students a valuable look into the practical application of skills which may help in the decision regarding the observed career field. Equally guiding Career and Technical Education's focus is career decision development utilizing this three-stage approach which links pathway and experiential learning opportunities as a bridge into industry. However, for educators in rural districts, internship opportunities are less available and viewed as more cumbersome by reporting demands from USBE. These demands often lead to students coordinating work-based learning experiences for themselves and without direction, structure, or accountability.

Early introduction of internships and experiential learning into the student's educational process helps to increase learning adaptability. It accounts for a sense of workforce preparation has been reported regardless of whether their internship was in the field of their intended future career (Arthur-Mensah, 2015). The introduction of work-

based learning opportunities may help further students' career decisions, with a National Association of College and Employers report stating that 68% of students strongly agreed that, based on their work experience, they would want a career in that industry (2022).

Apprenticeships for Career Readiness

One of the purposes of an apprenticeship is to shorten the window for training and to give apprentices the necessary skills for a career within a given industry which creates the certification of students through industry standards (Pilz, 2007). Apprenticeship and professional licensure are rooted in medieval guilds from the 13th and 14th centuries (Larkin, 2017). These early attempts to control or regulate training were carried out primarily by trade and medical unions. The roots of vocational education in America begin with the Puritans in the 17th century, who viewed skill acquisition as a divine mandate (Gordon, 2014).

Schools were built in the United States by the local churches and roaming schoolmasters or designed as boarding schools for affluent families (Kober, 2007). Organized at the local level and based on the English Statute of Artificers model of 1562, oversight of apprenticeships was placed with the state rather than feudal trade guilds. The regulation focused on three significant traits of apprenticeship that kept it separate from servitude: (1) receiving training from the masters, (2) an education in the common branches, and (3) an emphasis on ethics.

These traits became the foundation of apprenticeship practice, and this model was implemented throughout the early colonies of the United States (Gordon, 2014). There has been a division within this practice where the emphasis on common branches and

ethics has overridden practical training. Conversely, vocational education almost exclusively emphasizes skill development with embedded human-skill development. Over time, apprenticeships declined with the industrial age and the free public primary school movement.

With the educational movement within the industrial age, the practice of apprenticeship began to move away from the formal education process for all classes of people. Both voluntary and involuntary apprenticeships were utilized in the formative stages of America, doubling as a method of education and as a welfare component for orphans and children of low-income families. These youth often found themselves placed in involuntary apprenticeships. Businesspeople and masters would assume responsibility for these wards of the state as they oversaw their occupational training and daily needs (Barlow, 1967).

Apprenticeships declined as new manufacturing processes began during the industrial revolution and with free public primary education institutions. The 1937 Fitzgerald Act further contributed to the decline of apprenticeships by allocating control and oversight at the national level while aligning training to homogenous standards with input from trade unions. However, by 1940, states began taking back control of apprenticeships as they enacted formative apprenticeship regulations (Gordon, 2014). At the same time, state governments began regulating standards for medical professions such as physicians, dentists, and pharmacists.

The development of different oversight committees initiated the American movement from formal apprenticeships (master to apprentice) to informal apprenticeships where classroom learning precedes practical externships and on-the-job

hours training components as a pathway to licensure. This governmental movement has increased occupations requiring licensure from 5% in the 1950s to over 25% in 2015 (Department of the Treasury Office of Economic Policy, 2015).

While trade unions exist today and have varying levels of impact in select regions throughout the country, many of these organizations no longer oversee apprenticeships. Government agencies such as Utah's Department of Professional Licensing (UDOPL) have begun to provide policy oversight for apprenticeship programming. UDOPL has the authority to oversee Utah licensing to align and provide concessions and reciprocity for licenses earned outside the state. Additionally, UDOPL has strict on-the-job guidelines with multiple lanes for the accreditation of educational institutions. However, there is still a lack of clarity regarding technical definitions of apprenticeship and best practices in formal training. To be successful, it would be essential to evaluate the readiness of students to participate in apprenticeships.

Apprenticeship programs offer options for progressing directly through industry and learning on-the-job experience or expediting the journey by enrolling in a program certified by the state, which combines training from an educational institution with on-the-job training from an employer to reduce the time to completion. For example, in Utah, apprentice electricians may complete 8,000 hours of apprentice hours in tandem with didactic classroom instruction as their pathway for licensure. Conversely, students also have the option to complete 16,000 hours of documented hours of required training to receive the ability to test for their Journeyman Electrician's License (Utah Department of Professional Licensing, 2021). With this understanding of systemic parameters,

education may help position students to enter the workforce faster for those who commit earlier to their career trajectory.

The state of Florida has focused on career-centered high schools using the Florida Career and Professional Education Act (CAPE) funding. CAPE emphasizes industry-centered certifications as the focus of the CTE curriculum and concentrates on pathways within each career cluster (State of Florida Legislation, 2007). Utah has yet to take this step but has begun similar models through the Talent Ready Apprenticeship concepts sponsored by specific industry partners in each region. As Utah continues to create these new areas for apprenticeship and dual enrollment model, the attention to student interest, industry willingness, educational support, and student ability greatly deserves critical consideration.

Reimagining Utah Apprenticeships

Heriot (2016) stated that historically a shift in America's economy focused on the four-year liberal arts education model reduced the number of apprenticeship opportunities. Additionally, the cumbersome process of becoming certified in various licensure fields has significantly decreased apprenticeship participation. To combat this trend, champions of this educational approach are attempting to become more flexible for learners, educators, and employers.

Political pressure and pandemic-mediated supply shortages in the United States began shifting focus back to the repatriation of American goods. Equally, many companies are attempting to move their product manufacturing back to the United States for humanitarian purposes and economic stability. This movement has increased the need

for a trained manufacturing and other skilled trades workforce. Technical education providers, secondary institutions, post-secondary schools, and various governing bodies have scrambled to meet the need and advance the standards of workforce education to improve the model and to be more accommodating to industry.

In 2017, Utah's Governor's Office of Economic Opportunity (GoUtah) partnered with state universities, colleges, technical education schools, and the Department of Workforce Services (DWS) to test a restructuring of the apprenticeship model. This approach differed from the traditional model as the certifying bodies do not have a strict number of hours requirement for completion, government-mediated certification or required licensure. These new Talent Ready apprenticeships are largely industry and educationally led through private-public partnerships. The shift from Carnegie Units, defined by in-seat instruction time, toward focusing on competency (skill-mastery) and job readiness is a notable change for partnering educational institutions involved in these industry-led apprenticeships.

In the State of Utah, the GoUtah office has invested time and resources into the public-private partnership among institutions of higher learning, secondary education, and private businesses to create new apprenticeship models for American businesses. This work is based on the Swiss and German models of apprenticeship, which have undergone similar restructuring in the recent past (Talent Ready Utah, 2021). The new apprenticeship-style opportunities are still largely untested, and the efficacy of the new approaches domestically still needs to be evaluated.

Suppose the Utah apprenticeship model is to press forward with intended changes. In that case, a continued need for calibration, beginning with stronger public-private

partnerships and more flexibility from institutions of higher learning, is required to satisfy industry needs. Similar to apprenticeships in the 17th century, which provided upward-class mobility for low-income families (Gordon, 2014), the needs of students who participated in workforce training will influence the apprenticeship structure. For example, financial aid eligibility accommodation is necessary for participation in any employee training program (Davidson & Blankenship, 2017). Specifically, accommodations are necessary for students from low socioeconomic and rural areas for the future success of apprenticeship and technical education programs. The Utah Apprenticeship Model may be more cumbersome for rural districts due to a lack of economic resources, industry partnerships, and qualified instruction.

The Dual Model for Rural Education

Utah is currently exploring a shift of closer public-private partnerships. Thus, seeking to encourage students into apprenticeship and a dual-model of education. The dual, in this instance, refers to the training at both an educational authority and within the partnering businesses. When tested across cultures the Swiss and German apprenticeship models still perform well and have positive net-cost benefits to employers (Wolter & Mühlemann, 2015). In the dual model it is well accepted that this apprenticeship model helps to ease transitions between school and work for involved students (Wolter & Ryan, 2011). However, recent studies have indicated that those lacking in structure and coordination across cultures do not reflect the same benefit for students (Horn, 2016). This cultural gap highlights the need for thoughtful consideration of apprenticeship coordination and structure between academic institutions, businesses, and governmental

agencies as all parties coordinate oversight of these programs. Additionally, the benefits of commuting to these programs and the intended benefits to businesses and students should be emphasized from the outset of conversations (Wolter & Mühlemann, 2015).

As students determine their intended career exploration phases and the need for students to understand their values and interests, a more prescriptive career decision-making model needs to be adopted (Gati & Kulcsár, 2021). Prescriptive models of career decision maintain a more pragmatic view of the decision-making process and help to facilitate decisions by in-depth exploration to verify the suitability of alternatives (Gati, 2013). This approach is contrary to the exploration proposed by the pathway model in which the intended in-depth exploration does not occur until the completion phase of the pathway. By allowing for earlier in-depth exploration options, such as internship and work-based learning, students can explore the aspects of desired environment, interests, and alternatives without expecting of full career-commitment (Gati, 2013). By rooting the dual model into the secondary education system and offering the benefit of apprenticeship and work-based learning opportunities before the final year of high school for many students, educational leaders may have an opportunity to help influence the decision making process of students who, in rural settings have been historically slower to commit to a future career when compared to urban students. (Roberts & Grant, 2021).

Issues in Rural Education

Students isolated in rural districts may have a higher degree of career indecision versus more metropolitan or urban areas due to the lack of resources. This strain on resources impacts a student's ability to reach the completion stage within career readiness

as outlined by Utah Career and Technical Education programming, thereby reducing students' readiness for participation within the new Utah Apprenticeship model. Students with high career indecision could impact apprenticeship outcome measures by leaving the program early and failing to reach credentialing status. These students failing to complete burdens district resources, industry partners, and instructional staff as students struggle to make career decisions (Gati, Krausz, & Osipow, 1996).

Student-centered instruction within workforce development requires a greater emphasis placed on the personal development of the pupil and their demonstration of requisite competency. Previous research suggests that the requisite complexity and attention to the perceived difficulty in completing course tasks is insufficient (Lewin, 1980). As individuals begin exploring their post-secondary and career options, the desire for complex career choices coupled with high wages and social standing tend to be the default career choices for many students – although often unrealistic.

However, many students may not understand the scope of work, the time necessary to fulfill this goal or their ability to complete the work. Students who do not have access to adequate information resources due to the lack of professions in these rural communities may lack an understanding of the objectives each of these professions undertake on a regular operating basis.

The parallel between districts and the resources necessary to develop students could be pointed toward the financial resources available to school districts for work towards the career development of adolescent students into maturity. This approach has shown effect across interest categories as measured against Holland's (1959) RIASEC categories (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional).

These interest category choices reflect the models in which the interests in things decrease or remain constant, and the shift into interests in other people increases for those in select categories (Hoff, Briley, Wee, & Rounds, 2018). These measures indicate those personalities drawn to individual interests and career types as students begin to imitate their ideas of adulthood and gain more understanding about the adults available to influence them.

Students in rural districts could miss the opportunity to complete an apprenticeship as the school counseling resources and knowledge of opportunities may not be present at all district schools. When students begin choosing their intended careers, their initial thoughts about choosing a profession initiates a series of calibrations and then shifts. Once this destabilization occurs, a tentative commitment to another profession is selected as the student develops. The ability to recognize, identify and comprehend themselves and their environment becomes a more prominent role in the student's career counseling and personal development process. Once ability, value, and feasibility become more apparent, the individual commits to a career based on a realistic choice, and the individual begins to pursue a career with intent, direction, and planning.

Christensen, et al., (2009) highlighted the need for further development and training as some teachers in the secondary technical education career-readiness classes were taught by educators lacking the requisite content-area knowledge. Additional supports and curriculum development may only go so far to support these students in the knowledge acquisition aspect of career development as interests may not be offered at the schools due to lack of funding or interests may only be niche in comparison to the rest of the student body.

Students from lower-income families have a higher likelihood of also experiencing delays in career choice development (Ginzberg, Ginsburg, Axelrod, & Herma, 1951). Many of those lower-income students questioned in 1951 gave more thought to personal interest than their personal values. This delay in career choice development can be compared to students from families of higher income groups. Those students from more affluent families were able to have a more committed career choice from a younger age. They were more advanced in the career choice groupings and evaluating capacities for the ability to commit to a given career. This highlights the research need to identify variables associated with students' career indecision to strategically focus efforts to sustain the Utah Apprenticeship Model in rural counties.

Carbon and Emery Counties

Carbon and Emery counties in the central-eastern region of Utah have traditionally been heavily reliant on coal mining and energy generation occupations as their economic drivers. After a series of mine closures over the last two decades, mining currently accounts for 12.62% of employment in Emery and 23.26% in Carbon (Utah Department of Workforce Services, 2022). Other economic drivers in each respective community are government jobs, trade, transport and utilities, and education/health/social services. Each county is still heavily reliant on power generation, energy production, and the mining sectors to drive the current economic needs of the region. However, as these areas of natural resources begin to deplete, regulations become more restrictive, and coal reserves deplete or become economically not viable for the companies to retrieve, a look to the future of these rural economies becomes of concern.

Utah's Carbon and Emery counties are often referred to as Castle Country and are identified heavily with one another, as these counties share multiple community resources. Cultural and economic ties illustrate the interwoven nature of the two counties. The three county high schools are Carbon High School in Carbon County and Green River High School and Emery High School, both in Emery County. Carbon High School enrollment in the 2019-2020 school year was 986, with 37% of the students being identified as economically disadvantaged by USBE (Utah State Board of Education, 2022). In the same time frame, Emery High reported a student population of 654, with 45% of their student population being identified by State reports as economically disadvantaged. Green River High reported a student population of 78, with 69% of students classified as economically disadvantaged (Utah State Board of Education, 2022).

A close tie economically and historically exists between the two counties comprising Utah's central-eastern region. The need for economic diversification and growth opportunities within these counties illustrates the necessity for educational shifts to help bridge the skill gap for students in these rural Utah communities. The Utah apprenticeship restructure has a unique opportunity to begin within secondary career and technical education in providing more relevant career paths for students where before they were designed as terminal at the associate level. The identification of "booster" programs by Fuller and Sigelman (2017) highlights areas of opportunity and growth within the University system. Traditionally, technical education students have been offered a path into higher education but with no clear path to a four-year degree -- apart from an applied bachelor's degree of science -- and no direct pathway into graduate studies. Lack of mentorship, school counseling support, teacher subject-competence, and

family life are all aspects that play into the complexity of decision resources. Those in these rural districts may have a challenging time facing each area of concern.

As technical education continues the pathway implementation of the Perkin's funding model, workforce training will continue to emphasize work-based learning opportunities. Simultaneously, as Utah's eastern region attempts economic diversification, the need for workforce training and a technical education model that is responsive to student interests and business needs will mean more robust pathways and partnerships between the multiple stakeholder institutions. As a result, apprenticeship models for secondary education students participating in technical education pathways may help to set students on a trajectory of career choice earlier with practical workforce training, experience, and student modeling across these eastern Utah districts.

Need for the Research

Considerable research (Barak & Friedkes, 1981; Osipow, Carney, and Barak, 1976; Slaney, 1980; Gati, Krausz, & Osipow, 1996) developed job decision instruments to help indecisive students find a career path that suits their abilities, interests, and values (Alexander, Macht, & Karon, 1959). Students can have various levels of indecision which contribute to a lack of career commitment on levels deeper than simply a lack of information (Osipow et al., 1976; Gati et al., 1996). Developing experiential learning opportunities may help to create higher levels of career decisions in exploring students who are still be unprepared to commit to career opportunities (Esters & Retallick, 2013). Embedding practical and hands on learning for students in the exploration phases of

career decision will help bolster the decision-making process and lead to a greater sense of career certainty.

The proposed Career and Technical Education Student Development Framework needs to align with the intention to shift career indecision by emphasizing pathways and experiential learning opportunities to serve as a bridge to industry. This framework, however, takes time and resources for educational bodies to keep pace with the proposed changes. To identify the factors that impact sustained implementation of the Utah Apprenticeship model, research is needed to assess students' level of career indecision and variables impacting career decisions. Results from this study could help identify specific interventions for confident career commitments.

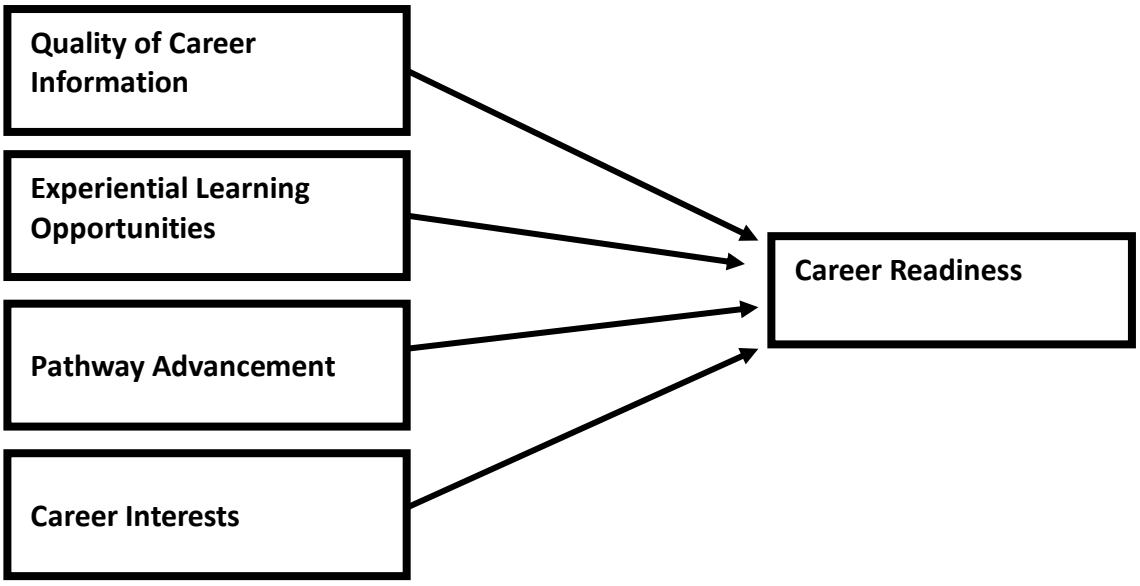
Conceptual Framework

Environmental factors greatly impact students' transition into future careers as they progress through their education. Outside factors influence student decisions, compounding the difficulty in committing to future occupational aspirations and increasing their relative indecision levels. Figure 1 highlights the different external factors contributing constructs of career readiness. As laid out by Conley's (2012) framework for college and career readiness, the critical factors will have various aspects within each of these constructs that contribute to the intended interventions in building higher levels of career commitment. Strategies to help develop student's problem-solving, information-locating abilities, and connecting to relevant resources. Tailoring strategies and interventions to where students operate within their career decision process and helping to identify appropriate career fields require personnel resources many rural

districts may not have the resources to meet. Access to structured experiential learning activities may affect students' ability to commit to the decision within the career field. Additional hindrances proposed by the model reflect the student who may not progress past the exploration phase within their pathway development and stay chronically uncommitted to the pathway model. Research indicates that within the district schools most students fail to reach pathway completion or concentration during their secondary academic career.

Figure 1

Conceptual Framework modeling of the Different Constructs contributing to Student's Career Readiness.



Summary

Apprenticeships have seen many iterations over time in how governmental agencies, trade unions, or public-private partnerships manage the process. Additionally, apprenticeships have differed in the United States in name with formal apprenticeships being hours-based or time-gated and other informal approaches being less restrictive in training guidelines and identified through credentials and certifications. However, with such a wealth of information and strategies, many view the application of apprenticeships as a concrete and inflexible process rather than iterative and in need of revitalization. If the apprenticeship model restructure continues, the changes must be intentional, relevant, and linked to the changing needs of students. As we target new policies and structures around workforce training, these changes must empower students to make career choices more efficiently for their future. Identifying areas impacting student career indecision will be vital to restructuring of apprenticeship models and designing future models of apprenticeship that match the needs of students in the affected programs.

Problem Statement

Career and Technical Education (CTE) is using the pathway model and targeted apprenticeships to revitalize CTE and develop a skilled workforce. The current body of literature does not adequately address student career decision-making prior to participation in a CTE pathway and apprenticeship program. Unless CTE leaders better understand the phenomenon of student career-decision making and participation in CTE

pathways and apprenticeship programs, they may miss making significant impacts in the workforce.

Purpose

The purpose of this study was to determine the factors that impact secondary CTE students' career indecision levels (e.g., Lack of Readiness, Lack of Information, Inconsistent Information). Further, this study focused on the extent to which variables such as county of residence and career interest impact career decision making, and to develop a conceptual framework of career readiness for targeted interventions.

Objectives

To guide the stated purpose, the following research objectives were to:

1. Examine the factor structure of career readiness constructs.
2. Determine the differences between Carbon and Emery County secondary students (9-12th grade) and their level of career indecision.
3. Determine the difference between participants residing in, Carbon and Emery counties and their level of career indecision.
4. Determine the differences in career indecision between Carbon and Emery students that have defined career interests and Carbon and Emery students that do not.
5. Determine the effect of work-based learning on career indecision.
6. Develop a predictive model for student career indecision.

CHAPTER 2

REVIEW OF LITERATURE

Utah has six competing stakeholders attempting to restructure workforce education: (1) federal governmental agencies, (2) the State Department of Workforce Services, (3) universities, (4) technical colleges, (5) The Utah State Board of Education, and (6) industries. As restructuring continues, it appears advantageous first to assess the interest inventories of the students and generate a baseline understanding of the current secondary and early post-secondary students as we begin shifting policy and curriculum to meet an end that still needs to be defined. As we examine the apprenticeship standards for the future, it is currently unclear whether the policies and guidelines are adequate for Utah's apprenticeship education program.

As students move through the current secondary educational system, the changes in structure to align more closely with industry and post-secondary education are a move in the direction of a stackable skills acquisition model. The model of apprenticeship still serves as a connection between workforce preparation and career training. In 1951 Eli Ginzberg and colleagues indicated that apprenticeship "helps to illustrate the relation which must perforce exist between how people prepare for work and the adjustment which they make to work" (p. 4). However, the problem stands that it is unclear whether the present career and technical education model prepares and informs students adequately to facilitate commitment to desired careers and assist in making decisions about their future.

Using behavioral and motivation theory literature, the theoretical framework for this study focused on the decision-making process and pathways to help identify potential

barriers, individual capacity and needed support in the decision process. Utilizing theories of Self-Efficacy (Bandura, 1997), Cognitive Dissonance (Festinger, 1957), and Lewin's planned approach to change (Lewin, 1947), the study aimed to demonstrate a baseline measurement of student's level of career certainty in rural districts prior to the implementation of new structured pathways and the proposals for targeted intervention as the competing stakeholders continue their intended restructures.

Models of Decision and Career Discernment

Various models for decision-making exist to predict favorable general health outcomes, ameliorate cognitive dissonance (Hilton, 1962) model solutions for economic woes (Edwards, 1954), or to help gain and predict social acceptance within society (Lewin, Dembo, Festinger, & Sears, 1944). Each of these decision-based model utilizes methods from disparate disciplines and situations. However, each model varies only slightly in application and has been contextually applied for each respective discipline (Feather, 1959). For example, aspirational behavior (Lewin, Dembo, Festinger, & Sears, 1944) is utilized with goal setting in the levels of aspirational situations in which a more socially desirable outcome can be discerned. The variance between these decision models rests within measuring the subjective probability of success (Feather, 1959). Each model seeks to determine the participant's ability to achieve their intended goal and help predict their future success based on the subjective levels of the person's ability to achieve their goal.

Edwards' Subjective Expected Utility model (1954, 1955) sources from economics and relates to developed research regarding decision theory within the

economics discipline. With the use of these various areas of study, Feather (1959) aimed to show convergence within his model of probability and decision under uncertainty. Feather's work showed the mathematical techniques to discern the decision within each model and relate the minor differences between subjective levels of uncertainty rather than risk. With the work of these multiple fields, decisions and behavior change found their root in contemporary literature to help assess and describe the motivations and models in which individuals make their decisions.

A career decision is a significant life choice that has far-reaching ramifications in other areas of life apart from occupation. These models can be reviewed, adapted, and applied, in general terms, to career decision-making. As each model seeks to help determine and predict behavior, the attitude and identification of potential barriers within the participants determine the appropriate intervention between each group. Hilton (1962) illustrates the need for individuals during their decision processes to resolve personal cognitive dissonance and restructure their concepts of self. As individuals seek to make life choices, an internal test of self is undertaken where the requisite threshold for information about the decision and personal inventories must be met.

If there is disharmony between a decision and personal inventories, then further investigation and easing the discomfort must occur before future decisions are made. It is this internal conflict in which many students are making their career decisions. Many begin by accessing information levels and perception of self with career fit. This constant state of calibration is highlighted across career decision literature, with various models of career commitment finding multiple stages and variances in career decision processes (Ginzberg et al., 1951).

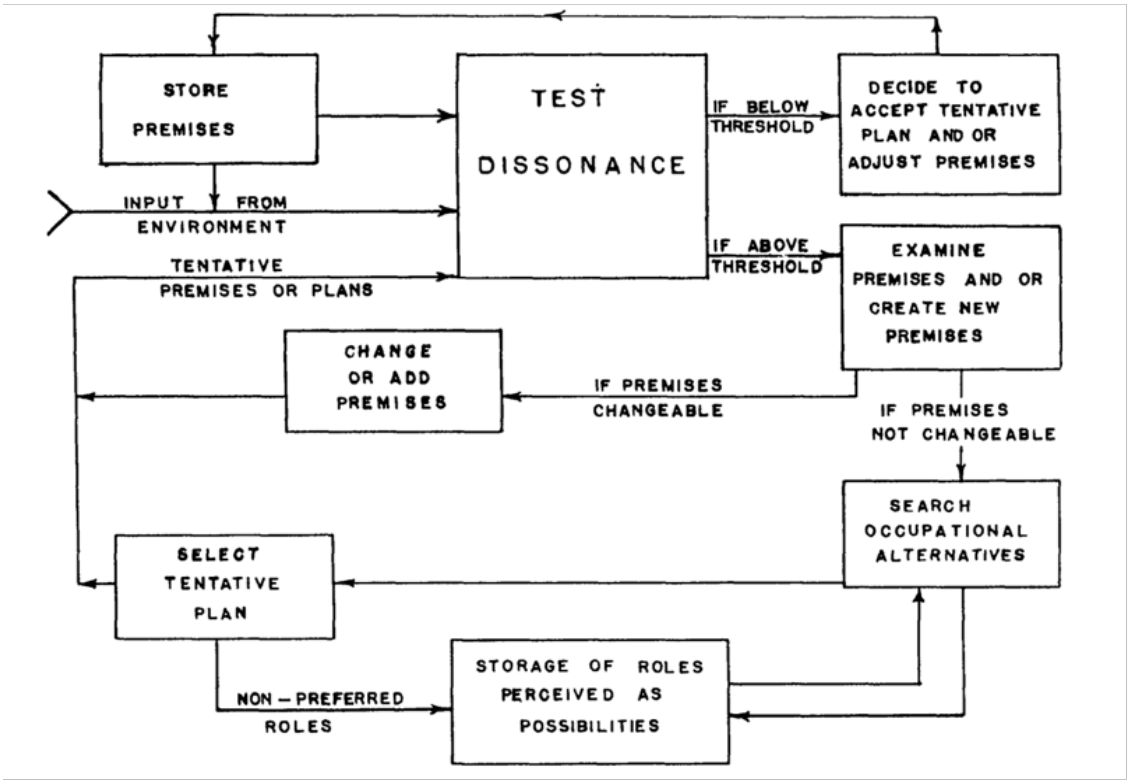
Super's (1980) development model highlights the natural phenomenon of individuals transitioning through career decisions as maturity and developmental milestones are met. However, it is embedded within these milestones that a person was limited in their ability to reliably make these decisions in a manner that is at pace with other similar groups. Ginzberg (1951) highlights those from low-income groups as suffering from delayed development in this manner. The theoretical framework guiding this study was rooted in the amelioration of cognitive dissonance and the choices made due to personal assumptions and information testing that results from individual decisions. As each student weighs their likelihood of success within a career, these choices must be tested and calibrated before a commitment can be made.

Cognitive Dissonance

As a theoretical framework, the resolution of cognitive dissonance as a means for decision-making is a base assumption of this study. This assumption is coupled with the complexity of goals as illustrated in Lewin's (1947) models, and subsequent work will be the underlying framework for this study. As a means for decision making, the individual must have a complex desire to meet their internal need for value, integrated with the information that helps to inform those decisions. As illustrated in Figure 2, individuals must have an informed stance that meets the needs of their subjective decision threshold. Suppose there is an instance where the threshold is not met, and the individual's assessment does not favor the given decision. In that case, internal premises must be changed or the need for a reliable alternative must be sought.

Figure 2

Flow Chart Demonstrating the Decision Process for the Reduction of Cognitive Dissonance



As individuals attempt to gain information about themselves and their desired occupations, there are a series of assumptions about their intended career, cultural beliefs, and assumptions about the self that must also be resolved before a sustained commitment can be made. This process will be highlighted as the career decision process, which is comprised of three states: (1) fantasy, (2) tentative, and (3) realistic. As individuals understand more about the world, occupations, and themselves, they can make more reliable and calibrated decisions about what areas are more appropriate for their abilities, preferences, and values.

Models of decision are beneficial and have utility when assessing issues with elevated levels of complexity. Still, for the scope and purpose of this study, the Lewin and Tolman Cognitive theories and post-Lewenian theoretical models will be utilized as the base framework for decision-making and theories. As the base assumption, cognitive theories posit that behavior change is induced by reinforcements influencing expectations, thoughts, hypotheses, and associated mental processes.

Feather's research (1959) examines behavior in choice situations where alternative paths have subjective probabilities of attainment, and the decision outcome is not concrete. As a result, Feather's work highlighted the subjective probability, which has been incorporated into each model and left for individuals to determine the correct course of action for themselves. The ability of educators to help students raise subjective levels of certainty for decision outcome confidence can help to increase the likelihood of a decision being made. Furthermore, identifying students' processes within the uncertainty stage and perceived decision barriers may help expedite individual decision processes.

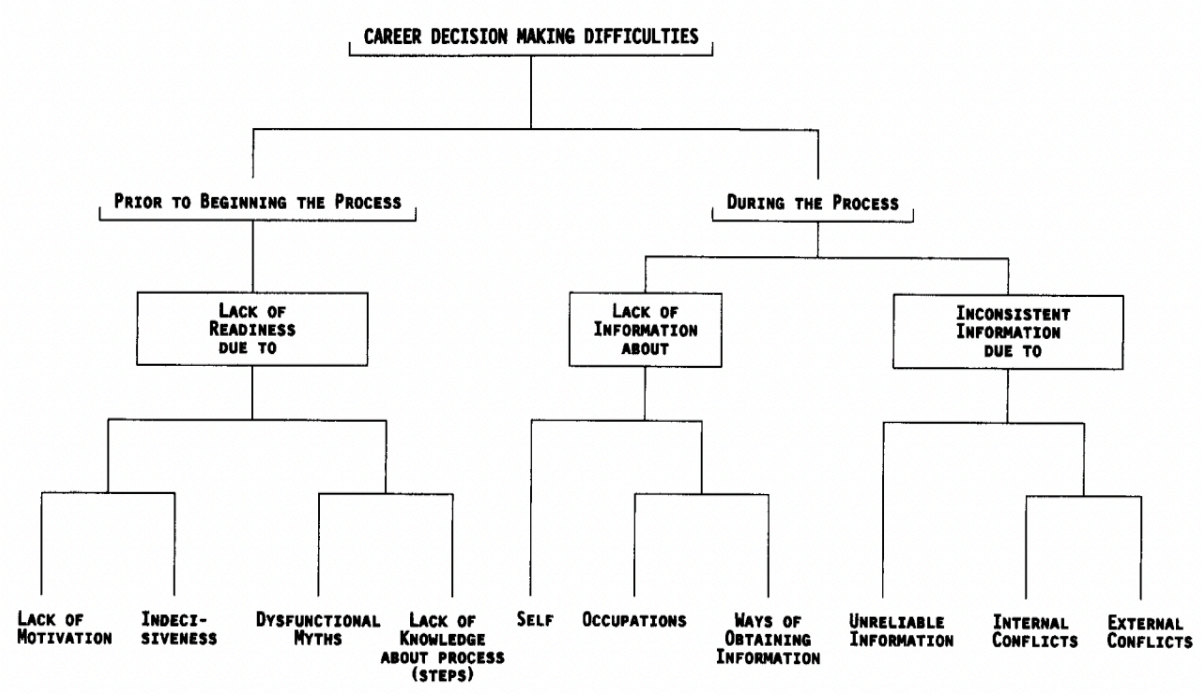
Career Decision-Making Difficulties Questionnaire

The Career Decision-Making Difficulties Questionnaire (CDDQ) (Gati, Krausz, & Osipow, 1996) is an empirical scale to locate the causes of difficulties an individual may experience when making a career decision. These difficulties may delay the beginning of the career decision-making process, halt the process before a decision is made or lead to a less-than-optimal decision (Stoltz & Barclay, 2019). Based on a taxonomy of difficulties derived from decision-making theory (see Figure 3), the CDDQ provides a total score with information about an individual's overall level of career

indecision (Gati, Krausz, & Osipow, 1996). Within the underlying framework of the CDDQ, there is general support for Super's Development Model (1980), emphasizing the life stages that an individual will pass through considering personal contexts. These are the general life stages and roles individuals may seek as they continue through life.

Figure 3

The Initial Theoretical Taxonomy of Career Decision-Making Difficulties



The instrument is comprised of 34 questions on a nine-point scale. Each item on the scale measures one of ten separate difficulty categories from three distinct constructs. The three constructs (1) lack of readiness, (2) lack of information, and (3) inconsistent information, provide necessary information on beneficial resources and interventions for those experiencing uncertainty at different stages of their process. Questions 7 and 12 act

as validity items on the scale. The CDDQ is scored by deriving the mean of the ten difficulty areas. The three cluster areas are derived by their construct area and then finding the mean score of each cluster. Scores of the two validity items are not assessed in the total score of the CDDQ.

Career Decision-Making Difficulties Questionnaire Sub-Categories

The 10 sub-categories comprising the CDDQ's 3 clusters correspond to the lack of readiness, knowledge, and conflicting information within the three main constructs. The lack of readiness construct consists of three sub-categories: (1) lack of motivation which highlights the lack of willingness to make decisions. (2) general indecisiveness indicates difficulty in making decisions. (3) dysfunctional beliefs posit a dissonance toward decision-making processes and unreasonable expectations.

The lack of information cluster is comprised of four sub-categories which highlight a lack of information about: (1) the career decision-making process, which reflects a deficiency in making wise decisions and the steps necessary to make critical decisions. (2) Lack of information about oneself that a person feels they are unsure of personal preference, vocational interests, abilities, or skill. (3) A lack of knowledge of occupations and majors which highlights a lack of awareness of relevant opportunities and career pathways. (4) Lack of information about ways of obtaining additional information indicates a person is unaware of different resources available to them and how to access these information resources.

The Inconsistent information cluster contains three sub-categories: (1) unreliable information indicates a person feels they conflict with information about themselves or

the occupations they wish to pursue. (2) Internal conflicts point to an internal struggle with a person compromising or committing to a career pathway or training that they do not have an interest in. (3) External conflicts point to an individual committing to a career which does not please those they trust or whose opinions they value.

Internal consistency and reliability of the CDDQ is very high with a Cronbach's alpha of 0.95 (Gati, Krausz, & Osipow, 1996). Other research has reported similar findings across cultures with studies across the United States and Israel. Additional tests of construct validity have been conducted with measure's against the Career Certainty Scale which was in part utilizing the two-sided approach of the relationship between certainty and indecision of previous research (Osipow S. H., Carney, Winer, Yanico, & Koschier, 1976) with high correlation (r = .77) on the indecision items within the scale (Osipow & Gati, 1998). The initial creation of the CDS was for a modular system to promote self-counseling about career indecision. To assess a student's level of indecision, it is beneficial to understand barriers they are facing and to provide resources and intervention that is contextualized to the individual student's dissonance.

Identifying areas where a person may be lacking in essential support and delivering a tailored intervention may prove beneficial for the individual. However, this process is cumbersome to resources across the student's support network. As educators understand and identify these potential barriers within their students, it is possible to begin pointed interventions for greater levels of career commitment (Gati, Krausz, & Osipow, 1996).

It has been proposed that within each of these sub-categories exists specific interventions for the remediation of decision difficulty (Rochat, 2019). For instance,

within the sub items that create the sub-category of lack of motivation, Rochat indicates the use of motivational interviewing and the rules of change by Miller and Rollnick (2013) as the proposed intervention strategy for the survey participant. By subdividing each of the ten sub-categories into proposed intervention strategies, the opportunity for targeted intervention becomes easier for school counseling professionals to focus resources to student need.

Social Cognitive Theory and Career Decision

Social-cognitive theories assume that the learning culture is built to move students into more profound understanding as a byproduct of the culture and the student's role in shaping it. However, it is being shown that there are further clarifications to be made when deciding on appropriate career goals. Ginzberg's team (1951) theorized that a person must resolve certain indecision aspects before committing to career choices (p. 51). These indecision aspects were:

(1) The aspect of self which includes the capacities, interests, goals, values, and time perspectives.

(2) The aspect of reality composed of tangibles about the career itself: educational requirements, conditions governing entrance to the field, workplace environment, and rewards for work performance. Rewards may include social standing within the community, family and class standards that are inherent with work and income.

(3) The aspect of the role of key persons, such as parents, teachers, and friends.

Each student is caught up in an internal personal battle between these aspects; however, much of the time in recruitment efforts is spent on information surrounding the salary or earning potential of a career field. This is a small portion of the aspect of self that must be addressed before a person can fully commit to a career decision. Students' ability to gauge the day-to-day tasks are also an area of concern as assumptions about general fields are made and the reality of the scope of work is called into question. Key persons and role models are the final piece within these aspects and having the intimate knowledge of work performed and required abilities are also an opportunity within the career development field.

Decision Within Development

It has been argued that career indecision is a natural aspect of human development and deciding on a career is one of the key developmental milestones for students entering adulthood (Savickas, 2002; Super, Savickas, Super, 1996, Super, 1969). As students prepare to transition into the next life stage away from adolescence and into the establishment stage outlined in Super's (1980) development model, students are understandably experiencing the growing pains and uncertainty of this natural cycle (Hoff et al., 2018). To help contextualize their current predicament, students learn and actively create cognitive structures that determine their concepts of self and the environment in which they are immersed (McEntire, 1992). Super (1969) labeled this as the formation stage whereby adolescents begin to acknowledge the world as something separate from themselves. During this creation process, a version of the individual is created and is held to the scrutiny of individual choice and environment. As the

individual tests this version of themselves, the created self must be changed in accordance with the information given and incorporated. This developmental process leads to shifts away from the fantasy stages of career decision in which soft commitments are made to fields that are outside of the individual's ability.

During their time in secondary and early post-secondary education, students begin to take more risks and help define a meaningful role in their environment. During this stage of career decision translation, students begin to identify with adult role models who serve as avatars for either the encompassing version of self (full identification) or as an avenue to discover other aspects of themselves previously unknown (Super, 1969). Moreover, this transition can last up to ten years and is not a linear process (Ginzberg et al., 1951).

Conversely, while Super has expressed the limitations of this theory, Zytowski (1965) also highlights the avoidance behavior of individuals leading to indecision. As a person experiences the stress associated with the area of indecision, they have the tendency to avoid that discomfort. They will undertake activities to help distract or delay the resolution of their indecision. This avoidance is a natural occurrence as those who do not wish to move through the development cycle will reach a state of arrested development. However, easing this transition into other areas must be encouraged. Eli Ginzberg's team (1951) illustrates that those in most need of career development are also delayed in their career decision processes.

Eli Ginzberg and colleagues (1951) indicate three periods of occupational choice: periods of fantasy, tentative, and realistic choices. This is highly reflected in the later model by Super (1969). In the fantasy stage of career commitment, the individual is

controlled by the wish to be an adult, and the ideas that permeate their perception of adulthood control this phase. In the tentative phase, the understanding of self-discipline and maturation begins to calibrate the career choices, and an initial rejection of the first choice is committed. Upon realistic decisions, there is a stage of specification that is reached. However, it is not to the rejection of all other choices but as a clear path to their intended end. Even among Ph.D. students, their specialization was secondary to their primary objective of teaching or researching at the college level. They viewed their work as a means to an end which researchers argue was the most realistic career choice (Ginzberg, et al., 1951).

Ginzberg's research argues that a career is a developmental process, not a singular choice. However, career commitment is a commitment to the structure as the functions are secondary to the choice. Those who wish to be college professors, in the case of Ginzberg's illustration, chose the route to Ph.D. as a secondary choice to their primary goal; their initial goal carried them through the other obstacles on the way to their primary objective. Students seeking to make informed career decisions may need further calibration from those around them. Yet, finding the appropriate information reservoirs may prove difficult.

Savickas (2002) points to career choice and development as a process informed by the school, family, physical environment, and cultural components. The work environment present during different stages of a person's development informs their social cues and cultural background that permeate into the characteristics of other aspects of the community. Savickas uses construction as an example within the context of the framework in which work links the individual to the community. Indecision is a natural

process of development from adolescence into adulthood. It is the balancing of various levels of social governance by key mentors within the community and the individual's self-perception on their ability, interests, values, and time that help guide them into deeper levels of commitment.

Decision and Valence

The cultural pull for students to declare specific majors may influence student choice toward more socially desirable goals (Lewin, 1936) (Lewin, 1946). This pull toward more socially desirable goals is referred to in the literature as valence. Students choose a career path that will increase social favor due to their status and the perceived difficulty in attaining that occupation or goal. That, in turn, is a more rewarding goal for many students to pursue. Many students begin college with the intention of career aspirations such as law and medical school which are both career paths with a higher level of social standing.

Conversely, other areas of study that are traditionally thought of as less complex or traditionally are discouraged by the cultural -- such as trades labor, manufacturing, and apprenticeship education. Ginzberg et al., (1951) posited the potential for labor shortages in the emerging American economy as an unintended consequence of this shift. The United States has felt the consequences of this skills gap and is now working to remedy the situation. Currently, there is a proposed restructure of the apprenticeship framework and attempts to change public perception. Considerable marketing and attention are being paid to the social standing of trades and traditional blue-collar occupations. While traditionally being encouraged for students of lower-academic ability, these occupations

have begun informing students and parents about the earning potential of these occupations.

However, it is unknown if students with separate career interests have a higher decision score predicting their readiness for career commitment. The parallel between students who choose to work in fields of more socially desirable careers of perceived complexity rather than those who choose to work in fields of less cultural valence could push the personal development of the adolescent students into maturity, which has shown effect across interest categories as measured against Holland's (1997) RIASEC categories (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). These interest category choices reflect the models in which the interests in things decrease or remain constant, and the shift into interests in other people increases for those in select categories (Hoff, Briley, Wee, & Rounds, 2018). These measures are indicative of those personalities being more drawn to certain interests and career types as students begin to imitate their ideas of adulthood and gain more understanding about the adults around them.

Students with greater interests in the more grounded sciences may show a more static career decision score from an earlier age than those with a more social grounding. As the interest in people grows as the student matures, the pull for different career commitments may be more pronounced later than those wishing to work with more manual trades or engineering-type fields that focus on things rather than people (Hoff, Briley, Wee, & Rounds, 2018).

Summary

Students with intended career paths that are more traditionally venerated within the culture may find more certainty in career-choices. Valence that pushes students into career choices perceived as more complex and harder to attain becomes more desirable to students but may not indicate a realistic choice for that individual for a myriad of reasons. Career clusters that favor these careers may indicate higher levels of certainty and support. However, those students may not achieve the final stages of commitment. Students with calibrated expectations and a greater understanding of self may be more prepared for their future with resources provided that not only inform them of the career choice, but also are more informed about their personal preferences and values that will ensure success within their intended career choice.

Career certainty may, in turn, be a matter of developmental processes facilitated by maturity and the elimination of perceived barriers and cognitive dissonance within the individual. As students gain experience, knowledge, and a deeper understanding of self and personal preference, their ability to make informed choices about their future take shape in more realistic and meaningful ways. These transitions may be more readily facilitated by an educational system that is poised to act on these developmental milestones and equipped to inform and provide opportunities for experiences beyond the classroom.

In the early years of apprenticeship, it was viewed as an avenue for upward mobility for the economically disadvantaged (Gordon, 2014). However, with the recent reports by Fuller and Sigelman (2017) which proposes an expansion of apprenticeships into industries and competencies that have been traditionally thought in the traditional

education paradigm. Identifying opportunity for students to view apprenticeship and experiential learning in a new light as many of the career pathways traditionally excluded for four-year degree tracks may benefit from restructure and reimagining.

As Utah prepares new choices and begins weighing options that align with the western-European models of apprenticeship and career choices, it may become more beneficial to understand the choices which are made at an earlier developmental phase may not be the most realistic. Yet, we must recognize it will also help to determine their trajectory and information resources that are available along the way to begin making more informed decisions and experiences along the way that will determine future successes. Rural school districts will continue to lag when compared to their more metropolitan and affluent communities as resources and trained professionals have easier access to young talent that are proximal to their operational facilities. However, to deliver quality education to areas that are in need, then the investigation of apprenticeship models and higher participation of Utah State University and industry in the secondary educational experience may prove to be more beneficial for these students in reaching career decision before the end of their secondary educational experience.

CHAPTER 3

METHODS

Target Region

This study's participants were students located in the rural Utah counties of Carbon and Emery. All associated school districts were named follow the counties and the demography of each of the counties varied in the form of rural. According to the Utah State Board of Education (USBE) school profile data, Green River High School, located southern Emery County, had a total student enrollment (grades 9 to 12) of 78. Similarly, according to the same database, Carbon High reported a total student population of 986, and Emery High reported an enrollment of 654 (Utah State Board of Education, 2022). Data was requested and received from the Southeastern Utah Perkins Consortium that represents Carbon, Emery, Grand, and San Juan Counties whose normal function as a consortium was to conduct needs assessment data and strategic planning feedback from students, districts, and community stakeholders.

Carbon and Northern Emery counties have a distinct culture based on tradition and linked by energy occupations and coal extraction. Recently the local governments homogenized their tourism and economic development efforts to diversify from fossil fuel dependent economies. Tourism, agriculture, and the national parks located in proximity to Southern Emery and Green River drive the economic structure.

Survey Timing and Participants

Perkins, a federal technical education expansion funding source, requires annual needs assessment data for future funding. The needs assessment data was collected by the consortium from students sampled across the Carbon and Emery County school districts of Utah. During career-exploration events during the Fall and Winter months of 2022 and 2023, with permission from the instrument author, students were given the Career Decision-Making Difficulty Questionnaire (CDDQ) through an electronic survey at career day (Gati, Krausz, & Osipow, 1996). The participating students ranged from freshmen to seniors in high schools within Carbon and Emery school districts. These southeastern Utah schools were sampled on separate days in the Fall and Winter months. Emery High School and Green River High School were both sampled on the same day in the winter of 2023 and the Carbon High School sample was collected in November 2022.

These data were collected as part of the Perkin's consortium data and reporting efforts that contributed to future comprehensive local needs assessments. The purpose of the data was for strategic planning in future application phases for Perkin's funding through the USBE as part of the national technical education funding model. Data was collected with no personal identifying data as part of the questionnaire through the Qualtrics system. Data collected by the consortium were given to representative school districts in Carbon and Emery. For this study, permission to use the data was requested from the Carbon and Emery school districts. Additionally, permission was sought from the Perkin's consortium representatives for the southeast region who was integral parts in the data collection. Additionally, IRB secondary data exemption was requested for this study.

Research Design

Kerlinger, as cited in Johnson and Christensen (2019) has stated that non-experimental, cross-sectional studies are appropriate for study design for educational purposes. The purpose of the cross-sectional approach is to offer a snapshot in time for the characteristics of participants. This design met the descriptive aim of this research as no variables were manipulated and descriptive data were collected. This study focused primarily on the current levels of indecision for students who were coming through Utah's rural secondary schools. Fiscal Year 23 data was requested from local school boards and educational authorities for data that was being collected in support of the Southeast Consortium Comprehensive Needs Assessment for the Carl D. Perkin's funding as assessed by USBE.

Questions regarding school of attendance, grade level, and career interests based on the fifteen career pathway groups were assessed for the students in addition to the Career Decision-Making Difficulty Scale (CDDQ). The assessment tested the proposed career readiness model and assessed individual variables against the CDDQ. This helped to identify and determine levels of indecision and indecision sub-categories in each of the representative groups and areas of career interest for underlying relationships of career indecision.

Assumptions

Initial assumptions of this study were the measurements of certain skills that are viewed as more industry attuned and were valued as higher within many of the technology fields. However, many of the students' attitudes still valued culture led trends

of favoring higher education and four-year degrees as preferential for many technical positions. Additional assumptions were couched within the construct that student participation was representative of the students within the region. A large, responding sample was expected. However, the target was not a census of the region due to absences and other student activities that may occurred during the collection time and the cross-sectional nature of the study.

Limitations

Limitations of this study were of time and scope. An analysis for potential gaps in current curricular shifts helped to identify areas neglected in pedagogy but did not aim to show causal factors for the disconnect.

The study was a cross-sectional descriptive study with data that was gathered on a single date within each of the school districts. The students that were absent from the activity or neglected to complete the survey were not represented within the data.

Sampling Technique

Due to practical and ethical constraints, a random sample was not utilized in this study. However, a representative accessible sample was taken from a population of participants who attended the school sponsored career fair activities during the 2021-2022 academic year. Given limited access opportunities with this population, this sampling technique offered a cost-effective and efficient method for collecting descriptive data for this study. This approach is still a viable approach as the study's

purpose is to assess the levels for these students and not to generalize on the broader population (Johnson & Christensen, 2019). Additional supporting and demographic information were extracted from the Utah State Board of Education's annual Carl D. Perkins report which collected student enrollment and programs of study. A survey containing a nine-point scale survey and supporting regional, career-pathway participation, and internship participation was digitally distributed through the Qualtrics platform to collect student responses to the instrument and district samples. Survey links were provided by the school administrators and by scannable QR codes which was coded to lead directly to the Qualtrics survey and provided to the students within the classroom for students who preferred mobile devices or lacked access to a computer. Additional data on pathway participation and completion was pre-existent within the rural districts and additional supporting reports were requested of the USBE state office. Much of the data is up to date and was incorporated into the Southeastern consortium's Carl D. Perkin's application. Carbon and Emery County data were essential for this study.

Variables

Variables of interest within this study were students' relative level of career certainty and indecision as assessed by the Career Decision-Making Difficulty Questionnaire (CDDQ) (Gati, Krausz, & Osipow, 1996). Dependent variables within the study included student grade level and the interaction of scores generated by the CDDS, district of residence (Carbon or Emery County), student career interests related to their overall scores on both measures, and previous participation in work-based learning opportunities. The independent variable of this study was the school district counties.

Instrument

Instrument questions were adapted from the Career Decision-Making Difficulty Scale (CDDQ) (Gati, Krausz, & Osipow, 1996) constructed to measure career indecision along various factors. Utilizing a nine-point scale, students were asked to identify their level of career preparedness, interests in fields, previous planning into career choices, and information confidence. The 34-question instrument assessed 3 separate constructs and 10 different factors with questions 7 and 12 acting as validity items within the questionnaire. To measure career preparation and planning, Osipow's theory (1976) for initial measures of career certainty was utilized.

Materials

All survey information, copies, and other items necessary for the study existed only in digital format. No additional materials were necessary for the completion of this project. No incentives were provided to students for the completion of the survey or for participation in this study.

Procedure

Existing secondary data was requested from the local school districts across the southeast. The local stakeholders were required to complete a Perkin's local comprehensive needs assessments and local applications. Additional data was required for efficacy reporting to the state office. The secondary instrument utilized in this study measured student's career interests, decidedness, attitudes, and course desires for the next

two years. Students were given these surveys as part of the needs assessment for the school districts and access to data was authorized prior the commencement of the study. Letters of consent were obtained from relevant county stakeholder Superintendents and consortium representatives. The Southeast consortium utilized Itamar Gati's Career Decision Difficulty-Making Difficulty Scale as the framework for the needs assessment questionnaire. This decision was due to the validity and reliability for prediction and indication on levels of career commitment for students and baseline for evaluation of future career intervention programs (Gati, Krausz, & Osipow, 1996).

Data were gathered during the Fall and Winter of 2022 through the Qualtrics survey system using a QR code for each school within the districts. Each school/district was assigned a unique survey portal to provide a private set of data independent from the other districts within the consortium. Students were given the opportunity to complete the form at the beginning of the school day which was designated as a specific career exploration day. Industry partners from each school district area provided various in-person presentations about the available careers in their respective regions. The goals were to create student awareness about the opportunities and required trainings necessary to work in each of the industry partner's businesses. Students were asked to complete the survey before receiving instructions for the rest of the day and before attending an industry partner's presentation.

Data was gathered from the online Qualtrics site and further analysis was conducted through the SPSS statistical software.

Analysis

Table 1

Variables of Interest Within the Study and Collected Data for Measurement

Variables of Interest	Data Measured
Pathway progress and development	Student grade level and scores of CDDQ
School access and resources	School district (Carbon or Emery) scores of CDDQ
Career interests and cluster	Student career interests by USBE Pathway Clusters
Work-based learning participation	Grouping variable for work-based learning participants
Advancement in career decision	Scores generated by career decision-making difficulty questionnaire (CDDQ)

SPSS was the primary tool used in data analysis for this study and was used to calculate the multiple linear regression analysis for final model creation. SPSS Statistics software was also utilized to calculate descriptive analysis, independent t-tests, analysis of variance (ANOVA), and exploratory factor analysis (EFA). These tests were used to address the types of data collected and the research objective for each. Table 1 outlines the data needed for the study and the correlating variable of interest.

Instrument Scoring

Students participating in the study completed CDDQ questionnaires. From those responses, various scales were generated by combining subcategories from the CDDQ

and certainty scales of Career Decision models, which comprise the total scoring rubric for the data. CDDQ total scores were formed as a grand mean from the ten subcategories that compose the instrument. Data within the three constructs of Lack of Readiness, Lack of Information, and Unreliable Information were elements within the ten subcategories. Total scores were reported for the mean of the three construct scores. The total score of the CDDQ was a measure of relative indecision across participants, with lower scores meaning less dysfunction in the career decision process. The three constructs indicated dysfunction within each corresponding construct, and future career intervention was given a more explicit objective and direction.

Research Objective 1: Exploratory Factor Analysis

Exploratory factor analysis was conducted to assess the separate independent variables within the study. Based on Thurstone's Common Factor Model (1947), and proposed by Charles Spearman (1904), confirmatory factor analysis (CFA) and exploratory factor analysis (EFA)sought to reproduce the observed relationships among a group of indicators with a smaller set of latent variables and postulates that all observed relationships were linear (Brown, 2015). An exploratory factor analysis was used observe the relationship between factors to assess fit and relationship within the data. A correlation matrix was produced with the given factors for strength of correlation and the overall proposed model fit. Extracted factors was reported and stated upon which construct they loaded most favorably within the instrument. Items of interest are the factors that loaded the strongest within the data as possible areas presented future intervention and exploration in future study. During the factor extraction stage,

instrument items from the CDDQ were entered into the factor analysis. All results were reported with appropriate Eigen values and scree plot for strength of relationship reported. Varimax rotation was used during the factor analysis.

Research Objective 2: Differences among grade levels

Analysis of variance (ANOVA) was calculated to assess the level of career indecision for each grade level against one another to observe differences between grade levels and within groups of students. Mean and standard deviation of indecision scores between the different grade levels were reported and assessed for variations along sub-categories of the CDDQ. Additionally, linear regression was calculated for relational data of student's grade levels and average scores on the instrument. Mean score and standard deviation for each grade level were reported.

Research Objective 3: Differences between districts

Independent t-tests were used to assess scores and district of residence (i.e., Carbon vs. Emery counties in Utah) against the various Scores of the CDDQ. These scores were calculated with the selection variable of school district as the independent variable within the model to assess the relationship of district of attendance against the level of indecision for students. Mean and standard deviation of scores for each of the schools were reported.

Research Objective 4: Differences Between Students With Career Interests Against Students With No Career Interests

Independent t-test analysis was calculated for students who indicate *no career interest* against those that have at least one career interest. Students with *no career interest* were used to test the level of indecision against those who indicated at least one career interest. During this stage the fifteen career pathways available at the rural districts as defined by the USBE was assessed for scores across the CDDQ and all ten sub-categories in the instrument. The mean score and standard deviation of career pathway interests was reported of the fifteen pathways.

Research Objective 5: Relationship of Work-Based Learning on Indecision

Independent t-test analysis was conducted for those participating in work-based learning opportunities (yes/no dichotomy) to assess the mean difference in scores for career indecision when comparing students who participate in work-based learning opportunities against those who do not. Students who identify their participation in job-shadow, internships, apprenticeship, or other experiential-learning opportunity were assessed using a grouping variable and comparing the indecision scores on the CDDQ and the Decision Scale Score from the Career Decision Scale by Osipow (1976).

Research Objective 6: Model Creation for Career Readiness

Exploratory factor analysis was conducted to assess the separate independent variables within the study. An exploratory factor analysis was used observe the relationship between factors to assess fit and relationship within the data. A correlation matrix was produced with the given factors for strength of correlation and the overall

proposed model fit. Extracted factors was reported and stated upon which construct they loaded most favorably within the instrument. Items of interest at the factors that loaded the strongest within the data as possible areas presented future intervention and exploration in future study. During the factor extraction stage, instrument items from the CDDQ were entered into the factor analysis. All results were reported with appropriate Eigen values and scree plot for strength of relationship reported. Varimax rotation was used during the factor analysis.

CHAPTER 4

ANALYSIS

Problem Statement

Career and Technical Education (CTE) is using the pathway model and targeted apprenticeships to revitalize CTE and develop a skilled workforce. The current body of literature does not adequately address student career decision-making prior to participation in a CTE pathway and apprenticeship program. Unless CTE leaders better understand the phenomenon of student career-decision making and participation in CTE pathways and apprenticeship programs, they may miss making significant impacts in the workforce.

Purpose

The purpose of this study was to determine the factors that impact secondary CTE students' career indecision levels (e.g., Lack of Readiness, Lack of Information, Inconsistent Information). Further, this study focused on the extent to which variables such as county of residence and career interest impact career decision making, and to develop a conceptual framework of career readiness for targeted interventions.

Objectives

To guide the stated purpose, the following research objectives were to:

1. Examine the factor structure of career readiness constructs.

2. Determine the differences between Carbon and Emery County secondary students (9-12th grade) and their level of career indecision.
3. Determine the difference between participants residing in, Carbon and Emery counties and their level of career indecision.
4. Determine the differences in career indecision between Carbon and Emery students that have defined career interests and Carbon and Emery students that do not.
5. Determine the effect of work-based learning on career indecision.
6. Develop a predictive model for student career indecision.

Introduction

To understand the current state of technical education in Utah, it is essential to set a baseline for pathway implementation and where targeted intervention may be most necessary. As education leaders and community stakeholders target pathway development and student recruitment, it is essential to understand the current landscape of technical education and students' current level of career decision. It is also necessary to describe the possible intervention strategies for creating a greater sense of career readiness for targeted career development.

Survey Participants' Distribution

Participants were grouped by three demographic categories: school district, CTE industry pathway interest, and biological sex. To better describe the participants' demographics, cross-tabulation of frequencies were calculated for the following

intersections: school by grade level, school by CTE industry pathway, school by biological sex, grade level by biological sex, grade level by industry pathway, CTE industry pathway by biological sex.

The population for this study came from students participating in CTE programs in the Carbon and Emery School districts in Utah. This population encompassed two counties and three high schools. Carbon County recorded an initial 253 responses from Carbon High School. Emery County recorded 308 initial responses, with 24 responses from Green River High School and 284 from Emery High School (total $N = 561$). Of the data recorded, the missing and incomplete survey forms were classified as non-responses. Usable data recorded for each school are as follows: Carbon High School recording 118 (35.12%) responses, Emery High School 199 (59.23%), and Green River High School with 19 (5.65%). A total usable data sample for this study is $n = 336$ with an overall usable response rate of 59.89% (see Table 2). As the data collected was through an anonymous survey link and responses were requested for collection on specific dates, there could be no attempt to solicit completed questionnaires from students that did not finish the instrument. This study is cross sectional and seeks to understand the current state of pathways in Utah's frontier regions; this study does not seek to generalize the results into populations other than Carbon and Emery Counties in 2023.

School District and Grade Level

When looking at the intersection between school and grade level, the following data was reported (see Table 2). Students participating in the study from regional school districts were more frequently 9th grade. Student participation decreased for higher grade

levels (10^{th}-12^{th}) which held true across all sampled schools. The differences among student participation by grade level was the largest between freshmen with 138 students participating (41% of the total data set), and seniors with 23 seniors participating (6.8%). Green River High School, in Emery School District, is considered a frontier rural school and has a lower student population at 79 total students enrolled (Utah State Board of Education, 2022). Lower participation should be expected to be proportional to High School student enrollment.

Table 2

Distribution of Participants across School and Grade Level

What school do you currently attend?	*n*	What is your current grade level?			
		Freshman	Sophomore	Junior	Senior
Emery School District Total	218	101	49	56	12
Carbon School District Total	118	37	44	26	11

School District and CTE Industry Pathway Interest

When looking at the intersection between school and CTE industry pathway interest, the following data was reported (see Table 3). Overall, the five most popular pathways were healthcare and medical ($f = 120$); engineering and technology ($f = 77$), the business, finance, and marketing ($f = 73$); audio/video technology and communications ($f = 72$); and public safety, corrections, and security ($f = 72$). Conversely, transportation, distribution, and logistics had the lowest overall frequency ($f = 10$), with this pathway being the lowest frequency at Carbon and Emery high schools. When looking at individual schools, healthcare and medical pathway also had the highest frequency at

both Carbon and Emery high schools. Notably for Green River High School, there are various pathways that do not hold interest for any of the participants: architecture and construction trades, human services, education and training, and hospitality and tourism.

Table 3

Distribution of Participants' by School District and CTE industry pathway Interest

	Carbon School District	Emery School District
What are your current career interests?	*f*	*f*
Healthcare and medical (*n* = 120)	42	78
Audio/video technology and communication (*n* = 73)	33	40
Human services (*n* = 69)	29	40
Public safety, corrections, and security (*n* =72)	29	43
Health science (*n* = 65)	25	40
Engineering technology (*n* = 77)	24	53
Manufacturing, welding, and production (*n* = 71)	22	49
Business, finance, and marketing (*n* = 72)	20	52
Agriculture, food, and natural resources (*n* =71)	17	54
I have no current career interests (*n* = 36)	15	21
Computer science and information technology (*n* = 37)	15	22
Architecture and construction trades (*n* = 40)	11	29
Education and training (*n* = 34)	10	24
Hospitality and tourism (*n* = 29)	10	19
Transportation, distribution, and logistics (*n* = 10)	1	9

Note: Students were allowed to select more than one career interest.

School and Biological Sex

When looking at participant distribution by school and biological sex, the frequency of male students was 166 (49.4%) and 170 (50.6%) female students. This distribution was similar for all three high schools (see Table 4).

Table 4

Distribution of Participants by School and Biological Sex

	What is your sex?	
What school do you currently attend?	Male	Female
Carbon School District (*n* = 118)	58	60
Emery School District (*n* = 218)	108	110

Grade Level and Biological Sex

When looking at the distribution of participants by grade level and biological sex, the sex dichotomy was spread similarly across grade level (see Table 5). The largest difference is among sophomore students with a 54 to 39 split in biological sex reporting.

Table 5

Participant Response by Grade Level and Biological Sex

	What is your current grade level?				
What is your sex?	Freshman (*n* = 138)	Sophomore (*n* = 93)	Junior (*n* = 82)	Senior (*n* = 23)	Total
Female	74	39	45	12	170
Male	64	54	37	11	166

Grade Level and CTE Industry Pathway Interest

When looking at the distribution of participants by grade level and CTE industry pathway interest, all four grade levels reported on average of at least two CTE industry pathway interests for each participant (see Table 6) with seniors having the highest number of average career interests per student (M = 3.09) and freshman having the lowest average number of career interests per students (M = 2.43). All four grade levels had at least one student selecting "no career interests." The sophomore grade level had the highest proportion of students selecting "no career interests" (12.9% of sophomores) and the junior grade level had the lowest (4.8% of juniors).

CTE Industry Pathway Interest and Sex

When looking at the intersection between CTE industry pathway interest and biological sex, the largest proportional reports of gender differences in career interests exist within the *engineering and technology* pathway with 73 males expressing future career interests compared to 4 females expressing similar intentions. (See Table 7). Similarly, in *computer science and information technology*, proportionally, 34 male students in the sample express intentions for pursuing their future career in this field, compared to 3 females. Proportionally, females reported a greater interest for participation in *human services* career cluster at 60, compared to 9 interested male respondents. *Hospitality and tourism* showed 23 females and 6 males, while education and training showed 24 females and 10 males. Of the 15 pathways, the *business, finance, and marketing pathway* and the *public safety, corrections, and security* had the least variance in proportion between biological sexes. While both pathways had only an 8%

difference, the *business, finance, and marketing* pathway was selected more often by male students; and the *public safety corrections, and security* pathway was selected more often by female students.

Table 6

Participant Response by CTE Industry Pathway Interest and Grade Level

What are your current career interests?	What is your current grade level?			
	Freshman	Sophomore	Junior	Senior
	n = 138	*n* = 93	*n* = 82	*n* = 23
Healthcare and medical	47	33	32	8
Agriculture, food, and natural resources	33	15	18	5
Audio/video technology and communication	31	19	15	8
Human services	29	13	20	7
Manufacturing, welding, and production	28	20	19	4
Engineering technology	27	24	19	7
Business, finance, and marketing	26	19	22	5
Public safety, corrections, and security	22	20	23	7
Health science	21	13	23	8
I have no current career interests	17	13	4	2
Architecture and construction trades	15	9	14	2
Hospitality and tourism	13	9	6	1
Education and training	11	9	11	3
Computer science and information technology	10	12	12	3
Transportation, distribution, and logistics	6	1	2	1
Total number of career interests	336	229	240	71

Work-Based Learning Participation Distribution

Because work-based learning was found to have a significant impact on career decision in the literature review, an additional dimension of the sample populations was participation in work-based learning activities. To better understand the survey participants, four distinct intersections with work-based learning were assessed: school, grade level, CTE industry pathway interest, and biological sex.

Table 7

Participant Distribution by CTE Industry Pathway Interest and Biological Sex

	What is your sex?	
What are your current career interests?	Male	Female
Engineering technology	73	4
Manufacturing, welding, and production	62	9
Business, finance, and marketing	40	32
Healthcare and medical	38	82
Computer science and information technology	34	3
Public safety, corrections, and security	33	39
Agriculture, food, and natural resources	32	39
Architecture and construction trades	29	11
Audio/video technology and communication	26	47
Health science	23	42
I have no current career interests.	20	16
Education and training	10	24
Human services	9	60
Transportation, distribution, and logistics	9	1
Hospitality and tourism	6	23

Work-Based Learning across Schools

When looking at the distribution of respondents' work-based learning across schools, 25.89% of students reported participating in work-based learning opportunities (see Table 8). Of the three high schools, Emery had the highest percentage of students participating (28.64%) and Green River High School had the lowest participation (15.79%).

Table 8

Work-Based Learning Participation across Schools

	Have you participated in work-based learning or an internship?			
	No		Yes	
What school do you attend?	*f*	%	*f*	%
Carbon High School (*n* = 118)	91	77.12	27	22.88
Emery High School (*n* = 199)	142	74.87	57	28.64
Green River High School (*n* = 19)	16	84.21	3	15.79

Work-Based Learning by Grade Level

When looking at the distribution of work-based learning and grade level, sophomores (see Table 9) had the highest participation rate (27.95%) while juniors had the fewest (20.73%).

Table 9

Work-Based Learning Participation by Grade Level

	Have you participated in work-based learning or an internship?			
	No		Yes	
What is your current grade level?	*f*	%	*f*	%
Freshman (*n* = 138)	100	72.46	38	27.54
Sophomore (*n* = 93)	67	72.04	26	27.95
Junior (*n* = 82)	65	79.27	17	20.73
Senior (*n* = 23)	17	73.91	6	26.09

Work-Based Learning by CTE Industry Pathway Interest

When looking at the distribution of work-based learning across CTE industry pathway interest, the *computer science and information technology* pathway had the highest proportion of participation in work-based learning experiences with 70.27% participation (see Table 10). The *transportation, distribution, and logistics* pathway had the lowest frequency with 10% reporting work-based learning experiences during their academic career.

Work-Based Learning Participation by Biological Sex

When looking at the distribution of work-based learning across respondents' biological sex, male students reported participating more frequently than female students (see Table 11), with 30.12% of responding males selecting yes compared to 21.76% of the responding females. selecting yes.

Table 10

Work-Based Learning Participation by Industry Pathway Interest

What are your current career interests?	Have you participated in work-based learning or an internship?			
	No		Yes	
	f	%	*f*	%
Business, finance, and marketing (*n* = 72)	55	76.39	17	23.61
Healthcare and medical (*n* = 120)	91	75.83	29	24.17
Engineering technology (*n* = 77)	59	75.32	18	23.38
Computer science and information technology (*n* = 37)	11	29.73	26	70.27
Audio/video technology and communication (*n* = 73)	60	82.19	13	17.81
Architecture and construction trades (*n* = 40)	29	72.50	11	27.50
Transportation, distribution, and logistics (*n* = 10)	9	90.00	1	10.00
Agriculture, food, and natural resources (*n* = 71)	46	64.79	25	35.21
Human services (*n* = 69)	54	78.26	15	21.74
Education and training (*n* = 34)	26	76.47	8	23.53
Health science (*n* = 65)	53	82.54	12	18.46
Hospitality and tourism (*n* = 29)	20	68.97	9	31.03
Public safety, corrections, and security (*n* = 72)	62	86.11	10	13.89
Manufacturing, welding, and production (*n* = 71)	44	61.97	27	38.03
I have no current career interests. (*n* = 36)	26	72.22	10	27.78

Table 11

Distribution of Respondents' Work-Based Learning Participation by Biological Sex

What is your Sex?	Have you participated in work-based learning or an internship?	
	No	Yes
Female	133	37
Male	116	50

Career Decision-Making Difficulty Questionnaire Scoring Criteria

CDDQ total scores were calculated by taking the average of the ten-subscale score. These subscales are 1) lack of motivation, 2) general indecisiveness, 3) dysfunctional beliefs, 4) lack of information about the career decision making process, 5) lack of information about the self, 6) lack of information about occupations, 7) lack of information on ways to obtain information, 8) unreliable information, 9) internal conflicts, and 10) external conflicts. Appendix B provides the summary of subscales and all instrument questions.

Research Objective 1: Exploratory Factor Analysis

Objective 1 sought to describe the factor structure of the Career Decision-Making Difficulty Questionnaire (CDDQ) and to examine if the original taxonomy is relevant to these rural districts. To describe career readiness constructs that were present within the data, exploratory factor analysis (EFA) was conducted to assess the separate independent variables within the study. Based on Thurstone's Common Factor Model (1947) and proposed by Charles Spearman (1904), EFA is utilized to reproduce the observed relationships among a group of indicators with a smaller set of latent variables. This approach assumes and postulates that all observed relationships are linear (Brown, 2015). An EFA was utilized to observe the relationship between factors and assess fit and relationship within the data.

A correlation matrix was produced with the given factors to show strength of correlation and the overall proposed model fit. Extracted factors were reported and stated,

and constructs whose factors loaded most favorably were identified to be used in extraction.

During the factor extraction stage, items of the instrument were entered into the factor analysis. Items of interest and the factors that load the strongest within the data were noted as possible areas for future intervention and exploration. All results were reported with appropriate Eigen values, and scree plots were generated. Varimax rotation was used during the factor analysis based on the assumption that the data is orthogonal.

KMO and Bartlett's test

The Kaiser-Meyer-Olkin measure for the data is 0.94 which is greater than the threshold 0.7 (Kaiser, 1974). According to Kaiser, a measure in the 0.90 is marvelous, 0.80 is meritorious, 0.70 is middling, 0.60 is mediocre, 0.50 is miserable, and 0.40 is unacceptable. The reported score of 0.94 falls within the marvelous range, which indicates that the sample size from which the data was derived is adequate (see Table 12). Furthermore, the Bartlett's test of sphericity had a significant value indicating suitability of data for factor analysis as correlations exist within the data.

Table 12

KMO Measure and Bartlett's Test

Kaiser-Meyer-Olkin measure of sampling adequacy		0.94
Bartlett's test of sphericity	Approximate Chi-Square	5269.94
	df	496
	sig.	**< 0.001**

Convergence of Factors

EFA was utilized to describe the constructs comprising student career indecision and the factors that may lead to more clear and confident career decisions. Extraction was limited to eigen values greater than or equal to 1, and factor loading was set to values higher than 0.45. All scales yielding a factor loading score less than 0.45 were removed from the preceding analysis. Table 13 shows the questions from the CDDQ and the six factors that they loaded from. The career indecision and lack of career readiness of the current data can be attributed to these six factors: *lack of information*, *inconsistent information*, *dysfunctional beliefs*, *internal conflict*, *general indecisiveness*, and *lack of motivation*. Of these, *lack of information* was the strongest factor from the data with an eigen value of 11. The *lack of readiness* construct was fragmented when compared to *lack of information* and *inconsistent information,* all three of which comprise CDDQ total scoring.

Table 13

Exploratory Factor Analysis Investigating Convergence of Factors for Career Decision

	Factors					
Question	Lack of information	Inconsistent information	Dysfunctional beliefs	Internal conflict	General indecisive	Lack of motivation
CDDQ 13	0.70					
CDDQ 14	0.75					
CDDQ 15	0.62					
CDDQ 16	0.66					
CDDQ 17	0.71					
CDDQ 18	0.65					
CDDQ 19	0.62					
CDDQ 20	0.70					
CDDQ 21	0.69					
CDDQ 22	0.60					
CDDQ 23	0.61					
CDDQ 24		0.55				
CDDQ 25				0.57		
CDDQ 26		0.59				
CDDQ 27		0.65				
CDDQ 28				0.75		
CDDQ 29		0.66				
CDDQ 30				0.48		
CDDQ 31				0.57		
CDDQ 32		0.65				
CDDQ 33		0.77				
CDDQ 34		0.72				
CDDQ 8			0.69			
CDDQ 9			0.71			
CDDQ 10			0.72			
CDDQ 11			0.63			
CDDQ 1						0.57
CDDQ 2						0.74
CDDQ 3						0.67
CDDQ 4					0.62	
CDDQ 5					0.72	
CDDQ 6					0.76	

Construct Alpha and Reliability

Cronbach's alpha tests were calculated to assess the reliability of the constructs within the data and to report the corresponding values. The multiple construct scales were tested for strength of reliability within the data. Additionally, the entire CDDQ alpha was tested for reliability across the instrument. Table 14 shows the various alpha values and

the corresponding constructs related to career decision. According to Salkind (2014) an alpha less than .60 is questionable, .70 is acceptable, .80 is good, and .90 is excellent. Across the instrument, there are three factors that rate acceptable and above. Factors having fewer questions within the construct fall into danger of questionable results, which is a limitation of the Cronbach's alpha. Overall CDDQ instrument being rated as an excellent score for reliability (.94).

Table 14

Cronbach's Alpha Across Scale Items

Factor	Number of items in factor scale	Cronbach's Alpha
Lack of information	11	0.930
Inconsistent information	8	0.890
Dysfunctional beliefs	4	0.690
Internal conflict	4	0.770
General indecision	3	0.674
Lack of motivation	3	0.624
CDDQ total	32	0.940

Note: CDDQ Total alpha score reported for instrument reliability

Research Objective 2: Differences Among Grade Levels

Objective 2 sought to determine the differences between Carbon and Emery County secondary students (9-12th grade) on their career indecision. The construct used the CDDQ questionnaire to assess students' relative levels of indecision and descriptive statistics were reported. An analysis of variance (ANOVA) was utilized to assess differences in the level of career indecision between grade levels. The assumptions of

ANOVA are the normality of data and normal distribution of response data. Additional assumptions include interval dependent variable of instrument scores, homoscedasticity, and the absence of multicollinearity. No assumptions were violated for this test. When testing for homogeneity of variance, all Levene's Statistics were non-significant.

Mean and standard deviation of CDDQ Total scores indicating indecision between the different grade levels were reported as freshman, sophomore, junior, and senior. The means and standard deviations for grade levels are reported in Table 16. The lower mean score for the junior class members with the higher standard deviation indicates higher variability within the respondents than other class ranks.

CDDQ score differences between grade levels were statistically non-significant (see Table 16). When assessing the variations within the data along sub-categories of the CDDQ, there were no statistically significant differences between grade levels. The effect of grade level, alone, is not significant to predict the variance in CDDQ total scores, $F(3,332) = 1.03, p = .38$. A large difference was found within the CDDQ subcategory *lack of motivation* $F(3,332) = 2.29, p = .08$. However, this level of significance does not meet the alpha threshold set a priori. Overall, the data showed no significant differences between the grade levels in the sample participants. Based on the results, the null hypothesis for research objective 1 was retained.

Table 15

Differences in CDDQ Scores Across Grade Level

Measure	Freshman (n = 138)		Sophomore (n = 93)		Junior (n = 82)		Senior (n = 23)		$F(3,332)$	p
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
CDDQ scale total	4.52	1.13	4.69	1.24	4.38	1.30	4.44	0.93	1.030	0.380

Note: Mean scores are based on a 9-point scale with 1= does not describe me and 9 = describes me. CDDQ scale total is comprised as the mean score of the ten subcategories. Decision scale total is a measure of certainty with 9 being certain. Significant at the $p<0.05$ level

Research Objective 3: Differences Between Districts

Research objective 3 sought to describe the relational effect of residence (i.e., differences between Carbon and Emery school districts) on career decisions and its possible differences. Given the small sample size of Green River High School, it was necessary to measure differences by district rather than schools. To assess differences between the participating districts, independent t-tests were used. No assumptions of t-tests were violated in assessing the differences between the two districts.

Mean and standard deviation of scores for each of the schools is shown in Table 17. The sets of scores within the instrument show significant differences between the schools for the CDDQ total. Additionally, the mean differences between the school districts were statistically significant for the constructs: *inconsistent information*, *external conflicts*, and *lack of information about occupations*. As a result, the null hypothesis was rejected.

Coded as dummy variables, Carbon School District was used as the constant and intercept variable. A regression analysis was used to determine the predictive association of school districts on the variable constructs: *CDDQ total score* and the subcategories

inconsistent information, *external conflicts*, and *lack of information about occupations.* A forward entry method was used to load the variables of interest into the model for constructs leading to greater levels of career decision.

Table 16

Differences in CDDQ Scores Between School Districts

Measure	Carbon School District (n = 118)		Emery School District (n = 218)		t	p
	M	*SD*	*M*	*SD*		
CDDQ scale total	4.72	1.18	4.42	1.18	2.20	**< 0.03**
Lack of Readiness	4.73	1.14	4.53	1.16	1.50	0.13
Lack of motivation	4.17	1.62	4.04	1.61	0.71	0.48
General indecisiveness	5.61	1.64	5.37	1.84	1.22	0.23
Dysfunctional beliefs	4.42	1.40	4.19	1.47	1.32	0.19
Lack of Information	4.92	1.46	4.62	1.55	1.71	0.09
Stages of CDM process	5.05	1.77	4.84	1.85	1.02	0.31
Self	4.82	1.65	4.60	1.73	1.11	0.27
Occupations	5.09	1.55	4.70	1.71	2.06	**0.04**
Ways of obtaining information	4.72	1.73	4.36	1.69	1.88	0.06
Inconsistent Information	4.52	1.43	4.11	1.43	2.47	**0.01**
Unreliable information	4.62	1.58	4.29	1.58	1.84	0.06
Internal Conflicts	4.54	1.50	4.37	1.52	0.95	0.34
External Conflicts	4.39	1.80	3.68	1.76	3.51	**< 0.001**

Note: Mean scores are based on a 9-point scale with 1= does not describe me and 9 = describes me. Values are significant at the *p <.05 level*

Research Objective 4: Career Interests Indecision Levels

Research objective 4 sought to describe the differences between students with identified career interests and those without. During this stage, students were able to select across the 15 industry pathways available at the rural districts as defined by the Utah State Board of Education (USBE) and were also given the ability to select *I currently have no career interests*. Analysis was conducted against the dichotomy of students in this cohort against the control group of students that indicate career interest in other areas. Of the students indicating their lack of career interest, none have selected multiple career choices. Students' scores across the Career Certainty Scale, the CDDQ, and all 10 sub-categories in the CDDQ instrument. Table 17 shows the scores of students with career interests (*n = 300*) against those that indicate no career interests (*n = 36*) and all relevant independent t-test statistics. The Levene's test for equality of variance indicated no significant differences between the two groups. The Cohen's *d* statistic of .34 which indicates a small effect size.

Table 17

Differences in CDDQ Scores by Career Undecided and Decided Students

Measure	What are your current career interests?					
	None (*n* = 36)		Interested (*n* = 300)		*t*	*p*
	M	*SD*	*M*	*SD*		
CDDQ total score	4.89	1.29	4.49	1.18	1.92	0.06

Note: Scores are based on a 4-point scale with 1= does not describe me and 4 = describes me. This scale total is comprised as the sum of the 4 questions that comprise this scale. Significant at the p<0.05 level.

When assessing the differences of students with at least one career decision against those who are currently undecided. The relationship and differences of career certainty indicated as statistically significant. Table 18 shows the results of the independent t-test results with means and standard deviations. The Cohen's *d* statistic for this independent t-test was -.73 indicating a medium effect size.

Table 18

Differences in Career Certainty Scores by Career Undecided and Decided Students

Measure	What are your current career interests?					
	None (n = 36)		Interested (n = 300)		*t*	*p*
	M	*SD*	*M*	*SD*		
Career certainty scale	7.00	2.24	8.84	2.67	-3.98	**<.001**

Note: Scores are based on a 4-point scale with 1= does not describe me and 4 = describes me. This scale total is comprised as the sum of the 4 questions that comprise this scale. Significant at the p<0.05 level.

Table 19 shows the results of the one-way analysis of variance (ANOVA) test in which students who have no career interests, one career interest, and many career interests (more than one) were compared for the mean differences between at least two of the groups when compared against the decision scale totals.

Table 19

Difference Among Decision Scale Totals and Number of Career Choices

Model	*SS*	*df*	*Mean square*	*F*	*sig*
Between groups	115.37	2	57.69	8.35	**< .001**
Within groups	2301.48	333	6.91		
Total	477.93				

All subcategory totals and differences against the CDDQ and the ten sub-categories of the instrument are show in Table 20. Variables of interest and significant scores from the subcategories and constructs of the CDDQ were noted with all relevant mean scores and standard deviations.

Table 20

Difference in Mean Score in Various Subcategories for Students With and Without Career Interests

Measure	I have no current career interests					
	Yes (n = 36)		No (n = 300)		t	p
	M	*SD*	*M*	*SD*		
CDDQ scale total	4.89	1.29	4.49	1.18	1.92	0.06
Lack of motivation	4.65	1.71	4.01	1.59	2.25	**0.03**
General indecisiveness	5.44	1.71	5.45	1.78	-0.03	.98
Dysfunctional beliefs	4.28	1.05	4.27	1.05	0.19	0.99
Stages of CDM process	5.28	1.89	4.87	1.89	1.28	0.20
Self	5.25	1.74	4.61	1.69	2.14	**0.03**
Occupations	5.30	1.79	4.79	1.65	1.74	0.08
Ways of obtaining information	4.99	1.90	4.42	1.68	1.88	0.06
Unreliable information	5.01	1.86	4.33	1.54	2.45	**0.02**
Internal conflicts	4.76	1.50	4.39	1.51	1.37	0.17
External conflicts	4.25	1.68	3.90	1.82	1.17	0.27
Readiness	4.79	0.99	4.58	1.17	1.03	0.17
Lack of information	5.20	1.62	4.67	1.50	1.99	**0.05**
Inconsistent information	4.67	1.58	4.21	1.42	1.84	0.06

Note: Mean scores are based on a 9-point scale with 1= does not describe me and 9 = describes me. CDDQ scale total is comprised as the mean score of the ten subcategories. Decision scale total is a measure of certainty with 9 being certain. Significant at the $p<0.05$ level.

Students with career interests indicate differences that are statistically significant when compared to those that do not have current career aspirations. These differences

manifested across the CDDQ sub-categories and career certainty scales which indicate career choice and planning. Therefore, the null hypothesis was rejected.

Research Objective 5: Work-based Learning

Research Objective 5 sought to determine the difference between those who participate in internships and work-based learning opportunities and the level of career certainty and indecision scores on the CDDQ. Analysis of students was conducted through independent t-test to determine mean differences between participating and non-participating groups. Students who identified their participation in job-shadow, internships, apprenticeship, or other experiential-learning opportunities were assessed using a grouping variable and compared the indecision scores on the CDDQ against those who did not participate as a control group. No assumptions of the t-tests have been violated, and all relevant t-test scores and subcategory results were recorded in Table 21. Additionally, scores have been run against career certainty questions as part of the instrument and results recorded in Table 21. Effect size for this measure was found to be small d = -.32.

Table 21

Differences in Mean Scored Against Work-Based Learning Participation

Measure	Work-based learning experience					
	No (n = 249)		Yes (n = 87)		t	p
	M	*SD*	*M*	*SD*		
Decision scale total	8.43	2.61	9.28	2.81	-2.56	**0.01**

Note: Scores are based on a 4-point scale with 1= does not describe me and 4 = describes me. This scale total is comprised as the sum of the 4 questions that comprise this scale. Significant at the $p<0.05$ level.

Students participating in work-based learning opportunities indicate lower average scores of indecision across the CDDQ. Table 22 shows the mean scores and standard deviations of the total score and sub-categories. Across the various career indecision scales, statistically significant differences manifest in the *decision scale total* and across the subcategories of *general indecisiveness, external conflicts*, and *inconsistent information* when comparing those participating in work-based educational opportunities to those not participating. Therefore, the null hypothesis was rejected.

Table 22

Analysis of Mean Score for Various Subcategories Against Work-Based Learning Participation

Measure	Work-based learning experience					
	No (n = 249)		Yes (n = 87)		t	p
	M	*SD*	*M*	*SD*		
CDDQ scale total	4.52	1.15	4.56	1.32	-0.32	0.75

Note: Mean scores are based on a 9-point scale with 1= does not describe me and 9 = describes me. CDDQ scale total is comprised as the mean score of the ten subcategories. Significant at the $p<0.05$ level.

Research Objective 6: A New Model of Career Readiness

Research objective 6 sought to develop a predictive model for student career decision. To interpret the scores of the CDDQ, it is essential to remember the scoring criteria is out of a 9-point scale with the questions of interest indicating a higher score meaning more dysfunction and lower scores indicating less. Students with scores above a 3.3 in any given category are considered to have moderate difficulty in their career decisions. Students with scores greater than 6.3 in any of the subcategory measures are

given a salient difficulty category indicating a high level of choice dysfunction (Amir, Gati, & Kleiman, 2008).

Model of Career Decision

Using forced entry of variables identified as statistically significant throughout the study, regression models were constructed to account for the relationships of the population characteristics within the constructs of career decisions that play significant factors toward confident career choices. The researcher entered measures for self-reported decision difficulty (career indecision), career choices (CTE industry pathways), career planning (decision scale total), work-based learning participation, and district of attendance (Carbon) as a model of best fit for career decision. Table 23 demonstrates the ANOVA statistics for the variables within the model.

Table 23

Regression ANOVA Detailing the Model Variance and Statistics

Model	*SS*	*df*	*Mean Square*	*F*	*sig*
Regression	196.05	5	39.21	45.90	**< .001**
Residual	281.88	330	0.85		
Total	477.93	335			

Table 24 demonstrates model fit at each level of the regression analysis indicating the model fit and the total variance explained at each step of the regression analysis.

Table 24

Model Fit at Each Step for Regression Entry

	R	R^2	Adj. R^2	Std. Error of Estimate
1	0.61	0.38	0.37	0.38
2	0.63	0.40	0.40	0.40
3	0.62	0.40	0.40	0.40
4	0.64	0.41	0.40	0.40

Note: Dependent Variable: CDDQ Total Score

In the model, across the CDDQ constructs for career indecision, students who have selected any of the CTE industry pathways other than *I have no current career interests*, were residents of Emery County and have participated in work-based learning activities were expected to have a CDDQ total score of 3.32 (see Table 25). However, for each point extra that a student reported on the CDDQ question *how would you rate your difficulty in making a career decision*, on average the CDDQ total score would be 0.32 points greater. Students who have selected they have no career choices were expected an average CDDQ total score of 0.17 points greater than students who have at least one career interest. Students who attend the Carbon school district are expected to have a higher average score on their CDDQ total scores .18 points higher than those in the emery district, on average and those who have not participated in work-based learning opportunities are expected a higher average score of.15 over those who participate in work-based learning opportunities.

Conversely, for students who reported they have a career interest and have begun making plans for this future career, each additional point on their *career decision total* scale is expected to coincide with 0.30 points less on their CDDQ total score than those

who have not started on their future career plans. This model accounts for 40% of the variability within the data.

Table 25

Regression Model for Construct Selection Variables to Predict Career Readiness

	B	*SE*	*95% CI*		*p*
			LL	*UL*	
Intercept	3.32	0.26	2.81	3.83	**< 0.001**
Self-reported decision difficulty - indecision	0.32	0.03	0.27	0.37	**< 0.001**
Career choice – I have no career choice	.19	0.17	-0.14	0.52	0.27
Decision scale total – future planning	-0.30	0.08	-0.46	-0.14	**< 0.001**
School District - Carbon	0.18	0.11	-0.03	0.39	0.09
No involvement in work-based learning	.15	.12	-0.08	.38	.19

Note: Dependent variable: CDDQ Total Score

CHAPTER 5

DISCUSSION

Objectives

To guide the stated purpose, the following research objectives were to:

1. Examine the factor structure of career readiness constructs.
2. Determine the differences between Carbon and Emery County secondary students (9-12th grade) and their level of career indecision.
3. Determine the difference between participants residing in, Carbon and Emery counties and their level of career indecision.
4. Determine the differences in career indecision between Carbon and Emery students that have defined career interests and Carbon and Emery students that do not.
5. Determine the effect of work-based learning on career indecision.
6. Develop a predictive model for student career indecision.

Introduction

The purpose of this study was to examine career readiness in rural adolescent students of Utah's Carbon and Emery Counties. The goal was to serve as a baseline to guide career and technical education (CTE) career pathway development. As Utah continues to examine and refine its educational strategies, a standard instrument and

baseline for measurement will be essential to future evaluation success and will help to guide future intervention strategies.

To accomplish this purpose, six objectives were pursued through three stages of research. The first stage was an exploratory factor analysis to assess instrument suitability. The next phase addressed objectives two – five, which explored factors of interest that led to career indecision. The last stage and objective six was to create a new model of career readiness. The final chapter was organized around the three stages.

Summary of Findings

Stage 1: Exploratory Factor Analysis

Research Objective 1: Factor Analysis Structure

Within the factor analysis, several constructs from the CDDQ emerged intact. *Lack of information* presented from the factor analysis as a completely articulated construct where students from the representative districts maintain as an area of concern and in need of intervention. It has been previously cited that the constructs that comprise career readiness often conflated for college success (Conley, 2012). However, it is contended within the data that this is a fundamental misapplication of college and career readiness. As many of the factors that will help to alleviate career indecision are positive traits for college success but are not immediately requisite for academic achievement (i.e., the construct of *lack of information)*. The broad definition of college and career ready seems to simultaneously leave other aspects of career development outside the conversation while trying to encompass whole-person concepts building. Fuqua and

Hartman (1983) contend that the immediate encouragement for undecided students would help to alleviate future psychological delays. To alleviate much of the confusion and seek to correct the issues present within the data would be utilizing Bandura's model of self-efficacy (1997). When contending with the *lack of information* construct as strongly correlating with the present data would be more appropriate as a desired intervention for behavior change when viewed through the lens of career readiness first.

CDDQ Construct Reliability

The Career Decision-Making Difficulty Questionnaire (CDDQ) instrument was assessed to be valid and reliable for measuring current secondary students in the United States of America. This finding supports the measures used by Osipow and Gati (1998). Cronbach's alpha for the constructs comprising the CDDQ instrument were similar (.95) with the present study findings (.94). We conclude CTE program staff and faculty have the option to utilize this instrument for assessing student career indecision and determining choice dysfunction within the subcategories.

Stage 2: Variables Associated with Career Readiness

Study Participants' Grade-Level Distribution

Participants were categorized into three different demographic groups based on school districts, industry pathway interest, and biological sex. When examining these demographics across the academic grade levels, participants from the two counties skewed younger in the demographics of this study. With over 68% of the student participants being first- and second-year students. With the current sample, there is an

opportunity to assess first- and second-year students status related to the career decision continuum. This assessment will be useful to CTE professionals for tracking students' career interests and indecision levels through the duration of their secondary education experience. Additionally, the proportionally larger participation of younger students prompted us to question why the population was skewed toward younger students. Possible reasons include juniors and seniors spending less time on campus; thus, they were absent at the time of the survey; greater autonomy to self-select out of taking surveys, or fewer juniors and seniors participating in CTE. Perhaps the lack of participation from upper division students is a feature of the secondary education system and its focus on concurrent enrollment and college prep rather than career and workforce development activities.

Biological Sex Distribution regarding CTE Industry Pathway Interest.

With the engineering technology career pathway, four female students noted interest, while 73 male students indicated interest. Similarly, the *computer science* pathway had 34 males indicating interest but only four females indicating interest (8.1%). Conversely, the *human services* pathway had 60 female students indicating interest and nine male students indicating interest (13%). Initially, biological sex differences were outside of the scope of this study; however, large gaps became present through analysis and will require future investigation as the differences indicate areas of growth for the school districts.***Research Objective 2: Grade Level and Indecision***

The research study's findings indicate grade level is not a significant predictor for career readiness. This may be due to factors of lower proportions of Senior participants

within the data. Further investigation is required. The variance associated with students' CDDQ scores indicated high variability between and within grade levels. This will require additional data collection to develop a clearer measurement of personal development and career decision associated with students' grade levels. This may be a show of delayed career decision development due to socioeconomic factors cited by Ginzberg (1951) which may not exist in other affluent and metropolitan school districts.

Research Objective 3: Differences Between School Districts

Within the data, specific subcategory scores (e.g., *lack of information about occupations and external barriers)* highlight the need for quality information and the development of student's interpersonal communication skills that will benefit students who indicate dysfunction in the areas. Gati refers to these skills as an indecision construct *Inconsistent Information* (1996). Interestingly, however, Emery School District students exhibited less career decision difficulty overall on the CDDQ total score and various subcategories. Significant scores on the *lack of information about occupations*, *external conflicts,* and *inconsistent information* are all indicative of choice dysfunction when comparing the two school districts.

The existence of these career decision difficulties in the Carbon School District may illustrate more choice delay due to the environment of Carbon County. Savickas (2002) has illustrated that career choice and development was a process informed by the school, family, physical environment, and cultural components. The work environment present during different stages of a person's development informs their social cues and cultural background that permeate into the characteristics of other aspects of the

community. This may indicate the high level of *external barrier* as these students feel a pull to a different career than the one that they feel may be expected from them or aspire to a future career that they do not perceive they have the financial ability to attain. Additionally, Carbon students may have a career aspiration that is not reflected within the community and do not have a career role-model to mentor them or elucidate their career pathway (Super, 1969).

Research Objective 4: Career Interests and Indecision

Students who indicate at least one career interest have similar levels of indecision with a small effect size. However, those who have at least one career choice have significantly higher levels of certainty and are more likely to have begun planning their future career. The differences between these scores on the certainty scales are non-significant in repeated measures indicating choosing at least one potential career match is enough to begin moving students in the direction of information gathering and pursuing their future career pathway.

Across the sub-categories of the CDDQ instrument, many differences arose that signal choice dysfunction in the sample with high levels of indecision in constructs indicating both groups exhibiting levels that are actionable in *dysfunctional beliefs* and *general indecisiveness.* Younger students in the sample selected *I have no current career interests* at a proportionally higher rate than the Junior and Senior class members, X^2 (1, $N = 336$) = 4.0, $p < .05$. Significant differences that exist within the CDDQ instrument were in *lack of information about self*, *lack of motivation,* and *unreliable information*. The *lack of information* construct was significantly higher in the noncommitted group.

This would indicate information gaps that could help to diminish choice dysfunction in the undecided students by delivering intervention aimed at self-discovery and guided reflection for personal values and aspirations to begin the career choice process.

Research Objective 5: Work-based learning outcomes

This objective sought to determine what differences exist for those who participate in work-based learning opportunities and the level of career indecision subcategory scores on the CDDQ. Students who participate in work-based learning demonstrated a statistically significant increase in their *decision scale scores* which indicate a knowledge of future career paths and the plans to meet those goals when compared to those that have not. This is indicative of the previous literature of experiential learning outcomes to career readiness (Carroll & Piro, 2020) This includes the first- and second-year students who had similar proportions of work-based learning participation across the grade levels.

Across the various subcategories of the CDDQ instrument, the subcategory of *general indecisive* proved to be one of the largest differences between the two groups. However, *external barriers* showed to have higher levels of indecision in the work-based learning participants which indicate a desire to commit to a career, but the student may feel this would go against a mentor or parent, or that they will be unable to accomplish their career goal.

Stage 3: Revised Model of Career Decision

Within the final model of career decision and the amelioration of dissonance within this study, self-reported career decision making difficulty emerged as one of the strongest single factors leading to overall indecision across the variables with the variance for this single item on the questionnaire accounting for over 30% of the variance within the CDDQ total scores. The self-assessed indecision level points to students with low levels of self-efficacy (Bandura, 1997) and choice-related anxiety having knowledge of their indecision, which tends to lead to avoidance behavior or chronic indecision traits (Zytowski, 1965).

To revise the proposed model for career decision (See Figure 4), *Quality Career Information* holds as a true indicator for the student's relative level of career readiness. As per the results, grade level was not a meaningful determinant of career preparedness and not a firm foundation on which to place individual development as the proxy because variance among the grade levels for career preparedness is simply too high. A more developed measure for Pathway Advancement will have to be developed in future research with a meaningful way to tie individual student's curricular accomplishments with their individual career indecision scores.

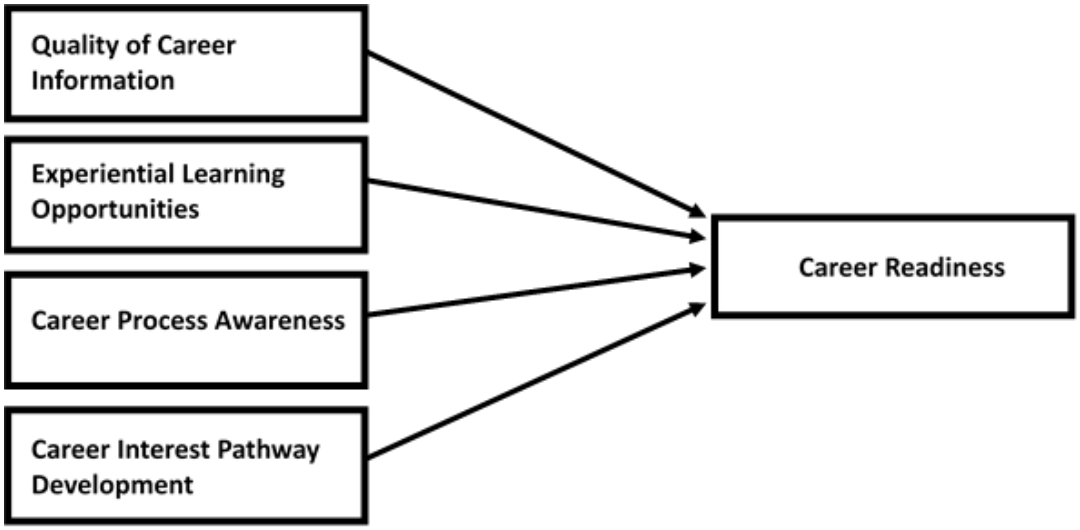
Additionally, career process awareness indicates the necessary steps for career decision commitment and can have practical implications for student career preparedness. Students in need of career direction may benefit from guided reflection to help assess the nature of their choice anxiety and begin to create a plan for future action. Additionally, these reflections will help to highlight the gaps in knowledge of students on how they pursue a future career or if they are able to find a career choice that suits their values and

desired lifestyle (Perna, 2018). An additional benefit of guided reflection regarding career choice may be to move the focus of career decision into a gradual choice of calibration and away from the binary of decided and undecided.

Career interest and pathway development involves exposing students to the various stages of career decision embedded within the current pathway model. However, this means moving the pathway model earlier into the academic career to allow for exploration activities before high school and permitting work-based learning opportunities in freshman and sophomore years. For example, allowing career exploration at younger ages, students are given the opportunity to shift and navigate various career choices until they find a more permanent choice as a normal practice rather than something that is the final stages of their postsecondary career.

Figure 4

Revisited Conceptual Framework Modeling of the Different Constructs Contributing to Student's Career Readiness



Discussion and Implications

Stage 1: Exploratory Factor Analysis

To describe the constructs that are present within the data, an exploratory factor analysis was utilized to validate the instrument choice and to show the applicability of this measure as a needs assessment tool across the sample. Findings from this study have been shown to be in line with the previous measures seeking to prove similar goals (Gati & Saka, 2001). The intention of utilizing this instrument is to identify along the ten sub-categories which areas are the strongest predictors for career indecision and dysfunction and tailor intervention strategies to help resolve these dysfunctions.

The intention of the proposed interventions derived from CDDQ subcategory information would aim to create greater self-efficacy and confidence in ability to make choices by delivering pointed intervention and relieving the dissonance and avoidance behaviors that the resulting dissonance brings. When viewing students' choice dysfunction as a *lack of information,* the initial reaction may be to deliver as much information to the student as possible. However, this strategy is very broad and lacks specificity. Utilizing the subscales that comprise the construct, students may be experiencing a lack of information on how to go about making a career decision, a lack of information about themselves, or about their intended occupation. Proposed interventions for each would be radically different and by only targeting occupation information, then the strategy completely failed to achieve the intended results of resolving students' choice dysfunction. By delivering prior to process interventions and helping students to make choices by illuminating the areas of information gaps, then the types of information seeking strategies become more apparent.

However, many of the current college and career readiness topics are directed at post-choice abilities and skills that may overlap with areas of career decision but would lack definitive direction at an intended goal. Students are encouraged to select a career path and then plan the college load necessary to fulfill the goal and begin the academic planning necessary to achieve the career aspiration. By spending more time and presenting career choices in tiers which a field has various options in a "stackable" option as presented in the Utah pathway model, may allow more time to spend identifying students' values, lifestyles, and abilities that may help to lead to greater career success (Perna, 2018).

As students who have begun the process of making career choices, they would be expected to exhibit, on average, lower levels of career indecision. This inverse relationship, on the surface seem to imply that no choice anxiety would be present within the decision process. However, previous research would indicate that is an overly simplistic view of choice paradigms and ignore the underlying reason for the indecision (Fuqua & Hartman, 1983). When students have a higher ability to choose an intended goal and plan actionable steps toward achieving that goal and creating their plans, then they begin the process of future building. Students are then ready for the other processes that will help them to achieve their future successes as they develop the ability to set and achieve these goals.

The fracturing of the readiness construct within the data may be largely due to the nature of choice variance within the population. As laid out of the taxonomy model of Gati (1996), the *lack of readiness* construct is prior to choice process while the other two are within the process of making a career decision. After initiating a choice, it would

make sense that this phase is no longer a singular barrier of choice dysfunction but that aspects of this career-development process may still have lingering effects for students within the sample. Students may question their choice, change their mind, or have more information that requires calibration, as in the cognitive dissonance model.

Stage 2: Factors of Interest

School and Industry Pathway Interest. When examining the distribution between school and industry pathway interest, notable trends and differences emerged from the three schools. The popularity of *healthcare and medical* pathways across all schools were some of the most popular which again is demonstrative of social valence (Lewin, 1936). Additionally, *engineering technology, audio/video technology and communication,* and *business, finance, and marketing* were among the most popular pathways in the sample. All three carry the same cultural positive feedback that is symptomatic of the positive social valence and desirability of high social standing.

Manufacturing, welding, and production was the most popular in the rural Green River High School and was tied as the 5th most popular pathway with *agriculture, food, and natural resources* with 71 total interested participants. The *agriculture* pathway had a heavy participation in Emery students, but this may be due largely to the rural school setting and the connection of family farms that are characteristic of the county. This is demonstrative of the dockworkers in Ginzerg's findings with inner city New York (1951). The *manufacturing* pathway is in a similar situation as local manufacturing businesses have begun massive projects that require considerable hiring pushes and are some of the largest non-healthcare and educational employers in the area. Many students

in these districts have direct connection to employees at these companies and the companies have spent considerable time in attempting to recruit students from area high schools.

Research Objective 2: Grade Level and Indecision

In a rural setting with pathway programs exhibiting low completion percentages, utilizing grade level as the stand-in for pathway advancement would be an unfit corollary and will require confirmation in a future study. As a stand-alone feature, it gives indication for follow-up research. This may be a feature of delayed development and a feature of Super's model. It is proposed that students may be stuck in a state of arrested development prior to targeted intervention strategies. The development of structured pathways that encourage and incentivize students toward pathway completion may help to deliver students into a greater sense of self and maturity.

Utilizing grade level as an indirect indicator for personal maturity was an assumption of the study. Utilizing student maturity and development as they age would reap the intended outcome of higher levels of decision. However, academic progress and pathway experience may be confounded by the rural setting of the study as family dynamics as other contexts may play a role in the variance within the data. For instance, some pathways are underdeveloped, lack work-based learning opportunities, and are restricted by a lack of district resources to maintain these learning opportunities. Additionally, as alluded to in the introduction, students are not required to commit to any pathway and may never progress their career exploration beyond the base-level courses and not find a fit for their future within the context of their secondary education. Students

are not incentivized to do so but conversely are encouraged to explore likely career matches without depth of choice. Comparisons from other Utah school districts will be required to determine if this finding holds true for the entire state or is a feature of these two school districts.

Grade Level and Industry Pathway Interest. When examining the distribution between grade level and industry pathway interest, *healthcare and medical* pathway was selected at a high frequency. The highest proportion of students that chose this pathway were the Junior class members (39%). Many of the first-year students chose the *healthcare pathway* nearly twice as frequent than any other pathway but chose less pathway interests compared to the junior and senior class members. Across all grade levels *transportation, distribution, and logistics* had the fewest number of respondents indicating interest.

Surprisingly, the average number of pathways increased as students continued their educational journey. Senior class members reported an average of 3.09 career interests within the data. This finding runs counter to the model of pathways as the purpose is to encourage students into specialization as they continue through the paradigm into career commitment. It can be assumed the number of career choices would drop, and students would commit or focus on a career interest. This increase in number of student career interest is indicative of Gati's subcategory *general indecisiveness* within the model and students now having difficulty choosing between many options that suit their interests (1996). Encouragingly, however, the proportion of students that selected *I currently have no career interests* was the least in the Junior class members at 4.88% of students selecting this option. Reporting senior class members proportionally chose this

option 8.7% of the time. These data also indicate the separation of mean CDDQ indecision scores, as juniors reported the lowest indecision among the participants.

Research Objective 3: Differences Between Districts

Within the data, specific scores highlight the need for quality information and the development of prior-to-process skills that will help to benefit the participating students. Gati refers to these skills as an indecision construct of *lack of readiness* (1996). Additionally, the perceived external barriers of living in rural Utah were significantly associated with participating in work-based learning opportunities. It is also possible that the differences between the two counties manifest discrepancies between career decision totals. Carbon (2022) and Emery Counties (2022) are economically and socially similar. Both counties have high numbers of employees in education, mining, energy production, state government, and local governments. Carbon County holds the region's hospital, manufacturing employers, and opportunities. Additionally, both counties have identical unemployment rates of 3.9% which is above the state average of 2.7% which accounts for more individuals out of work in Carbon County as the population is 20,372 compared to the population of 9,967 in Emery County.

There are numerous work-based opportunities for many pathways outside of rural Utah counties which have the industry to support these opportunities. The distance in these counties creates a barrier to student participation and CTE industry pathway development as there are no industry partners present in rural Utah to support the hiring and work-based opportunities in the areas of interest. This reality is evident with the work-based participation of Carbon students in the pathways specific to *manufacturing*

and *healthcare* as the opportunity to work closely with the area hospital, which services a large portion of the region in Carbon County and the larger manufacturing facilities also located in Carbon County. In contrast, many Emery students are not afforded the same access and opportunities due to distance restrictions or are given work-based opportunities on a shorter window through job-shadow or summer work.

Interestingly, however, Emery School District students exhibited less career decision difficulty overall on the CDDQ total score and various subcategories. Significant scores on the *lack of information about occupations*, *external conflicts,* and *inconsistent information* are all indicative of choice dysfunction when comparing the two school districts. The existence of these career decision difficulties in the Carbon School District may illustrate more choice delay due to the environment of Carbon County. Savickas (2002) has illustrated that career choice and development was a process informed by the school, family, physical environment, and cultural components. The work environment present during different stages of a person's development informs their social cues and cultural background that permeate into the characteristics of other aspects of the community. This may indicate the high level of *external barrier* as these students feel a pull to a different career than the one that they feel may be expected from them or aspire to a future career that they do not perceive they have the financial ability to attain. Additionally, Carbon students may have a career aspiration that is not reflected within the community and do not have a career role-model to mentor them or elucidate their career pathway as Super (1969) indicated in his initial career development theory.

Differences in Pathways of Interest. Students in the sample have competing interests across the districts and schools, with healthcare being one of the most popular

career choices regardless of location whereas 35.71% of students in the sample indicate an interest in this field. However, the differences emerge with *agriculture, food, and natural resources* being more prominent in Emery High School, 26.13% of students in the Emery sample indicated an interest in the pathway.

However, with the large push by county representatives and cultural shifts, *hospitality and tourism* pathways remain at the bottom of student interest as the second least selected pathway in the data. No students from Green River High School selected an interest with the pathway which has a large support population for Grand County and Green River as a tourist destination for river rafting. However, given the size of the school and resources, the school may not have the personnel and resources to support a culinary program or other pathway offerings for student participation.

Intervention Strategies for Career Indecision. Understanding the dynamics between each district in this study is essential to help deliver intentional interventions directed at the developmental delays in career decision by subcategory of the CDDQ. Individual students' needs across school districts continue to be emphasized and will direct the proposed remediation for the students' expressed needs identified by instrument scores. Examining what articulates the cognitive dissonance of students and helping to resolve the feeling of choice-induced anxiety in students has been a driving force behind career choice research. Rochat (2019) proposed various intervention strategies through the ten subcategories of the CDDQ. The interventions range from motivational interviewing to different occupational education models and assessments.

When examining the various points of differences between Carbon and Emery school districts, the differences in the subcategory of *general indecisiveness* across the

counties. Additionally, high scores in *lack of information* in the areas of *stages of the career decision-making process* and *lack of information about occupations* indicate a need for quality information and experiences to allow students the opportunity to gain a more informed and realistic look at how to choose a career and what opportunities exist. Engaging in quality career information sessions that deviate from the formal career day settings have been proposed in recent intervention as Perna refers to bringing the awareness gap and identifying where lifestyle and personal interest intersect (2018). Students are then afforded an opportunity to engage with industry professionals who accomplished their career goal and can elucidate the path to success. This may not always be the case for the students in rural districts as parents and educators may not know the occupation well enough to give guidance to reach the career goal or what coursework would be a good step to test personal aptitude for the career path.

Research Objective 4: Career Interests and Indecision

Holland's model (1997) of career and personality alignment through the dimension of realistic, investigative, artistic, social, enterprising, and conventional (RIASEC) sought to help predict what methods would be most effective in assisting individuals in resolving issues of career decision making. It was posited that those with various personality traits would be predisposed to multiple career choices and, in turn, would more easily find a career path more quickly than the non-conventional personality types.

Students interested in the *hospitality and tourism* career pathway were expected to have an overall career indecision level of 5.16 points out of 9 on the CDDQ total score

scale. These results were nearly an entire point above participants who express different career interests and even above the total scores of those who indicated they currently had no career interests. This pathway had the highest levels of career decision dysfunction with significant values across seven of the ten subscales. Conversely, when assessing the subcategories of the CDDQ, various career pathways have statistically significant less dysfunction in their career decision-making process.

When assessing for *lack of motivation* and *general indecisiveness*, the students interested in *manufacturing, welding, and production* were statistically less likely to have issues with multiple pathway interests that obstructed their pathway selection, while students selecting industry pathways within healthcare, health science, and law were significantly more motivated to move forward with their career decisions. These pathways had statistically significant lower scores on the CDDQ.

The differences in CDDQ scores could be due to the nature of the work and the expectation of what work and a career in the field would entail. *Manufacturing and Welding* career fields are tangible and easy for students to typically describe. However, this may not be the case for *hospitality and tourism* where the field is broad and often associated with service industry careers. Students within the pathway may enjoy courses in culinary arts, but do not have a clear expectation of what the daily rigor of this work could be. This is echoed by students choosing the *hospitality and tourism* pathway were also demonstrating a decision tendency that indicates a high *lack of knowledge about the occupation*.

The current study echoes those theories proposed by Holland (1997) as some student career choices were lower in indecision by a statistically significant margin than

the control group of students that had career interests versus none. Additionally, some career paths significantly reduced career indecision when compared to other CTE industry pathways. This may be due to the ability of students to participate in work-based opportunities with local businesses and those pathways having a steadier articulation of credentials at each level, and students are aware of the training needed for each level of employment in the representative *health science* careers. It may also be due to the quality of industry support and pathway within the districts as many of the higher performing pathways have a high amount of industry participation in the pathway. The local hospital and clinics in Carbon and Emery County allow students to intern and job-shadow on-site along with the physical therapy businesses for *health science*.

Research Objective 5: Work-based learning outcomes

This objective sought to determine the differences exist for those who participate in work-based learning opportunities and the level of career indecision subcategory scores on the CDDQ. Students who participate in work-based learning demonstrated a statistically significant increase in their *decision scale scores* which indicate a knowledge of future career paths and the plans to meet those goals when compared to those that have not. This is indicative of the previous literature of experiential learning outcomes to career readiness (Carroll & Piro, 2020) This includes the first- and second-year students who had similar proportions of work-based learning participation across the grade levels. This could be indicative of a few of the proposed models of career development from Super (1969). This previous research alludes to students vicariously envisioning success through an avatar of career development. This stage would indicate that students are

modeling their career path after an observable individual and emulating their career trajectory. This imitation would increase their self-efficacy as they create a personal vocational identity through the process and gain confidence as they perform the work (DeLorenzo, 2000).

Using the sociocultural theory of civic belonging, students may have a newfound purpose in the community if a new and innovative approach to encourage civic engagement and pre-apprenticeships were used to reduce the "rural brain-drain" (Vygotsky & Cole, 1978). This approach helps to connect students to community resources and investment in their local community that are common in other countries but have not been widely tested in the United States. Additionally, this approach seeks to solve teaching issues in these areas by supporting local educators and enhancing curricular activities.

As students are given instruction in theory, they are then expected to solve a practical problem with their new skills, this was initially shown through mathematical principals and savvy buying practices (Lave & Wenger, 1991). The approach would also support with additional non-traditional programming and pre-apprentice activities. Industry, evaluation, and secondary educator support are all in place to allow this program to have a reasonable expectation of success.

Work-Based Learning District Differences. Historically, work-based opportunities have been a mainstay in education as the primary method for workforce development and education for the disadvantaged. It was a previous decision to move away from the practice of relegating apprenticeship to the trades and highest levels of education. The current pathway initiatives implemented in Utah look to reinvigorate the

practice and begin using structured work-based learning opportunities across the state to help students find direct pathways into future opportunities.

Emery school district encourages all 7th-grade students to spend a day with one of their parents at work as a job-shadow day. Students are encouraged to accompany an adult to their place of work to observe and interact for the day. This has wide participation and is a feature of the district's College and Career Readiness (CCA) course.

Students who participate in work-based learning opportunities exhibit stronger decision traits of future planning and steps to achieve career goals. Total indecision subconstructs are over a full half-point lower on average on their relative indecision levels. However, students who participate in work-based learning surprisingly exhibit dysfunctional levels of the perception of *external barriers*, which indicates having career aspirations. However, many students feeling they do not have the financial means or personal support from loved ones to accomplish these goals. This finding is not surprising as the vision for long-term success does not seem feasible when committing to an internship at a hospital and hearing about the debt often required to achieve a career as a physician.

Work-Based Learning Quality. With a large proportion of first- and second-year students selecting participation in work-based learning experiences, the focus on quality experiences and structured learning opportunities at the worksite becomes a point of emphasis. Ensuring practical application opportunities for learning objectives, worksite culture, mentorship, and guided reflection on learning throughout the work-based experiences are all positive indicators of program quality that must be ensured at

all levels of education and geographic region. Student participation in work-based opportunities may span the continuum of structure from job-shadow for brief moments all the way into formal apprenticeship.

Students who indicated participation in work-based learning opportunities, however, indicated stronger planning and goal setting for their future careers. This finding indicates students who commit to work-based learning exhibit a clearer vision for their future career and have initiated necessary steps to take to achieve their career goal. This extends to the higher proportion of the younger grade levels. It may merit more investigation to move internship hours at the secondary level to earlier in the pathway process to allow students a more in-depth level of career exploration.

Stage 3: Revised Model of Career Decision

Research Objective 6: Models for Career Readiness

To better understand and model future career decisions for students, it would be beneficial for future research to focus intervention on self-assessed decision difficulty and target the areas in which students identify as personal barriers for career choice. To adjust for the present data, a new model for career readiness would need to include awareness to achieving the desired career and the process across the entire continuum rather than post choice process as a foregone conclusion. To elucidate for a student why it would be important to choose a career and the ability to calibrate the decision as more information is presented would indicate a more complete look at career commitment decisions (Perna, 2018).

A Revised Model of Career Decision

The *unreliable information* construct was missing pieces of the subcategory of *internal conflicts* which presented later in the factor analysis. However, the readiness construct and the related subcategories, while complete, were not presented as one cohesive construct. However, this may be explained as it would be expected that many students would have progressed beyond the stage of identifying a need for future planning and have begun taking exploratory steps to investigate careers. Within the *lack of readiness* construct, the *dysfunctional beliefs* subcategory had a stronger explanatory power than *lack of motivation* and *general indecisiveness.* This can also be attributed to the stages within the career development paradigm as students work through the subsequent development stages. Students seek out valuable information for their future careers to address and identify unhealthy expectations or beliefs about their intended career as students develop a self-concept (Savickas, 2002). As students continue into career development and answer the internal questions about interests, values, intended lifestyle, and abilities, a healthier career outlook and commitment may be initiated.

Limitations Revisited

Limitations of this study were of time and scope. An analysis for potential gaps in current curricular shifts helped to identify areas neglected in pedagogy and development of future pathways. However, the study did not aim to show causal factors for the disconnect. The study was a cross-sectional descriptive study with data that were gathered on a single date within each of the school districts. The students that were absent from the activity or neglected to complete the survey were not represented within the

data. This led to low participation from some grade levels without the option for follow-up for incomplete data entries or to acknowledge those that were not present on the day of the career fair activities. Additionally, no defining characteristics were requested or built as part of the survey. This limits the ability for follow up or to correlate levels of indecision with academic achievement or secondary education completion which are all essential measures of the pathway paradigm but are outside of the scope of this study.

Limitation of Instrument Length

Limitation of this study were in part due to the nature of sampling and the length of the questionnaire. With the added questions about pathway development, work-based learning, and other additional consortium-specific questions, the number of incomplete questionnaires was of initial concern. However, the data was still suitable for all analytics, and it would be difficult in future iterations to change the questionnaire as all items on the CDDQ instrument itself loaded with the requisite strength. As part of the release for use of the instrument, the instrument must be administered as a complete instrument and cannot be done in segments. This meant collecting data that were not within the scope of this research project, however, offered interesting insight and directions for future investigation into determining factors of career-readiness development in adolescents.

Additional demographic questions in future iterations will be excluded as redundant or non-compulsory for the study's intentions. Additionally, in future study the decision scale questions may be excluded in favor of more examination on the CDDQ instrument, itself. Streamlining the instrument will be necessary to ensure the successful

collection of complete and meaningful data in the future, but with the current factor analysis results, it would not be advised at this time to remove CDDQ scale items.

Senior Participation

Additionally, it is of concern of where the Senior-year students are in their participation and if they declined to complete the survey or if these students are showing up to school less than their younger classmates. The lower proportion of student participation may be due to other academic activities taking place at the time of collection. However, in future iterations of the study, a proctor for the instrument may help to identify these issues and deliver the instrument outside of the context of career-exploration activities, but in the context of normal school hours in preparation for career-related exploration and information sessions.

Study Assumptions

The study assumed that it was good and necessary for students to choose a career. This in many ways is supported by developmental literature as a continuation of latent unresolved psychological issues including characteristic anxiety, self-perceptual problems, and externalized attribution (Fuqua & Hartman, 1983). This study also assumed that students have an ideal career to seek. This, in part, is based in the principal of matching interests with future goals or that personality will find greater career satisfaction in personality-aligned roles (Holland, 1997). This study assumes that pathways are a sought-after metric for technical education successes at the secondary educational level. While the current regime is in favor of the pathway paradigm and is

actively encouraging the educational system to implement pathways through funding dollars for program expansion and development. The pathway innovation may fail to reach potential due to lack of adoption through the perception of high complexity and failure to communicate the benefits of pathway selection.

It is also assumed that the purpose of technical education is for vocational training. This is somewhat due to the initial terminology of technical education being referred to vocational education in its inception and has a long history of workforce alignment and skills training for the skilling and training of students not aligned to a four-year degree path. However, it is proposed by the underpinnings of this pathway approach to education that skills become the defining feature of the system and competencies replace time as the independent variable on the x-axis of the current educational framework; this is referred to in Stanford 2025 project as an axis-flip (Yusuf, Walters, & Sailin, 2020). This shift in thinking equivocates trade school education to certificate and associate-level community college and University training. By elevating the skills gain and learning as the primary objective of the educational journey and not merely degree attainment.

Yusuf (2020) also proposes a tiered system in identifying the necessary skills for career success first and delivering those more immediately. Students may capitalize on their skills and earn a living wage prior to general education completion in certificate programs that were previously labeled as four-year degree competencies (Fuller & Sigelman, 2017). However, if they decide to re-enter the educational system for future training, students may do so without suffering redundant coursework or credit loss. The

shift in skills-first training mirrors Lave and Wenger's (1991) situated learning style and expediting the skills attainment portion of education.

Recommendations for Research

Research Into Biological Sex Differences

Outside of the scope of this study exists the question of career decision differences between male and female participants. Future research should include the investigation and patterns that may exist between the biological sex dichotomy to help assess and alleviate the cognitive dissonance between these levels to help create more conscious and direct counseling efforts that allow for a more natural and tailored approach for career awareness activities. Especially in the technical education sector, it may persist that certain fields are not desirable for the various reasons and helping to address those concerns and identify career decision factors that may be differentiated between biological sexes. Additionally assessing which subcategories may affect the biological sexes differently and indicate strategies for intervention or help to start assessing what is causing these dysfunctions in the technical education sector.

Recommendations for Practice

Pathway Directions

Future studies should consider the successes and credential attainment of pathway completers versus students who do not complete a pathway to assess the level of difference between the groups. Additionally, it is unknown if pathway completion is

reducing time spent at the post-secondary level, helping with career attainment, or equating to future academic success.

An innovative and collaborative approach to creating a new framework for pathways may help to invigorate skills-based learning excitement into new educational areas and create a more structured way for higher education to align with the skills-based paradigm beyond the standard Carnegie-unit transfer of credit over time and into something more expedient and practical. By creating a structured inventory of necessary skills at the outset of program creation and constant calibration with industry partners and stakeholders, the post-secondary educational landscape finds a more community-centric mission which is the function of the land-grant University system across the United States. This mission helps to abate curricular stagnation and gives practical application to students who are looking for avenues to apply their knowledge and skills in a practical environment prior to degree-attainment. This shift to competency-based education communicates more effectively the outcome requirements for the course as they pass through the competency requirements laid out prior to assessment, rather than the current system of semester time requirement and incubation period.

Work-based Learning and Career Decision

Incorporating work-based learning opportunities earlier within the curriculum of pathways does not appear to have the initial assumed limitations. Surprisingly, many students have reported a work-based learning experience at younger ages in the study that was initially assumed. The proportion has similar distribution across the two school districts. This has shown efficacy in helping students begin making decisions for their

future career trajectory within the study as they plan and understand the daily task requirements and build the confidence in ability to perform the given workplace tasks.

Additionally, the examination of quality work-based learning opportunities must be assessed as Utah continues down the road of closer workforce alignment and emphasis on skills-based training. To reflect the best practices of previously cited literature, students entering their apprenticeship and work-based opportunity must have a clear understanding of objectives, educational plan, and work-place remediation must become a clear priority for business and industry partners (Horn, 2016).

Student Career Decision Interventions

With the use of the needs-based findings in the CDDQ instrument, it is possible to begin offering specific and more beneficial career guidance by addressing specific areas of dysfunction within the subcategories. Within the constructs of *readiness* and *lack of information* there are several subcategories that have considerable dysfunction across the data which have proposed interventions to help participants work through their career hesitancy. Students who are high in *lack of motivation* for choosing a future career have dysfunction before they begin the process, with the lower-class members making much of the dataset. It could be argued that this is expected, however, prior to beginning the process of career selection motivational interviewing (Miller & Rollnick, 2013) has been proposed as the intervention strategy for this issue.

By utilizing a series of questions and counseling with students, the student may begin forming opinions and goals for themselves of what future career decisions will look like and what steps they are willing to take to investigate career interests. Similarly, the

lack of information about the self was an area of dysfunction across the divisions of student participants. Helping to identify core beliefs and identify personal attributes through this process may prove beneficial to students who are lacking confidence about their potential in their future careers.

Savickas (2002) and Fuqua (1983) have previously indicated that the lack of career commitment may be indicative of latent psychological stressors. By utilizing student's subcategory scores and delivering tailored interventions targeted to the current dysfunction would give educators a definitive strategy for impacting student success. Identifying decision dysfunction at the district level may help to bring about more collaborative and large-scale interventions that redefine the current delivery of intervention. As a lack of information pertaining to career decision processes may walk students through each step of the career choice process or into a new paradigm of life design where students are guided in practices of redefining their goals and aspirations (Savickas M. L., 2012).

Conclusion

A standout feature of the findings highlights a gap in student awareness. This awareness gap manifests across various levels of the indecision process beginning prior to the process of making their career decision at the subcategory of *lack of readiness* level and into the subcategories of *lack of information* and *inconsistent information* issues during the process. This has caused some breakdown in the process as students enter the process of career decision making having committed to the level of needing a career choice, however, are having issues navigating their pathways into career readiness. The study was conducted to

measure and describe the features of career dysfunction prior to future strategies designed to target these issues.

Work-based opportunities must continue to be a feature of career readiness and a cornerstone feature at the exploration level to help guide students to their future career paths. The students engaged in work-based learning opportunities across all grade levels demonstrate higher levels of planning and career preparation when compared to those who have not completed a work-based learning opportunity. By delivering these opportunities earlier in the career pathway experience, students have an opportunity to make a more informed decision and create a more developed plan of action by the conclusion of their high school education. Local educational authorities and industry partners must come together to create a support system of high-engagement and quality work-based opportunities that emphasize the building of an individual's personal skill in tandem with the technical skills as college and career readiness emphasizes in the classical sense.

Interestingly, the single item of self-described career decision difficulty was the greatest indicator for the levels of indecision. It is perhaps worthwhile to return to a cognitive apprenticeship style of career decision and introduce guided reflection as a means of ameliorating cognitive dissonance along the career decision process. In the paradigm of career readiness, it may be more beneficial for students to assess their readiness and through guided reflective practices. These could be through writing, audio/video recording, or general counseling sessions with professionals to help students. The goal of these guided reflection sessions would be to assess what barriers, goals, and processes they would need to resolve before the commitment to a career can be achieved. As indicated through the subcategories of the CDDQ it may be beneficial to deliver

guided reflection along the spectrum to help students have an opportunity to elucidate their hesitancy in career commitment.

As educational authorities continue to refine technical education strategies, the goals and objective of relevant stakeholders must be assessed and aligned. Structured exploration into career fields and skill sets must be clear for students, counselors, and educators to define the strategy with milestones and benefits of career pathway commitment. Clearly defined strategies for career development and utility for future career opportunities will help students to understand the age-old question of *"what's in it for me?"* As technical educators, the goal is to ground all curriculum in technical-skill and human-skill development. However, these objectives must become explicit within the curriculum.

REFERENCES

Alexander, I. E., Macht, L. B., & Karon, B. P. (1959). The level-of-aspiration model: Applied to occupational preference. *Human relations*, 163-170.

Amir, T., Gati, I., & Kleiman, T. (2008). Understanding and Interpreting Career Decision-making difficulties. *Journal of Career Assessment*, 281-309.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York, New York: W.H. Freeman/Times Books.

Barak, A., & Friedkes, R. (1981). The mediating effects of career indecision and subtypes on career counseling effectiveness. *Journal of vocational behavior*, 120-128.

Barlow, M. (1967). *History of industrial education in the United States* . Bennett.

Camara, W. (2013). Defining and measuring college and career readiness: A validation framework. *Educational Measurement: Issues and Practices, 32*(4), pp. 16-27.

Carroll, R., & Piro, J. S. (2020). College and Career Readiness though High School Experiential Learning in the United States. *International Journal of Experiential Learning & Case Studies*, 79-99.

Christensen, J., Warnick, B. K., Spielmaker, D., Tarpley, R. S., & Straquadine, G. S. (2009). Agricultural In-service needs of introductory level career and technical education teachers. *Journal of Agricultrual Education, 50*(4), 1-13.

Christo-Baker, E. A., Sindone, A., & Roper, C. (2017). Addressing the skills gap: A regional analysis. *The Journal of Applied Business and Economics, 19*(8), pp. 10-21.

Conley, D. T. (2012). *A complete definition of college and career readiness.* Educational Policy Improvement Center.

Davidson, J. C., & Blankenship, P. (2017). Initial academic momentum and student success: Comparing 4- and 2-year students. *Community College Journal of Research and Practice, 41*(8), pp. 467-480.

DeLorenzo, D. R. (2000). The relationship of cooperative education exposure to career-decision-making self-efficacy and career locus of control. *Journal of Cooperative Education*, 15-24.

Department of the Treasury Office of Economic Policy. (2015). *Occupational licensing: A framework for policy makers.* Washington D.C. .

Edgerton, A. K., & Desimone, L. M. (2018). Teacher Implementation of college and career-readiness standards: Links among policy, instruction, challenges, and resources. *AERA, 4*(4).

Edwards, W. (1954). The theory of decision making. *Psychological bulletin, 51*(4), 380.

Edwards, W. (1955). The prediction of decisions among bets. *Journal of experimental psychology*, 201.

Esters, L., & Retallick, M. S. (2013). Effect of an experiential and work-based learning program on vocational identity, career-decision self efficacy, and career maturity. *Career and Technical Education Research* , 69-83.

Feather, N. (1959). Subjective probability and decision under uncertainty. *Psychological Review, 66*(3), 150-164.

Festinger. (1957). *A theory on cognitive dissonance* (Vol. 2). California: Stanford university press.

Fuller, J. B., & Sigelman, M. (2017). *Room to grow: Identifying new fronteirs for apprenticeships.* Boston: Burning Glass Technologies and Harvard business School.

Fuqua, D. R., & Hartman, B. W. (1983). Differential diagnosis and treatment of career indecision. *Personnel & Guidance Jornal, 62*(1).

Gati, I. (2013). Advances in career Decision Making. In W. B. Walsh, M. L. Savickas, & P. J. Hartung, *Hanbook of vocational psychology: Theory, research, and practice* (pp. 183-215). Routledge/Taylor & Francis Group.

Gati, I., & Kulcsár, V. (2021). Making better career decisions: From challenges to opportunities . *Journal of Vocational Behavior*.

Gati, I., & Saka, N. (2001). High School Students' Career-Related Decision-Making Difficulties. *Counseling & Development, 79*(3), 75-84.

Gati, I., Krausz, M., & Osipow, S. H. (1996). A taxonomy of difficulties in career decision making. *Jounral of Counseling Psychology, 43*(4), 510-526.

Ginzberg, E., Ginsburg, J. W., Axelrod, S., & Herma, J. L. (1951). *Occupational choice.* New York: Columbia University Press.

Gordon, H. R. (2014). *The history and growth of career and technical education in America (4th Ed.).* Long Grove, IL, United States of America: Waveland Press.

Heriot, G. (2016). *Apprenticeships: Useful alternative, tough to implement (Policy Analysis No. 805).* Cato Institute Policy.

Hilton, T. L. (1962). Career decision-making. *Jounral of counseling psychology, 9*(4), 291-298.

Hoff, K. A., Briley, D. A., Wee, C. J., & Rounds, J. (2018). Normative changes in interests from adolescence to adulthood: A meta-analysis of longitudinal studies. *Psychological bulletin*, 426.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* . Odessa: Psychological Assessment Resources .

Horn, D. (2016). The effectiveness of apprenticeship training: A within-track comparison of workplace-based and school-based vocational training in Hungary. *Social Science Research*, 139-154.

Johnson, R. B., & Christensen, L. (2019). *Educational Research: Quantitative, Qualitative, and Mixed Approaches.* SAGE Publications, Inc.

Kaiser, H. F. (1974). An index of factorial simplicity. *psychometrika*, 31-36.

Kazin, R. I. (1976). Educational/vocational indecision questionnaire: Replication of a factor analysis. *annual meeting of the American Psychological Association.* Washington, DC.

Kober, N. (2007). *Why we still need public schools: Public education for the common good.* Center on Education Policy.

Larkin, P. (2017). *A brief history of occupational licensing.* The Heritage Foundation.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Cambridge university press.

Lewin, K. (1936). *Principles of topological psychology.* New York: McGraw-Hill.

Lewin, K. (1946). Behavior and development as a function of the total situation. In L. Carmichael, *Manual of child psychology* (pp. 791-844). New York: Wiley.

Lewin, K. (1947). Group decisions and social change. In T. M. Newcomb, & E. L. Hartley, *Readings insocial psychology.* New York: Henry-Holt.

Lewin, K., Dembo, T., Festinger, L., & Sears, P. S. (1944). Level of asipration. In J. M. Hunt, *Personality and the behavior disorders* (pp. 333-378). Ronald Press.

McEntire, E. (1992). *Lecture notes for Psychology of Learning course.* Waco, TX.

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change.* New York, New York: Guilford Press.

National Student Clearinghouse Research Center. (2021). *Enrollment information 2021.*

Osipow, S. H., & Gati, I. (1998). Construct and concurrent validity of the career decision-making difficulties questionnaire. *Journal of Career Assessment*, 345-363.

Osipow, S. H., Carney, C. G., & Barak, A. (1976). A scale of educational-vocational undecidedness: A typological approach. *Journal of vocational behavior*, 233-244.

Osipow, S. H., Carney, C. G., Winer, J., Yanico, B., & Koschier, M. (1976). *Career Decision Scale.*

Osipow, S. H., Winer, J. L., Koschir, M., & Yanico, B. (1975). A modular approach to self-counseling for vocational indecision using audio-cassettes: A prototype. In L. Simpson, *Audio-visual media in career development* (pp. 34-38). Bethlehem: College Placement Council.

Perna, M. C. (2018). *Answering Why: Unleashing Passion, Purpose, and Performance in Younger Generations.* Greenleaf Book Group.

Pilz, M. (2007). Two countries - one system of vocational education? A comparison of the apprenticeship reform in the commercial sector in Switzerland and Germany. *Compare: A Journal of Comparative and International Education, 37*(1), 69-87.

Roberts, J. K., & Grant, P. (2021). What we know and where to go: A Systematic review of the rural student college and career readiness literature and future directions for the field. *The Rural Educator, 42*(2), 72-94.

Rochat, S. (2019). The career decision-making difficulties questionnaire: A case for item-level interpretation. *The Career Development Quarterly, 67*(3), 205-219.

Salkind, N. J. (2014). *Statistics for people who hate statistics* (Vol. 5). London, UK: SAGE.

Savickas, M. (2002). Career construction: A developmental theory of vocationl behavior. In D. Associates, *Career choice and Development* (pp. 149-205). Jossey-Bass.

Savickas, M. L. (2012). Life design: A paradigm for career intervention in the 21st century. *Journal of Counseling & Development*, 13-19.

Services, U. D. (2022). *Utah Annual County Profiles - Emery*. Retrieved from Utah Department of Workforce Services: https://jobs.utah.gov/wi/insights/profile/

Skinner, C. S., Tiro, J., & Champion, V. L. (2015). Background on the health belief model. *Health behavior: Theory, research, and practice, 75*, 1-34.

Slaney, R. B. (1980). Expressed vocational choice and vocational indecision. *Journal of counseling psychology*, 122-129.

Spearman, C. (1904). General intelligence, objectively determined and measured. *American Journal of Psychology* , 201-293.

State of Florida Legislation. (2007). *Career and professional educaiton*. Retrieved from State of Florida Legislation: www.leg.state/fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=1000-1099/1003/Sections/1003.491.html

Stoltz, K. B., & Barclay, S. R. (2019). *A comprehensive guide to career assessment.* Broken Arrow, OK: National Career Development Association.

Super. (1969). Vocational development theory: Persons, positions, and processes. *The counseling psychologist*, 2-9.

Super, D. (1953). A theory of vocational development. *American Psychologist, 8*(5), 185-190.

Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of vocational behavior, 16*(3), 282-298.

Super, D. E., Crites, J. O., Hummel, R. C., Moser, H. P., Overstreet, P. L., & Warnath, C. G. (1957). *Vocational development: A framework for research.* New York: Bureau of Publications.

Super, D. E., Savickas, M., & Super, C. M. (1996). The life span, life space approach to careers. In D. Brown, & L. Brooks, *Career choice and development: Applying contemporary theories to practice* (pp. 121-178). Jossey-Bass.

Talent Ready Utah. (2021, March). *Talent Ready Utah Apprenticeship Connection (TRAC)* . Retrieved from Talent Ready Utah: talentreadyutah.com/trac/

Torpley, E. (2020). *Education level and projected openings, 2019-2029.* Washington D.C.: Bureau of Labor Statistics.

Utah Department of Professional Licensing. (2022, October). *DOPL- Electrician*. Retrieved from Utah Department of Professional Licensing: https://dopl.utah.gov/el/

Utah Department of Workforce Services. (2022, October). *Local insights- Carbon County Snapshots*. Retrieved from Department of Workforce Services: https://jobs.utah.gov/wi/insights/county/carbon.html

Utah State Board of Education. (2022, October). *College and Career Awareness Strands and Standards*. Retrieved from Utah State Board of Education: https://www.schools.utah.gov/file/67f089cd-631b-4c70-9d64-f1c0c86cb430

Utah State Board of Education. (2022, October 03). *School Profile*. Retrieved from Utah State Board of Education - Carbon High Profile: https://utahschoolgrades.schools.utah.gov/School/Profile?SchoolID=293&DistrictID=279&SchoolNbr=704&SchoolLevel=HS&IsSplitSchool=0&schoolyearendyear=2021

Utah State Board of Education. (2022, October 03). *Utah State Board of Education - Emery Profile*. Retrieved from School Profile: https://utahschoolgrades.schools.utah.gov/School/Profile?SchoolID=454&DistrictID=442&SchoolNbr=706&SchoolLevel=HS&IsSplitSchool=0&schoolyearendyear=2021

Utah State Board of Education. (2022, October 03). *Utah State Board of Education - Green River Profile*. Retrieved from School Profile: https://utahschoolgrades.schools.utah.gov/School/Profile?SchoolID=453&DistrictID=442&SchoolNbr=704&SchoolLevel=HS&IsSplitSchool=0&schoolyearendyear=2021

Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes.* Harvard university press.

Wolter, S. C., & Mühlemann, S. (2015). *Apprenticeship training in Spain - a cost effective model for firms.* . Guetersloh: Bertelsmann Stiftung.

Wolter, S. C., & Ryan, P. (2011). Apprenticeship. In S. M. Eric, A. Hanushek, & L. Woessmann, *Handbook of the Economics of Education* (pp. 521-576). Elsevier.

Yusuf, B., Walters, L. M., & Sailin, S. N. (2020). Restructuring Educational Institutions for Growth in the Fourth Industrial Revolution (4IR): A Systematic Review. *International Journal of Emerging Technologies in Learning*, 93-109.

Zytowski, D. G. (1965). Avoidance behavior in vocational motivation. *Personnel and guidance journal*, 746-750.

APPENDICES

Appendix A Questionnaire:

Perkin's High School Needs Assessment Survey – Student Questionnaire Southeastern Consortium.

What is your current grade level

Freshman in high school (1)
Sophomore in high school (2)
Junior in high school (3)
Senior in high school (4)
In college/university (5)

What school do you currently attend?

Carbon High School (1)
Pinnacle Canyon Academy (2)
Emery High School (3)
Green River High School (4)
San Juan High School (5)
White Horse High School (6)
Monument Valley High School (7)
Monticello High School (8)
Navajo Mountain High School (9)
Grand High School (10)
Utah State University (11)

What are your current career interests?

Business, finance, and marketing (1)
Healthcare/medical (2)
Engineering and technology (3)
Computer science and information technology (4)
Arts, audio video technology and communications (5)
Architecture and construction trades (6)
Transportation, distribution, and logistics (7)
Agriculture, food, and natural resources (8)
Human services (9)
Education and training (10)
Health science (11)
Hospitality and tourism (12)

Law, public safety, corrections, and security (13)
Manufacturing, welding, production (14)
I have no current career interests (15)

Do I think my classes are preparing me for a future career?

No (1)
Yes (2)

What classes do I wish were offered, that are not currently offered?

Have you participated in work-based learning or an internship?

No (1)
Yes (2)

Have you considered an apprenticeship?

No (1)
Yes (2)

I do not feel that the Bachelor's Degree-education model is tailored for me.

Not Like Me At All (1)
Only Slightly Like Me (2)
Very Much Like Me (3)
Exactly Like Me (4)

I have decided on a career and feel comfortable with it.

Not like me at all (1)
Only slightly like me (2)
Very much like me (3)
Exactly like me (4)

I know how to go about implementing a plan for my career choice.

Not like me at all (1)
Only slightly like me (2)
Very much like me (3)
Exactly like me (4)

I have decided on a plan of study after high school and feel comfortable with it.

Not like me at all (1)
Only slightly like me (2)

Very much like me (3)
Exactly like me (4)

I know how to go about implementing my plan of study after high school.

Not like me at all (1)
Only slightly like me (2)
Very much like me (3)
Exactly like me (4)

Appendix B: Career Decision-Making Difficulties Questionnaire

Age: _____

Number of years of education: _____

Sex: Female / Male

Have you considered what field you would like to major in or what occupation you would like to choose?

Yes / No

If so, to what extent are you confident of your choice?

Not confident at all 1 2 3 4 5 6 7 8 9 Very confident

Next, you will be presented with a list of statements concerning the career decision-making process. Please rate the degree to which each statement applies to you on the following scale:

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

Circle 1 if the statement does not describe you and 9 if it describes you well. Of course, you may also circle any of the intermediate levels.

Please do not skip any question.

Lack of Readiness

For each statement, please circle the number which best describes you.

I know that I have to choose a career, but I don't have the motivation to make the decision now ("I don't feel like it").

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

Work is not the most important thing in one's life and therefore the issue of choosing a career doesn't worry me much.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I believe that I do not have to choose a career now because time will lead me to the "right" career choice.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

It is usually difficult for me to make decisions.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I usually feel that I need confirmation and support for my decisions from a professional person or somebody else I trust.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I am usually afraid of failure.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I like to do things my own way.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I expect that entering the career I choose will also solve my personal problems.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I believe there is only one career that suits me.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I expect that through the career I choose I will fulfill all my aspirations.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

Lack Of Information

I believe that a career choice is a one-time choice and a life-long commitment.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I always do what I am told to do, even if it goes against my own will.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not know what steps I have to take.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not know what factors to take into consideration.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I don't know how to combine the information, I have about myself with the information I have about the different careers.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I still do not know which occupations interest me.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I am not sure about my career preferences yet (for example, what kind of a relationship I want with people, which working environment I prefer).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not have enough information about my competencies (for example, numerical ability, verbal skills) and/or about my personality traits (for example, persistence, initiative, patience).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not know what my abilities and/or personality traits will be like in the future.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not have enough information about the variety of occupations or training programs that exist.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

Inconsistent Information

I find it difficult to make a career decision because I do not have enough information about the characteristics of the occupations and/or training programs that interest me (for example, the market demand, typical income, possibilities of advancement, or a training program's perquisites).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I don't know what careers will look like in the future.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not know how to obtain additional information about myself (for example, about my abilities or my personality traits).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not know how to obtain accurate and updated information about the existing occupations and training programs, or about their characteristics.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I constantly change my career preferences (for example, sometimes I want to be self-employed and sometimes I want to be an employee).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I have contradictory data about my abilities and/or personality traits (for example, I believe I am patient with other people but others say I am impatient).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I have contradictory data about the existence or the characteristics of a particular occupation or training program.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I'm equally attracted by a number of careers and it is difficult for me to choose among them.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because I do not like any of the occupation or training programs to which I can be admitted.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because the occupation I am interested in involves a certain characteristic that bothers me (for example, I am interested in medicine, but I do not want to study for so many years).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because my preferences cannot be combined in one career, and I do not want to give any of them up (e.g., I'd like to work as a free-lancer, but I also wish to have a steady income).

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because my skills and abilities do not match those required by the occupation I am interested in.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because people who are important to me (such as parents or friends) do not agree with the career options I am considering and/or the career characteristics I desire.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

I find it difficult to make a career decision because there are contradictions between the recommendations made by different people who are important to me about the career that suits me or about what career characteristics should guide my decisions.

Does not describe me 1 2 3 4 5 6 7 8 9 Describes me well

Finally, how would you rate the degree of your difficulty in making a career decision?

Low 1 2 3 4 5 6 7 8 9 High

Appendix C: Carbon Data Release

CARBON SCHOOL DISTRICT

December 5, 2022

To Whom It May Concern,

Carbon School District gives permission for Zak Konakis to utilize Perkins Southeast Consortium Data which was collected in our comprehensive needs assessment conducted Fall 2022.

Thank you,

Mika Salas
Superintendent

Carbon School District, 251 W. 400 N. Price, Utah 84501 435-637-1732 435-637-9417
www.carbonschools.org

Appendix D: Gati Instrument Release

CDDQ34-icc-per.doc

Itamar Gati, Ph.D.
School of Education, Hebrew University, Jerusalem, ISRAEL

e-mail: itamar.gati@huji.ac.il Fax: (+972)-2-5882084

If you agree to the following conditions, please sign the attached statement, indicate the number of copies you desire to reproduce for your goal, and send it to me by e-mail or fax it to the number above. When I receive the signed copy, I will send you a copy of the CDDQ along with your copy of the signed permission slip that will allow you to reproduce the instrument. Please limit requests to no more than 1000 at a time. If you need more, please let me know. Permission expires one year after it is granted.

Note: The instrument must be reproduced in its entirety. Permission to reproduce separate items is not granted.

1. I agree to reproduce the instrument in its entirety with no changes in content or format.
2. I agree to include the copyright statement shown on the instrument. Please add that it has been reproduced with the permission of the authors.
3. I will share the data with Gati and Osipow and provide specific data for secondary analysis with the understanding that appropriate credit will be cited.
4. This permission to reproduce is limited to this occasion; permission expires in one year from the date of the permission letter; permission is limited to 1000 copies; future reproduction requests must be specifically and separately requested.
5. Foreign translations must be back translated into English and approved by Itamar Gati.

I agree to the above conditions:

Name: *Zak A. Konakis* Date: *10/29/2022* e-mail: *Zak.konakis@usu.edu*

Signature *Zak Konakis* Fax:_____ Tel: *1(435)613-5214*

Address:
ATTN: Zak Konakis
Utah State Univeristy,
451 East 400 North,
Price, Utah 84501.

Sincerely,

Itamar Gati 10/30/2022

Itamar Gati, Ph.D.

Permission is not granted without the signature of Itamar Gati in this space.

te\cddq-per-icc.doc

Appendix E: USBE Career Pathway Clusters

Utah Career Pathways

Utah Career Pathways align with and are categorized by the national Career Clusters®. Each Career Pathway culminates in an industry recognized credential of value.

Career Pathway Charts: 2022-2023 | 2021-2022 | 2020-2021 | 2019-2020

Career Pathways List: 2023-2024 | 2022-2023 | 2021-2022 | 2020-2021 | 2019-2020

Credentials of Value Chart: 2020-2021

- AGRICULTURE, FOOD AND NATURAL RESOURCES
- ARCHITECTURE AND CONSTRUCTION
- ARTS, AUDIO/VISUAL TECHNOLOGY AND COMMUNICATIONS
- BUSINESS, FINANCE AND MARKETING
- COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
- EDUCATION AND TRAINING
- ENGINEERING AND TECHNOLOGY
- HEALTH SCIENCE
- HOSPITALITY AND TOURISM
- HUMAN SERVICES
- LAW, PUBLIC SAFETY, CORRECTIONS AND SECURITY
- MANUFACTURING
- TRANSPORTATION, DISTRIBUTION AND LOGISTICS

Appendix F: IRB Determination

Determination of Non-Human Subjects Research

From: Melanie Domenech Rodriguez, IRB Chair

Nicole Vouvalis, IRB Director

To: ***Michael Pate***

Date: ***December 6, 2022***

Protocol #: ***13189***

Title: ***CTE Student's Career Indecision***

Based on the information provided to USU's IRB, it has been determined that this project does not qualify as human subject research as defined in 45 CFR 46.102(e) and/or (l), and is not subject to oversight by USU's IRB. Should your project change from that described in the submission detailed above, please file a new Request for Determination of Non-Human Subjects Research. This application will be closed one year following approval so please retain this letter as evidence of the IRB's determination.

Appendix G: Emery Data Release

Emery County School Distric

120 North Main • Box 120 • Huntington, Utah 8452
(435) 687-9846 Fax (435) 687-984

February 8th, 2023

RE: Request for Data Permission

Approval for Zak A. Kanakis, MPH-Utah State University Eastern

Zak Kanakis has Emery School District's approval to use Perkins Southeast Consortium Data collected in the comprehensive needs assessment conducted Fall 2021 as well as other available data upon request to support his study. Additional data requests would require completion of our District's Data privacy form. We find this study meaningful to program advancement, and are hopeful that it can lead to determining root cause concerns for some of our program deficits.

We support study into characteristics of career and technical programs and possible correlation associated with students' career interest. Career indecision can delay or derail students in their career paths. We have interest in how we can use the results of this study to support our CTE programs. With the parameters of "No names or identifiers requested. All data will be reported in aggregate form to prevent identification of individual students or school traits beyond region characteristics." We are comfortable with the data requests of this study.

Sincerely,

Ryan Maughan
Superintendent