12-2022

Responsive Technical Education Curriculum: An Exploratory Case Study Approach Toward Understanding Human Skills Alignment

Kari Lamoreaux
Utah State University

RESPONSIVE TECHNICAL EDUCATION CURRICULUM: AN EXPLORATORY CASE STUDY APPROACH TOWARD UNDERSTANDING HUMAN SKILLS ALIGNMENT

by

Kari Lamoreaux

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

of

DOCTOR OF PHILOSOPHY

in

Career and Technical Education

Approved:

Gary Straquadine, Ph.D. Committee Chair	Jamie Cano, Ph.D. Committee
Ryan Knowles, Ph.D. Committee Member	Debra Spielmaker, Ph.D. Committee Member
Brian Warnick, Ph.D. Committee Member	D. Richard Cutler, Ph.D. Vice Provost of Graduate Studies

UTAH STATE UNIVERSITY
Logan, Utah

2022

ABSTRACT

Responsive Technical Education Curriculum: An Exploratory Case Study Approach Toward Understanding Human Skills Alignment

by

Kari Lamoreaux, Master of Education

Utah State University, 2022

Major Professor: Dr. Gary Straquadine
Department: Applied Sciences, Technology, and Education

Globalization and rapid changes in technology have led to a shift in the skills needed by current employers. These changes have resulted in what government entities, educational institutions, and industry leaders have termed a *skills gap*, a mismatch between the abilities that employers rely upon in their employees and the abilities that job seekers possess. This exploratory case study, conducted within a local context, sought to better understand the uniquely human skills employers desire and technical educators need to teach to maximize social efficiency and develop human capital.

The study was conducted in four phases. 1) A content analysis of current literature was completed to identify commonly recurring human skills. 2) These skills were then used as search terms in an analysis of Davis Technical College occupational advisory committee meeting minutes from Fall 2018 to Spring 2021. 3) Two survey instruments were then created from these analyses: one for distribution among occupational advisory committee members and the other for distribution among Davis Technical College

faculty. 4) Data was collected and analyzed using both descriptive and inferential statistics.

This dissertation reports employer perceptions regarding the importance of human skills for entry-level employees and for career success. In addition, it reports faculty perceptions regarding the importance of human skills for entry-level employees and the instructional methods used to help develop these skills. These perceptions were compared both within and between groups, categories, and industries. Among the many findings of the study, *integrity* and *work ethic* were found to be the most important human skills across all constructs explored, both for employers as well as faculty.

An important implication of this study is that *human skills* are difficult to name, define, and operationalize in industry, education, and research contexts. Findings from the study provide a catalyst for further discussion among stakeholders rather than an ending point of inquiry. A better understanding of how employers define and perceive the human skills most important to their industry contexts for entry-level employees is needed if faculty want to create responsive curricula.

(247 pages)

PUBLIC ABSTRACT

Responsive Technical Education Curriculum: An Exploratory Case Study Approach Toward Understanding Human Skills Alignment

Kari Lamoreaux

Globalization and rapid changes in technology have led to a shift in the skills employers need. These changes have resulted in a gap between the skills people have and those required by industry. This exploratory case study sought to better understand the uniquely human skills employers desire and technical educators should teach in order to address this gap in a local context. The study was conducted in four phases. 1) Current literature was analyzed to identify commonly recurring human skills discussed in studies and reports. 2) These skills were then used as search terms in an analysis of occupational advisory committee meeting minutes. 3) Two survey instruments were then created from these analyses: one for distribution among employers in Davis and Morgan Counties, Utah, and the other for distribution among Davis Technical College faculty. 4) Data was collected and analyzed using both descriptive and inferential statistics.

This dissertation reports employer perceptions regarding the importance of human skills for entry-level employees and for career success. In addition, it reports faculty perceptions regarding the importance of human skills for entry-level employees and the instructional methods used to help develop these skills. These perceptions were compared in multiple ways. Among the many findings of the study, *integrity* and *work ethic* were found to be the most important human skills across all constructs explored.

An important implication of this study is that the findings from the survey data should be utilized as a catalyst for further discussion rather than as the ending point of inquiry. A better understanding of how employers define and perceive human skills most important to their industry contexts for entry-level employees is needed if faculty want to create responsive curricula.

ACKNOWLEDGMENTS

I would like to acknowledge the following people who have all had a significant role in my pursuit of a doctorate degree! I would like to thank my two co-chairs: Dr. Gary Straquadine and Dr. Debra Spielmaker. Gary Straquadine, your constant support and encouragement quieted my anxiety and inspired me to be my best. Thank you for the privilege of being your last graduate student and for believing in me. Debra Spielmaker, thank you for introducing me to ASTE and inviting me to be part of this amazing family. Your advice and patience as I navigated my coursework and comprehensive exams were invaluable.

I would like to thank my committee members, Dr. Brian Warnick and Dr. Jamie Cano. Thank you for your support throughout my Ph.D. and for creating a professional path that lets me marry my passion for education with my eclectic skill set. Dr. Ryan Knowles, thank you for putting up with my endless questions both in class and throughout my research.

A huge thank you to all the Davis Technical College faculty and OAC members whose participation allowed me to better understand how human skills fit into technical training. Darin Brush, Leslie Mock, and Jenna Snyder – thank you for listening to my ideas, encouraging my research study, allowing me access to Davis Technical College resources, and facilitating data collection. I could not have completed this study without your support.

Next, I would like to thank my friends and coworkers who encouraged and supported me throughout my journey. Will Pierce was the first to tell me to go for it. Rose Judd-Murray was the first fellow Ph.D. student I met on my journey, and she never

hesitated to share her wisdom and positivity to smooth my path. Lezlie Christensen-Branum was by my side from the very first day in class and believed in me when I didn't believe in myself. She continues to offer her friendship and professional expertise as we move to our next adventures. Cory Ortiz and Zak Konakis are data gurus who spent countless hours helping me analyze and interpret my data.

Most importantly, I would like to recognize my amazing family. My father was the first to suggest this crazy, incredible goal; he then proceed to pray me across the finish line. My mother fed my children, bought my groceries, swept my sidewalks, pulled my weeds, and did a hundred other things to make my life easier. Their prayers, phone calls, meals, and love gave me the courage to begin and the stamina to complete this amazing adventure. Brandon, Nikki, Katy, and Ali –thank you for never complaining about upsetting our calm life in pursuit of my goal and for believing I could do it. I can never thank you enough for making me look like an amazing mom. You make me proud, and I could not have accomplished this without you! We Got This!

CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

The Skills Gap

The U.S. Chamber of Commerce president and CEO recently highlighted the challenge of the national skills gap in his keynote address at the U.S. Chamber Foundation's "Talent Forward" conference, stating that "too many people lack the skills or credentials they need to compete for 21st century jobs" (Donohue, 2018). His assertion draws attention to the impact of the skills gap on employees; however, he also emphasized that the skills gap affects businesses and closing it is imperative to our nation's economic competitiveness.

Donohue is not alone in his concern. According to CEO and chairperson Jonas Prising (Manpower Group, 2020), talent shortages may well be the defining economic challenge of our time, and this challenge is not limited to the United States. Prising argued, "More than half of companies around the world cannot find the skills they are looking for—almost double what it was a decade ago" (p. 1). This skill shortage poses many consequences. For example, a report from the Society for Human Resource Management (2019) suggested that "the talent shortage will have a stifling impact on the economy and global innovation" (p. 2). More specifically, Deloitte's study (2018) predicted the skills gap will leave an estimated 2.4 million positions unfilled between 2018 and 2028, with a potential economic impact of $2.5 trillion. With such substantial economic consequences, industry leaders, government entities, and educational institutions are looking at both why the skills gap—a mismatch between the abilities that

employers rely upon in their employees and the abilities that job seekers possess—exists and how to best close the gap.

Changing Skills

Over time, the skills perceived to hold promise for closing the gap have shifted radically. Prior to the late 1900s, creating a skilled workforce meant teaching basic technical skills that aligned with a specific job. Technical education programs and curricula fulfilled their mission by teaching technical skills such as programming, designing, or executing (Kleibard, 2004; Gordon, 2014), and teaching these job-specific skills aligned well with the Tayloristic approach, which relied on employees to perform repetitive routine tasks (Packer, 1992). However, changes in technology have updated many of these processes, creating a need for entry-level employees to have more than just technical skills (Holzer, 2015).

More recently, government agencies, educational researchers, and economists began focusing on how workplace changes should affect education to prepare students for the workplace. This attention resulted in a number of reports, beginning with the U.S. Department of Labor's seminal Secretary's Commission on Achieving Necessary Skills (SCANS) report in 1991. A commission of representatives from the nation's schools, businesses, unions, and government examined "changes in the world of work and the implications of those changes for learning" (The secretary's commission on achieving necessary skills, 1991). This report, *What Work Requires of Schools*, became known as the SCANS report, and it defines eight requirements that are "essential preparation for all students" going directly to work. These requirements include the need for students to

learn and develop not only basic job skills but also thinking skills and personal qualities. The framework created by this commission can be found in Appendices A and B.

Over a decade later, the U.S. Department of Education (USDE) similarly determined that to be successful in the workplace, students need not only technical skills but also "the ability to use their knowledge and skills—by thinking critically, applying knowledge to new situations, analyzing information, comprehending new ideas, communicating, collaborating, solving problems, making decisions" (Partnership for 21st Century Skills, 2002, p. 9). Their report established that, even though technology has simplified and even eliminated routine tasks, resulting in fewer positions available to workers with basic job skills, there are increasing opportunities for highly skilled workers who possess skills beyond those required to complete a task in a workplace that is constantly evolving. The Partnership for 21st Century Skills framework can be found in Appendix C.

As the workplace evolved, the USDE continued to respond. A recent initiative from the Office of Career, Technical, and Adult Education resulted in the *Employability Skills Framework* (see Appendix D). This framework is the latest attempt to connect policymakers, educators, and employers' efforts to define skills needed to succeed in the workplace. The framework describes nine skill sets that focus not only on workplace skills but also on applied knowledge and effective relationships as crucial components of career readiness (Office of Career, Technical, and Adult Education, U.S. Department of Education, n.d.).

These three pivotal reports demonstrate the growing acceptance among educators, government leaders, and businesses that nontechnical skills are critical to workplace

success. However, they also reveal a lack of consensus regarding identifying and defining these skills. Furthermore, it is important to note that, while these frameworks identified desirable skills and competencies at a national level, those desired by local communities and contexts likely differ substantially. While there seems to be universal recognition that nontechnical skills are important, when pressed to name, define, or describe particular nontechnical skills, the concept becomes murky (Matteson et. al., 2016). This lack of consensus increases the challenge of closing the skills gap, as teachers can't teach necessary workplace skills until those skills are named and defined.

Matteson et al. (2016) suggested the first step toward meaningfully defining the skills needed is to "first establish what skills are and how [or if] they differ from related concepts, such as attitudes, beliefs, disposition and traits, and values" (p. 73). However, clearly defining the term *skill* is not an easy task. In the past, the term *skill* usually referred to a specific manual operation; now this term is used to encompass "any practice, form of knowledge, or way of constituting productive labor" (Tribble, 2009, p. 1). Abdullah-Al-Mamun (2012) agreed, stating that *skills* are often described as an indefinable or abstract concept.

For example, there has been some debate about whether the skills employers want in their employees are actually *skills*. Boahin and Hofman (2013) preferred the term *competency* rather than *skill* to "conceptualize performing the task to a specified standard relative to a given occupation," and Heckman and Kautz (2012) chose to use the term *traits* rather than *skills* or *character* to capture the personal attributes that should be studied for workplace readiness.

Despite the large number of definitions for the term *skill*, most definitions included the idea that a skill can be learned and developed through suitable training (Kechagias, 2011), thus making the term *skills* appropriate for both industry and educational contexts.

Labeling the type of skills has proven difficult over time. Graham and Porterfield (2018) describe the difficulty they encountered in the following way:

> To encourage consistency and clarity, this study will use the term professional skills. However, the decision did not come about easily. Inconsistency in naming these skills is not new. In the 1970s, Whitmore and Fry referred collectively to the skills that are not technical mechanical skills as soft skills. Since then . . . various names have been used. Even calling them professional skills creates problems. This moniker captures merely a small portion of the overall breadth of these skills and their effect on careers and organizations, especially when blended with strong technical skills. Second, professional skills suggests that technical skills are something else (certainly not unprofessional skills); any career success requires a strong foundation of technical skills. Third, this moniker seems to impose a limit—only professional situations—on where these skills can benefit someone, when their application can enrich all aspects of life, including say a marriage or friendship. Other names create similar or additional concerns. In addition to the inconsistency around what to call these skills, determining which skills are necessary varies by study, respondent perspective, and professional organization. (p. 4)

Similarly, deciding what name to use in this study was not an easy decision. In this study, the researcher consciously chose not to use the terms professional, employability, 21st century, success, essential, or workplace skills, to avoid the issues described by Graham and Porterfield. Instead, the term *human skills* will be used to refer to all skills, behavior, attitudes, personal values, and character traits beyond technical skills that can be learned and developed. Use of the term *human* highlights that

> these are the skills that will distinguish us from artificial intelligence (AI), machine learning, and deep learning applications. These are the things that robots and AI will not be able to do for the foreseeable future in the way that human beings do them" (L'Italien, 2018).

Use of the term *skills* highlights that they can be developed through training and practice. By using the term *human skills*, this study seeks to better understand the uniquely human skills employers desire and educators need to teach.

Closing the Skills Gap

Globalization and rapid changes in technology have been identified as major contributing factors to a changing workplace and the shift in skills needed, thus creating the gap between the skills people have and those required by industry (Levesque, 2019; Mitchell et. al., 2010; Robles, 2012). In their fourth skills gap study and in conjunction with the National Association of Manufacturers, researchers at Deloitte (2018) found that most manufacturers thought the number one cause of the skills shortage is a "shifting skill set due to the introduction of new advanced technology and automation" (p. 4). A report by ACT, Inc. (2017) posited that as global competition increases, companies' profitability is directly dependent on having a talented workforce that is flexible and adaptable. Similarly, Prising predicted that as the pace of technological disruption, digitization, and automation continues to accelerate, the skills needed are also changing faster than ever (Manpower Group, 2020). Thus, the questions become, how can the current workforce be trained with the skills needed, and if possible, how can such training most efficiently be accomplished?

The ACT, Inc. report (2017) suggested that closing the skills gap will require collaboration among all stakeholders, including "educators, industry leaders and associations, credentialing agencies, workforce professionals, economic developers, policy leaders, and individuals" (p. 13). Levesque (2019) concurred, stating that creating

robust talent pipelines will require collaboration among government, education, and business. Likewise, in a study by the National Association of Manufacturers (2014), it was found that alliances that collaborate to assess common skills deficits then drive educational institutions to provide resources are the most successful at closing the skills gap.

While the Deloitte study also found that collaboration among stakeholders is a critical part of creating a supply of skilled workers, it emphasized the importance of educational partners, stating that the path forward should include long-term partnerships between organizations and technical education providers to develop programs and design curricula that build a strong connection with the industry. Collectively, these studies suggest that closing the skills gap effectively and efficiently will require educational institutions to partner with industry to assess what skills are needed and align curricula and training to ensure graduates match the performance expectations of real-world employers.

Technical Education

The need for educational partners to assist in creating a trained workforce is not new. In fact, since the 1800s, technical education, previously known as vocational education, has existed to fill this need, with its primary objective being to prepare graduates for occupations (The Editors of Encyclopedia Britannica, 1998). However, the growing skills gap refocuses stakeholder attention on the importance of technical education for the economy and the individual.

For example, in 2016, Georgia's Department of Education launched an initiative to improve technical education, stating, "It's essential that we offer the very best career education available, responsive to the changing economic landscape and aligned to the needs of business and industry" (Stirgus, 2016). Likewise, the governor of Florida signed an executive order to support technical education programs (Mahoney & Sokol, 2019), and Florida legislation was passed to provide scholarships to students in need to attend trade and technical schools (Harper, 2020). Relevant to the context of the current study, the state of Utah identified technical education as a primary solution to provide the needed talent for fast-growing business sectors, naming 2018 as the Year of Technical Education in Utah (Utah System of Higher Education, 2019).

Refocused attention on the importance of technical education has also occurred beyond the state level. In 2018 the U.S. President signed the Strengthening Career and Technical Education for the 21st Century Act, reauthorizing the Carl D. Perkins Career and Technical Education Act (Perkins V) (Advance CTE, 2021). A few years later, the U.S. Senate unanimously passed a resolution recognizing February 2021 as Career and Technical Education (CTE) Month (Newsroom of Todd Young, U.S. Senator for Indiana, 2021). While this attention seems to indicate that technical education is well positioned to create a skilled workforce and close the gap, the key to its success will be creating and maintaining training programs with curricula that respond to the rapidly changing needs of both the employers and the students who will become the trained workforce.

This alignment between training offered and skills needed is so important that the Council on Occupational Education (COE), a national accrediting agency of higher technical education institutions recognized by the U.S. Department of Education,

includes in its accreditation standards the need for each educational program to incorporate "current job market requirements in its instruction" and "instructional activities include knowledge, skills, work habits, and attitudes required of the occupation" (Council on Occupational Education Handbook, 2021). This accreditation standard is further evidence of the importance of educational and industry partners working together to develop effective curricula that align with the needs of the employer, thus preparing students to find successful employment and technical education providers to fulfill their role in providing a trained workforce that will begin to close the skills gap.

Designing Effective Curriculum

Curriculum design experts Wiggins and McTighe (1998) suggested that curriculum is effective only if students achieve the desired learning. To achieve *desired* learning, the implication follows that effective curriculum must first identify what students need to know, understand, or be able to do (Biggs, 2003; Tyler, 1949; Wiggins & McTighe, 2005). Similarly, Mitchell et al. (2010) emphasized that understanding how advances in the workplace change the skills successful employees need is a critical step in helping technical educators create a responsive curriculum that meets both the current and future needs of employers.

Standard Two in the COE Handbook of Accreditation (2021) further supported the importance of identifying what students need to learn by requiring that all educational programs have clearly stated objectives. However, Jerald (2009) suggested that deciding what skills or competencies should be taught to help students prepare for work in the 21st century can be elusive, as rapid changes in technology and globalization disrupt work and

trigger changes in the skills needed to succeed in today's workplace. It seems the very things that contribute to the skills gap, namely, rapidly changing technology and globalization, also create challenges in creating up-to-date objectives for technical education training programs that address both technical and human skills.

Problem Statement

Faculty at Davis Technical College continually worked to update learning objectives and create a curriculum that responds to local industry's rapidly changing needs, and identifying both the technical and human skills employers want has been an ongoing challenge (personal communication, Spring 2018). A report from ACT, Inc. (2017) reaffirmed this challenge and suggested there is a lack of "a standard common language . . . that easily communicates the competencies needed for a job and that demonstrates an individual has mastered them" (p. 3). To ascertain what local employers need from their employees, technical colleges in Utah have met semiannually with Occupational Advisory Committees (OAC), consisting of local employers, to assess and improve training programs to better align with industry needs. While employers have historically seemed to be able to communicate the technical skills needed, they often struggle to identify the more elusive human skills. The delineation of these human skills will allow Davis Technical College faculty to create curricula more responsive to the needs of local industry. Therefore, the problem this study investigated was to identify the human skills employers seek in their respective employees.

Statement of Purpose

The purpose of this exploratory study was threefold. The first purpose was to discover and compare what human skills employers in Northern Utah perceived as most important for their employees to possess to be hired for entry-level jobs, to be successful in those jobs, and to facilitate employment advancement. The second purpose was to discover what human skills the faculty at Davis Technical College thought were important to teach in their programs and what methods they are using to teach those skills. The third purpose was to draw comparisons about human skills perceptions among employers of various industries and between employer and faculty perceptions.

Research Questions

This study sought to answer the following research questions:

1. What human skills do selected employers in Davis and Morgan Counties, Utah, think are important for entry-level employees in their industry?
2. What human skills do selected employers in Davis and Morgan Counties, Utah, think are important for career success and employment progression?
3. What human skills do instructors at Davis Technical College think are important for their students to learn to be prepared for entry-level employment?
4. What methods do instructors at Davis Technical College use to facilitate the development of human skills in their technical programs?

5. How do the human skills employers perceive as important differ among industries?
6. Is there a difference between the human skills employers think are important for entry-level employees and the human skills Davis Technical College faculty think are important?

Definition of Terms

For this study, terms were defined as follows:

Entry-level jobs are the entry point into a profession between education and experience; these jobs typically require minimal education, training, and experience. Entry-level jobs are available in every industry, and some may require higher academic qualifications, while others might involve specialized skills, knowledge, or techniques (Indeed Editorial Team, 2021).

Human skills (also known as soft skills) are a cluster of essential nontechnical skills and attributes that are uniquely human. They include work habits, behaviors, attitudes, character traits, personal values, and competencies that are thought to be critically important to succeed in today's workplace. These skills shape how employees work, both on their own and with others. Human skills are broadly applicable and transferable to any workplace environment at any level of experience.

Industry clusters, also known as career clusters, are a group of occupations with similar features, and occupations in the same cluster require similar training in both technical and human skills. These clusters often serve as a way to organize training programs, curriculum design, and instruction. While there are both national and state

frameworks organizing careers and training programs, for this case study, the training programs were organized according to Davis Technical Colleges' program offerings (see Table 1).

Occupational Advisory Committees (OAC) "are composed of at least three members external to the institution, [and] must be appointed for each program taught by the institution. Their primary purpose is to ensure that desirable, relevant, and current practices of each occupation are being taught" (Council on Occupational Education, 2021, p. 91). OAC members are invited to participate as a committee member by faculty from the training program.

Technical education is "focused on the academic and vocational preparation of students for jobs involving applied science and modern technology" and is "typically offered in post-high-school curricula that are two years [or less] in length, is not designed to lead to a . . . degree, and is offered in a wide variety of institutions, such as technical institutes, junior colleges, vocational schools, as well as traditional 4-year colleges and universities" (The Editors of Encyclopedia Britannica, 1998). Technical education in Utah does not include general education coursework.

Technical skills (also known as hard skills) are the knowledge and skills needed to perform a particular task or activity. Technical skills will change as technology changes and are unique to a specific occupation, often requiring specialized training and practice for proficiency.

Training programs in technical education are a course or series of courses that provide hands-on, job-specific instruction focused on helping students develop the skills

required for a particular job function or trade. Completion usually leads to a certification, diploma, or even an associate's degree.

Table 1

Davis Technical College Industry Clusters and Training Programs

Business & Technology	Health Professions
Architectural & engineering design	Advanced emergency medical technician / emergency medical technician
Business administrative services	Dental assistant
Cybersecurity / information technology	Firefighter
Software development	Medical assistant
Web and graphic design	Medical office administration
Construction	Nurse assistant
Building construction technology	Pharmacy technician
Electrician apprentice	Phlebotomy
Heating and air conditioning	Practical nurse
Plumbing apprentice	Surgical technology
Manufacturing	Service Professions
Automation and robotics	Cosmetology/hair designer
CNC machining	Culinary arts
Composite materials technology	Esthetician/master esthetician
Injection molding	Nail technician
Welding technology	
Transportation	
Automotive technology	
Diesel/heavy-duty technology	

Assumptions

The following assumptions were made in the pursuit of this study:

1. The OAC members and faculty participating in this study had the capability to complete the online questionnaire, knew the answers asked of them, and answered items honestly, completely, and thoughtfully.

2. The content analysis of the literature and OAC meeting minutes provided an accurate representation of current stakeholder perceptive needs and values.
3. The OAC members who responded to the survey were appropriate and accurate representatives of the industry they replied for.

Limitations

The primary limitation of this study is its small population size. The population consisted of OAC members and faculty of Davis Technical College, representing a localized context. While results should not be generalizable beyond Davis Technical College, recognition of similar human skills among employers within the industries presented suggests results may be extracted accordingly. A second limitation occurred when selecting the human skills included in the survey instruments. The skills had to be limited to support survey response; it is possible that important skills could have been omitted.

Significance of the Research

Technical education has been identified as a possible solution to the growing skills gap because of its unique mission to prepare a skilled workforce and promote economic growth (53b, Utah Code, §106) and its ability to adapt more quickly to the changing needs of industry than traditional higher educational institutions (Dougherty S. M., 2016). However, to accomplish this mission, technical educators must understand exactly what skills employers want from their employees and align their training programs appropriately. Identifying the skills needed to be successful in a rapidly

changing, knowledge-based economy is an ongoing challenge (Jerald, 2009); however, beginning with the SCANS report *What Work Requires of Schools* (The secretary's commission on achieving necessary skills, 1991), research suggests that teaching both technical skills and human skills is critical if we want to prepare students for 21st century jobs and create a supply of skilled workers who are able to contribute to an organization's productivity and our nation's competitiveness (Donohue, 2018).

This research is significant because its findings can enable instructors at Davis Technical College to develop a responsive curriculum, including human skills, needed to train the workforce they serve. By aligning curricula with employers' needs in their regional area, educators can improve student employability. A skilled workforce will benefit the overall economy and individuals, who will be better able to find employment, thus supporting social efficiency through human capital development.

CHAPTER II

REVIEW OF THE LITERATURE

Theoretical Framework

The debate surrounding which philosophical basis should drive the goals of technical education started in the early 20th Century, with Snedden and Prosser's socially efficient education on one side and Dewey's democratic education on the other (DeFalco, 2016; Gordon, 2014; Hyslop-Margison, 2000; Stone, 2016).

As one of the most prominent educators of the progressive era and an advocate of social efficiency, Snedden argued for a vocational training model whose primary focus was meeting labor force needs and preparing students for immediate employment in occupations in which they excelled (Gordon, 2014). Snedden supported a two-part system of education: one part being academic and the other part being vocational, with a focus on how technical education benefits society.

Dewey, a well-known philosopher and educator and a leader of the progressive movement in education in the United States, opposed Snedden's socially efficient education framework and instead believed "the purpose of education was to provide the skills and competencies necessary for the integration of work, family, and community life" (Stone, 2014). Dewey believed occupational training was central to all education, and vocational education should be included as part of a comprehensive curriculum (Hyslop-Margison, 2000). In other words, Dewey viewed vocational training as an essential part of all academic education that benefits the individual, while Snedden and

Prosser advocated for keeping academic and vocational training separate to better serve society.

As evidenced by the current separation of academic and technical education in public schools today, it is clear which philosophy was adopted. Yet the debate about whether technical education should prepare students for work or prepare them for life, begun by Snedden and Dewey, is something of a false dichotomy (DeFalco, 2016; Rojewski, 2002; Stone, 2014). Scott (2014) suggested that technical education be seen as less of an either/or proposition and more of a multipurpose enterprise. For example, Stevens et al. (2018) found that individuals who received technical training consistently received higher wages. Backes et al. (2015), Holzer and Dunlop (2013), and Stevens et al. (2018) also found a substantial gain in the earnings of students with postsecondary credentials, both vocational certificates and associate degrees, when compared to high school graduates. The Utah System of Higher Education's 2017 report supports these findings (Carruth & Curtin, 2017). It is important to note that income has been directly connected to life satisfaction, happiness, and overall well-being (Killingsworth, 2021). Borbely (2009) posited that along with higher earnings, training leads to a higher degree of job security, suggesting both individuals and society derive economic benefit. This then suggests that *technical education* will also benefit both the student and the workforce.

Social efficiency theories have been criticized for privileging communal and economic goals over the individual (Kleibard, 2004). Yet theories such as the Human Capital Theory (HCT) identify education and training as the key to economic growth because the returns on education investment are *both* personal and social. The individual

is rewarded financially, and the economy is boosted by individuals with advanced human capital (Gillies, 2015). While some debate that social efficiency theories diminish the concept of education by narrowing the focus to education for work and increasing human capital, the definition of *human capital* in HCT encompasses not only knowledge or skills but also attributes and attitudes such as work ethic, reliability, honesty, individual responsibility, and other life skills as benefits to an individual and necessities for building human capital (Becker, 2002).

Prosser, a staunch supporter of Snedden and social efficiency, believed technical education was the key to socially efficient education (Gordon, 2014). Prosser advocated that the purpose of technical education was the development of human capital, thus simultaneously meeting the needs of the worker (by preparing the worker to earn higher wages) and the needs of the employer (by providing a trained workforce) (Doolittle & Camp, 1999; Kleibard, 2004; Gordon, 2014). Social efficiency advocates also contended that "public schools were an arm of the social system; and, as such, they had an inherent mission to further the good of society by contributing to its efficiency" (Doolittle & Camp, 1999, p. 1).

The current study adopted social efficiency as its theoretical framework for both theoretical and practical reasons. As conceived of in this study, social efficiency accomplishes both the individual and the collective goals in closing the skills gap. Furthermore, this study examined the perspectives of employers and educators to identify the human skills required for workplace success. While the study did not explicitly examine student perspectives, the impetus for the study was to uncover findings that will benefit all three stakeholders: students, faculty, and employers.

Literature Review

The skills gap has refocused attention on higher education, and specifically technical education, as a possible solution by providing the training needed to create a trained workforce. Donohue (2018) stressed the need to improve our education system and strengthen training to better equip current and potential workers with the skills needed today.

This literature review first provided a brief history of technical education to contextualize its role in education and articulate why it is the best way to prepare a skilled workforce. Identifying the role of technical education in closing the skills gap provides the historical and empirical foundation upon which to build the proposed study. Then, relevant literature was synthesized, including government, industry, and academic reports and studies describing the skills employers want, focusing on human skills. This synthesis made it possible to identify skills to do further research on employer and faculty perspectives about human skills.

For this literature review, Google Scholar, Education Resources Information Center (ERIC), Education Source, Professional Development, and PsycINFO databases were searched for studies that identified skills important to employers and taught through vocational education. Searches used combinations of the following terms: “human skills,” “soft skills,” “employability skills,” “professional skills,” or “21st-century skills” and “vocational training,” “vocational education,” “technical education,” or “career and technical education.” The decision was made not to limit searches to peer-reviewed articles because of the nature of technical education research. However, searches were limited to works published after 1991, when the U.S. Department of Labor released The

Secretary's Commission on Achieving Necessary Skills (SCANS) report: *What Work Requires of Schools*, focusing on studies published after 2015.

The articles found were reviewed and used to help identify additional relevant content, specifically key pieces of legislation and national reports focused on linking vocational education to the labor market. The primary goal of the review remained the identification of the human skills employers perceive as desirable in employees and vocational educators perceive as requiring teaching.

The Role of Career and Technical Education

The focus on technical education to create a trained workforce began with the Smith-Hughes Act of 1917, which identified vocational education as a separate and distinct system of education that focused its curricula on specific skills workers needed at that time, technical education has been tasked with preparing people for jobs (Dougherty & Lombardi, 2016; Hyslop-Margison, 2000; Stone, 2014). However, to successfully fulfill this purpose, the curriculum developed must be responsive to the needs of the employer. Mitchell et al. (2010) asserted that understanding how advances in the workplace change the skills successful employees need, and technical colleges need to teach, is a critical step in helping technical educators better realize their mission.

In the United States, the Division of Academic and Technical Education is responsible for helping students acquire both academic and technical skills to be prepared for high-skill, high-wage, or high-demand occupations in the 21st-century global economy (Education, 2020). Similarly, the mission of the Utah technical colleges is "to meet business and industry needs for technically-skilled workers and promote economic

development by providing market-driven technical education to secondary and adult students" (Legislature, 2021). These mandates highlight the important role technical education plays in the public education system, as well as the economy as a whole.

Knowledge-Based Economy

Technological developments are continuously changing the workplace. These changes, along with the globalization of markets, have transformed what were previously industrial countries into knowledge-driven economies (Laroche et. al., 1999). To effectively create the needed talent pool, educators must anticipate and respond to an endlessly changing workplace. Current research in human capital identified the need for both knowledge and skills in the current knowledge-based economy (Lewis-Sessoms, 2020) because information and knowledge have replaced labor and capital as the key factors of production.

A knowledge-based economy rests on creating, evaluating, and trading knowledge (Hendarman & Tjakraatmadja, 2012); thus well-educated and skilled individuals are an essential component of a thriving knowledge-based economy. Technical educators can support this economy and contribute to students' human capital by providing students with both technical and human skills as a part of their education.

Human skills may differ, but according to Gibb (2014), they all share a common purpose and that is to improve personal development, participation in learning and success in employment. Robles (2012) wrote that hard skills are the technical expertise and knowledge needed for a job while human skills are interpersonal qualities, also known as people skills. Azim et al. (2010) referred to hard skills as processes, tools, and

techniques while human skills are seen as skills dealing with human issues or the people part of the project; in other words, soft skills are necessary to deal with people and hard skills to analyze and predict. As technical educators strive to create a trained workforce by developing responsive curricula, knowing what employers want from employees is critical. Current literature has made it clear that both types of skills are needed. However, while the technical skills needed to complete a specific task seem to be straightforward and easy to identify and communicate, the nontechnical skills, or those that are referred to in the current study as *human skills*, prove challenging on these fronts.

Deriving Shared Meanings Between Stakeholders

The sheer number of reports and studies focused on identifying human skills testifies to the glaring need to include human skills in technical education curricula; unfortunately, which human skills should be taught is not as obvious. Part of the difficulty in determining exactly which *skills* employers want from their employees resides in the confusion surrounding how to talk about these skills. “Simply stated, there is no standard *common language* between employers and individuals that easily communicate the competencies needed for a job” (ACT, Inc., 2017). One potential reason for the absence of a common language lies in Kechagias’s (2011) admonition that, “Each discipline, educational sector, and country defines soft skills according to their own needs” (p. 55). This confusion surrounding which term to use and what the terms mean when referring to human skills has been an ongoing challenge. In fact, as early as 1927, Kelly (Pellegrino & Hilton, 2012) identified the confusion of what were then classified as noncognitive skills as two distinct fallacies: the *jingle* and the *jangle*.

Reeves and Joanne (2014) described the *jingle fallacy* as "the use of a single term to describe a multiplicity of quite different things" (para. 2). Using *noncognitive skills* as an example, they noted this phrase often "lumps together a vast range of skills, traits, strengths, or attributes: essentially, as the term implies, anything that is not cognitively based" (para. 2). They went on to explain that noncognitive skills might refer to social manners or personal confidence, but they "may also refer to the capacity to defer gratification (sometimes referred to as prudence or 'grit'), focus on a task, whether difficult times (labeled, sometimes, 'resilience'), or empathize with the troubles of another person" (para. 2). This suggests that a kind of fallacious thinking governs the use of terms like *soft skills*.

A second fallacy, the jangle fallacy, adds to the confusion. On this subject, Kelly (1927) remarked, "Equally contaminating to clear thinking is the use of two separate words or expressions covering, in fact, the same basic situation" (p. 64). Pellegrino and Hilton (2012) used the examples of *teamwork* and *collaboration* or *flexibility* and *adaptability*. They have a different *jangle*, but in reality, they are single psychological constructs or competencies. This fallacy may be at the root of conflicting terms, such as soft skills, human skills, employability skills, or nontechnical skills.

Reeves and Joanne (2014) described *jangle fallacy* as occurring

> when people use different terms to describe the same thing. This can get in the way of cross-disciplinary collaboration and the adoption of common measurements. The problem is often compounded by the different vocabularies of various disciplines. A particular attribute may be labeled a "skill" by an economist, a "personality trait" by a psychologist, a certain kind of "learning" by an educationalist, or a "character" dimensions by a moral philosopher. Each may have the same concept in mind, but miss each other's work or meaning because of the confusion of terms. (para. 4)

To avoid these fallacies, Jerald (2009) encouraged stakeholders, including educators, industry leaders and associations, credentialing agencies, workforce professionals, and economic developers, to "dig deeper than the flashy phrases and poorly defined buzzwords" (p. 1) in order to understand what skills are needed. Similarly, Collet et al. (2015) posited that understanding how human skills are described and applied in different industries is an important first step in identifying the skills to teach. A review of the literature showed a lack of consensus in three main areas: the name of the term used, the definitions of the term, and the list of skills, behaviors, and attitudes the name encompasses.

Confusion Surrounding the Name (The Jangle Fallacy)

Almost every article or report addressing workplace readiness or workforce development mentions the need for skills that expand beyond *technical skills.* However, as stated in a paper published by the Texas Workforce Commission (2009/2015), "Each research effort uses different terminology, making it hard to organize and describe a concrete group of workplace basics" (p. 1). Dolce et al. (2019) also identified a large number of adjectives that are used as synonyms for *soft*, mentioning *generic*, *key*, *basic*, *personal*, *transferable*, and *vocational*. However, they also identified common replacements for the term *skills*: *competencies*, *attributes*, *qualities*, and *capabilities*. Dolce's examples are prime examples of the jangle fallacy in action.

Jacobson-Lundeberg (2017) suggested that the large number of "vague terms without clear definitions or meaning" (p. 50) causes confusion, citing the terms *employability skills*, *success skills*, *noncognitive skills*, and *essential skills* as examples of

power skills. Snape (2017) made a similar observation when he synthesized research on the need for 21st century skills: "All have looked to explore future-focused needs and requirements for 21st century learning although the difference between 'soft skills,' attitudes and dispositions has not always been clear" (p. 49). Keller et al. (2011) found much the same confusion six years earlier when they explored employability skills in an Information Systems Capstone course. They referred to the lack of agreement as a debate, while Deming (2015) used the words complex and confusing.

To further complicate the absence of consensus about labeling human skills, some authors use multiple names within the same text. North and Worth (2004) used the name *soft skills* in the title of their article, but in the body of their paper, they refer to *interpersonal competencies*. Similarly, Mitchell et al. (2010) used *soft skills* in the title of their article but referred to developing *human-relation abilities* as the best way to prepare students for tomorrow's workforce. Shuman et al. (2005) started with the term *soft skills* but also introduced the term *professional* skills; Boahin and Hofman (2013) similarly started with *soft skills* to describe competencies that can be transferred readily across different types of employment but then switched to the term *employability skills*. Keller et al. (2011) differentiated *skills* from *attributes* in the following way, "Skills relate to an ability to carry out a particular task, and attributes are personal non-skill-based behaviors and attitudes" (p. 2). Yet, they then combined the *skills*, *knowledge*, and *attributes* required to be effective in the workplace and achieve one's potential into the single term *employability skills"* thus contradicting their own definition. This inconsistency is just a sampling of the confusion found across the literature.

Limited to only books, articles, and reports used in the current study, over 30 different names were used to refer to human skills. These names are organized alphabetically in Table 2 with the number of reports and articles that included the name. Names with no number were only found in one article or report.

Table 2

The Jangle Fallacy

21st-century skills (5)	Meta skills
Applied skills (2)	Necessary skills
Behavioral skills (2)	Noncognitive skills and abilities (6)
Career readiness	Nontechnical skills
Career skills (2)	People skills (2)
Character skills or strengths	Personality traits
Core skills	Personal skills and attributes
Corelife skills	Power skills (4)
Durable skills	Practical intelligence
Employability skills or competencies (24)	Professional skills or competencies
Enabling skills	Socioemotional skills (2)
Essential skills (2)	Soft skills (48)
Foundational skills (2)	Success skills
General skills	Transferable skills (3)
Generic skills (2)	Transferable 21st-century competencies
Human skills (7)	Vocational skills
Interpersonal skills or competencies (2)	Workplace basics skills
Key competencies	Workplace skills (4)
Life skills (2)	Work readiness competencies

It should be noted that while the term *soft skills* was the most commonly used term, there are often negative connotations surrounding that terminology. In one report, for example, the first eight pages used the term *soft skills*, but the final section suggested

that using the term *soft skills* was dismissive, so the term *power skills* was introduced (Corporate Learning Solutions, n.d.). Britt (2016) also advocated using alternate terminology to define these skills because the term *soft* often carries undesirable connotations. For example, "soft" is often interpreted as "easy," which is deceptive given that the training, learning, and application of these skills is, in fact, not easy. *Soft* may also be interpreted by some as unimportant.

Regardless of what we call these human skills, the sheer number of synonymous names suggests their importance. According to the Texas Workforce Commission (2009/2015), "Whether we call them 'workplace fundamentals,' foundation skills or workplace readiness skills, workplace basics are critical for employers to build the competitive, productive, creative, synergistic and disciplined workforce that drives innovation and productivity" (p. 1). As if confusion surrounding the name wasn't problematic enough, additional confusion exists surrounding how these skills are defined. The following section addresses this problem.

Confusion Surrounding the Definition (The Jingle Fallacy)

Not only are there numerous terms used to describe the human skills employers desire, but examples from the literature also illustrate that even once a term is chosen, there are multiple definitions for the same term. Jerald (2009) described trying to define what these terms mean as *daunting*. Furthermore, when a single term is being used to denote so many different phenomena (jingle fallacy), the term can get in the way of understanding. Definitional clarity is thwarted in several ways.

While some definitions are as simple as the one by Jones et al. (2016), who defined the term *soft skills* as "traits and social skills important in interacting with others" (p. 422), other definitions are much more complex, such as the definition of *soft skills* offered by *Teaching and Assessing Soft Skills* (Kechagias, 2011). "A number of intra- and inter-personal skills (or socio-emotional competencies) are required, such as communication, ability to work on multidisciplinary teams, flexibility, etc. These skills we call 'soft skills,' in order to distinguish from technical, or 'hard skills'" (p. 26).

An additional challenge that was found across the literature was many authors simply avoided defining the term altogether. Whether this was due to the assumption that the term needed no definition or to the difficulty in drafting a feasible definition was impossible to determine. For example, in a report by the National Research Council of the National Academies of Sciences, Engineering, and Medicine (2012), the term *21st century skills* was used to describe the skills needed to close the skills gap. However, instead of providing a definition, the report simply provided a starting point for discussion of the meaning and value of such skills by breaking the term into three broad domains of competence: cognitive, intrapersonal, and interpersonal.

Another common practice when trying to define terms was to define them in the negative; in other words, by comparing them to other skill types, such as hard skills, technical skills, or cognitive skills. For instance, Newell (2002, as cited by Stewart, 2017) defined *soft skills* as manifestations of emotional intelligence while *hard skills* were indicators of cognitive intelligence. Similarly, Palmer (2014) never provided a definition for vocational skills when discussing the skills employers need and educators should teach but instead used the term in conjunction with technical skills (technical and

vocational skills), implying vocational skills are all the *nontechnical* skills. In a similar manner, Robles (2012) stated, “Hard skills are the technical expertise and knowledge needed for a job. Soft skills are interpersonal qualities, also known as people skills, and personal attributes that one possesses” (p.453). Problematically, this method of defining terms can add another level of confusion if the reader is not familiar with either term.

Yet another definitional ambiguity occurs when synonymous terms are used to define the original term. For example, Abdullah-Al-Mamun (2012) asserted that *soft skills* are those skills that help students develop *employability skills*. Garrison (2018) defined 21st century skills as *soft skills*, *life skills*, interper*sonal skills*, *workforce skills*, and *noncognitive skills*. In her dissertation, Pillai (2017) explores *CoreLife skills*, which is defined as the brand name for *generic* or *employability skills*.

A synthesis of these disparities is depicted in Table 3, which lists several definitions found in the literature for the single term *soft skills*. The definitions are organized into those that define soft skills by what they are, by what they are not, by what they include, and by what they do. These definitions depict a single example of the jingle fallacy at play (a single term with multiple definitions) with regard to the construct of soft skills. However, this problem is compounded exponentially by the number of labels used to identify human skills.

Table 3

Definitions for Soft Skills Across the Literature

What they are
Describes career attributes that individuals should possess (Mitchell et al., 2010)
The cluster of personality traits, social graces, facility with language, personal habits, friendliness, and optimism that mark people to varying degrees (Dalaya et. al., 2015)
Intra- and inter-personal skills essential for personal development, social participation, and workplace success and should be distinguished from technical or hard skills (Taylor, 2016)
Attitudes, behaviors, and personality traits, which can affect an individual's outcomes with relationships, job performance, and career opportunities (McGowan, 2019)
Traits and social skills important in interacting with others (Jones et. al., 2016)
Portable/life skills, which can be portrayed as the ability to communicate, teamwork, willingness to engage, active listening, problem-solving, and the power to influence (Maple, 2018)
Skills needed in order to be successful at the postsecondary level. Soft skills have been defined by various authors as personal characteristics such as: work ethics, positive attitude, social grace, facility with language, friendliness, integrity, and the willingness to learn (Harris & Rogers, 2008)
Interpersonal qualities, also known as the people skills and personal attributes that one possesses (Stewart, 2017)
Important job-related skills that involve little or no interaction with machines and whose application on the job is quite generalized, such as—responsibility and punctuality, the ability to communicate and cooperate, workmanship, persistence (Park, 2017)
Soft skills—personality traits, goals, motivations, and preferences that are valued in the labor market, in school, and in many other domains (Heckman & Kautz, 2012)
What they are not
Nontechnical skills (Garrison, 2018)
What they include
Soft skills are the nontechnical skills of employees that contribute to workplace and industry success (Lewis-Sessoms, 2020)
Personal attributes, interpersonal skills, and problem solving and decision-making skills (Shakir, 2009)
Soft skills consist of an extensive list of abilities, ranging from operational to interpersonal (Dolce et al. 2019)
Team skills, communication skills, and problem-solving skills (James & James, 2004)
Character traits, attitudes, and behaviors—rather than technical aptitude or knowledge—which are the intangible, nontechnical, personality specific skills that determine one's strengths as a leader, facilitator, mediator, and negotiator (Woodard, 2018)
Personal characteristics such as: work ethics, positive attitude, social grace, facility with language, friendliness, integrity, and the willingness to learn (Harris & Rogers, 2008)

What they do
Soft skills refer both to intrapersonal skills, such as the ability to manage oneself, and to interpersonal skills, such as managing interactions with others (Botke et. al., 2018)
Particular abilities that can improve one's employment performance and career prospects. These soft skills help students to develop their employability skills and make them confident to work in a performance oriented work environment as a critical lifelong learner (Abdullah-Al-Mamun, 2012)
Skills that might differentiate employees who have similar technical skills or experiences, such as personal qualities, attributes, or commitments (National Research Council, 2012)
Contribute to employability and are transferable in many jobs (Stewart, 2017)
personal attributes that enhance an individual's interactions and his/her job performance (Hendarman & Tjakraatmadja, 2012)
All of the above
Soft skills are character traits, attitudes, and behaviors—rather than technical aptitude or knowledge. Soft skills are the intangible, nontechnical, personality-specific skills that determine one's strengths as a leader, facilitator, mediator, and negotiator. Soft skills are character traits that enhance a person's interactions, job performance, and career prospects (Robles, 2012)

Confusion Surrounding What Skills are Important

Welsh et al. (2011) stated, "Few people would argue against the idea that there are skills and abilities necessary for success in life"; however, asking people to identify those skills "would generate a wide variety of responses" (p. 27). They argue the lack of consensus about which skills are most important should not be surprising, given that the skills and abilities valued by some occupations, societies, and cultures will differ from those valued in others. They further assert that the "difference in the dominant technologies of production and associated ways in which work is organized" (p. 27) will also influence which skills are deemed important. Rahmat (2016) similarly suggested the lack of consensus on the exact inventory of employability skills needed, even though various companies are in the same industry sector, is a result of employers having their

own specific employability skill needs. While the difficulty in clearly identifying which skills employers need was acknowledged, a report by ACT Inc., *Understanding and Solving the Skills Gap* (2017), attributed this difficulty to the ever-changing market demands that create a constant flux in not only the skills employers want but also the skills possessed by workers.

Minimal agreement was evident across the literature regarding which skills should be taught. Lea (2019) determined his comprehensive soft skills training guide for allied health care adjuncts should focus on the following skills: communication skills, teamwork and collaboration, flexibility and adaptability, empathy, lifelong learning, planning and time management, professionalism and personal appearance, positive attitude, and ethics. However, the Malaysian Ministry of Higher Education identified seven traits to be embedded in undergraduate programs: communication skills, critical thinking and problem-solving skills, teamwork, lifelong learning and information management, entrepreneurship skills, ethics and professional morals, and leadership skills (Shakir, 2009). The National Association of Colleges and Employers (2021) identified ten key attributes employers are seeking on college graduates' resumes: the ability to work in a team, problem-solving skills, analytical/quantitative skills, communication skills (verbal), communication skills (written), initiative, leadership, technical skills, flexibility/adaptability, strong work ethic. While these three studies have similarities, enough difference exists as to prohibit curricular design across all technical education contexts.

Starting with the SCANS report, many collaborative workgroups and researchers chose to use a framework rather than a single list of terms to bring clarity to the complex

idea of defining what employers need and what educators should teach. However, each framework organizes the skills differently, and there is still disagreement about which skills are important across frameworks. Some frameworks simply cluster specific skills under a broader term or skill (see Figure 1); others add a definition to each skill to create a working definition (see Figure 2). Still others tried to add clarity to specific skills by using action verbs to define different types of skills. (See Figure 3). However, even this was confusing as the "action verbs" ended up incorporating nouns and adjectives.

Figure 1

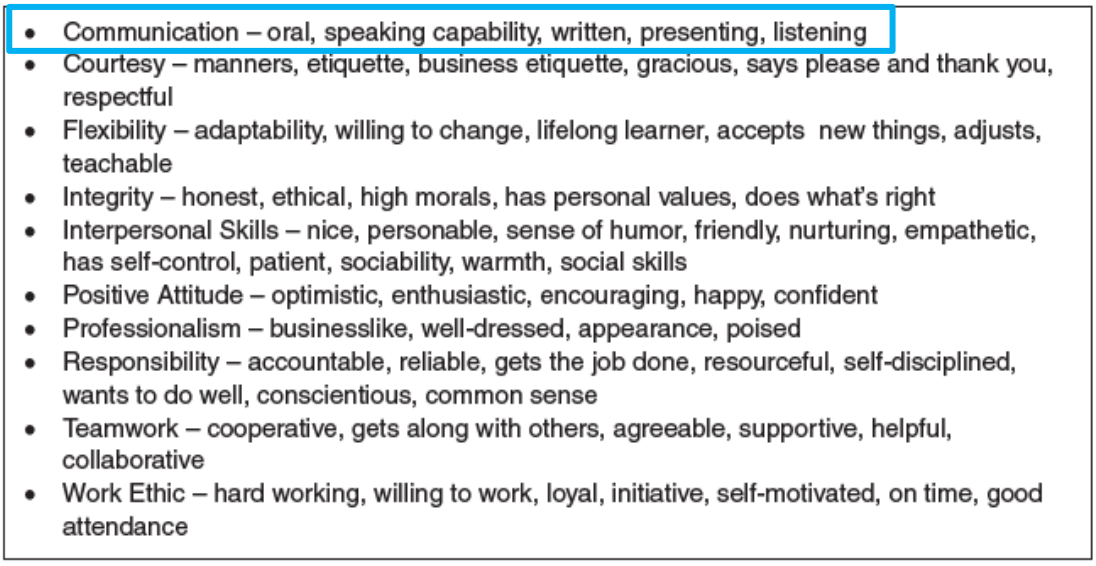
A Portion of the Employability Skills Framework from Rahmat et al., 2016

EMPLOYABILITY SKILLS CONSTRUCT	EMPLOYABIILITY SKILLS DIMENSIONS
1) COMMUNICATION SKILLS	• Effective Reading Strategies
	• Effective Writing Strategies
	• Using numeracy effectively
	• Effective Listening Skills
	• Effective Speaking Skills
	• Share information using a range of information and communications technologies
2) PERSONAL QUALITIES	• Responsibility
	• Self-Esteem
	• Self-Management

Note: In Figures 1, 2, 3, and 4 blue borders call out the differences in the way *communication* has been operationalized.

Figure 2

Soft Skills Framework from Robles (2012)



- Communication – oral, speaking capability, written, presenting, listening
- Courtesy – manners, etiquette, business etiquette, gracious, says please and thank you, respectful
- Flexibility – adaptability, willing to change, lifelong learner, accepts new things, adjusts, teachable
- Integrity – honest, ethical, high morals, has personal values, does what's right
- Interpersonal Skills – nice, personable, sense of humor, friendly, nurturing, empathetic, has self-control, patient, sociability, warmth, social skills
- Positive Attitude – optimistic, enthusiastic, encouraging, happy, confident
- Professionalism – businesslike, well-dressed, appearance, poised
- Responsibility – accountable, reliable, gets the job done, resourceful, self-disciplined, wants to do well, conscientious, common sense
- Teamwork – cooperative, gets along with others, agreeable, supportive, helpful, collaborative
- Work Ethic – hard working, willing to work, loyal, initiative, self-motivated, on time, good attendance

Note: In Figures 1, 2, 3, and 4 blue borders call out the differences in the way *communication* has been operationalized.

Figure 3

Employability Skills Framework from Misra and Khurana (2017)

Employability Skills	*Action Verbs*
Technical Skills	Basic literacy (Reading, Writing, Speaking), Learnability, Technological skills, Numeracy skills, Adaptability
Higher order thinking skills	Occupational Knowledge, Learning, Reasoning, Creative thinking, Decision making, Problem-solving
Personal Skills	Knowledge, Integrity, Self- control, Self-confidence, Emotional literacy, Initiative
People / social skills	Teamwork, Respect, Ethics and Values, Networking, Interpersonal skills, Globally Aware
Generic Skills	Leadership, Team working, Project management, Oral communication skills
Self-perceived employability skills	Resilience, Behavioural Skills, Social Networking, Job- Seeking Skills, Labour Market Knowledge

Note: In Figures 1, 2, 3, and 4 blue borders call out the differences in the way *communication* has been operationalized.

Another framework example comes from the guide *Employability Skills from Framework to Practice* (Australian Government, 2006). To provide clarification about what skills employers need, the guide quickly moved away from a list of specific skills that should be encompassed by the term *employability skills* to a framework that provides seven distinct facets, which the authors acknowledge may vary among industries and applications. Each facet provides examples of skills and behaviors, which contribute to the application of a particular skill (see Figure 4). However, at the same time, they assert,

> No matter where they have been adapted or how they have been named, these conceptualisations of skills share a common goal. They seek to establish the basis for recognizing an important set of skills which support the successful accomplishment of the task-based activities central to any job role. (Australian Government, 2006, p. 8)

Despite the difficulty in labeling, defining, and selecting human skills, all stakeholders across the literature agreed that soft skills were critical for business success (Corporate Learning Solutions, n.d.; Deloitte Touche Tohmatsu Limited and The Manufacturing Institute, 2018; Manpower Group, 2020; National Research Council, 2012; Texas Workforce Commission, 2009/2015). There is no question that this broad set of skills is seen as valuable in industry contexts. This fact underscores the importance of their inclusion in technical education curricula.

Figure 4

A Portion of the ACCI/BCA Employability Skills Framework (Australian Government, 2006)

Communication	Teamwork	Problem solving
Listening and understanding	Working as an individual and a team member	Developing practical situations
Speaking clearly and directly	Applying teamwork to a range of situations	Solving problems in teams
Reading and interpreting documentation	Working with people of different ages, genders, races, religions or political persuasions	Showing independence and initiative in identifying problems and solving them
Using numeracy effectively	Coaching, mentoring and giving feedback	Resolving customer concerns in relation to complex project issues
Sharing information	Knowing how to define a role as part of a team	Using mathematics, including budgeting and financial management, to solve problems
Being assertive	Identifying the strengths of team members	Testing assumptions, taking the context of data and circumstances into account
Writing to the needs of the audience		
Empathising		
Negotiating responsively		
Persuading effectively		
Establishing and using networks		

Note: In Figures 1, 2, 3, and 4 blue borders call out the differences in the way *communication* has been operationalized.

Is Technical Education the Answer?

While rapid changes in the workplace have been blamed for the skills gap, Collet et al. (2015) suggested that inadequate education is also partially to blame. They identified the structure of education, which makes rapid change difficult; the failure of higher education to teach soft skills; the difficulty for teachers to teach skills other than their discipline-specific experience; and the lack of employer clarity about the skills employees need as contributing factors to the shortage of properly skilled workers. Some have proposed that technical education has the ability to address all of these concerns by offering work-focused training that is more affordable, takes less time to complete, and has fewer barriers to admissions than 2- and 4-year degrees (Backes et. al., 2015; Stevens et. al., 2018; Stringfield & Stone, 2017).

In a knowledge-based economy, technical education provides several advantages over traditional 4-year academic institutions for these reasons. Lowery and Thomas-Anderson (2017) argued that technical and community colleges meet the needs of both the employers and the economy by 1) serving regional employers by adapting quickly to changing conditions in local workforce needs, 2) offering customized training to technical workers, and 3) providing certification training in support of new technologies. This is made possible, in part, because of the frequent and ongoing collaboration between educators and industry partners (Lea, 2019). Additionally, faculty in most technical college programs possess hands-on technical knowledge that comes from direct experience in industry (Lea, 2019).

Recent publications have described advantages of technical education programs, including their ability to efficiently provide skilled labor for the workforce and promotion

of economic growth (Stevens et. al., 2018). Dougherty (2016) noted that smaller institutions, such as community or technical colleges, can adapt more quickly to the changing needs of industry, which allows for customized training to fit the needs of both learners and employers in their specific region. Curruth and Curtin (2017) found many technical education programs lead to industry certificates, rather than degrees, that require full-time students as little as one semester to complete, thus efficiently enabling students to enter the workforce sooner. Lowry and Thomas-Anderson (2017) and Stevens et al. (2018) noted that because technical education programs are most often taught at vocational centers or community colleges, the tuition for these programs is more affordable than many larger 4-year colleges.

The skills gap has initiated renewed interest in the perceived benefits of technical education, along with the need to expand it beyond technical training to include human skills. This has motivated several studies focused on the skills employers need and which technical educators should be teaching. The current study synthesized the most recent literature on this topic to ascertain a broad range of skills that could be investigated within a local context.

While the transition from a manufacturing and service-based economy to a knowledge-based economy has not changed the purpose of technical education—to create a trained workforce—it has altered the skills that a trained workforce needs. To fulfill its mission and remain socially efficient, technical education must respond to the changing needs of employers by creating training programs that expand beyond the technical skills to teach all the skills employers identify as important. Creating responsive curricula allows technical education to develop human capital more efficiently, thus improving the

earning potential of the individual as well as the productivity of the employer and allowing technical education to fulfill both Snedden's goal of social efficiency and Dewey's dream of a democratic education. The current case study addressed these goals by examining workforce needs and faculty perspectives within a local context.

CHAPTER III

METHODOLOGY

Research Setting

This study was conducted in Davis and Morgan Counties, Utah. Both faculty at Davis Technical College and representatives from the industries with which they collaborate were study participants. Davis Technical College students are not limited to Davis County as they search for employment. However, because the service area of Davis Technical College is localized, the majority of Davis Technical College students are hired by employers in Northern Utah, specifically Davis and Morgan Counties. Therefore, the research setting for this study was limited to employers in these two counties and the faculty at Davis Technical College.

Population

For this study, the population was limited to OAC members and faculty for the 34 technical training programs at Davis Technical College. These programs were organized into six industry clusters: business and information technology, construction, health professions, manufacturing, service professions, and transportation. The decision was made to use OAC members because their role was to advise faculty about trends in industry and to evaluate how well the training program prepared students with the skills they need for successful employment. The OAC members served voluntarily and were local employers (or their representatives, such as H.R. managers) who often hired Davis

Technical College graduates. The faculty population included full-time and part-time faculty who had consistent teaching schedules. Surveys were sent to all 452 Davis Technical College OAC members and 196 faculty.

Research Design

Case study research provides a comprehensive understanding of a bounded unit, such as an event or organization. It offers an opportunity to collect different kinds of data to get an in-depth look at an organization. Yin (2009) defines and discusses case studies as follows:

> A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. In other words, you would use the case study method because you wanted to understand a real-life phenomenon in depth, but such understanding encompassed important contextual conditions—because they were highly pertinent to your phenomenon of study (p. 18).

As Chapter 2 discussed, much confusion exists in both defining human skills and determining which ones employers desire. This phenomenon is likely due to what Yin describes above as "important contextual conditions" (p. 18). A case study design was thus highly appropriate for the current study because it investigated this phenomenon within a local context to inform stakeholders. Additionally, local labor market needs vary by geographical region, and, by state law, Davis Technical College serves the geographic area of Davis and Morgan counties (State Law 53b. 2A.101).

Therefore, an exploratory case study design was utilized to investigate the research questions. Davis Technical College's mission promotes the support of economic growth through technical education. This mission, in fact, has been codified by the state:

in Utah, technical educators are tasked with creating training programs specific to their geographic areas (State Law 53b. 2A.105). The current study sheds light on one aspect of this mandate by exploring the alignment of human skills desired and taught within a local context. Descriptive analysis was used to identify and explore which human skills employers in Davis and Morgan Counties perceived as important, which human skills Davis Technical College faculty thought were important, and how they were taught in their programs. While some skills are transferable, many skills are specific to regions and industries. Thus, a case study was an appropriate design as it served local educators and employers while still providing information and tools that can be adapted to other contexts.

This research study was completed in four distinct phases. The first phase was a content analysis of selected literature. The second phase was a content analysis of the Occupational Advisory Committee (OAC) meeting minutes from Fall 2018 to Spring 2021 using the findings identified in Phase 1. The third phase used the findings from both content analyses to create and pilot two survey instruments: one for OAC members and one for faculty. The final phase was data collection and analysis.

Phase 1: Content Analysis of the Literature

Content analysis has been described as a flexible research method for textual analysis by several researchers (Hoffman et. al., 2011; White & Marsh, 2006). The method is typically used to analyze broadly defined human communications (Babbie, 2004). Though defined in multiple ways, most relevant to the current study, it has been defined as “a research technique for the objective, systematic and quantitative description

of the manifest content of communications (Berelson, 1952, p. 15). Because much valuable research has already been done on human skills, and to ensure the current study was grounded in those empirical findings, the first content analysis involved identification of human skills valued by employers that had been identified in former studies and reports.

From the literature review, empirical studies and reports from 2015 to 2021 were included in the content analysis. In other words, literature that had conducted primary research by asking participants to rank or define human skills important for employment was included. However, because the goal of this content analysis was to amass a master list of human skills perceived to be important, in cases where studies used an instrument or framework from a prior study, only the primary source was used, even in cases where publication occurred prior to 2015. In no case were studies gathered previous to 1991, as the SCANS report, the seminal publication on the phenomenon of study, was published in that year. Studies were reviewed until data saturation was met and no new skills were introduced. This resulted in a total number of 40 sources from 1991 to 2021 being included in the content analysis.

Current industry, government, and academic reports and studies were analyzed to create a comprehensive list of skills mentioned across sources to determine which human skills were identified as important for today's workforce. In accordance with the content analysis recommendations suggested by Neuendorf (2002), a coding process was designed. A spreadsheet was used to collect and organize the skills mentioned by source. Sources were placed in columns, and skills were placed in rows. The researcher and a

separate coder collectively defined boundaries for operationalizing each skill. Some studies reported disparate skills, while others reported skill clusters or frameworks.

Though the initial coding scheme included skill clusters (e.g., *communication skills* shown in Figures 1-4), cluster titles were not retained due to cross-case variability. Notably, coding the skills proved challenging due to the obvious conflation of terms among studies previously described as the jingle/jangle fallacies discussed in Chapter 2. For example, disparate skills often required collapsing synonymous terms (e.g., "creative thinker," "creativity," "creativity skills," and "innovation") into singular codes. This analysis resulted in 93 a priori codes (see Appendix E). A codebook containing these 93 codes was created and applied to each study. After coding, through discussion and calibration, 100% agreement between the researcher and the second coder was reached. See Appendix F for the results of the Phase 1 content analysis of the literature.

Phase 2: Content Analysis of OAC Meeting Minutes

Davis Technical College holds biannual OAC meetings. During these meetings, faculty from each training program meet with local employers to ensure alignment between the skills taught in the program and the skills employers need. Additionally, OAC members assess the skills being taught and make recommendations to guide changes to the program curricula. Written minutes are kept for each meeting. This phase in the current study was a content analysis of the minutes from Fall 2018 to Spring 2021 for all 34 programs. The purpose of this analysis was to identify which human skills the OAC members had discussed as important in these advisory meetings.

This content analysis was completed using the qualitative analysis software NVivo. The unit of analysis was defined as a single conversation during the meeting. The skills from Phase 1 were used as search criteria in a text search that was expanded to include exact matches, stemmed words, and synonyms to be as inclusive as possible. Each search result was read in context to determine if it met the inclusion criteria. The inclusion criteria required that the skill had been discussed as a) being desired by employers, b) lacking from current employees, or c) missing from current curricula. Once the codes had been assigned, a frequency count was executed. Intercoder agreement between the researcher and the second coder was reached on 50% of the corpus (see Appendix G).

Phase 3: Instrument Creation, Validation, and Reliability

Once the content analyses were complete, the goal was to identify only 30 most frequently mentioned human skills across both lists. This goal was in place to facilitate instrument feasibility and response rate by avoiding survey fatigue. To accomplish this goal, the results from content analyses of both the literature and OAC meeting minutes were combined, and the 25 skills with the highest frequency were identified. Additionally, the top 25 most frequent skills from the analysis of the meeting minutes were also identified, after which the two lists were combined. Twenty human skills were found in both lists; however, the five most frequently mentioned skills from the meeting minutes that were not part of the top 25 found in the combined analyses were included in the final list. Because *reading* appeared in both analyses but is usually considered an

academic skill, it was dropped from the list. This resulted in a total of 29 unique human skills (see Table 4).

A decision was made to expand the original list to include the most frequently mentioned skills from the meeting minutes because the current study seeks to understand a localized context; thus local perceptions were critical. However, because the research questions were never explicitly asked during OAC meetings, the top results from the analysis of the literature were used to ensure all the most important skills were included in the survey instrument.

Two survey instruments, one for OAC members and one for faculty, were created using Qualtrics (see Appendices H and I). Because this research deals with human subjects, a protocol with the IRB was established, and IRB approval was received (see Appendix J).

Both groups of survey participants ranked the 29 skills on a 4-point Likert scale, with one being not important and four being extremely important. Likert scales are used to measure opinions, beliefs, and attitudes and provide a relatively high variance, which is important given the small population, which resulted from within industry-clusters comparisons (DeVellis, 2017). The skills assessed for importance were the same in both surveys. However, the OAC members were asked to rank the skills for both entry-level employees and career success, while the faculty were only asked about entry-level employees. Additionally, the faculty were asked to identify the methods currently used to teach human skills in their respective programs.

Table 4

Top 25 Skills from Content Analysis of Literature and OAC Minutes

Human skills	*f*		Ranking based on *f* (1=highest)	
	OAC minutes	Combined content analyses	OAC minutes	Combined content analyses
Adaptability	10	32	20	13
Attendance/punctuality	21	22	12	24
Attitude	18	31	14	15
Behavior	11	12	19	34
Communication technology	40	44	5	7
Consulting	20	29	13	16
Critical thinking	23	37	10	10
Customer service	60	69	2	3
Decision making	3	23	41	23
Independence	7	32	25	14
Initiative	8	17	24	30
Integrity	7	26	26	18
Job interview skills	39	39	6	9
Leadership	1	26	56	19
Motivation	16	23	15	21
Presenting	10	13	21	33
Problem solving	3	35	40	11
Professional appearance	16	21	16	25
Professionalism	47	55	4	6
Respect	9	21	23	27
Responsibility	9	25	22	20
Self-confidence	65	74	1	2
Social skills	31	68	9	4
Teamwork	36	75	7	1
Time management	7	23	27	22
Verbal communication	39	52	11	12
Willingness to give & receive feedback	48	61	3	5
Work ethic	32	43	8	8
Written communication	12	28	18	17

Note. The combined content analysis combines the frequencies counts from both the literature review and the OAC minutes.

Reliability

Warmbrod (2014) completed a meta-analysis of 706 articles published from 1999 to 2012 in the *Journal of Agricultural Education*. He found that 344 of these studies reported quantitative results using a Likert-style scale for at least one measured variable. From his analysis, he found "45% of the articles exhibited incongruent interpretations" (p. 30), meaning that there was disagreement between the reliability coefficient and the Likert-scale scores reported and interpreted. As a result of his findings, Warmbrod recommended frequency tables be created that report the percentage of respondents who chose each option on the Likert scale for each item measured. To conform to these recommendations, the researcher created frequency tables for OAC entry-level, OAC career success, and faculty entry-level perceptions of importance. Tables 48-50 are found in Appendix K.

DeVellis (2017) observed that a reliable instrument is "one that performs in consistent, predictable ways" (p. 39). To determine reliability for this study, the faculty survey was piloted with 32 teachers who currently teach at a technical college in Utah similar in size and programs to Davis Technical College. The statistical analysis program R was used to look at a split-half correlation to measure the internal consistency or the consistency of participant responses on the survey because it required only one administration of the survey. According to Taber (2018), in order for a scale to be reliable, it should have an alpha of .70 or higher. The pilot survey resulted in a Cronbach's α of .94, indicating the reliability was robust. Additionally, the Cronbach Alpha reliability statistic was calculated post hoc using the responders for faculty and OAC (see Table 5).

Table 5

Reliability Estimates of the Survey Instrument

Instrument construct	Cronbach's α
Pilot technical education faculty at USUE	.94
Faculty entry-level	.94
OAC entry-level	.92
OAC career success	.88

Validity

Validity is the extent to which the survey measures what it is supposed to measure. To ensure content and face validity, the survey was reviewed by academic and content specialists who assessed the survey for clarity of instructions and concepts. Their help ensured the surveys contained questions that covered all aspects of the human skills being measured. The comments, input, and recommendations of each reviewer were considered and incorporated into the final instrument (Creswell & Poth, 2018). Copies of the final surveys can be found in Appendices H and I.

Phase 4: Data Collection

At Davis Technical College, a single employee is responsible for maintaining the OAC address database and communicating with all of the OAC members as needed. This person sent an original email and two follow-up emails with a link to the Qualtrics survey to all the OAC members from the Davis Technical College email to ensure the message did not go to spam or junk folders. An original email and two follow-up emails with a link to the Qualtrics were sent from the vice president of instruction at Davis Technical College to all faculty's work emails. The follow-up emails for both surveys were sent to

the same group of people because identifiable information was not collected, meaning respondents remained anonymous. Copies of the emails can be found in Appendices L and M.

Data Analysis

Once the surveys were completed, descriptive and inferential statistics were used to determine frequencies, identify trends, and compare results to answer the research questions. For tests that required specific assumptions to be met, violations of these assumptions were tested. If the assumptions were violated, equivalent non-parametric tests were used.

RQ1: What human skills do select employers in Davis and Morgan Counties, Utah, think are important for entry-level employees in their industry? For this question, descriptive statistics were used to summarize the data collected in the OAC survey, and the most important human skills were identified by using mean scores.

RQ2: What human skills do select employers in Davis and Morgan Counties, Utah, think are important for career success and employment progression? For this question, descriptive statistics were again used to summarize the OAC survey data, and the most important human skills were identified using mean scores.

RQ3: What human skills do instructors at Davis Technical College think are important for their students to learn to be prepared for entry-level employment? For this question, descriptive statistics were used to summarize the faculty survey data, and the most common human skills were identified using mean scores.

RQ4: What methods do instructors at Davis Technical College use to facilitate the development of human skills in their technical programs? For this question, a frequency distribution table was created to organize and summarize the data.

RQ5: How do the human skills employers perceive as important for entry-level employees differ among industries? Due to assumption violations, the nonparametric equivalent to the one-way ANOVA, the Kruskal-Wallis test, was used to compare industry clusters (independent variables) on each human skill (dependent variable) and determine if there were significant differences. Where significant differences were found, post-hoc analysis was used to explore the specific differences.

RQ6: Is there a difference between the human skills employers think are important for entry-level employees and the human skills Davis Technical College faculty think are important? Due to assumption violations, the nonparametric equivalent to the independent samples *t*-test, the Wilcoxon rank-sum test, was used to determine if there was a statistically significant difference between the survey results from OAC members and the survey results from faculty, with the industry cluster as the independent variable and the skill as the dependent variable.

CHAPTER IV

RESULTS

This chapter provides the findings and quantitative analysis of the data collected as part of the research study. The purpose of this exploratory study was to discover and compare what human skills employers in Northern Utah perceived as most important for entry-level employees and for career success, to discover what human skills the faculty at Davis Technical College thought were important to teach in their programs and what methods they use to teach those skills, and to draw comparisons about human skills perceptions. The research was guided by the following questions:

1. What human skills do selected employers in Davis and Morgan Counties, Utah, think are important for entry-level employees in their industry?
2. What human skills do selected employers in Davis and Morgan Counties, Utah, think are important for career success and employment progression?
3. What human skills do instructors at Davis Technical College think are important for their students to learn to be prepared for entry-level employment?
4. What methods do instructors at Davis Technical College use to facilitate the development of human skills in their technical programs?
5. How do the human skills employers perceive as important differ among industries?
6. Is there a difference between the human skills employers think are important for entry-level employees and the human skills Davis Technical College faculty think are important?

The population for this study was limited to OAC members and faculty for the 34 technical training programs at Davis Technical College. Survey participants were asked to self-identify which training program they were associated with. For data analysis, these programs were organized into the six industry clusters that exist at Davis Technical College: business and information technology, construction, health professions, manufacturing, service professions, and transportation. Surveys were sent to all 452 Davis Technical College OAC members and 196 faculty. The response rates for each industry cluster can be found in Table 6. The number of participants for some data analyses varied due to missingness.

Table 6

Response Rates of Davis Technical College OAC Members and Faculty

Participants	*N*	*n*	%
Occupational advisory committee members	452	47	10.4%
Business & technology cluster	45	8	17.8%
Construction cluster	80	4	5.0%
Health professions cluster	136	22	16.2%
Manufacturing cluster	87	6	6.9%
Service professions cluster	84	5	6.0%
Transportation cluster	20	2	10.0%
Faculty	196	73	37.2%
Business & technology cluster	20	13	65.0%
Construction cluster	20	6	30.0%
Health professions cluster	74	23	31.1%
Manufacturing cluster	34	13	38.2%
Service professions cluster	31	11	35.5%
Transportation cluster	17	7	41.2%

Because the purpose of this study was pedagogical in nature, *most important* was determined in two ways. When aggregated among industry clusters, the top five human skills were selected to support an appropriate number for integration into curricula.

However, when disaggregating by industry cluster, the small response rate resulted in many human skills with the same mean score. In cases where this occurred, individual decision rules were applied to retain the fewest number of skills greater than or equal to five to limit findings to accommodate curriculum integration. This resulted in more than five skills sometimes being included in the *most important* category for some clusters.

Additionally, participants were given an opportunity to enter any additional human skills they perceived as important for their industry that were not included in the list of skills provided in the survey. The results from this open-ended question for both OAC members and faculty can be found in Appendix N.

Research Question 1 – Entry-Level Importance by OAC

This research question sought to identify which human skills Davis Technical College OAC members thought were most important for entry-level employees in their industry, using descriptive statistics. The construct used 29 human skills listed in alphabetical order. Participants were asked to rank each skill using a four-point Likert scale from 1= *not at all important* to 4 = *extremely important*. Mean scores were computed for each skill in two ways: aggregated among industry clusters and disaggregated by industry clusters. Responses from OAC members for different human skills ranged from $n = 45$ to $n = 47$.

Aggregated Among Industry Clusters

When looking at the mean scores from the OAC members' surveys for the importance of the human skills for entry-level employees aggregated among industry

clusters, the five most important human skills were *integrity*, *work ethic*, *willingness to learn and receive feedback*, *attitude*, and *attendance/punctuality* (see Table 7). The most important was *integrity*, which also had the least variance among OAC participants' answers (*SD* = 0.38). The variance among the mean scores of the top five most human skills perceived to be most important was 0.17. None of the 29 human skills had a mean score of less than 2.00. The skill found to be least important was *presenting*. The range between the most important human skill and the least important was 1.76. The skill with the highest variance was *customer service or patient care* (*SD* = 0.85).

Disaggregated by Industry Clusters

The problem this study sought to address was the need to identify the human skills employers seek in their respective employees. Therefore, it was worth examining what human skills employers in the different industry clusters thought were important for their entry-level employees, which are found in Table 8.

Table 7

Entry-Level Importance by OAC Aggregated Among Industry Clusters

Human skills	*M*	*SD*	*n*
Integrity	3.83	0.38	46
Work ethic	3.78	0.42	46
Willingness to learn and receive feedback	3.67	0.52	46
Attitude	3.66	0.52	47
Attendance/punctuality	3.62	0.53	47
Behavior	3.55	0.58	47
Respect	3.54	0.59	46
Responsibility	3.48	0.59	46
Teamwork	3.46	0.69	46
Motivation	3.41	0.58	46
Verbal communication	3.27	0.72	45
Adaptability	3.26	0.61	47
Customer service/patient care	3.26	0.85	47
Professionalism	3.22	0.70	46
Time management	3.17	0.61	46
Critical thinking	3.15	0.75	47
Initiative	3.13	0.75	46
Decision making	3.04	0.76	46
Problem solving	3.04	0.70	46
Social skills	3.04	0.70	46
Professional appearance	2.98	0.83	46
Self-confidence	2.80	0.72	46
Independence	2.72	0.75	46
Job interview skills	2.65	0.64	46
Communication technology	2.64	0.67	47
Written communication	2.61	0.77	46
Leadership	2.41	0.65	46
Consulting	2.17	0.82	47
Presenting	2.07	0.68	46

Note. Mean Scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important

Table 8

Entry-Level Importance by OAC Disaggregated by Industry Clusters

Human Skills	Mean Scores					
	BUSN	CONS	HLTH	MANF	SERV	TRAN
	n = 8	*n* = 4	*n* = 22	*n* = 6	*n* = 5	*n* = 2
Adaptability	3.00	3.50	3.32	3.33	2.80	4.00
Attendance/punctuality	3.25	3.75	3.68	3.67	3.60	4.00
Attitude	3.62	3.75	3.73	3.50	3.40	4.00
Behavior	3.62	3.25	3.55	3.50	3.60	4.00
Communication technology	3.00	2.75	2.55	2.50	2.60	2.50
Consulting	2.00	2.50	2.18	2.00	2.40	2.00
Critical thinking	3.00	2.75	3.32	3.50	2.60	3.00
Customer service/patient care	3.25	2.50	3.73	2.17	3.20	3.00
Decision making	2.88	2.67	3.18	3.00	2.80	3.50
Independence	2.38	2.67	2.68	3.33	2.60	3.00
Initiative	2.50	3.00	3.18	3.83	3.20	3.00
Integrity	3.75	4.00	3.82	4.00	3.60	4.00
Job interview skills	2.50	2.33	2.68	2.67	2.60	3.50
Leadership	2.12	2.33	2.55	2.67	2.00	2.50
Motivation	3.00	3.67	3.50	3.67	3.20	3.50
Presenting	2.25	1.67	2.05	2.17	2.20	1.50
Problem solving	2.88	2.67	3.14	3.33	2.80	3.00
Professional appearance	2.50	2.33	3.38	2.33	3.20	3.00
Professionalism	3.25	2.33	3.50	2.50	3.20	3.50
Respect	3.38	3.67	3.59	3.67	3.40	3.50
Responsibility	3.25	2.67	3.55	3.67	3.80	3.50
Self-confidence	2.25	2.67	2.86	3.17	2.80	3.50
Social skills	2.75	3.67	3.23	2.83	2.60	3.00
Teamwork	3.00	3.67	3.64	3.17	3.60	3.50
Time management	2.75	3.33	3.23	3.33	3.20	3.50
Verbal communication	3.25	3.33	3.27	3.33	3.00	4.00
Willingness to learn and receive feedback	3.38	4.00	3.73	3.67	3.60	4.00
Work ethic	3.62	4.00	3.77	3.83	3.80	4.00
Written Communication	2.62	2.33	2.68	2.83	2.20	2.50

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important; colors represent the top scores for each industry; the darker the color, the greater the perceived importance; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

Business and Technology

The human skill perceived as most important by business and technology OAC members for entry-level employees was *integrity* (see Table 9). The skills *behavior*, *work ethic*, and *attitude* tied for the second highest mean score. The third highest mean score was for *respect* and *willingness to learn and receive feedback*. Due to the importance of some skills being assessed as the same by the survey respondents, the top three mean scores encompassed a total of six human skills. A difference of 0.37 separated the mean scores of the six most important human skills for the business and technology cluster. No skill had a mean score of less than 2.00 (somewhat important), and the human skill perceived as least important by mean scores was *leadership* ($M = 2.12$, $SD = 0.83$, $n = 8$). The range between the highest mean score and the lowest mean score was 1.63 (see Table 8).

Table 9

Entry-Level Importance as Perceived by OAC in Business and Technology

Human skills	*M*	*SD*	*n*
Integrity	3.75	0.46	8
Behavior	3.62	0.52	8
Work ethic	3.62	0.52	8
Attitude	3.62	0.74	8
Respect	3.38	0.74	8
Willingness to learn and receive feedback	3.38	0.74	8

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Construction

The top three human skills perceived as most important by construction OAC members for entry-level employees were *integrity*, *willingness to learn and receive*

feedback, and *work ethic* (see Table 10). The next highest mean score was for *attendance/punctuality* and *attitude*. A difference of 0.25 separated the highest mean scores from the second highest. Due to the importance of some skills being perceived as the same by the survey respondents, the top two mean scores encompassed a total of five human skills. The human skill identified as least important by mean score was *presenting* ($M = 1.67$, $SD = 0.58$, $n = 3$). The range between the highest mean score and the lowest mean score was 2.33 (see Table 8).

Table 10

Entry-Level Importance as Perceived by OAC in Construction

Human skills	*M*	*SD*	*n*
Integrity	4.00	0.00	3
Willingness to learn and receive feedback	4.00	0.00	3
Work ethic	4.00	0.00	3
Attendance/punctuality	3.75	0.50	4
Attitude	3.75	0.50	4

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Health Professions

The human skill perceived as most important by OAC members of the health professions for entry-level employees was *integrity* (see Table 11). The next highest mean score was *work ethic*. The third highest mean score was for *attitude*, *customer service and patient care*, and *willingness to learn and receive feedback*. Due to the importance of some skills being perceived as the same by the survey respondents, the top three mean scores encompassed a total of five human skills, whose mean scores were separated by a difference of 0.09. No skill had a mean score of less than 2.00 (somewhat

important), and the human skill identified as least important by mean score was *presenting* (*M* = 2.05, *SD* = 0.65, *n* = 22). The range between the highest mean score and the lowest mean score was 1.77 (see Table 8).

Table 11

Entry-Level Importance as Perceived by OAC in Health Professions

Human skills	*M*	*SD*	*n*
Integrity	3.82	0.39	22
Work ethic	3.77	0.43	22
Attitude	3.73	0.46	22
Willingness to learn and receive feedback	3.73	0.46	22
Customer service/patient care	3.73	0.55	22

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Manufacturing

The human skill perceived as most important by manufacturing OAC members for entry-level employees was *integrity* (see Table 12). The next most important human skills were initiative and *work ethic*. The third highest mean score was for *attendance/punctuality*, *motivation*, *respect*, *responsibility*, and *willingness to learn and receive feedback*. Due to the importance of some skills being assessed as the same by the survey respondents, the top three mean scores encompassed a total of eight human skills, whose mean scores were separated by a difference of 0.33. No skill had a mean score of less than 2.00 (somewhat important), and the human skill identified as least important by mean score was *consulting* (*M* = 2.00, *SD* = 0.63, *n* = 6). The range between the highest mean score and the lowest mean score was 2.00 (see Table 8).

Table 12

Entry-Level Importance as Perceived by OAC in Manufacturing

Human skills	*M*	*SD*	*n*
Integrity	4.00	0.00	6
Initiative	3.83	0.41	6
Work ethic	3.83	0.41	6
Attendance/punctuality	3.67	0.52	6
Motivation	3.67	0.52	6
Respect	3.67	0.52	6
Responsibility	3.67	0.52	6
Willingness to learn and receive feedback	3.67	0.52	6

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Service Professions

The human skills perceived as most important by OAC members of the service professions for entry-level employees were *responsibility* and *work ethic* (see Table 13). The next most important human skills were *attendance/punctuality*, *behavior*, *integrity*, *willingness to learn and receive feedback,* and *teamwork*. A difference of 0.20 separated the highest mean scores from the second highest. Due to the importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of seven human skills. No human skill had a mean score of less than 2.00 (somewhat important), and the human skill identified as least important by mean score was *leadership* ($M = 2.00$, $SD = 0.71$, $n = 5$). The range between the highest mean score and the lowest mean score was 1.80 (see Table 8).

Table 13

Entry-Level Importance as Perceived by OAC in Service Professions

Human Skills	*M*	*SD*	*n*
Responsibility	3.80	0.45	5
Work ethic	3.80	0.45	5
Attendance/punctuality	3.60	0.55	5
Behavior	3.60	0.55	5
Integrity	3.60	0.55	5
Willingness to learn and receive feedback	3.60	0.55	5
Teamwork	3.60	0.89	5

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Transportation

The human skills ranked as most important by transportation OAC members for entry-level employees were *adaptability*, *attendance*/*punctuality*, *attitude*, *behavior*, *integrity*, *verbal communication*, *willingness to learn and receive feedback*, and *work ethic*, which all had a mean score of $M = 4.0$ (Table 14). Due to the importance of these skills being perceived as the same by the survey respondents, the top mean score encompassed a total of eight human skills. The human skill identified as least important by mean score was *presenting* ($M = 1.50$, $SD = 0.71$, $n = 2$). The range between the highest mean score and the lowest mean score was 2.50 (Table 8).

Table 14

Entry-Level Importance as Perceived by OAC in Transportation

Human skills	*M*	*SD*	*n*
Adaptability	4.00	0.00	2
Attendance/punctuality	4.00	0.00	2
Attitude	4.00	0.00	2
Behavior	4.00	0.00	2
Integrity	4.00	0.00	2
Verbal communication	4.00	0.00	2
Willingness to learn and receive feedback	4.00	0.00	2
Work ethic	4.00	0.00	2

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

General Findings

When comparing the human skills that OAC members from the different industry clusters thought were important for entry-level employees, several unique findings became apparent. *Integrity*, *willingness to learn and receive feedback*, and *work ethic* were perceived as most important for all six industry clusters. *Customer service and patient care* was only perceived as most important for health professions. *Initiative* and *motivation* were only perceived as most important for manufacturing. *Teamwork* was only perceived as most important for service professions, and *adaptability* and *verbal communication* were only perceived as most important for transportation.

The human skills perceived as most important for all six industries encompassed 14 skills, leaving 15 human skills with mean scores that were not perceived as most important for any industry clusters. As an additional item of interest, the three human skills perceived to be least important across the majority of industries were *presenting*, *consulting*, and *leadership*.

Finally, when looking at the mean scores for all human skills in all industries, eight skills had a mean score of 4.0 (extremely important) for at least one industry cluster, and only the skill *presenting* had a mean score of less than 2.0 for any industry cluster, suggesting it was perceived as less than *somewhat important* for both transportation and construction industries.

Research Question 2 – Career Success Importance by OAC

This research question was answered using descriptive statistics to identify which human skills Davis Technical College OAC members thought were most important for career success and employment progression. The construct used 29 human skills listed in alphabetical order. Participants were asked to rank each skill using a four-point Likert scale from 1 = *not at all important* to 4 = *extremely important*. Mean scores were computed for each skill in two ways: aggregated among industry clusters and disaggregated by industry clusters. Responses for these different skills ranged from $n = 44$ to $n = 46$.

Aggregated Among Industry Clusters

The five human skills found to be the most important for career success and employment progression were *integrity*, *work ethic*, responsibility, *attitude*, and *decision making* (see Table 15). The skill found to be least important was *consulting*. The variance among the mean scores of the top five most human skills perceived to be most important was 0.16, and the difference between the highest mean score and the lowest mean score was 1.20. None of the 29 human skills had a mean score of less than 2.0. The skills with

the highest variance were *job interview skills* (*SD* = 0.80), *consulting* (*SD* = 0.79), and *presenting* (*SD* = 0.78). *Integrity* and *work ethic* had the highest mean score and the least variance among OAC participants (*SD* = 0.21).

Disaggregated by Industry Clusters

The problem this study sought to address was the need to identify the human skills employers seek in their respective employees. Therefore, it was worth examining what human skills employers in the different industry clusters thought were important for their employees (see Table 16).

Table 15

Career Success Importance by OAC Aggregated Among Industry Clusters

Human skills	*M*	*SD*	*n*
Integrity	3.96	0.21	45
Work ethic	3.96	0.21	45
Responsibility	3.89	0.32	45
Attitude	3.85	0.36	46
Motivation	3.80	0.40	45
Problem solving	3.80	0.40	45
Decision making	3.80	0.41	44
Attendance/punctuality	3.76	0.43	46
Behavior	3.74	0.44	46
Initiative	3.73	0.45	45
Verbal communication	3.73	0.50	45
Teamwork	3.73	0.54	45
Willingness to learn and receive feedback	3.71	0.51	45
Critical thinking	3.70	0.51	46
Respect	3.69	0.51	45
Professionalism	3.69	0.56	45
Time management	3.69	0.56	45
Adaptability	3.54	0.50	46
Independence	3.53	0.63	45
Leadership	3.53	0.66	45
Customer service/patient care	3.52	0.72	46
Self-confidence	3.51	0.55	45
Social skills	3.51	0.59	45
Written communication	3.40	0.65	45
Professional appearance	3.16	0.77	45
Communication technology	3.11	0.67	46
Job interview skills	2.96	0.80	45
Presenting	2.89	0.78	45
Consulting	2.76	0.79	46

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Table 16

Career Success Importance by OAC Disaggregated by Industry Clusters

Human skills	Mean scores					
	BUSN	CONS	HLTH	MANF	SERV	TRAN
	n = 7	*n* = 3	*n* = 22	*n* = 6	*n* = 3	*n* = 3
Adaptability	3.43	3.75	3.45	3.67	3.50	4.00
Attendance/punctuality	3.43	4.00	3.77	3.83	3.75	4.00
Attitude	3.86	3.75	3.95	3.67	3.75	3.67
Behavior	3.57	3.5	3.82	3.67	4.00	3.67
Communication technology	3.14	3.50	3.05	3.00	3.00	3.33
Consulting	2.57	3.00	2.77	2.33	3.25	3.00
Critical thinking	3.71	3.50	3.68	3.83	3.75	3.67
Customer service/patient care	3.43	3.75	3.86	2.33	3.50	3.33
Decision making	3.57	4.00	3.82	3.83	4.00	3.67
Independence	3.00	4.00	3.64	3.83	3.25	3.33
Initiative	3.43	3.33	3.82	4.00	3.75	3.67
Integrity	4.00	4.00	3.95	4.00	3.75	4.00
Job interview skills	2.71	3.33	3.05	2.67	2.75	3.33
Leadership	3.14	3.67	3.73	3.50	3.25	3.33
Motivation	3.43	4.00	3.86	3.83	3.75	4.00
Presenting	2.71	3.33	2.91	2.67	2.75	3.33
Problem solving	3.71	4.00	3.77	3.83	3.75	4.00
Professional appearance	3.00	3.00	3.36	2.50	3.25	3.33
Professionalism	3.86	4.00	3.82	2.83	3.75	3.67
Respect	3.71	3.67	3.73	3.50	3.75	3.67
Responsibility	4.00	3.67	3.86	4.00	4.00	3.67
Self-confidence	3.00	3.67	3.64	3.67	3.25	3.67
Social skills	3.57	3.67	3.55	3.50	3.25	3.33
Teamwork	3.57	3.67	3.82	3.50	4.00	3.67
Time management	3.43	4.00	3.73	3.67	3.75	3.67
Verbal communication	4.00	3.67	3.64	3.67	3.75	4.00
Willingness to learn and receive feedback	3.71	3.67	3.68	3.83	3.50	4.00
Work ethic	4.00	4.00	3.91	4.00	4.00	4.00
Written communication	3.57	3.33	3.32	3.67	3.00	3.67

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important); colors represent the top scores for each industry; the darker the color, the greater the perceived importance; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

Business and Technology

When assessing the importance of human skills for career success and employment advancement, OAC members in the business and technology industry perceived four skills as extremely important (see Table 17). Due to the importance of some skills being perceived as the same by the survey respondents, the top two mean scores encompassed a total of six human skills. A difference of 0.14 separated the highest mean score from the second highest. No human skills had a mean score of less than 2.00 (somewhat important), and the human skill perceived as least important by mean scores was *consulting* ($M = 2.57$, $SD = 0.53$, $n = 7$). The range between the highest mean score and the lowest mean score was 1.43 (see Table 16).

Table 17

Career Success Importance as Perceived by OAC in Business and Technology

Human skills	*M*	*SD*	*n*
Integrity	4.00	0.00	7
Responsibility	4.00	0.00	7
Verbal communication	4.00	0.00	7
Work ethic	4.00	0.00	7
Attitude	3.86	0.38	7
Professionalism	3.86	0.38	7

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Construction

When assessing the importance of human skills for career success and employment advancement, OAC members in the construction industry perceived nine skills as extremely important, all with a mean score of M = 4.00 and a standard deviation of $SD = 0.00$ (see Table 18). The human skills identified as least important were

professional appearance and *consulting*; both had a mean score of *M* = 3.00; however, *professional appearance* had a smaller standard deviation (*SD* = 0.10 compared to *SD* = 0.82). The range between the highest mean score and the lowest mean score was 1.00 (Table 16).

Table 18

Career Success Importance as Perceived by OAC in Construction

Human skills	*M*	*SD*	*n*
Attendance/punctuality	4.00	0.00	4
Decision making	4.00	0.00	3
Independence	4.00	0.00	3
Integrity	4.00	0.00	3
Motivation	4.00	0.00	3
Problem solving	4.00	0.00	3
Professionalism	4.00	0.00	3
Time management	4.00	0.00	3
Work ethic	4.00	0.00	3

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Health Professions

The human skills perceived as most important by OAC members of the health professions industry cluster for career success and employment advancement were *attitude* and *integrity* (see Table 19). Due to the importance of some skills being assessed as the same by the survey respondents, the top three mean scores encompassed a total of five human skills. A difference of 0.37 separated the mean scores of the five most important human skills for the health professions cluster. No skill had a mean score of less than 2.00 (somewhat important), and the human skill identified as least important by

mean score was *consulting* (*M* = 2.77, *SD* = 0.87). The range between the highest mean score and the lowest mean score was 1.18 (see Table 16).

Table 19

Career Success Importance as Perceived by OAC in Health Professions

Human skills	*M*	*SD*	*n*
Attitude	3.95	0.21	22
Integrity	3.95	0.21	22
Work ethic	3.91	0.29	22
Customer service/patient care	3.86	0.35	22
Motivation	3.60	0.35	22

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Manufacturing

When assessing the importance of human skills for career success and employment advancement, OAC members in the manufacturing industry cluster perceived four skills as extremely important (see Table 20). The next highest mean score encompassed seven skills. Due to the importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of 11 human skills. A difference of 0.17 separated the mean scores of the 11 most important human skills for the manufacturing cluster. No skill had a mean score of less than 2.00 (somewhat important), and the human skills identified as least important by mean scores were *consulting* (*SD* = 0.82) and *customer service and patient care* (*SD* = 0.82), both with a mean score of *M* = 2.33 (see Table 16).

Table 20

Career Success Importance as Perceived by OAC in Manufacturing

Human skills	*M*	*SD*	*n*
Initiative	4.00	0.00	6
Integrity	4.00	0.00	6
Responsibility	4.00	0.00	6
Work ethic	4.00	0.00	6
Attendance/punctuality	3.83	0.41	6
Critical thinking	3.83	0.41	6
Decision making	3.83	0.41	6
Independence	3.83	0.41	6
Motivation	3.83	0.41	6
Problem solving	3.83	0.41	6
Willingness to learn and receive feedback	3.83	0.41	6

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Service Professions

When assessing the importance of human skills for career success and employment advancement, OAC members in the service professions industry cluster perceived five skills as extremely important (see Table 21). No skill had a mean score of less than 2.0 (somewhat important), and the human skills identified as least important were *job interview skills* and *presenting*, both of which had a mean score $M = 2.75$ ($SD = 1.26$, $n = 4$). The range between the highest mean score and the lowest mean score was 1.25 (see Table 16).

Table 21

Career Success Importance as Perceived by OAC in Service Professions

Human Skills	*M*	*SD*	*n*
Behavior	4.00	0.00	4
Decision making	4.00	0.00	3
Verbal communication	4.00	0.00	4
Teamwork	4.00	0.00	4
Work ethic	4.00	0.00	4

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Transportation

When assessing the importance of human skills for career success and employment advancement, OAC members in the transportation industry perceived eight skills as extremely important (see Table 22). No skills had a mean score of less than 2.0 (somewhat important), and *consulting* was the least important skill and had a mean score of $M = 3.00$ ($SD = 1.00$). The range between the highest mean score and the lowest mean score was 1.00 (see Table 16).

Table 22

Career Success Importance as Perceived by OAC in Transportation

Human skills	*M*	*SD*	*n*
Adaptability	4.00	0.00	3
Attendance/punctuality	4.00	0.00	3
Integrity	4.00	0.00	3
Motivation	4.00	0.00	3
Problem solving	4.00	0.00	3
Verbal communication	4.00	0.00	3
Willingness to learn and receive feedback	4.00	0.00	3
Work ethic	4.00	0.00	3

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

General Findings

When comparing the human skills that OAC members from the different industry clusters thought were important for career success and employee advancement, several unique findings became apparent. *Work ethic* was identified as one of the most important human skills in all six industry clusters. In contrast, several skills were only ranked as most important for one industry cluster: *behavior* and *teamwork* for service professions, *customer service and patient care* for health professions, *critical thinking* for manufacturing, and *time management* for construction. Ten human skills had mean scores that were not ranked as most important for any industry clusters.

Research Question 3 – Entry-Level Importance by Faculty

This research question was answered using descriptive statistics to identify which human skills Davis Technical College faculty thought were most important for entry-level employees in their industry and thus which human skills should be taught in their training programs. The construct used 29 human skills listed in alphabetical order. Participants were asked to rank each skill using a four-point Likert scale from 1= *not at all important* to 4 = *extremely important*. Responses for these different skills ranged from $n = 72$ to $n = 73$.

Aggregated Among Industry Clusters

Mean scores were computed for the perceived importance of each skill for entry-level employees and can be found in Table 23. The five human skills perceived by faculty to be the most important for entry-level employment were *responsibility*, *work ethic*,

critical thinking, *integrity*, and *attendance/punctuality*. The variance among the mean scores of the top five most human skills perceived to be most important was 0.21. None of the 29 human skills had a mean score of less than 2.0, and the skill found to be least important was *presenting*. *Responsibility* and *critical thinking* had the least variance among faculty participants, with a standard deviation of *SD* = 0.49. The values with the highest variance were *presenting* (*SD* = 0.90), *professional appearance* (*SD* = 0.87), and *customer service or patient care* (*SD* = 0.86). The range between the highest mean score and the lowest mean score was 1.76.

Disaggregated by Industry Clusters

The problem this study sought to address was the need to identify the human skills employers seek in their respective employees. Therefore, it was worth exploring what human skills employers in the different industry clusters thought were important for their employees (see Table 24).

Table 23

Entry-Level Importance by Faculty Aggregated Among Industry Clusters

Human skills	*M*	*SD*
Responsibility	3.75	0.49
Work ethic	3.75	0.52
Critical thinking	3.70	0.49
Integrity	3.67	0.62
Attendance/punctuality	3.64	0.59
Willingness to learn and receive feedback	3.63	0.59
Attitude	3.62	0.57
Behavior	3.62	0.59
Respect	3.62	0.62
Time management	3.59	0.55
Problem solving	3.56	0.62
Initiative	3.48	0.63
Motivation	3.48	0.65
Teamwork	3.47	0.63
Decision making	3.45	0.65
Verbal communication	3.42	0.62
Adaptability	3.41	0.64
Professionalism	3.38	0.68
Independence	3.32	0.68
Self-confidence	3.26	0.69
Customer service/patient care	3.23	0.86
Social skills	3.11	0.81
Communication technology	3.03	0.71
Written communication	3.01	0.81
Professional appearance	2.90	0.87
Consulting	2.85	0.83
Job interview skills	2.82	0.75
Leadership	2.74	0.78
Presenting	2.45	0.90

Note. $n = 73$; Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Table 24

Entry-Level Importance by Faculty Disaggregated by Industry Clusters

Human skills	Mean scores					
	BUSN	CONS	HLTH	MANF	SERV	TRAN
	n = 13	*n* = 6	*n* = 23	*n* = 13	*n* = 11	*n* = 7
Adaptability	3.54	2.67	3.57	3.23	3.45	3.57
Attendance/punctuality	3.38	3.17	3.74	3.77	3.91	3.57
Attitude	3.54	2.83	3.70	3.69	3.91	3.57
Behavior	3.38	3.17	3.74	3.67	4.00	3.43
Communication technology	3.46	2.50	3.30	2.69	3.00	2.43
Consulting	2.77	2.50	2.83	2.46	3.73	2.71
Critical thinking	3.62	3.33	3.78	3.62	3.82	3.86
Customer service/patient care	3.31	2.83	3.70	2.38	3.73	2.71
Decision making	3.15	3.00	3.57	3.38	3.64	3.86
Independence	3.08	3.17	3.26	3.08	3.73	3.86
Initiative	3.15	2.83	3.65	3.54	3.73	3.57
Integrity	3.62	2.67	3.78	3.77	3.91	3.71
Job interview skills	2.92	2.50	2.83	2.69	3.45	2.14
Leadership	2.54	2.17	2.87	2.69	3.45	2.14
Motivation	3.23	2.83	3.65	3.46	3.73	3.57
Presenting	2.46	1.67	2.61	2.31	3.18	1.71
Problem solving	3.54	3.00	3.65	3.62	3.55	3.71
Professional appearance	2.54	2.50	3.22	2.46	3.73	2.43
Professionalism	3.46	2.83	3.65	2.92	3.73	3.14
Respect	3.69	2.83	3.83	3.69	3.73	3.14
Responsibility	3.62	3.33	3.78	3.92	3.82	3.86
Self-confidence	3.15	2.83	3.26	3.00	3.64	3.71
Social Skills	3.32	2.17	3.35	2.85	3.73	2.43
Teamwork	3.31	3.00	3.74	3.23	3.91	3.00
Time management	3.31	3.33	3.57	3.69	3.82	3.86
Verbal communication	3.46	2.83	3.48	3.31	3.82	3.29
Willingness to learn and receive feedback	3.46	2.83	3.74	3.69	3.82	3.86
Work ethic	3.69	3.33	3.78	3.62	4.00	4.00
Written communication	3.31	2.50	3.09	2.62	3.18	3.14

Note. Aggregated *n* = 73, one participant in the manufacturing cluster omitted a response for the skill *behavior;* Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important; colors represent the top scores for each industry; the darker the color, the greater the perceived importance; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

Business and Technology

The human skills perceived as most important by business and technology faculty for entry-level employees in their industry cluster were *respect* and *work ethic* (see Table 25). The skills with the next highest mean score were *critical thinking*, *integrity*, and *responsibility*. A difference of 0.04 separated the highest mean scores from the second highest. Due to the importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of five human skills. No human skill had a mean score of less than 2.0 (somewhat important), and the skill identified as least important by mean scores was *presenting* ($M = 2.46$, $SD = 0.52$, $n = 13$). The range between the highest mean score and the lowest was 1.23 (see Table 24).

Table 25

Entry-Level Importance as Perceived by Faculty in Business and Technology

Human skills	*M*	*SD*	*n*
Respect	3.69	0.48	13
Work ethic	3.69	0.48	13
Critical thinking	3.62	0.51	13
Integrity	3.62	0.51	13
Responsibility	3.62	0.51	13

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Construction

The human skills perceived as most important by construction faculty were *critical thinking*, *responsibility*, *time management*, and *work ethic* (see Table 26). A difference of 0.16 separated the highest mean scores from the second highest. Due to the

importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of seven human skills. The human skill with the lowest mean score was *presenting* ($M = 1.67$, $SD = 0.82$, $n = 6$). The range between the highest mean score and the lowest mean score was 1.66 (see Table 24).

Table 26

Entry-Level Importance as Perceived by Faculty in Construction

Human skills	*M*	*SD*	*n*
Critical thinking	3.33	0.80	6
Responsibility	3.33	1.03	6
Time management	3.33	1.03	6
Work ethic	3.33	1.21	6
Attendance/punctuality	3.17	1.17	6
Behavior	3.17	0.75	6
Independence	3.17	0.75	6

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Health Professions

The human skill ranked as most important by faculty in the health professions cluster was *respect* (see Table 27). The next highest mean scores were for *critical thinking*, *integrity*, *responsibility*, and *work ethic*. A difference of only 0.05 separated the highest mean scores from the second highest. Due to the importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of five human skills. No human skill had a mean score of less than 2.00 (somewhat important), and the skill with the lowest mean score was *presenting* ($M = 2.61$, $SD = 0.78$, $n = 23$). The range between the highest mean score and the lowest mean score was 1.22 (see Table 24).

Table 27

Entry-Level Importance as Perceived by Faculty in Health Professions

Human skills	*M*	*SD*	*n*
Respect	3.83	0.39	23
Critical thinking	3.78	0.42	23
Integrity	3.78	0.42	23
Responsibility	3.78	0.42	23
Work ethic	3.78	0.42	23

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Manufacturing

The human skill perceived as most important by faculty in the manufacturing cluster was *responsibility* (see Table 28). The skills with the next highest mean score were *attendance/punctuality* and *integrity*. The third highest mean score was for *attitude*, *respect*, *time management*, and *willingness to learn and receive feedback*. A difference of only 0.23 separated the highest mean scores from the third highest. Due to the importance of some skills being assessed as the same by the survey respondents, the top three mean scores encompassed a total of seven human skills. No human skills had a mean score of less than 2.00 (somewhat important). The lowest mean score was *presenting* ($M = 2.31$, $SD = 0.75$, $n = 13$). The range between the highest mean score and the lowest mean score was 1.61 (see Table 24).

Table 28

Entry-Level Importance as Perceived by Faculty in Manufacturing

Human skills	*M*	*SD*	*n*
Responsibility	3.92	0.28	13
Attendance/punctuality	3.77	0.44	13
Integrity	3.77	0.44	13
Attitude	3.69	0.63	13
Respect	3.69	0.48	13
Time management	3.69	0.48	13
Willingness to learn and receive feedback	3.69	0.48	13

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Service Professions

The human skills ranked as most important by faculty in service professions were *behavior* and *work ethic* (see Table 29). The next highest mean score was for *attendance/punctuality*, *attitude*, *integrity*, and *teamwork*. A difference of 0.09 separated the highest mean scores from the second highest. Due to the importance of some skills being assessed as the same, the top two mean scores encompassed a total of six human skills. The lowest mean score was *communication technology* ($M = 3.00$, $SD = 0.77$, $n = 11$). The range between the highest mean score and the lowest mean score was 1.00 (see Table 24).

Table 29

Entry-Level Importance as Perceived by Faculty in Service Professions

Human skills	*M*	*SD*	*n*
Behavior	4.00	0.00	11
Work ethic	4.00	0.00	11
Attendance/punctuality	3.91	0.30	11
Attitude	3.91	0.30	11
Integrity	3.91	0.30	11
Teamwork	3.91	0.30	11

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important

Transportation

The human skill perceived as most important by faculty in the transportation cluster was *work ethic* (see Table 30). The next highest mean score was for *critical thinking*, *decision making*, *independence*, *responsibility*, *time management*, and *willingness to learn and receive feedback*. A difference of 0.14 separated the highest mean scores from the second highest. Due to the importance of some skills being assessed as the same by the survey respondents, the top two mean scores encompassed a total of seven human skills. The lowest mean score was *presenting* ($M = 1.71$, $SD = 1.11$, $n = 7$). The range between the highest mean score was 2.29 (see Table 24).

Table 30

Entry-Level Importance as Perceived by Faculty in Transportation

Human skills	*M*	*SD*	*n*
Work ethic	4.00	0	7
Critical thinking	3.86	0.38	7
Decision making	3.86	0.38	7
Independence	3.86	0.38	7
Responsibility	3.86	0.38	7
Time management	3.86	0.38	7
Willingness to learn and receive feedback	3.86	0.38	7

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

General Findings

When comparing the human skills that faculty from the different industry clusters thought were important, several unique findings became apparent regarding individual skills and human skills as a construct.

Responsibility was the only human skill whose importance was in the top three mean scores of all six industry clusters. Additionally, it had the highest mean score in both the construction and manufacturing clusters. Conversely, three human skills had mean scores in the top three of only one industry cluster: *adaptability* in the business and technology cluster, *decision making* in transportation, and *verbal communication* in service professionals. All other human skills found to be most important had mean scores in the top three of at least two industry clusters. Twelve human skills had mean scores that were not in the top three of any industry clusters.

Only two human skills had a mean score of $M = 4.0$ in any industry clusters. Participants in both the construction and service professions clusters unanimously scored

work ethic as 4 = *extremely important*. All participants in the service professions industry scored *behavior* as 4 = extremely important. The human skill with the lowest mean score was *presenting* (M = 1.67, *SD* = 0.82) in the construction cluster (see Table 24).

When looking at human skills as a single construct for each industry cluster, the highest aggregated mean score for the importance of human skills was in the service profession cluster (see Table 31). Construction had the lowest aggregated mean score. Additionally, when looking at the disaggregated skills, the highest mean score for construction was lower than any of the top three mean scores in all the other industry clusters (Table 24).

Table 31

Descriptive Statistics of Human Skills by Faculty as a Single Construct by Industry Cluster

Human skills	*M*	*SD*	*Mdn*	*IQR*	*n*
Business and technology	3.27	0.31	3.28	0.52	13
Construction	2.80	0.58	2.91	0.60	6
Health professions	3.47	0.35	3.62	0.52	23
Manufacturing	3.21	0.36	3.24	0.41	13
Service professions	3.68	0.29	3.69	0.41	11
Transportation	3.24	0.39	3.28	0.31	7

Note. Aggregated *n* = 73, one participant in the manufacturing cluster omitted a response for the skill *behavior;* Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Research Question 4 – Methods for Teaching Human Skills

This question sought to identify which methods instructors at Davis Technical College used to facilitate the development of human skills in their technical programs.

For this construct, participants were provided a list of 10 common methods used to teach and assess skills and asked to select all the ways their program helps students develop human skills. Frequency counts were computed. The response rate for this construct was $n = 71$.

The most common method used to develop human skills was through *program expectations* (see Table 32), such as helping students develop the skill of attendance or punctuality by tracking attendance through a system of clocking in and out. This method was not only the most common across the college, it was also the most common method used in each industry cluster. The least common method was *assignments that explicitly teach a human skill*, with only a third of the participants selecting this method.

Table 32

Methods Used by Faculty to Help Students Develop Human Skills

Method	Participants who selected each method	
	f	%
Through program expectations (e.g., students learn to be on time because attendance is taken)	59	83.1%
Through student-teacher conferencing	52	73.2%
Through teacher feedback (e.g., written comments on assignments)	46	64.8%
Through the program orientation	38	53.5%
In a required course on human skills (e.g., workplace success)	34	47.9%
Through teacher evaluation (e.g., use of human skills is graded)	32	45.1%
In a course syllabus	30	42.3%
In assignments that embed human skills (e.g., giving a presentation)	28	39.4%
Through end-of-course self-assessments/reflection	25	35.2%
In assignments explicitly about human skills	24	33.8%

Note. $n = 71$

All methods listed in the survey were selected by at least one faculty member in each industry cluster as being used to develop human skills. However, if the methods were examined by individual training programs rather than industry clusters, only five training programs used all ten methods.

Participants were given the opportunity to share other methods they use that were not included in the survey list by answering the prompt, “Please describe any other methods you use to develop human skills among your students.” Faculty from all six industry clusters identified additional methods used in their training programs. Methods included role-playing, collaborating with students, completing hand-on tasks, participating in clinical experiences, and modeling by the instructor. All of the responses were organized in Table 33; no changes were made to the narrative other than to fix obvious spelling errors.

Table 33

Additional Methods used by Faculty to Develop Human Skills

Business and technology faculty
I try to interact with the students every day they are here.
Team activities
Person-to-person meetings, encouraging collaboration with other students
Hands-on training
Through periodic, impromptu one-on-one teaching while students work through design problems with instructors during class to learn new technical skills, receive technical knowledge, and grow / develop their presentation and explanation skills as they explain designs and issues to their instructors.
Construction faculty
Demonstration and lecture
Simulated service calls
Health professions faculty
Having students lead a group of fellow students as found in industry.
Case scenarios and role play activities in which students demonstrate appropriate "human skills" or workplace readiness
Nothing special
Require communication between students and "resident" to build relationships
Working with team members and patients in the clinical setting.
Role play and face-to-face interaction
Students are constantly refining their soft skills while practicing their hard skills.
Clinical practice with actual patients
Manufacturing faculty
We stress it in class meetings and have outside companies come in and talk about it
By communicating with each student every day
Video submissions.
Talking to the teacher about what you learn and how it works
I try to discuss with the students the importance of "buying your customer a coke". The act of unsolicited gifting breaks down walls, and makes people more prone to engage in difficult conversations.
Work Ethics Assessment
Service professions faculty
We use role play, practice consultations and communication with clients in the salon
I think the students learn a lot about human skills by watching how their instructors interact with clients on the salon floor.
There is an optional course for our students: Workplace skills. I wish that it was required for all students.
Students work in clinicals a considerable amount of time in their program. They work with the public, perform consultations & services while the instructors offer feedback and coaching. Role-playing is used but could be used more throughout their training.
Transportation faculty
Students learn independence and problem solving by completing tasks.
Students interacting with other students

Note. Survey Prompt: “Please describe any other methods you use to develop human skills among your students.”

Research Question 5 – Comparison Between Entry-Level and Career Success

This research question sought to answer how the human skills employers perceive as important differ among industry clusters. Participants were asked to self-select which training program they advised. Then training programs were grouped into industry clusters based on the organization at Davis Technical College. The construct used 29 human skills listed in alphabetical order. Participants were asked to assess the importance of each skill twice using a four-point Likert scale from 1= *not at all important* to 4 = *extremely important*: once for entry-level employees and once for career success and employee advancement. Descriptive statistics were computed for each industry cluster of both entry-level employment and career success in two ways: disaggregated by skills and aggregated among skills. The aggregated among skills score was computed by averaging all 29 skills into a single construct.

The Benjamini–Hochberg p-value correction method was used to adjust the p-value and avoid Type I errors. This method is less stringent than the more commonly used Bonferroni correction method and increases the method's power. The decision was made to use this method, given this study's exploratory nature. Using the Benjamini-Hochberg method will typically result in more null hypotheses being rejected, and more discoveries may be made (Dubitzky & et al., 2013).

When there is low statistical power, the decision may be made to increase the alpha level above the default of the 0.05 threshold. While this raises some concern due to the possible increase in Type I error rate (false-positive results), Maier and Lakens (2021) suggested there are some circumstances that justify this increase. For example, if the goal of the researcher is to efficiently generate reliable knowledge that will have direct

decision-making relevance or if it is not feasible to reduce overall error rates by collecting more data, such as in this exploratory case study. Therefore, the decision was made to use an alpha level of .10.

This study originally proposed running a one-way ANOVA. The assumptions for ANOVA were assessed as part of the data analysis. This test included a normality check using the Shapiro-Wilk test. All *p* values were found to be significant at the $p = .05$. With all *p* values significant, the data failed the assumption of normality. Due to this assumption violation, the Kruskal-Wallis test was used to identify if any significant differences existed among clusters in regard to the importance. This non-parametric test is an alternative to one-way ANOVA. The effect size for Kruskal-Wallis is the eta squared based on the H-statistic: eta2[H] = (H - k + 1) / (*n* - k); where H is the value obtained in the Kruskal-Wallis test; k is the number of groups; *n* is the total number of observations.

The interpretation values commonly in published literature are: 0.01- < 0.06 (small effect), 0.06 - < 0.14 (moderate effect) and ≥ 0.14 (large effect) (Tomczak & Tomczak, 2014). This Kruskal-Wallis test was run twice: once for entry-level employees and once for career success and employment advancement. When significance was found, the Dunn's test was run post-hoc to assess for significant pair-wise comparisons. Because of the small samples sizes in this exploratory case study, a power analysis would not yield accurate results, so the decision was made not to run a post-hoc power analysis (Fan & Zhang, 2012).

The response rate ranged from $n = 42$ *to* $n = 48$. The *n* varied among the programs and between skills needed for entry-level and career success and advancement.

To eliminate issues with interpretation due to non-normal distribution, the median (*Mdn*) and range (*IQR*) were reported for this non-parametric test. However, due to the lack of variation, the mean (*M*) and standard deviation (*SD*) were also reported to highlight the slight variations.

Differences in Disaggregated Human Skills among Industry Clusters

When comparing the difference in the perceived importance of human skills among industries, it is useful to see the descriptive statistics for all human skills being explored. Table 34 reports the mean scores for all 29 human skills disaggregated by industry cluster. Both entry-level and career success data were included in the table to provide a means for comparison.

Table 34

Entry-Level and Career Success Importance as Perceived by OAC for Disaggregated Industries

Human Skills	Mean Scores											
	BUSN		CONS		HLTH		MANF		SERV		TRAN	
	n = 8	*n* = 7	*n* = 4	*n* = 3	*n* = 22		*n* = 6		*n* = 5	*n* = 3	*n* = 1	*n* = 3
	Entry	Adv	Entry	Adv	Entry	Adv	Entry	Adv	Entry	Adv	Entry	Adv
Adaptability	3.00	3.43	3.50	3.75	3.32	3.45	3.33	3.67	2.80	3.50	4.00	4.00
Attendance/ punctuality	3.25	3.43	3.75	4.00	3.68	3.77	3.67	3.83	3.60	3.75	4.00	4.00
Attitude	3.62	3.86	3.75	3.75	3.73	3.95	3.50	3.67	3.40	3.75	4.00	3.67
Behavior	3.62	3.57	3.25	3.5	3.55	3.82	3.50	3.67	3.60	4.00	4.00	3.67
Communication technology	3.00	3.14	2.75	3.50	2.55	3.05	2.50	3.00	2.60	5.00	2.50	3.33
Consulting	2.00	2.57	2.50	3.00	2.18	2.77	2.00	2.33	2.40	3.25	2.00	3.00
Critical thinking	3.00	3.71	2.75	3.50	3.32	3.68	3.50	3.83	2.60	3.75	3.00	3.67
Customer service or patient care	3.25	3.43	2.50	3.75	3.73	3.86	2.17	2.33	3.20	3.50	3.00	3.33
Decision making	2.88	3.57	2.67	4.00	3.18	3.82	3.00	3.83	2.80	4.00	3.50	3.67
Independence	2.38	3.00	2.67	4.00	2.68	3.64	3.33	3.83	2.60	3.25	3.00	3.33
Initiative	2.50	3.43	3.00	3.33	3.18	3.82	3.83	4.00	3.20	3.75	3.00	3.67
Integrity	3.75	4.00	4.00	4.00	3.82	3.95	4.00	4.00	3.60	3.75	4.00	4.00
Job interview skills	2.50	2.71	2.33	3.33	2.68	3.05	2.67	2.67	2.60	2.75	3.50	3.33
Leadership	2.12	3.14	2.33	3.67	2.55	3.73	2.67	3.5	2.00	3.25	2.50	3.33
Motivation	3.00	3.43	3.67	4.00	3.50	3.86	3.67	3.83	3.20	3.75	3.50	4.00
Presenting	2.25	2.71	1.67	3.33	2.05	2.91	2.17	2.67	2.20	2.75	1.50	3.33
Problem solving	2.88	3.71	2.67	4.00	3.14	3.77	3.33	3.83	2.80	3.75	3.00	4.00
Professional appearance	2.50	3.00	2.33	3.00	3.38	3.36	2.33	2.50	3.20	3.25	3.00	3.33
Professionalism	3.25	3.86	2.33	4.00	3.50	3.82	2.50	2.83	3.20	3.75	3.50	3.67
Respect	3.38	3.71	3.67	3.67	3.59	3.73	3.67	3.50	3.40	3.75	3.50	3.67
Responsibility	3.25	4.00	2.67	3.67	3.55	3.86	3.67	4.00	3.80	4.00	3.50	3.67
Self-confidence	2.25	3.00	2.67	3.67	2.86	3.64	3.17	3.67	2.80	3.25	3.50	3.67
Social skills	2.75	3.57	3.67	3.67	3.23	3.55	2.83	3.50	2.60	3.25	3.00	3.33
Teamwork	3.00	3.57	3.67	3.67	3.64	3.82	3.17	3.50	3.60	4.00	3.50	3.67
Time management	2.75	3.43	3.33	4.00	3.23	3.73	3.33	3.67	3.20	3.75	3.50	3.67
Verbal communication	3.25	4.00	3.33	3.67	3.27	3.64	3.33	3.67	3.00	3.75	4.00	4.00
Willingness to learn and receive feedback	3.38	3.71	4.00	3.67	3.73	3.68	3.67	3.83	3.60	3.50	4.00	4.00
Work ethic	3.62	4.00	4.00	4.00	3.77	3.91	3.83	4.00	3.80	4.00	4.00	4.00
Written communication	2.62	3.57	2.33	3.33	2.68	3.32	2.83	3.67	2.20	3.00	2.50	3.67

Note Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

Entry-Level Employees

When comparing the OAC members' perceptions about the importance of human skills for entry-level employees among industry clusters, significant differences were found for the following four skills: *customer service and patient care*, *initiative*, *professional appearance*, and *professionalism* (see Table 35).

The importance of *customer service and patient care* as perceived by OAC members for entry-level employees was found to be significantly different among the industry clusters. In the post-hoc analysis, the importance of *customer service and patient care* was significantly higher in the health professions than in the construction cluster (p = .073) and the manufacturing cluster (p = .002). The effect size for this was model was large (η^2 = .208).

The importance of *initiative* as perceived by OAC members for entry-level employees was found to be significantly different among the industry clusters. In the post-hoc analysis, the importance of *initiative* was perceived to be significantly more important in the manufacturing industry cluster than in the business and technology industry cluster (p = .014). The effect size for this model was moderate (η^2 = .090).

The importance of *professional appearance* as perceived by OAC members for entry-level employees was found to be significantly different among the industry clusters. In the post-hoc analysis, the importance of *professional appearance* was perceived to be significantly more important in the health professions industry cluster than in the manufacturing cluster with a small effect size (p =.040, η^2 = .115).

The importance of *professionalism* as perceived by OAC members for entry-level employees was found to be significantly different among the industry clusters. In the

post-hoc analysis, the importance of *professionalism* was perceived to be significantly more important in the health professions industry than in construction (p = .070) and in the manufacturing industry (p =.035), with a moderate effect size (η^2 = 0.135).

Table 35

Significant Differences in Entry-Level Importance by OAC Among Industry Clusters

	BUSN	CONS	HLTH	MANF	SERV	TRAN	Chi Squared	*p*
	n = 8	*n* = 3-4	*n* = 22	*n* = 6	*n* = 5	*n* = 2		
Customer service/ patient care							19.136	0.002
M	3.25	2.50*	3.73*	2.17*	3.20	3.00		
SD	0.71	1.00	0.55	0.75	0.84	0.00		
Mdn	3.00	1.15	4.00	2.00	3.00	3.00		
IQR	2.00	2.00	2.00	2.00	2.00	0.00		
Initiative							11.142	0.049
M	2.50*	3.00	3.18	3.83*	3.20	3.00		
SD	0.76	1.00	0.59	0.41	0.84	1.41		
Mdn	3.00	3.00	3.00	4.00	3.00	3.00		
IQR	2.00	2.00	2.00	1.00	2.00	2.00		
Professional appearance							12.790	0.025
M	2.50	2.33	3.36*	2.33*	3.20	3.00		
SD	1.07	1.53	0.58	0.52	0.45	0.00		
Mdn	3.00	2.00	3.00	2.00	3.00	3.00		
IQR	3.00	3.00	2.00	1.00	1.00	0.00		
Professionalism							14.160	0.015
M	3.25	2.33*	3.50*	2.50*	3.20	3.50		
SD	0.46	0.58	0.60	0.55	0.84	0.71		
Mdn	3.00	2.00	4.00	2.50	3.00	3.55		
IQR	1.00	1.00	2.00	1.00	2.00	1.00		

Note. * denotes significant difference at $p < .10$; Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

Career Success and Employment Advancement

When comparing the OAC members' perceptions about the importance of human skills for career success among industry clusters, significant differences were found for *customer service and patient care*, *independence*, *and professionalism* (see Table 36).

Table 36

Significant Difference in Career Success Importance by OAC Among Industry Clusters

	BUSN	CONS	HLTH	MANF	SERV	TRAN	Chi Squared	p
	n = 7	*n* = 4	*n* = 22	*n* = 6	*n* = 4	*n* = 3		
Customer service/ patient care							19.60	.001
M	3.43*	3.75*	3.86*	2.33*	3.50	3.33		
SD	0.79	0.50	.350	0.82	0.58	0.58		
Mdn	4.00	4.00	4.00	2.50	3.50	3.00		
IQR	2.00	1.00	1.00	2.00	1.00	1.00		
Independence							9.371	.095
M	3.00	4.00	3.64	3.83	3.25	3.33		
SD	1.00	0.00	0.49	0.41	0.50	0.58		
Mdn	3.00	4.00	4.00	4.00	3.00	3.00		
IQR	3.00	0.00	1.00	1.00	1.00	1.00		
Professionalism							13.954	.016
M	3.86*	4.00*	3.82*	2.83*	3.75*	3.67		
SD	0.38	0.00	0.39	0.75	0.50	0.58		
Mdn	4.00	4.00	4.00	3.00	4.00	4.00		
IQR	1.00	0.00	1.00	2.00	1.00	1.00		

Note. * denotes significant difference at $p < .10$; Mean Scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important; BUSN = business and technology, CONS = construction, HLTH = health professions, MANF = manufacturing, SERV = service professions, TRAN = transportation.

The importance of *customer service and patient care* as perceived by OAC members for career success was found to be significantly different among the industry clusters. In the post-hoc analysis, the importance of *customer service and patient care* was perceived to be significantly less important in the manufacturing industry cluster

than in the business and technology cluster (p = .085), the construction cluster (p = .049), and the health profession cluster (p < .005) with a large effect size ($\eta^2 = 0.215$).

The importance of *independence* as perceived by OAC members for career success was found to be significantly different among the industry clusters. However, in the post-hoc analysis, no significant differences were found.

The importance of *professionalism* as perceived by OAC members for career success was found to be significantly different among the industry clusters. In the post-hoc analysis, the importance of *professionalism* was perceived to be significantly less important in the manufacturing industry cluster than in the business and technology cluster (p = .021), the construction cluster (p = .027), the health professions cluster (p = .009), and the service professions cluster (p = .098) with a moderate effect size ($\eta^2 = .132$).

Differences in Aggregated Human Skills among Industry Clusters

Because the term *soft skills* was found 54 times in the content analysis of the OAC meeting minutes and to further explore the importance of human skills as a single aggregated construct, a Kruskal Wallis test was run for both entry-level employees and career success and advancement. Although neither test showed a significant difference for the importance of human skills among industry clusters, the descriptive statistics can be found in Tables 37 and 38.

Table 37

Mean and Standard Deviation of Human Skills by OAC as a Single Construct Disaggregated by Industry

Industry cluster	Aggregated mean scores for all human skills						Mean score difference
	Entry-level			Career success			
	n	*M*	*SD*	*n*	*M*	*SD*	
Business & technology	30	2.93	0.45	31	3.46	0.20	0.53
Construction	3	3.01	0.45	3	3.70	0.32	0.69
Health professions	22	3.21	0.37	22	3.62	0.27	0.41
Manufacturing	6	3.14	0.11	6	3.48	0.17	0.34
Service professions	5	3.02	0.43	3	3.60	0.46	0.58
Transportation	1	3.48	--	3	3.64	0.31	0.16

Note. Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Table 38

Median and Interquartile Range of Human Skills by OAC as a Single Construct Disaggregated by Industry for Career Successes

Industry cluster	Aggregated mean scores for all human skills						Median score difference
	Entry-level			Career success			
	n	*Mdn*	*IQR*	*n*	*Mdn*	*IQR*	
Business & technology	30	2.91	1.45	31	3.52	0.55	0.61
Construction	3	3.03	0.90	3	3.79	0.62	0.76
Health professions	22	3.19	3.79	22	3.66	4.00	0.81
Manufacturing	6	3.17	0.24	6	3.50	0.45	0.33
Service professions	5	3.17	1.07	3	3.79	0.86	0.62
Transportation	1	3.48	0.00	3	3.48	0.50	0

Note. Median scores:1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Research Question 6 – Comparisons between OAC and Faculty

This research question sought to answer how the human skills faculty perceive as important for entry-level employees differ from those that employers perceive as important for entry-level employees. Participants were asked to self-select which training program they advised. The training programs were then grouped into industry clusters based on the organization at Davis Technical College. The construct used 29 human skills listed in alphabetical order. Participants were asked to each assess the importance of each skill using a four-point Likert scale from 1= *not at all important* to 4 = *extremely important*. Table 39 shows the mean scores and standard deviations for each skill as assessed by both faculty and OAC members. The data for this question was analyzed in two ways: aggregated among industry clusters and disaggregated by industry cluster.

This study originally proposed using an independent samples *t*-test to determine if there were any significant differences. During the data analysis, the data was tested for violations of statistical assumptions. The Shapiro-Wilk normality test resulted in significant differences ($p < .05$) for all variables, meaning that the statistical assumption of normality was violated. Thus, the non-parametric Wilcoxon rank-sum test was used to test for significant differences between groups.

A post-hoc power analysis was conducted using G*Power for all significant findings. This computation was conducted using the calculated effect size (r), alpha = .10, and the achieved sample sizes for both faculty and OAC. All significant findings yielded insignificant powers ($1 - \beta < .80$) (Faul et. al., 2017). However, given that this study is an exploratory case study with a small population and small sample sizes, these findings were to be expected.

Table 39

Human Skills Importance for Entry-Level Employees by Faculty and OAC Members for Aggregate Programs

Human skills	Entry-level employees			
	Faculty		OAC	
	M	*SD*	*M*	*SD*
Adaptability	3.41	0.64	3.26	0.61
Attendance/punctuality	3.64	0.59	3.62	0.53
Attitude	3.62	0.57	3.66	0.52
Behavior	3.62	0.59	3.55	0.58
Communication technology *	3.03	0.71	2.64	0.67
Consulting*	2.85	0.83	2.17	0.82
Critical thinking*	3.70	0.49	3.15	0.75
Customer service or patient care	3.23	0.86	3.26	0.85
Decision making*	3.45	0.65	3.04	0.76
Independence*	3.32	0.68	2.72	0.75
Initiative*	3.48	0.63	3.13	0.75
Integrity	3.67	0.62	3.83	0.38
Job interview skills	2.82	0.75	2.65	0.64
Leadership*	2.74	0.78	2.41	0.65
Motivation	3.48	0.65	3.41	0.58
Presenting*	2.45	0.90	2.07	0.68
Problem solving*	3.56	0.62	3.04	0.70
Professional appearance	2.90	0.87	2.98	0.83
Professionalism	3.38	0.68	3.22	0.70
Respect	3.62	0.62	3.54	0.59
Responsibility*	3.75	0.49	3.48	0.59
Self-confidence*	3.26	0.69	2.80	0.72
Social skills	3.11	0.81	3.04	0.70
Teamwork	3.47	0.63	3.46	0.69
Time management*	3.59	0.55	3.17	0.61
Verbal communication	3.42	0.62	3.27	0.72
Willingness to learn and receive feedback	3.63	0.59	3.67	0.52
Work ethic	3.75	0.52	3.78	0.42
Written communication*	3.01	0.81	2.61	0.77

Note. * Significant mean score differences between faculty and OAC at $p < .10$; Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

To eliminate issues with interpretation due to non-normal distribution, the median (*Mdn*) and range (*IQR*) were reported for this non-parametric test. However, due to the lack of variation, the mean (*M*) and standard deviation (*SD*) were also reported to highlight the slight variations.

Aggregated Among the Industry Clusters

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees, the Wilcoxon test revealed there were significant differences for 13 skills (see Table 40).

Table 40

Significant Differences in Entry-Level Importance by Faculty and OAC for Aggregate Programs

Human skills	Entry-level employees				*p*	*r*
	Faculty		OAC			
	Mdn	*IQR*	*Mdn*	*IQR*		
Communication technology	3.0	1.0	3.0	3.0	.005	.26
Consulting	3.0	1.0	2.0	3.0	< .005	.37
Critical thinking	4.0	1.0	3.0	2.0	< .005	.37
Decision making	4.0	1.0	3.0	2.0	< .005	.27
Independence	3.0	1.0	3.0	3.0	< .005	.37
Initiative	4.0	1.0	3.0	3.0	< .005	.24
Leadership	3.0	1.0	2.5	2.0	.047	.18
Presenting	2.0	1.0	2.0	3.0	.017	.22
Problem solving	4.0	1.0	3.0	2.0	< .005	.37
Responsibility	4.0	0.0	4.0	2.0	< .005	.26
Self-confidence	3.0	1.0	3.0	3.0	< .005	.30
Time management	4.0	1.0	3.0	2.0	< .005	.34
Written communication	3.0	1.0	3.0	3.0	.006	.25

Note. < 0.3 (small effect), 0.30 < 0.5 (moderate effect) and ≥ 0.5 (large effect) (Tomczak & Tomczak, 2014). Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

However, none of the differences were found to have a large effect size. *Consulting*, *critical thinking*, *independence*, and *problem solving* had the most significant differences with a moderate effect size. For each skill that showed a significant difference, faculty assessed the skill to be more important than the OAC members did. Additionally, even though not all differences were significant, faculty participants perceived 82.8% (24/29) of the human skills as more important for entry-level employees than OAC. The only human skills that OAC perceived as more important than faculty were *attitude*, *integrity*, *professional appearance*, *willingness to learn and receive feedback*, and *work ethic* (see Table 39). Four of these skills are in the top five most important skills as perceived by OAC for entry-level employees.

Disaggregated by the Industry Clusters

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in each industry cluster, the Wilcoxon test revealed there were some significant differences. These differences are reported below by industry cluster.

Business and Technology Industry Cluster

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in the business and technology industry cluster, the Wilcoxon test revealed there were significant differences for six skills (see Table 41). All the differences had either a moderate or large effect size. For each skill that showed a significant difference, faculty assessed the skill to be more important for entry-level employees than the OAC members did. *Self-confidence* had the most significant difference with a large effect size.

Table 41

Significant Differences in Entry-Level Importance by Faculty and OAC in Business and Technology

Human skills	Faculty				OAC				*p*	r
	M	*SD*	*Mdn*	*IQR*	*M*	*SD*	*Mdn*	*IQR*		
Adaptability	3.54	0.52	4.0	1.0	3.00	0.53	3.0	2.0	.046	.44
Independence	3.08	0.49	3.0	2.0	2.38	0.74	2.5	2.0	.024	.50
Initiative	3.15	0.55	3.0	2.0	2.50	0.76	3.0	2.0	.046	.44
Problem solving	3.54	0.66	4.0	2.0	2.88	0.64	3.0	2.0	.036	.47
Self-confidence	3.15	0.55	3.0	2.0	2.25	0.71	2.0	2.0	.007	.59
Time management	3.31	0.48	3.0	1.0	2.75	0.46	3.0	1.0	.025	.50

Note. Faculty $n = 13$, OAC $n = 8$, < 0.3 small effect, 0.30 < 0.5 moderate effect and ≥ 0.5 large effect (Tomczak & Tomczak, 2014); Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Construction Industry Cluster

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in the transportation industry cluster, the Wilcoxon test revealed there were significant differences for two skills (see Table 42): *social skills* and *willingness to learn and receive feedback*. Both skills had a large effect size, with *willingness to learn and receive feedback* having the largest. For both skills that had a significant difference, OAC members assessed the skill to be more important than did the faculty.

Table 42

Significant Differences in Entry-Level Importance by Faculty and OAC in Construction

Human skills	Faculty				OAC				p	r
	M	*SD*	*Mdn*	*IQR*	*M*	*SD*	*Mdn*	*IQR*		
Social skills	3.35	0.41	2.0	1.0	3.67	0.58	4.0	1.0	.048	.71
Willingness to learn and receive feedback	3.74	0.98	3.0	3.0	4.00	0.0	4.0	0.0	.022	.81

Note. Faculty $n = 6$, OAC $n = 3$, < 0.3 (small effect), 0.30 < 0.5 (moderate effect) and ≥ 0.5 (large effect) (Tomczak & Tomczak, 2014); Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Health Professions Industry Cluster

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in the health professions industry cluster, the Wilcoxon test revealed there were significant differences for seven skills (see Table 43). All differences had a moderate effect size. For each skill that showed a significant difference, faculty assessed the skill to be more important for entry-level employees than the OAC members did. The human skill that showed the most significant difference was *communication technology*.

Manufacturing Industry Clusters

No significant difference was found in how faculty and OAC members assess the importance of human skills for entry-level employees in the manufacturing industry. The lack of difference may be a result of low response rates. The sample size for faculty was $n = 13$. The sample size for OAC members was $n = 6$.

Table 43

Significant Differences in Entry-Level Importance by Faculty and OAC in Health Professions

Human skills	Faculty				OAC				*p*	*r*
	M	*SD*	*Mdn*	*IQR*	*M*	*SD*	*Mdn*	*IQR*		
Communication technology	3.30	0.56	3.0	2	2.55	0.80	2.0	`3.0	< .005	.49
Consulting	2.83	0.72	4.0	3.0	2.18	0.91	3.0	2.0	.010	.39
Critical thinking	3.78	0.42	4.0	1.0	3.32	0.65	3.0	2.0	.009	.39
Independence	3.26	0.69	3.0	2.0	2.68	0.72	3.0	3.0	.011	.38
Initiative	3.65	0.49	4.0	1.0	3.18	0.59	3.0	2.0	.008	.40
Presenting	2.61	0.78	3.0	3.0	2.05	0.65	2.0	3.0	009	.39
Problem solving	3.65	0.49	4.0	1.0	3.14	0.64	3.0	2.0	.006	.41

Note. Faculty $n = 23$, OAC $n = 22$, < 0.3 (small effect), 0.30 < 0.5 (moderate effect) and >= 0.5 (large effect) (Tomczak & Tomczak, 2014); Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Service Professions Industry Cluster

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in the service professions industry cluster, the Wilcoxon test revealed there were significant differences for 12 skills (see Table 44). All the differences had either a moderate or large effect size. For each skill that showed a significant difference, faculty assessed the skill to be more important for entry-level employees than did the OAC members. The human skill that showed the most significant difference was *critical thinking*.

Table 44

Significant Differences in Entry-Level Importance by Faculty and OAC in Service Professions

Human skills	Faculty				OAC				*p*	*r*
	M	*SD*	*Mdn*	*IQR*	*M*	*SD*	*Mdn*	*IQR*		
Attitude	3.91	0.30	4.0	1.0	3.40	0.55	3.0	1.0	.042	.53
Behavior	4.00	0.00	4.0	0.00	3.60	0.55	4.0	10	.038	.54
Consulting	3.73	0.47	4.0	1.0	2.40	0.5	4.0	1.0	<.005	.76
Critical thinking	3.82	0.40	4.0	1.0	2.60	.055	2.0	1.0	<.005	.78
Decision making	3.64	0.50	4.0	1.0	2.80	.045	3.0	1.0	.016	.62
Independence	3.73	0.47	4.0	1.0	2.60	0.45	3.0	1.0	.005	.72
Job interview skills	3.45	0.52	3.0	1.0	2.60	0.55	3.0	1.0	.022	.56
Leadership	3.45	0.52	3.0	1.0	2.00	0.71	2.0	2.0	<.005	.74
Problem solving	3.55	0.52	4.0	1.0	2.80	0.45	3.0	1.0	.028	.56
Social skills	3.73	0.47	4.0	1.0	2.60	0.55	3.0	1.0	.005	.72
Verbal communication	3.82	0.40	4.0	1.0	3.00	0.71	3.0	2.0	.020	.60
Written communication	3.18	0.75	3.0	2.0	2.20	0.45	2.0	1.0	.026	.57

Note: Faculty n = 11, OAC n = 5, < 0.3 (small effect), 0.30 < 0.5 (moderate effect) and >= 0.5 (large effect) (Tomczak & Tomczak, 2014); Mean scores: 1 = Not at all important, 2 = Slightly important, 3 = Very important, 4 = Extremely important.

Transportation Industry Clusters

No significant difference was found in how faculty and OAC members assess the importance of human skills for entry-level employees in the transportation industry cluster. The lack of difference may be a result of small sample sizes. The sample size for faculty was n = 7. The sample size for members was n = 2.

General Findings

When comparing how faculty and OAC members assessed the importance of human skills for entry-level employees in the different industry clusters, two findings

became apparent regarding the skills individually and to human skills as a construct. In all of the clusters where significant differences were found except transportation, the faculty assessed the human skill as more important than OAC members. The service professions cluster showed the most difference between faculty and OAC perceptions of importance among all the clusters.

Intercorrelations Among Human Skills

Correlations can provide insights into complex real-world relationships by describing simple relationships among data. Given the complex nature of human skills, intercorrelations were calculated (Pearson's *r)* for each of the three grouping variables: OAC entry-level employees, OAC career success, and faculty entry-level employees using.

Regarding the perceived importance of human skills for entry-level employees by OAC members, there were 245 significant intercorrelations at $a = .10$, or 60% of the possible intercorrelations were significant. Forty-one were large ($r < .50$); 160 were medium ($.30 < r < .50$), and 44 were small ($.10 < r < .30$). The largest significant intercorrelation was between *respect* and *work ethic* ($r = .70$, $a < .05$).

As for the perceived importance of human skills for career success by OAC members, there were 132 significant intercorrelations, or 33% of the possible intercorrelations were significant. Nineteen were large ($r < .50$); 82 were medium ($.30 < r < .50$), and 31 were small ($.10 < r < .30$). The largest significant intercorrelation was between *behavior* and *attitude* ($r = .62$, $a < .05$).

When looking at the perceived importance of human skills for entry-level employees by faculty there were 351 significant intercorrelations, or 86% of the possible intercorrelations were significant. One hundred two were large ($r < .50$); 171 were medium ($.30 < r < .50$), and 78 were small ($.10 < r < .30$). The largest intercorrelation was between *behavior* and *attitude* ($r = .75$, $a < .05$). The skills *attitude*, *integrity*, and *motivation*, *professionalism*, *respect*, *social skills*, and *verbal communication* all had significant intercorrelations with all 29 of the human skills explored in this study.

Cohen (2013) suggested that correlations larger than .50 are usually found between variables that are attempting to measure the same thing. Thus, the many significant large correlations found among all three groups assessed by this study provide further evidence of the jangle fallacy and the confusion surrounding human skills; namely, what do we call these skills, how do we define them, which are most important, and which should be taught? The correlation tables for all three constructs can be found in Tables 51–53 in Appendix O.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This exploratory case study had a threefold purpose. The first purpose was to discover and compare what human skills employers in Northern Utah perceived as most important for their employees to possess to be hired for entry-level jobs and what skills were most important to be successful in those jobs and advance to higher-level jobs. The second purpose was to discover what human skills the faculty at Davis Technical College thought were important to teach in their programs and what methods they are using to teach those skills. The third purpose was to draw comparisons about human skills perceptions among employers of various industries and between employer and faculty perceptions. This final chapter was organized around those three purposes.

Summary of Findings

The following sections summarize findings through the lens of the study's three purposes, which encompass the six research questions.

Purpose 1: OAC Members and Human Skills

The first purpose of this exploratory case study was to discover and compare which human skills Davis Technical College OAC members thought were most important for entry-level employees and those which were desired for career success. Research Questions 1 and 2 explored these perceptions in two ways: aggregated among industry clusters and disaggregated by industry cluster.

When looking at human skills among all industry clusters, the five human skills perceived as most important for entry-level employees were *integrity*, *work ethic*, *willingness to learn and receive feedback*, *attitude*, and *attendance/punctuality* (see Table 7). Similarly, the human skills perceived as most important for career success and employment progression were *integrity*, *work ethic*, *respect*, *attitude*, and *decision making* (see Table 15). Three human skills were found to be in the top five most important for both entry-level employees and career success: *integrity*, *work ethic*, and *attitude*. *Integrity* was found to be the most important for both categories.

Regarding the perceived importance of entry-level human skills disaggregated by industry cluster, the most important skills varied (see Table 8). Of the 29 skills included in the survey, 14 were identified as most important in at least one of the industry clusters. Of those 14, only 3 human skills were perceived as most important for entry-level employees in all six clusters: *integrity*, *work ethic*, and *willingness to learn and receive feedback*.

The perceived importance of human skills for career success by industry cluster was different for all six clusters (see Table 16). Of the 29 skills included in the survey, 19 were identified as most important in at least one of the industry clusters. However, only *work ethic* was perceived as most important for career success in all six clusters. These findings suggest that *work ethic* is perceived as essential for both entry-level employees and career success in all industries.

Purpose 2: Faculty and Human Skills

The second purpose of this exploratory case study was to discover what human skills the faculty at Davis Technical College thought were important to teach in their programs and what methods they use to teach those skills. Research Questions 3 and 4 explored these two constructs. Research Question 3 looked at faculty perceptions both aggregated among industry clusters and disaggregated by industry cluster.

When looking at human skills among industry clusters, the five human skills perceived by faculty as most important for entry-level employees by faculty were *responsibility*, *work ethic*, *critical thinking*, *integrity*, and *attendance/punctuality* (see Table 23). When looking at faculty's perceptions of importance by industry cluster, no two industry clusters had the same human skills as most important, and no skill was perceived as most important in all six clusters.

When exploring the methods used by Davis Technical College faculty to help students develop human skills (see Table 32), the most common was *through program expectations*, with 83% of the faculty participants reporting they use this method. The least common method was through *assignments that explicitly teach human skills,* with only 34% of the faculty reporting they use this method. A common theme observed among faculties' open-ended responses was the implicit nature of much human skill instruction (see Table 33). Faculty methods for helping students develop human skills were often described as organic, informal opportunities to practice appropriate social interactions throughout their training. For example, one faculty member mentioned, "I try to interact with the students every day they are here." Additional methods volunteered by

participants in the survey included student-to-student interactions and workplace experiences both in class and through clinical experiences and externships.

Purpose 3: Comparisons

The third purpose of this exploratory case study was to draw comparisons about human skills perceptions among employers of various industries and between employer and faculty perceptions. Research Question 5 explored the comparison of OAC perceptions among industry clusters, and Research Question 6 explored differences in the perceptions of OAC and faculty for entry-level employees.

Employer Perceptions among Industries

When comparing the perceived importance of human skills for entry-level employees by OAC, four skills were found to have a significant difference in the perceived importance among industry clusters: *customer service*, *initiative*, *professional appearance*, and *professionalism* (see Table 35). When comparing the importance of human skills for career success by OAC, only three skills were found to have a significant difference in the perceived importance among industry clusters: *customer service*, *independence*, and *professionalism* (see Table 36). When the importance of human skills as a single construct was explored (the mean score of all 29 skills combined), no significant difference was found among industry clusters.

Employer Perceptions Compared to Faculty Perceptions

When comparing how faculty and OAC members assessed the importance of human skills aggregated among industry clusters for entry-level employees, 13 skills were found to have significant differences (see Table 40), with *consulting*, *critical thinking*, *independence*, and *problem solving* having the largest effect size (r = .37). On average, for all 13 significant findings, faculty perceived the skills to be more important than OAC. When comparing faculty and OAC perceptions for all skills (see Table 39), even those that were not significantly different, the only human skills that OAC perceived as more important than faculty for entry-level employees were *attitude*, *integrity*, *professional appearance*, *willingness to learn and receive feedback*, and *work ethic*.

When comparing how faculty and OAC members assessed the importance of human skills by industry clusters for entry-level employees, significant differences were found in the business and technology, construction, health professions, and service professions (see Tables 41 - 44). Among the significant differences, only those in the construction cluster had higher mean scores from the OAC members than for the faculty. However, it is important to note that the construction had the lowest response rates of any cluster for both OAC and faculty (OAC = 5.0% and faculty = 30.0%, see Table 6).

Conclusions and Implications

Purpose 1: OAC Members and Human Skills

The first purpose of this exploratory case study was to discover and compare which human skills Davis Technical College OAC members thought were most important for entry-level employees and those desiring career successes.

Entry-Level Employment

A standout feature of the human skills perceived to be most important for entry-level employees (*integrity*, *work ethic*, *willingness to learn and receive feedback,* and *attitude*) is how, in combination, they are examples of human skills, which are particularly challenging to define, discuss, teach, and assess. These four skills, in fact, may best embody the confusion surrounding *human skills* due to their intangible nature. They bear a stunning resemblance to the very definition of *human skills* adopted in Chapter 1.

A likely explanation for the importance of *integrity* might be the inclusive nature of the term. Integrity is defined as “the quality of being honest and having strong moral principles” (Oxford English Dictionary). The ambiguity built into the definition is an example of a ripe situation for the jingle fallacy (see Chapter 2), in which a singular term is used to represent multiple things. In fact, one open-ended response by an OAC member explicitly linked the human skill *integrity* to their own additional human skill, *personal values*, which they defined in the open response survey option, “Enter additional human skills you believe were missing from the previous list.”

> Personal values (those mentioned above, i.e. integrity, respect, etc.) that are foundationally independent of a "company’s values." They can be one in the same but only because they agree with one’s personal convictions...doing the right thing for the right reason because it personally is right. (Davis Technical College Faculty, Survey Response, January 2022)

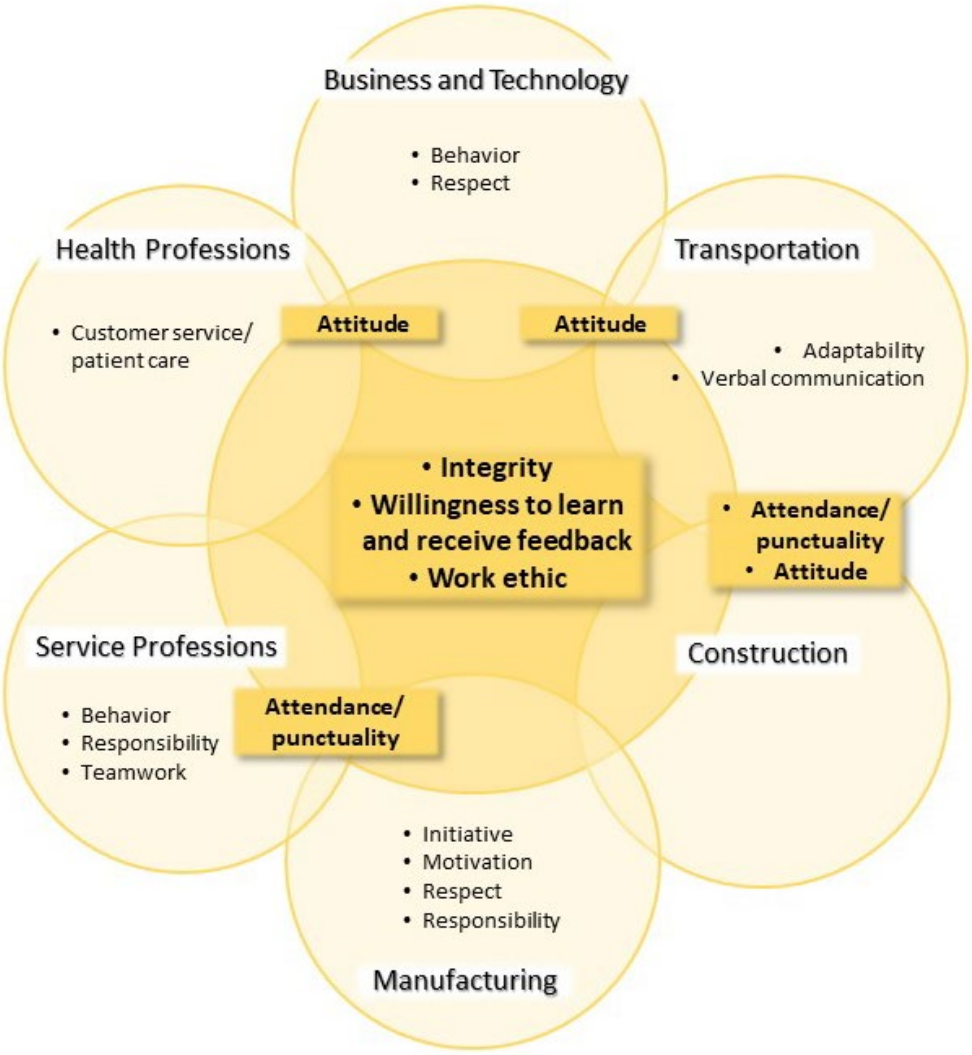
In other words, *integrity* seems to be a human skill that encapsulates several human skills, thus possibly amplifying its importance. The jingle fallacy may also be in play with the skill *work ethic* as this term similarly seems to encompass multiple skills related to work habits.

More troublesome to explain are the outlier cases (Figure 5). For example, the fourth most important human skill at the aggregated level (i.e., *attitude*) did not feature as one of the most important in manufacturing or service industries. Similarly, *attendance*/*punctuality,* one of the top five most important human skills at the aggregated level, appeared in four of the six industries' most important skills—but not in those of business and technology or health professions. And finally, some entry-level human skills identified as most important appeared only in a single industry, as was the case with *motivation*, *adaptability*, *customer service/patient care*, *initiative*, *teamwork*, and *verbal communication*; however, no reason for their inclusion or exclusion from other industries was discovered.

Several possible explanations may be offered for these outlier findings. The possibility exists that these skills were, in fact, more important for particular industries. This is likely the case with *customer service/patient care*, whose latter terms may have led to conflation of the two, as only the health industry selected this skill as most important. Yet other cases are harder to explain; for example, *verbal communication* only featured in the most important category for the transportation industry, whose students' career paths start with automotive or diesel technicians.

Figure 5

Entry-Level Importance by OAC: Aggregated and Disaggregated



Note. Darker yellow shading represents the overlap between aggregated and disaggregated perceptions. Quantitative values can be found in Table 8.

Another possibility for the outliers is that the survey instrument did not clarify skill definitions sufficiently, leading to construct confusion in participant responses. The concision of the survey, designed for feasibility and ease of completion, may have

contributed to this problem. A final reason for the variation among industries most likely resides in the small sample when disaggregating data by industry cluster. Smaller response rates increase the odds of individual bias impacting the results. Regardless, heavy reliance upon the results of these outlier cases by industry type is unwarranted.

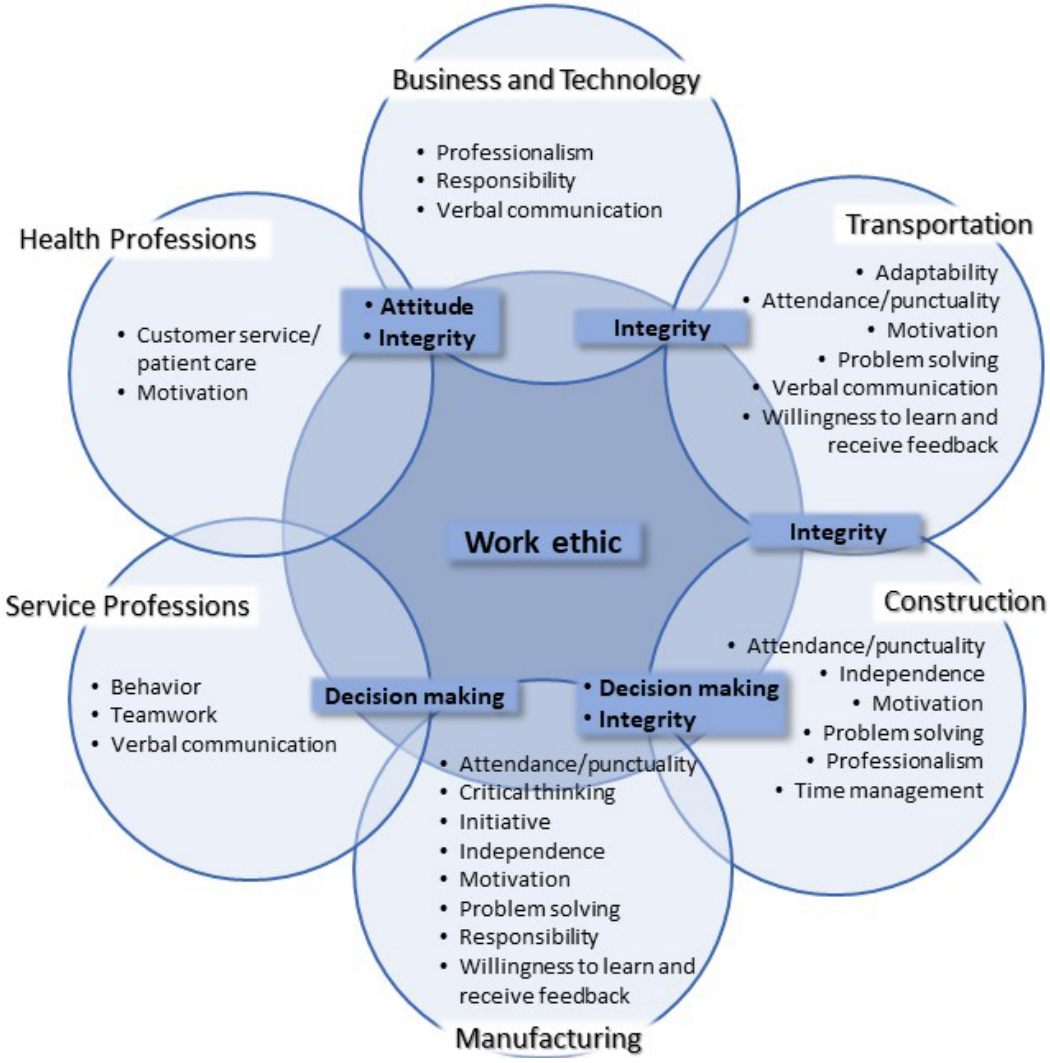
An important implication arising from Research Questions 1 and 2, which served the purpose of identifying the most important human skills for OAC members, is that the findings from the survey data should be utilized as a catalyst for further discussion rather than as the ending point of inquiry. Digging deeper into the ways in which OAC members define and identify human skills most important to their industry contexts for entry-level employees is advised.

Career Success and Employment Advancement

Analysis of the most important human skills identified by OAC members for career success and employment advancement, represented in Figure 6, indicate several interesting differences from those identified for entry-level employment. One notable difference is that more human skills overall were identified as being important for career success and employment advancement (19 total skills–see Table 16) than for entry-level employment (14 total skills–see Table 8). That 21% more skills were seen to be important was due to multiple skills receiving tied mean scores that were high. As a result, 65% of the 29 skills listed on the survey instrument were selected as most important for career success in at least one industry cluster.

Figure 6

Career Success Importance by OAC: Aggregated and Disaggregated



Note. Darker blue shading represents the overlap between aggregated and disaggregated perceptions. Quantitative values can be found in Table. 16.

Although no statistical comparisons were conducted because these analyses were outside the primary research questions, the finding that the mean score for every human skill explored was greater for career success than entry-level suggests that human skills

as a single construct are perceived to be more important for career success than for entry-level employment (see Table 34). In fact, all but 3 of the 29 skills on the survey (*job interview*, *presenting*, *consulting*) were identified as at least *very important* for career success ($M > 3$, Table 14). Furthermore, when disaggregated by industry clusters, 16 of the 29 skills had mean scores of 4.0 for at least one cluster, indicating they were perceived to be *extremely important* for at least one industry (see Table 15). This finding is supported by Attakorn et. al. (2013), who noted, "It often said that hard skills will enable individuals to obtain an interview, but soft skills enable individuals to secure a job" (p. 101).

Not only were more human skills perceived to be more important for career success and employment advancement than entry-level, but more variety in those human skills was evident among industry clusters (see Table 15). For example, 7 of the 19 skills found to be *most important* were only found in a single cluster. This suggests that, as employees move beyond entry-level employment, the human skills important for career success may change. Literature investigating and reporting on these differences is limited, implying that this subject is suitable for future research.

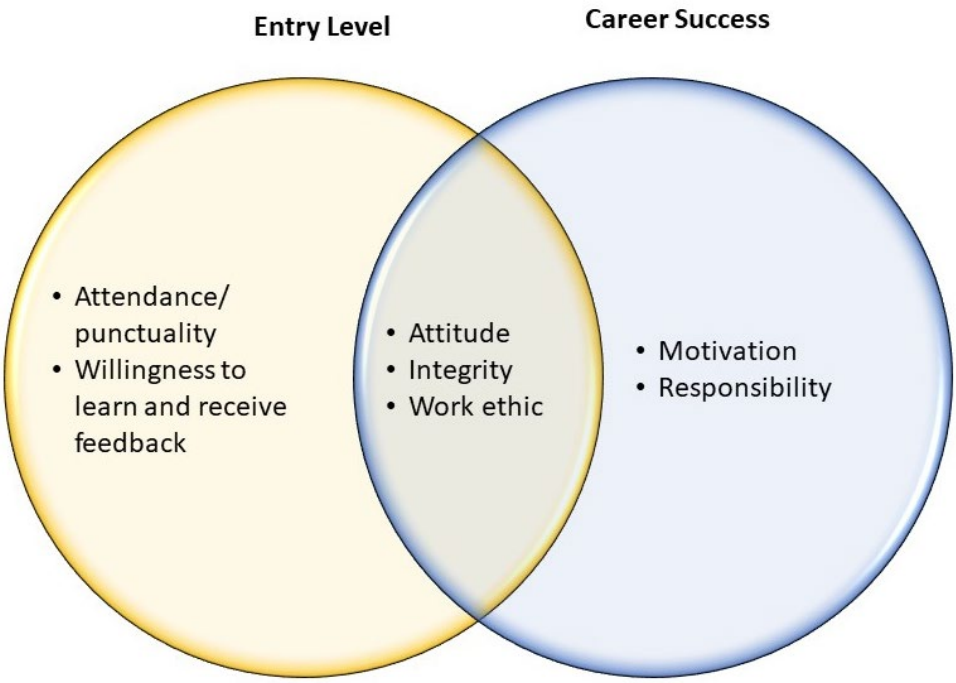
A final observation regarding the human skills perceived to be important for career success is that *work ethic* was the only human skill to overlap entry-level and career success contexts in all six industry clusters. This highlights the importance of *work ethic* in all contexts—extending even into educational success, as discussed next.

Entry-Level Compared to Career Success

It was perhaps unsurprising that the human skills perceived by OAC to be most important for entry-level employment also featured prominently in career success. This was found both in the aggregated and disaggregated analyses. As Figure 7 demonstrates, when comparing entry-level to career success aggregated among industries, three of the top five skills were identical.

Figure 7

OAC Perceptions of Most Important Human Skills Aggregated Among Industry Clusters



Disaggregated data demonstrate similar overlaps in the skills perceived as most important for both entry-level and career success categories. Figure 8 illustrates skills overlapping for each industry cluster. As noted earlier, many different human skills were

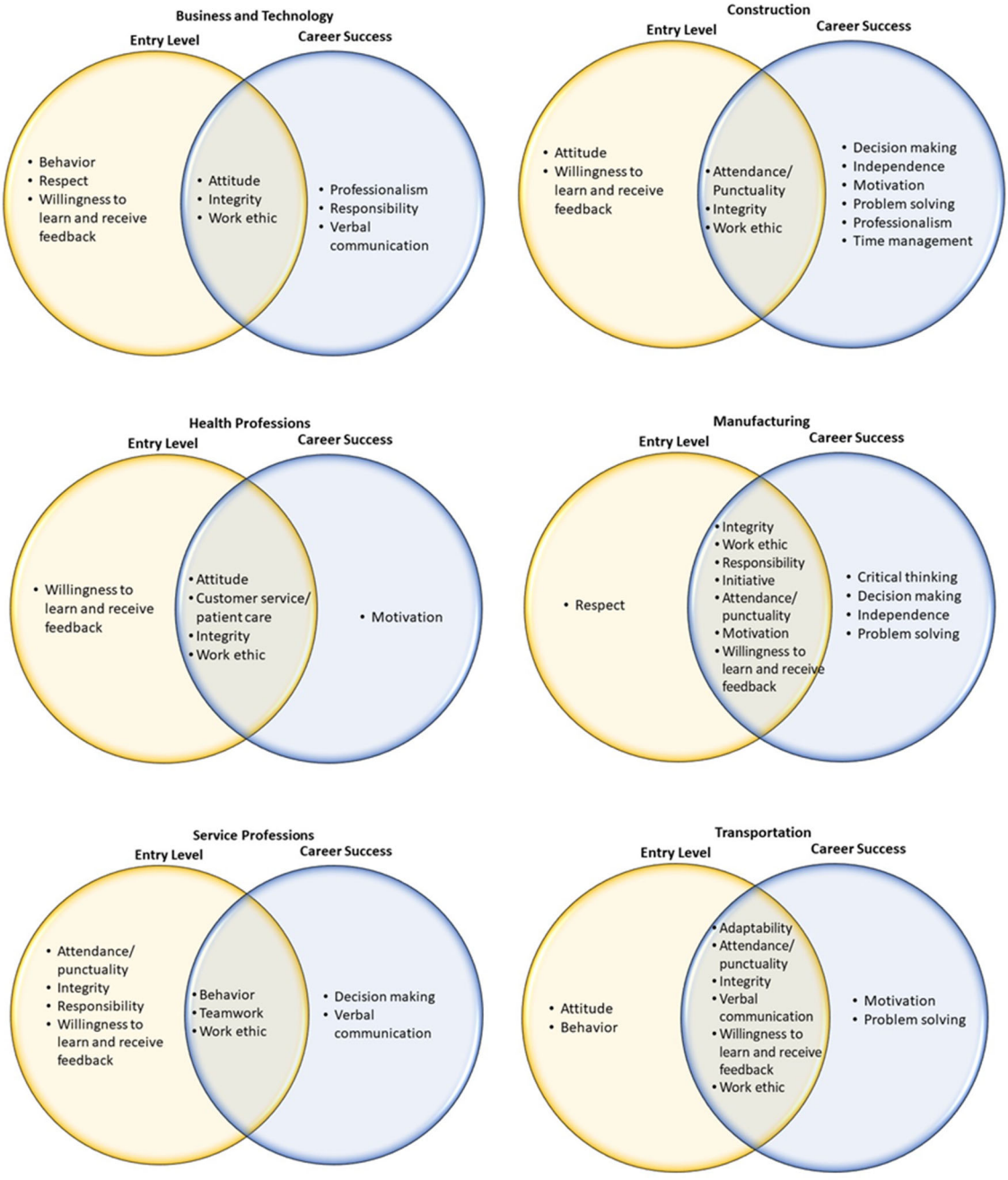
included in the most important for the career success category compared to the entry-level. These include *critical thinking*, *decision-making*, *independence*, *motivation*, *problem-solving, professionalism*, and *time management*. The primary implication observed in the comparisons in Figure 8 involves the cognitive, as opposed to demonstrative, nature of those skills perceived as important for career success.

Often, career success requires additional education, such as a degree compared to a technical college certificate. Where technical certificates are typically job-specific and technical in nature, degrees are typically structured to include both breadth and depth of knowledge transferable to alternate contexts. Therefore, it follows that the skills perceived as important for each context would differ in these ways. This finding has pedagogical implications as the curricula for technical education need to align with the job desired and include the corresponding human skills.

When comparing the perceived importance of all human skills among industries, the mean score for every skill increased from entry-level to career success (Table 32). The most dramatic shift in perceived importance from entry-level to career success was for *leadership*. The smallest shift was for the skill *willingness to learn and receive feedback*. This suggests there is a large difference in the importance of *leadership* between the two employment stages, while the importance of *willingness to learn and receive feedback* remains consistent.

Figure 8

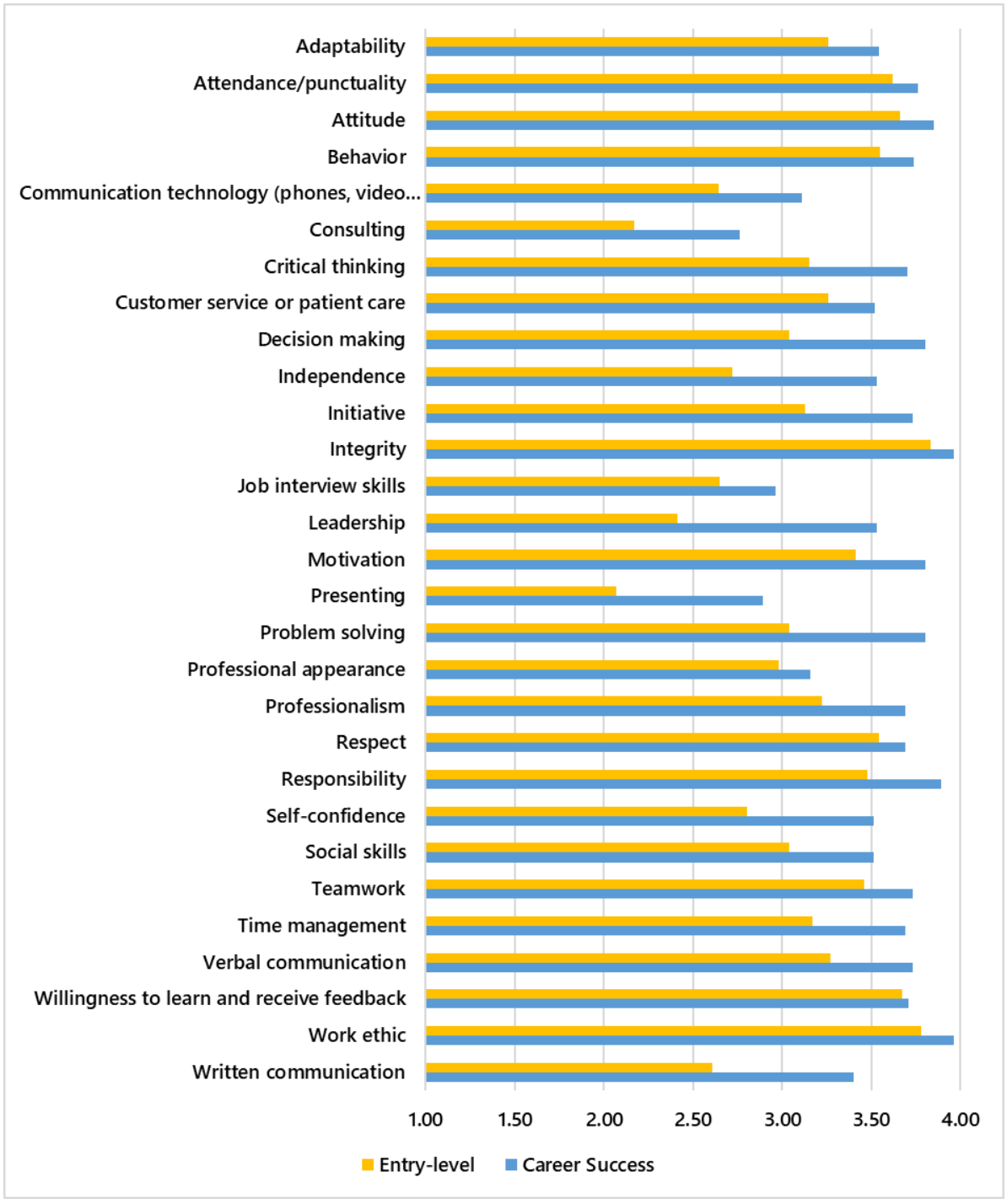
OAC Perceptions for All Industry Clusters



When comparing the perceived importance of human skills for entry-level employees to career success as a single construct, the data did not show any significant differences; however, the importance of every human skill increased from entry-level to career success. The differences are visible in Figure 9. These suggest that human skills are perceived to be increasingly important for those attempting to advance their careers. The skills *consulting*, *communication technology*, *critical thinking*, *decision making*, *independence*, *initiative*, *leadership*, *presenting*, *problem solving*, *self-confidence*, *social skills*, *time management*, and *written communication* have notable differences in mean scores. However, the degree of importance differs depending on the human skill.

Figure 9

OAC Perceptions of Importance for Entry-Level and Career Success by Mean Score Comparisons



Survey Results Compared to Meeting Minutes

Given that the primary tool used to guide changes in the training programs at Davis Technical College is the information found in the OAC meeting minutes, it was determined there was value in comparing the results of the survey to the results of the content analysis of the meeting minutes to explore alignment between the two data sources. From the survey, the mean scores calculated for both entry-level employment and career success were ranked from highest to lowest (most important to least important). These rankings were placed in a table with the rankings from the content analysis of the OAC meeting minutes, which ranked skills based on a frequency count, the highest frequency being the most important (see Table 45).

Integrity, which was found to be one of the most important human skills for both entry-level employees and career success in the survey results, was ranked 26th in the content analysis. This human skill was mentioned only seven times in the OAC meeting minutes among all industries for all six meetings. Showing a similar displacement in the rankings, *self-confidence* was mentioned more times than any other human skill in the minutes (f = 65) but was only the 22nd most important skill in the survey results for both entry-level and career success (M = 2.80 for entry-level, M = 3.51for career success).

The differences between the survey results and the content analysis revealed that the language used in the minutes and the findings from the surveys are not parallel. This may be attributed to the fact that discussions surrounding human skills typically happen organically rather than through direct questioning.

Table 45

Human Skill Importance as Assessed by OAC Surveys and Meeting Minutes

Human skills	Mean score rankings		Frequency rankings
	OAC survey entry-level	OAC survey career success	OAC meetings minutes content analysis
Adaptability	12	18	20
Attendance/punctuality	5	8	12
Attitude	4	4	14
Behavior	6	9	19
Communication technology	25	26	5
Consulting	28	29	13
Critical thinking	16	14	10
Customer service or patient care	12	21	2
Decision making	18	5	42
Independence	23	19	25
Initiative	17	10	24
Integrity	1	1	26
Job interview skills	24	27	6
Leadership	27	19	57
Motivation	10	5	15
Presenting	29	28	21
Problem solving	18	5	17
Professional appearance	21	25	16
Professionalism	14	15	4
Respect	7	15	23
Responsibility	8	3	22
Self-confidence	22	22	1
Social skills	18	22	9
Teamwork	9	10	7
Time management	15	15	27
Verbal communication	11	10	11
Willingness to learn and receive feedback	3	13	3
Work ethic	2	1	8
Written communication	26	24	18

Note. The results of the content analysis of the meeting minutes can be found in Tables 46 and 47 in Appendix G.

Purpose 2: Faculty and Human Skills

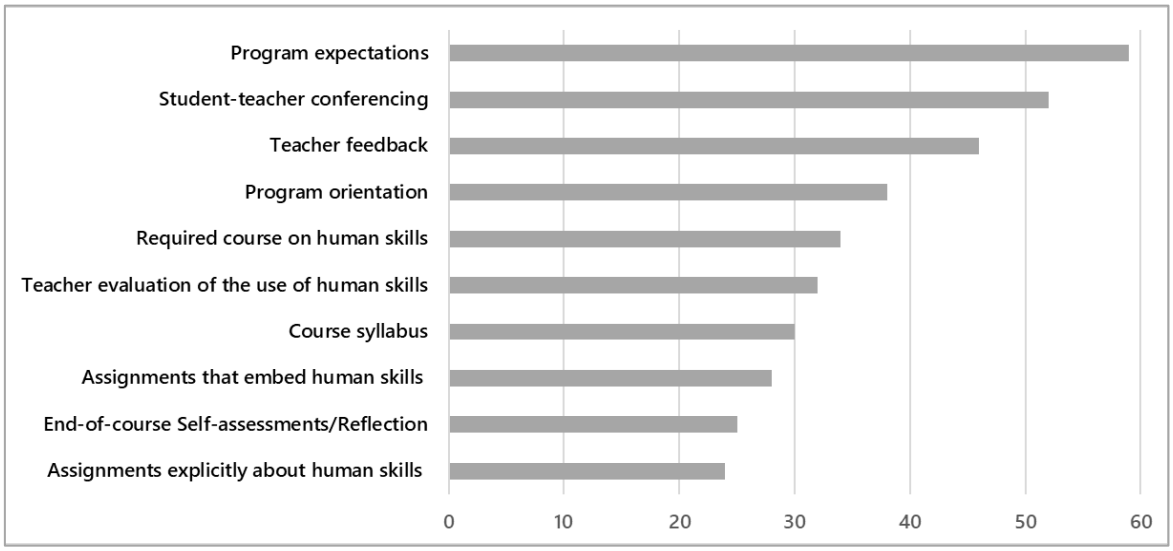
When exploring the perceptions of Davis Technical College faculty, *responsibility*, *work ethic*, *critical thinking*, *integrity*, and *attendance/punctuality* were perceived as the most important human skills for entry-level employees. Three of those skills (*responsibility*, *work ethic*, and *attendance/punctuality*) are a striking reflection of the competency-based, self-paced, hands-on educational environment in which they operate. Davis Technical College is a clock-hour institution, and funding is tied to student attendance and course completion. Student responsibility is critical as students must take ownership of their own learning. In fact, students run the risk of losing financial aid when attendance drops or if courses are not completed on time. Even though it is a self-paced environment, a completion date is set for each course upon registration; if not completed by that date, students must retake the course and pay tuition and fees a second time. Given the fact that a large proportion of Davis Technical College students are non-traditional, managing competing responsibilities, *work ethic* is an essential element of success.

When exploring the methods used by faculty at Davis Technical College to help students develop human skills, the most frequent method was through *program expectations (e.g., students learn to be on time because attendance is taken)* (see Figure 10). A likely explanation for the popularity of this method is the explicit example of attendance given on the survey instrument itself. Because *attendance/punctuality* was identified as one of the five most important human skills by faculty and because attendance tracking is a requirement among programs at Davis Technical College, this may have directed participants' attention toward program expectations as a primary

method for developing human skills. Additionally, *clinical experiences or externships* and *informal student-teacher interactions* were identified through open-ended responses as methods used for teaching human skills (Table 30). These methods are prevalent throughout competency-based education and technical training.

Figure 10

Methods Used by Faculty to Develop Human Skills



However, combining the prevalence of *program expectations* as a pedagogical strategy with the relative infrequency of explicit instruction provides an interesting observation. Synthesizing these findings suggests that faculty teach human skills both explicitly and implicitly, though the latter was seen to be a more common method, as less than half of the participants reported evaluating human skills development formally.

These distinctions are important. Eisner (2002) has argued that "the implicit curriculum of the school is what it teaches because of the kind of place it is" (p. 97). He

notes further that the implicit curriculum socializes students "to a set of expectations that some argue are profoundly more powerful and longer lasting than what is intentionally taught or what the explicit curriculum of the school publicly provides" (p. 88). As the faculty data demonstrated, human skills are taught both explicitly and implicitly. However, the extent to which students are made aware of human skills development is unclear and may be similarly unclear to faculty themselves.

In fact, Eisner's now foundational treatment of curriculum design and program evaluation provided examples that continually demonstrate the propensity for human skills to reside in the implicit curriculum. He notes, for example,

> It is possible to create a school environment in which the taking of *initiative* becomes an increasingly important expectation as children mature. In such an environment, as children get older, they would be expected to assume greater *responsibility* for their planning…the implicit curriculum of the school can teach a host of intellectual and social virtues: *punctuality*, a willingness to *work hard* on tasks that are not immediately enjoyable, and the ability to defer immediate gratification in order to work for distant goals can legitimately be viewed as positive attributes of schooling (pp. 88-95, emphasis added).

The implication here is that human skills are often taught unintentionally. In itself, this isn't a problem; however, a responsive curriculum demands awareness, especially because it is possible that human skill development may be undermined by negative examples or overly rigid expectations. Take the case of *work ethic*, which both faculty and OAC members identified as one of the most important skills for entry-level. If students perceive a lackluster work ethic on the part of their teachers, what is actually being taught—regardless of stated learning objectives?

Given the presence of internal inconsistencies in faculty responses within training programs (for confidentiality purposes not reproduced in this study), there is some

question about faculty's own awareness of their pedagogical approaches on this front. For example, participants in programs where programmatic orientations were identified as a method for teaching human skills entered contradictory responses. Regardless, if human skills are not assessed, educators cannot be confident their students are developing the human skills required by industry.

Purpose 3: Comparisons

For the purposes of this exploratory case study, which was to examine human skills in a localized context, this final section will focus on comparing perceptions about human skills in the entry-level category. Differences among OAC member perceptions among industries are discussed first, followed by differences between OAC member and faculty perceptions.

OAC Perceptions Compared Among Industry Clusters

When comparing the perceived importance of human skills for entry-level employees among industry clusters, only four skills were found to be significantly different: *customer service and patient care*, *initiative*, *professional appearance*, *and professionalism* (Table 34). Given the small sample sizes, the findings were not unexpected and were accepted for this exploratory case study. However, the existence of differences, despite these constraints, suggests additional differences might be uncovered with larger sample sizes.

OAC and Faculty Perceptions Compared

The importance of human skills for entry-level employees as perceived by OAC members and faculty was analyzed for differences both aggregated among industry clusters and disaggregated by industry clusters.

The aggregated analyses found the perceived importance between OAC and faculty to be significantly different for 13 skills (see Table 39); however, visible differences were found for all 29 human skills, as illustrated in Figure 12. When focusing on the top five skills perceived as most important for entry-level employees, the faculty and OAC responses showed some overlap, with *work ethic*, *integrity*, and *attendance/punctuation* being shared as demonstrated in Figure 11.

Figure 11

OAC and Faculty Perceptions Compared Aggregated Among Industry Clusters

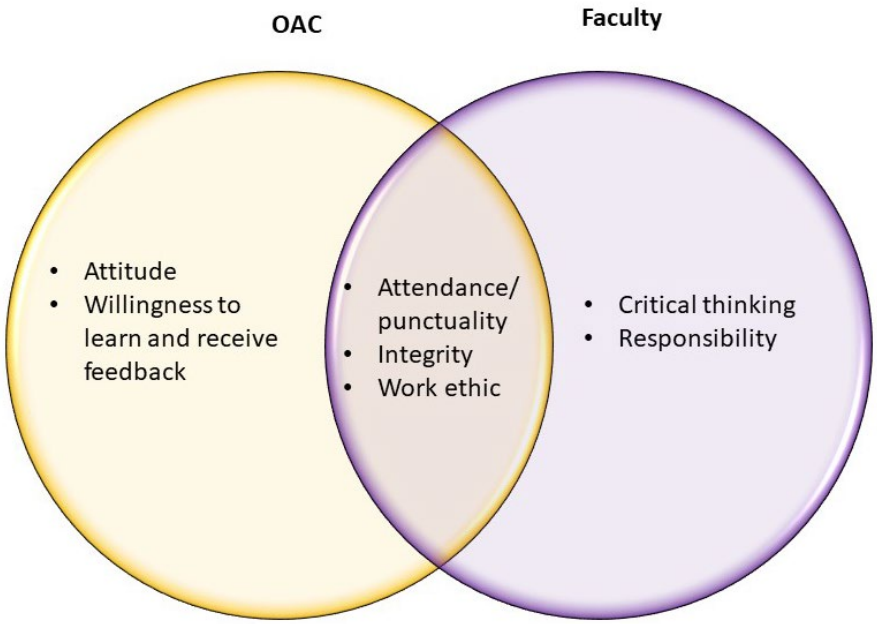
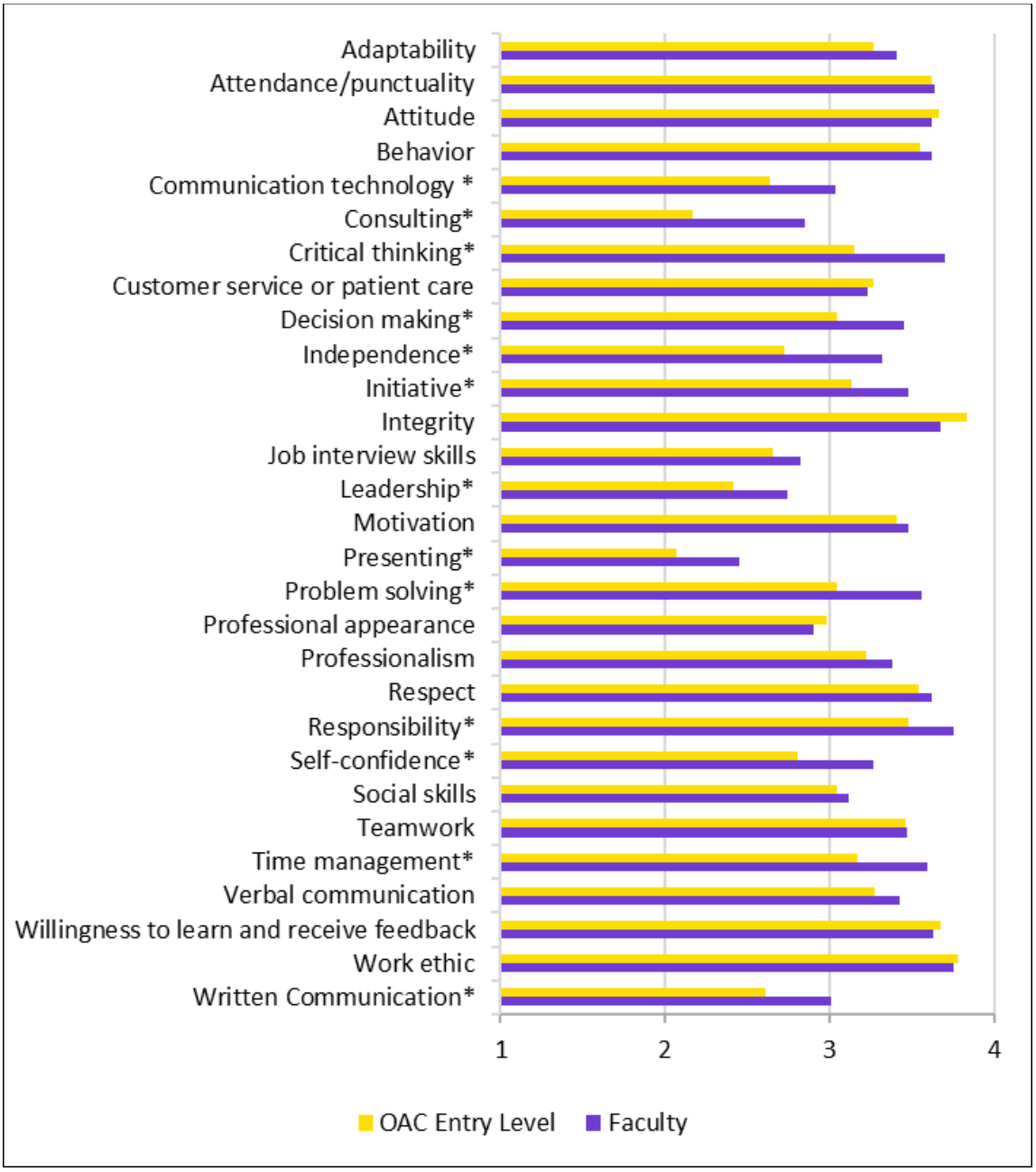


Figure 12

Perceived Importance as Assessed by Faculty and OAC for Entry-Level Employees



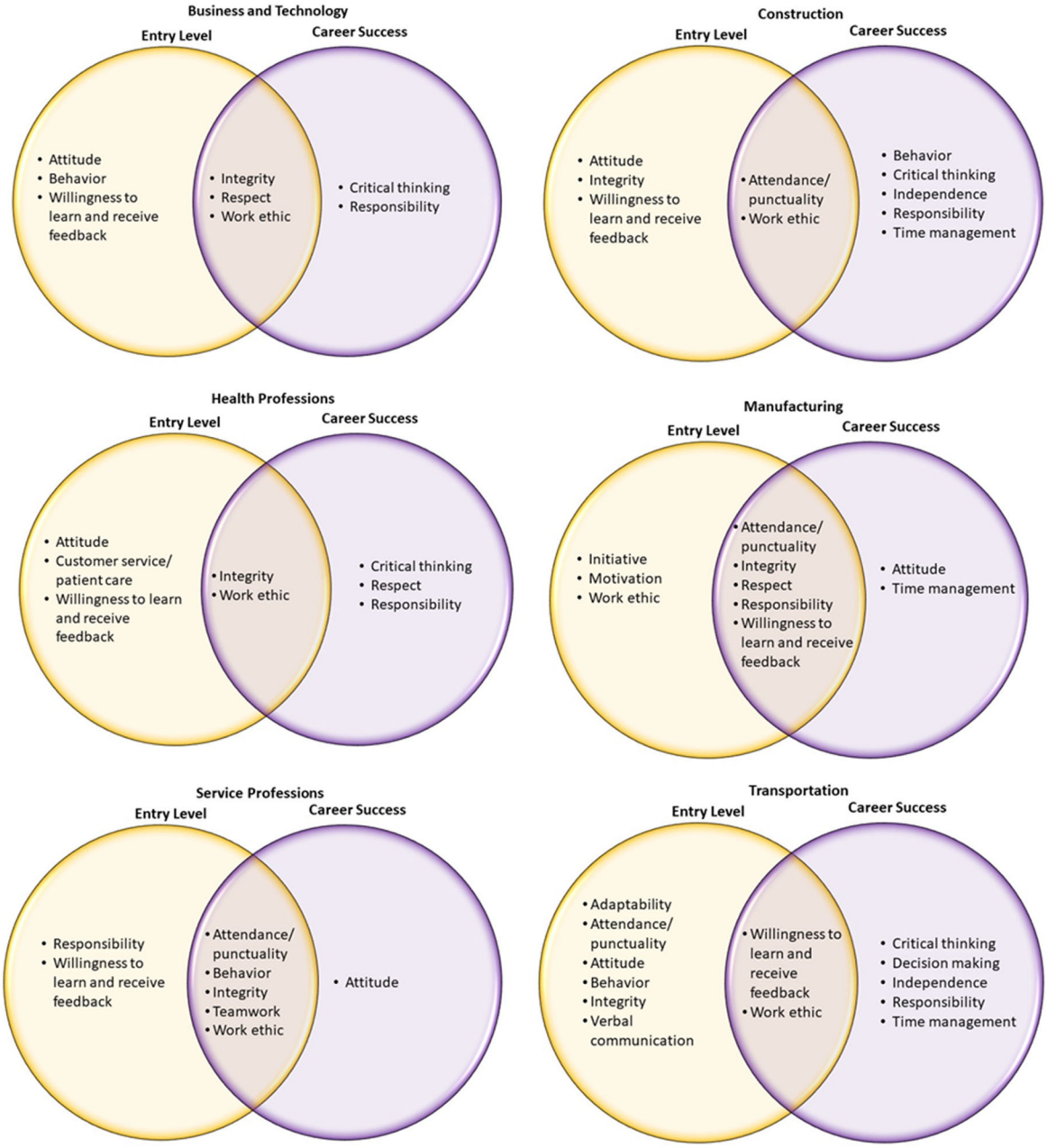
Note. * denotes significant difference at $p < .10$

The disaggregated analyses found significant differences between OAC and faculty perceptions of the perceived importance of human skills for entry-level employees in some industries. There were 6 differences in business and technology (Table 39), 2 differences in construction (Table 40), 7 health professions (Table 41), and 12 in service professions (Table 42). Among the significant differences, only those in the construction cluster had higher mean scores from the OAC members than from faculty. Disaggregated data demonstrate similar overlaps to the aggregated data in the skills perceived as most important when comparing the perceptions of OAC and faculty. Figure 13 illustrates the overlapping skills for each industry cluster.

Perhaps more important than noting which skills were significantly different, the fact that significant differences were found between OAC and faculty perceptions suggests that further discussion is critically important to design a responsive curriculum. Furthermore, the apparent alignment of faculty and industry partners in manufacturing and transportation may be worth further investigation to uncover reasons for this alignment.

Figure 13

OAC and Faculty Perceptions Compared Disaggregated Among Industry Clusters

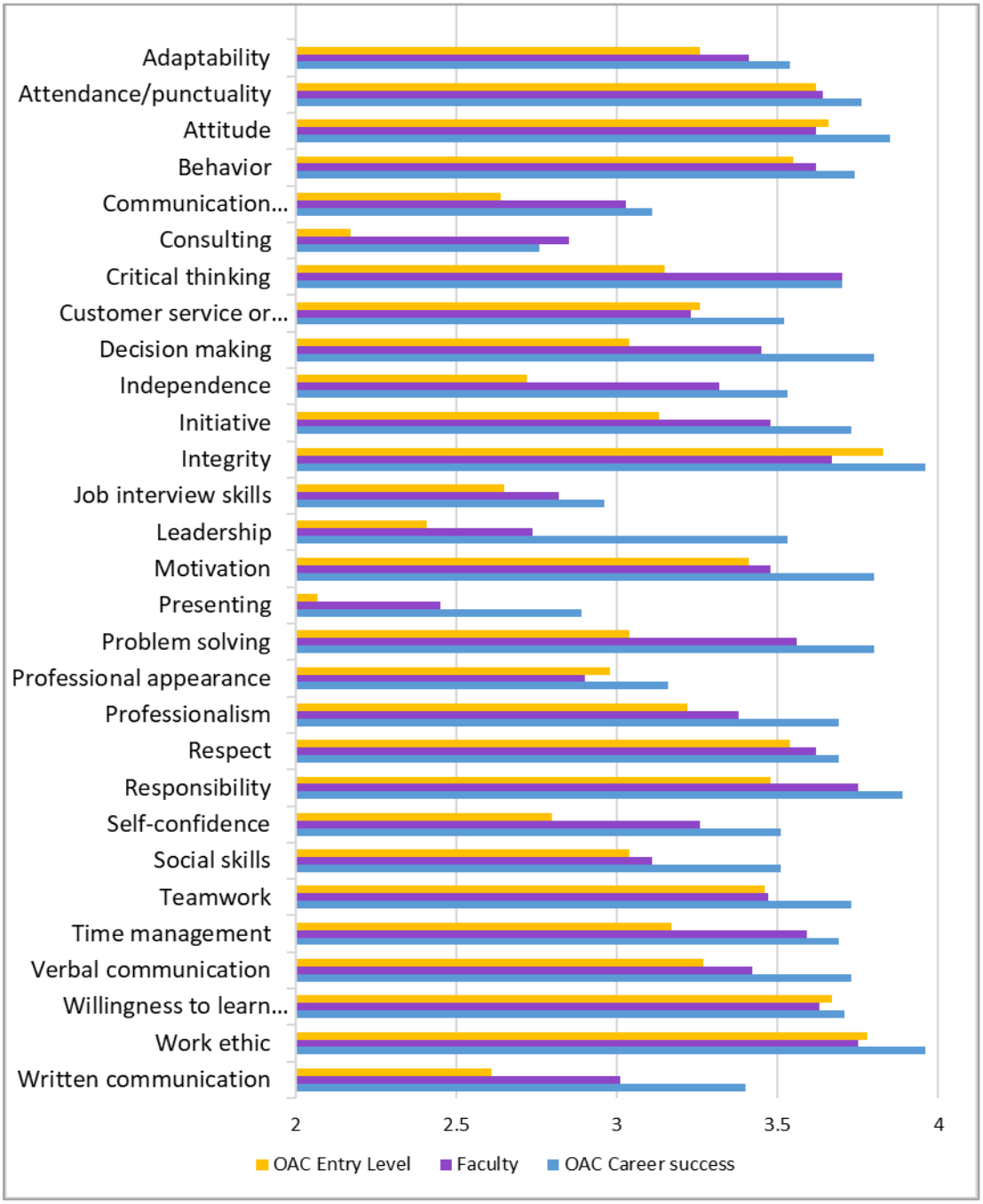


An important implication from these findings is that, because differences exist between faculty and OAC perceptions regarding which human skills are most important for each industry cluster, the skills gap will not be closed until stronger alignment regarding human skills between faculty and employers' perceptions (OAC members) is reached. Given the purpose of technical education, which is to develop human capital in a socially efficient way that benefits both individuals and society, alignment on this front is essential. This is especially pertinent given that faculty perceived 23 of the 29 human skills as *more* important for entry-level employees than did OAC members. In contrast, the perceptions by faculty entry-level compared to OAC members for career success were similar to perceptions by OAC for entry-level, with every human skill being perceived as less important except *consulting*. Figure 14 provides a visual means for exploring the alignment among the three constructs explored in this study: the importance of human skills by OAC for entry-level, by OAC for career success, and by faculty for entry-level.

Notably, faculty perceptions of importance fell between OAC perceptions for entry-level and career success in 21 of the 29 skills. While exploring alignment, this balance between the two career stages might suggest that faculty are trying to simultaneously prepare students for both entry-level employment and career success and employment advancement. However, the question needs to be asked if this is the most efficient way to fulfill the mission of technical education in the state of Utah. If not, faculty may need to narrow their foci from developing human capital on a grand scale to developing human capital by preparing students for entry-level employment through better curricula alignment.

Figure 14

Perceptions of Importance of Human Skills

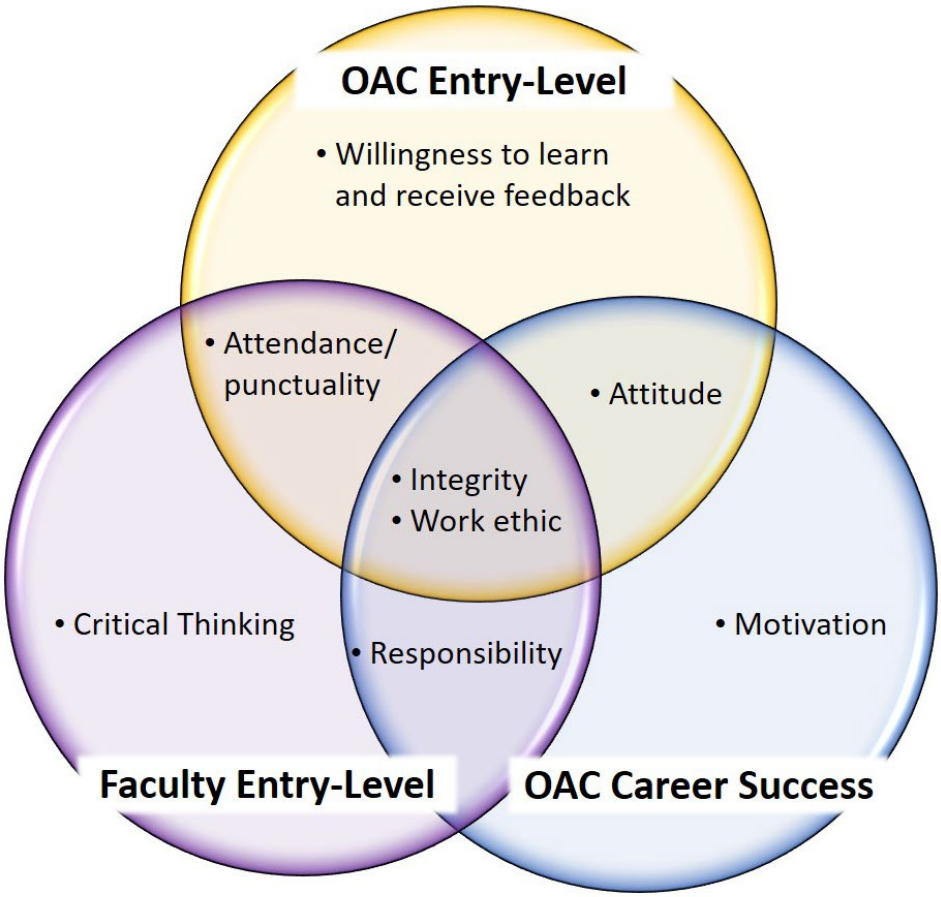


Note. As no mean scores were less than 2.00, the horizontal axis begins with 2 to accentuate the differences.

A final and culminating finding of this study was that *integrity* and *work ethic* were perceived to be the most important human skills at entry-level, as evidenced through their rankings in all three constructs aggregated among industries: OAC entry-level employees, OAC career success, and faculty entry-level employees (Figure 15). Additionally, when disaggregated by industry clusters for all three constructs, these two skills remained the most important.

Figure 15

Comparison of Five Most Important Human Skills



Limitations Revisited

All empirical studies contain some limitations. Those most relevant to the current study are revisited here:

1) When disaggregating data by industry clusters, sample sizes were often small. This likely prevented a full reporting of the differences in perceptions of human skills among industry clusters.
2) The survey instrument created for the study utilized a 4-point Likert scale to facilitate participant response. This limited scale likely affected variance in the study's comparisons
3) A natural consequence of case studies is their contextual dependence; results from this study are not generalizable beyond the responding participants studied in 2022.
4) The COVID-19 pandemic affected both data collection and response rates by limiting participation. OAC meetings, which are normally held in-person for accreditation purposes, were canceled and/or moved to virtual modalities, which altered data collection logistics.
5) The self-reported nature of the instrument used for data collection may possibly have affected internal validity.
6) Instrument length limited the range of human skills explored in the survey, which may have resulted in some human skills not being identified as important.
7) In the pursuit of this study, non-response bias was not assessed. Therefore, it is important to acknowledge that bias may exist in the findings if those that

did not respond perceive the importance of human skills differently than those who did.

Recommendations for Research

The following section discusses recommendations for others who plan to research human skills.

1. Given the limited scope of the current study, future research should expand to include technical education throughout the state of Utah.
2. Some studies found in the literature review utilized frameworks in an attempt to clarify, organize and communicate the human skills important for today's workplace. However, the differences among the frameworks can instead increase the confusion rather than decrease it when attempting to import them into specific contexts. Rather than relying upon a universal framework, future research could investigate a method or protocol for localized application in the pursuit of contextualized frameworks. Adaptation of the survey instrument developed in the current study for other localized contexts could be one step in this direction.
3. Given the confusion surrounding the term *human skills*, the importance of context, and the difficulty in clearly communicating about human skills, future qualitative studies may offer important depth and insight.
4. The current study found that most literature exploring human skills did not delineate for specific industries or among entry-level, career success, or employment advancement. However, the findings of this study suggested that,

as employees move beyond entry-level positions, the human skills important for career success may change. Further research should be done to explore these differences.

5. As noted in the literature review of this study, the confusion surrounding the terms used, the definitions assumed, and the skills included in the construct of human skills limits our ability to both access and apply relevant information for contextual use. Standard definitions and terms would enhance future research and discussions.

Recommendations for Practice

The following section discusses practical recommendations for both OAC members, whose primary responsibility is advising faculty and guiding changes in technical education curriculum, and faculty, whose primary responsibility is to prepare students for entry-level employment through the development of responsive curriculum and instruction. These recommendations are primarily geared toward the responding participants from which the data was derived; however, they may be considered by other technical education providers in the state of Utah and beyond.

1. The findings from the current study can be used to begin a conversation between OAC members and Davis Technical College faculty. Targeted and focused conversations, which could easily occur during annual meetings, regarding OAC members' definitions of the human skills most important to their industry contexts is a critical step toward narrowing the skills gap through a responsive curriculum.

2. Additionally, collaboration that extends beyond faculty and OAC to include all stakeholders would improve social efficiency. As Chapter 1 noted, these stakeholders might also include "educators, industry leaders and associations, credentialing agencies, workforce professionals, economic developers, policy leaders, and individuals" (ACT, Inc., 2017, p. 13).
3. Some misalignment was noted between faculty and OAC member perceptions of entry-level human skills. Additionally, faculty were observed to embrace many more and differing human skills than did their industry partners. To remain socially efficient while still developing human capital and to serve the mission of technical education, faculty need to attempt to increase pedagogical alignment with the recommendations of their OAC members for students seeking entry-level employment. This may include limiting the number of human skills they attempt to include in their curricula.
4. The apparent alignment between faculty and industry partners in manufacturing and transportation suggests these stakeholders may offer a successful model for alignment. A better understanding of how these faculty and OAC members work together may prove beneficial for other training programs.
5. Given the variety of methods faculty used to teach human skills, and the implications that follow from the current study, faculty need to consider additional efforts to both explicitly teach and assess the development of human skills (see Appendix P for a sample rubric for assessing human skills). Wilhelm (1999) advocated that faculty should both define proficiency and

assessment protocols for entry-level human skills. If human skills are not assessed, educators cannot be confident their students are developing the skills required by industry. Additionally, internal alignment of faculty in each training program in the selection of and methods used for teaching human skills seems warranted.

6. Given the potential success and natural propensity of implicit curriculum for teaching human skills, it logically follows that faculty need to be more aware of the messages they send regarding human skills implicitly in their classrooms. Additionally, they might consider intentionally taking advantage of this method, particularly for those human skills that are less tangible (such as *integrity*, *work ethic*, *willingness to learn and receive feedback*, and *attitude*). Otherwise, we must ask: Is the curriculum responding to the needs of the school environment or the needs of industry?

Refining the Theoretical Framework

This research has explored the perceived importance of human skills in Davis and Morgan Counties, Utah, among OAC and faculty at Davis Technical College. The confusion surrounding how these terms are defined, perceived, measured, and taught persists among stakeholders, and mitigating confusion is critical for a socially efficient education, which requires the direct teaching of knowledge, attitudes, and skills needed to prepare students for the workplace. When both the human skills and technical skills desired by employers are identified, faculty will be able to develop a curriculum that responds to the current needs of employers by providing learning objectives that align

with skills needed for specific occupations. This alignment supports a socially efficient education aimed at developing human capital. When students are prepared to find successful employment, all stakeholders will benefit.

REFERENCES

Abdullah-Al-Mamun, M. (2012). The soft skills education for the vocational graduate: Value as work readiness skills. *British Journal of Education Society & Behavioural Science, 2*(4), 326-338. doi:10.9734/BJESBS/2012/1858

ACT, Inc. (2017). *Understanding and solving the skills gap.*

Advance CTE. (2021). *Strengthening Career and Technical Education for the 21st Century Act*. Retrieved from Advance CTE: https://careertech.org/Perkins

Attakorn, K., Tayut, T., Pisitthawat, K., & Kanokorn, S. (2013). Soft skills of new teachers in the secondary schools of Khon Kaen Secondary Educational Service Area 25, Thailand. *International Conference on Education & Education Psychology 2013* (pp. 1010-1013). Antalya, Turkey: Elsevier. doi:10.10116/j.sbspro.2014.01.1262

Australian Government. (2006). *Employability skills: From framework to practice.* Department of Education, Science and Training. Melbourne: Precision Consultancy. Retrieved from http://hdl.voced.edu.au/10707/221448

Babbie, E. R. (2004). *The practice of social research* (10 ed.). Cengage Learning.

Backes, B., Holzer, H. J., & Velez, E. D. (2015). Is it worth it? Postsecondary education and labor market outcomes for the disadvantaged. *IZA Journal of Laabor Policy, 4*(1). doi:10.1186/s40173-014-0027-0

Becker, G. S. (2002). The age of human capital. *Education in the Twenty-First Century*, 3-8.

Berelson, B. (1952). *Content analysis in communication research.* Michigan: Free press.

Biggs, J. (2003). Aligning teaching for constructing learning. *Higher Education Academy*, 1-4.

Boahin, P., & Hofman, A. (2013). A Disciplinary perspective of competency-based training on the acquisition of employability skills. *Journal of Vocational Education & Training, 65*, 385-401. Retrieved from http://dx.doi.org/10.1080/13636820.2013.834954

Borbely, J. M. (2009). U.S. labor market in 2008: economy in recession. *Monthly Labor Review, 132*(3), 3-19.

Botke, J. A., Jansen, P. G., Khapova, S. N., & Tims, M. (2018). Work factors influencing the transfer stages of soft skills training: A literature review. *Educational Research Review, 24*, 130-147.

Carruth, B., & Curtin, J. (2017). *2017 report on technical education.* Utah Systems of Higher Education.

Cohen, B. H. (2013). *Explaining phsychological statitics* (4th ed.). Hoboken, Jew Jersey: Wiley.

Collet, C., Hine, D., & du Plessis, K. (2015). Employability skills: Perspectives from a knowledge-intensive industry. *Education and Training, 57*, 532-559. Retrieved from https://doi.org/10.1108/ET-07-2014-0076

Corporate Learning Solutions. (n.d.). *Making the business case for soft skills.* Bellevue: Bellevue University. Retrieved September 2021, from https://humancapitallab.org/downloads/Making-the-Business-Case-for-Soft-Skills.pdf

Council on Occupational Education. (2021). *Handbook of accreditation: 2021 edition.* Atlanta, Georgia: Council on Occupational Education. Retrieved from https://council.org/manuals/

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design.* Thousand Oaks, CA: Sage.

Dalaya, M., Ishaquddin, S., Ghadage, M., & Hatte, G. (2015, Mar). An interesting review on soft skills and dental practice. *Journal of Clinical & Diagnostic Research*. doi:https://dx.doi.org/10.7860%2FJCDR%2F2015%2F12725.5719

DeFalco, A. (2016). Dewey and vocational education: Still timely? *The Journal of School & Society*, 54-64.

Deloitte Touche Tohmatsu Limited and The Manufacturing Institute. (2018). *2018 Deloitte and The Manufacturing Institute skills gap and future of work study.* Deloitte Insights.

DeVellis, R. F. (2017). *Scale development: Theory and applications* (4th ed.). SAGE Publications, Inc.

Dolce, V., Emanuel, F., Cisi, M., & Ghislieri, C. (2019, December). The soft skills of accounting graduates: Perceptions versus expectations. *Accounting Education, 29*(1), 57-76. doi:10.1080/09639284.2019.1697937

Donohue, T. J. (2018). The two gap challenge. *Talent Forward 2018.* Washington, D.C. Retrieved from https://www.uschamber.com/series/above-the-fold/the-two-gap-workforce-challenge

Doolittle, P. E., & Camp, W. G. (1999). Constructivism: The career and technical education perspective. *Journal of Vocational and Technical Education, 16*. doi:http://doi.org/10.21061/jcte.v16i1.706

Dougherty, S. M. (2016). *Career and technical education in high school: Does it improve student outcomes?* Thomas B. Fordham Institute, Washington D.C.

Dougherty, S. M., & Lombardi, A. R. (2016, March). From vocational education to career readiness: The ongoing work of linking education and the labor market. *Review of Research in Education, 40*, 326-355. doi:10.3102/0091732X16678602

Dubitzky, W., & et al. (Eds.). (2013). *Encylopedia of Sytems Biology.* Springer Science+Business Media LLC. doi:10.1007/978-1-4419-9863-7

Education, U. D. (2020, April 23). *Office of Career, Technical, and Adult Education*. Retrieved from https://www2.ed.gov/about/offices/list/ovae/index.html

Eisner, E. W. (2002). *The educational imagination: On the design and evaluation of school programs* (3rd ed.). Upper Saddle River, NJ: Prentice Hall.

Fan, C., & Zhang, D. (2012). A note on power and sample size calculations for the Kruskal-Wallis test for ordered categorical data. *Journal of Biopharmaceutical Statistics, 22*(6), 1162-1173. doi:https://doi.org/10.1080/10543406.2011.578313

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2017). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175-191.

Garrison, C. (2018). Technical college student attitudes toward learning 21st century work skills [Doctoral dissertation, Northeastern Univeristy]. Northeastern

University Library Digital Repository Service. Retrieved from https://repository.library.northeastern.edu/files/neu:cj82r865v

Gillies, D. (2015). *Encyclopedia of Educational Philosophy and Theory.* (M. A. Peters, Ed.) Singapore: Springer Science+Business Media. doi:10.1007/978-981-287-532-7_254-1

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

Graham, R., & Porterfield, T. (2018). Preparing today's engineering graduate: An empirical study of professional. *ASEE Annual Conference & Exposition.* American Society for Engineering Education.

Harper, M. (2020, January 25). House panel backs scholarships for low-income 2-year, career-tech, HBCU students. *The Dayton Beach News-Journal*.

Harris, K. S., & Rogers, G. E. (2008, November). Soft skills in the technology education classroom: What do students need? *The Technology Teacher*, 19-24.

Heckman, J. J., & Kautz, T. (2012). Hard evidence on soft skills. *Labour Economics*, 451-464. doi:10.1016/j.labeco.2012.05.014

Hendarman, A. F., & Tjakraatmadja, J. H. (2012). Relationship among Soft Skills, Hard Skills, and Innovativeness of Knowledge Workers in the Knowledge Economy Era. *Procedia - Social and Behavioral Sciences, 52*, 35-44. doi:10.1016/j.sbspro.2012.09.439

Hoffman, J. V., Wilson, M. B., Martinez, R. A., & Sailors, M. (2011). Content analysis: The past, present, and future. In N. K. Duke, & M. H. Mallette (Eds.), *Literacy research methodologies* (2nd ed., pp. 28-49). New York: Guilford Publications.

Holzer, H. (2015, April). Higher education and workforce policy: Creating more skilled workers (and jobs for them to fill). *Higher Education and Workforce Policy*, 1-9.

Hyslop-Margison, E. J. (2000). An assessment of the historical arguments in vocational education reform. *Journal of Career and Technical Education, 17*, 23-30.

Indeed Editorial Team. (2021, February 23). *What Is an Entry-Level Job?* Retrieved from Indeed Career Guide: https://www.indeed.com/career-advice/finding-a-job/what-is-an-entry-level-job

Jacobson-Lundeberg, V. (2017, January). Power skills. *Techniques*, 50-53.

James, R. F., & James, M. L. (2004). Teaching Career and Technical Skills in a "Mini" Business World. *Business Education Forum, 59*(2), 39-41.

Jerald, C. D. (2009). *Defining a 21st century education.* Center for Public Education.

Jones, M., Baldi, C., Phillips, C., & Waikar, A. (2016). The hard truth about soft skills: What recruiters look for In business graduates. *College Student Journal, 50*(3), 422-428.

Kechagias, K. (Ed.). (2011). *Teaching and assessing soft skills.* Thessaloniki: 1st Second Chance School of Thessaloniki.

Keller, S., Chan, C., & Parker, C. M. (2011). Employability skills: Student perceptions of an IS final year capstone subject. *Innovation in Teaching and Learning in Information and Computer Sciences, 10*(2), 4-15. doi: 10.11120/ital.2011.10020004

Kelley, T. L. (1927). *Interpretation of educational measurements.* (L. M. Terman, Ed.) New York : World Book Company. Retrieved from http://cda.psych.uiuc.edu/kelley_books/kelley_interpretation_1927.pdf

Killingsworth, M. (2021, January 18). Money matters to happiness perhaps more than previously thought. *Penn Today*. Retrieved from https://penntoday.upenn.edu/news/money-matters-to-happiness-perhaps-more-than-previously-thought

Kleibard, H. M. (2004). *The struggle for the American curriculum* (3rd ed.). New York, NY: RoutledgeFalmer.

L'Italien, K. (2018, June 11). *From hype to help: Associations and the future of learning and work.* Retrieved from Association Chat: https://associationchat.com/2018/06/11/from-hype-to-help-associations-and-the-future-of-learning-and-work/

Laroche, M., Mérette, M., & Ruggeri, G. C. (1999). On the concept and dimensions of human capital in a knowledge-based economy context. *Canadian Public Policy / Analyse De Politiques, 25*(1), 87-100. doi:10.2307/3551403

Lea, D. M. (2019). Adjunct faculty perceptions of students' soft skill: A review of a community college training program.

Legislature, U. S. (2021). *Overview*. Retrieved from Utah System of Technical Colleges: https://cobi.utah.gov/2021/51/overview

Levesque, E. M. (2019). *Understanding the skills gap—and what employers can do about it.* Washington D. C. : Brookings Institution .

Lewis-Sessoms, M. (2020). A case study exploring perspectives of community college experiences' role on soft skills development of North Carolina students enrolled in career and technical programs [Doctoral dissertation, North Carolina State]. *NC*

State Repository. Retrieved from https://repository.lib.ncsu.edu/handle/1840.20/37338

Lowry, K., & Thomas-Anderson, T. (2017). How community colleges are closing the skills gap through CTE and STEM funding innovations. *New Directions for Community Colleges, 2017*(48), 45-54. doi:10.1002/cc.20252

Mahoney, E. L., & Sokol, M. (2019, January 30). DeSantis issues executive order on workforce education, requests millions for technical programs. *Tampa Bay Times*.

Maier, M., & Lakens, D. (2021). *Justify your alpha: A primer on two practical approaches* . PsyArXiv. doi:https://doi.org/10.31234/osf.io/ts4r6

Manpower Group. (2020). *Closing the skills gap: What workers want.* Milwaukee. Retrieved from https://go.manpowergroup.com/hubfs/MPG_WhatWorkersWant_2020.pdf?hsLang=en

Maple, M. D. (2018). *Soft skills implications within postsecondary education (Publication No. 10792588) [Indiana State University]*. ProQuest Dissertations and Theses Global.

Matteson, M. L., Anderson, L., & Boyden, C. (2016). Soft skills: A phrase in search of meaning. *Libraries and the Academy, 16*(1), 71-88.

McGowan, M. T. (2019). *An exploration of technology employer perceptions regarding soft skills for Workplace Success (Publication No. 13897724) [Doctoral dissertation, Grand Canyon University]*. ProQuest Dissertations and Teses Global.

Mitchell, G. W., Skinner, L. B., & White, B. J. (2010). Essential soft skills for success in the twenty-first century workforce as perceived by business educators. *The Delta Pi Epsilon Journal, LII*, 43-53.

National Association of Colleges and Employers. (2021, April 13). *The key attributes employers seek on college graduates' resumes.* Retrieved from NACE Center for Career Development and Talent Acquisition: https://www.naceweb.org/about-us/press/the-key-attributes-employers-seek-on-college-graduates-resumes/

National Association of Manufacturers. (2014). *Overcoming the manufacturing skills gap: A guide for building a workforce-ready talent pipeline in your community.*

National Research Council. (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century.* Washington D.C.: The National Academies Press. doi:https://doi.org/10.17226/13398.

Newsroom of Todd Young, U.S. Senator for Indiana. (2021, March 4). Senate passes Young resolution recognizing February as Career and Technical Education Month. *[Press Release]*. Retrieved from Todd Young U.S. Senator for Indiana: https://www.young.senate.gov/newsroom/press-releases/senate-passes-young-resolution-recognizing-february-as-career-and-technical-education-month

North, A. B., & Worth, W. E. (2004, June). Trends in selected entry-level technology, interpersonal, and basic communication SCANS skills: 1992-2002. *Journal of Employment Counseling, 41*, 60-70.

Office of Career, Technical, and Adult Education, U.S. Department of Education. (n.d.). *Employability Skills*. Retrieved from Perkins Collaborative Resource Network: https://cte.ed.gov/initiatives/employability-skills-framework

Packer, A. H. (1992, March). Taking action on the SCANS report. *Educational Leadership*, 27-31.

Palmer, R. (2014). Technical and vocational skills and post-2015: Avoiding another vague skills goal? *International Journal of Educational Development, 39*, 32-39. doi:http://dx.doi.org/10.1016/j.ijedudev.2014.08.007

Park, C. M. (2017). *Soft skills in health careers programs: A case study of a regional vocational technical high school (Publication No. 106189790 [Boston University]*. ProQuest Dissertation and Theses Global.

Partnership for 21st Century Skills. (2002). *Learning for the 21st century: A report and MILE guide for 21st century skills.* U.S. Department of Education, Washington D.C.

Pellegrino, J. W., & Hilton, M. L. (2012). *Education for life and work: Developing Transferable Knowledge and Skills in the 21st Century.* Washington D.C.: National Academic Press. Retrieved from http://www.nap.edu/catalog.php?record_id=13398

Pillai, S. (2017). *An investigation of implementation, adoption and use of technology for enhancing students' corelife skills in a vocational institute: A case study informed by Actor-Network Theory [Unpublished doctoral disseration]*. Lancaster University.

Rahmat, N. A. (2016). Employability skills constructs as job performance predictors for Malaysian polytechnic graduates: A qualitative study. *Malaysian Journal of Society and Space*, 154-167.

Reeves, R. V., & Venator, J. (2014, December 19). Jingle-jangle fallacies for non-cognitive factors.

Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly, 75*(4), 453-465. doi:10.1177/1080569912460400

Rojewski, J. W. (2002). *Preparing the workforce of tomorrow: A conceptual framework for career and technical education.* Columbus, OH: National Dissemination Center for Career and Technical Education.

Scott, J. L. (2014). *Overview of Career and Technical Education* (5th ed.). American Technical Publishers.

Shakir, R. (2009). Soft skills at the Malaysian institutes of higher learning. *Asia Pacific Education Review, 10*, 309-315. doi:10.1007/s12564-009-9038-8

Snape, P. (2017). Enduring learning: Integrating C21st soft skills through technical education. *Design and Technology Education, 22*(3), 48-59.

Society for Human Resource Management. (2019). *The global skills shortage: Bridging the talent gap with education, training, and sourcing.* Retrieved from https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Documents/SHRM%20Skills%20Gap%202019.pdf

Stevens, A. H., Kurlaender, M., & Grosz, M. (2018). *Career technical education and labor market outcomes: Evidence from California community colleges.* Institute of Education Sciences & U.S. Department of Education. doi:10.3368/jhr.54.4.1015.7449R2

Stewart, M. (2017). Student perceptions of soft skills as an indicator of workplace success. *Publication No. 10282379*. ProQuest Dissertations & Theses Global.

Stirgus, E. (2016, September 23). State looks to improve career education. *The Atlanta Journal-Constitution*.

Stone, J. R. (2014, Fall). More than one way: A case for high-quality CTE. *American Educator*, 4-11.

Stone, J. R. (2016). Career and Technical education in the second decade of the 21st century. *The Journal of School & Society, 3*(1), 40-53.

Stringfield, S., & Stone, J. R. (2017). The Labor Market Imperative for CTE: Changes and challenges for the 21st century. *Peabody Journal of Education, 92*, 166-179. doi:10.1080/0161956X.2017.130220

Taylor, E. (2016). Investigating the perception of stakeholders on soft skill development of students: Evidence from South Africa. *Interdisciplinary Journal of e-Skills and Life Long Learning, 12*, 1-18. Retrieved from http://www.ijello.org/Volume12/IJELLv12p001-018Taylor2494.pdf

Texas Workforce Commission. (2009/2015). *Workplace basic skills: Employer demands and worker preparation.* Labor Market and Career Information Department. Austin: Labor Market and Career Information. Retrieved from https://lmci.state.tx.us/shared/PDFs/WorkplaceBasicSkills_web.pdf

The Editors of Encyclopaedia Britannica. (1998, July 20). Technical education. *Encyclopedia Britannica*. Retrieved from https://www.britannica.com/topic/technical-education

The secretary's commission on achieving necessary skills. (1991). *What work requires of school: A SCANS report for America 2000.*

Tomczak, M., & Tomczak, E. (2014). The need to report effect size estimates revisited: An overview of some recommended measures of effect size. *Trends in Sport Sciences, 1*(21), 19-15.

Tribble, L. S. (2009). The importance of soft skills in the workplace as perceived by community college instructors and industries.

Tyler, R. W. (1949). *Basic principles of curriculum and instruction.* Chicago: University of Chicago Press.

Utah System of Higher Education. (2019, November 29). *2018 – the Year of Technical Education.* Retrieved from Utah System of Higher Education: https://ushe.edu/2018-the-year-of-technical-education/#:~:text=Governor%20Herbert%20recently%20announced%202018,IT%20Education%20Pathway%20in%20Utah.

Warmbrod, J. R. (2014). Reporting and interpreting scores derived from Likert-type scales. *Journal of Agricultural Education, 55*(5), 30-47.

Welsh, M., Stewart, M., Mearns, A., Keshagias, K., Papdopoulou, D., Agapidou, E., . . . Botke, J. (2011). *Teaching and assessing soft skills.* (K. Kechagias, Ed.) Thessaloniki, Greece: 1st Second Chance School of Thessaloniki (Neapolis).

White, M., & Marsh, E. E. (2006). Content analysis: A flexible methodology. *Library Trends, 55*(1), 22-45. doi:10.1353/lib.2006.0053

Wiggins, G., & McTighe, J. (1998). *Understanding by Design.* Alexandria, VA: Association for Supervision and Curriculum Development.

Wiggins, G., & McTighe, J. (2005). *Understanding by Design* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Wilhelm, W. J. (1999). A Delphi study of desired entry-level workplace skills, competencies, and proof-f-achievement products. *Annual Meeting of the American Educational Research Association*, (pp. 19-23). Montreal, Quebec.

Woodard, E. W. (2018). *Soft skills, in turn: An exploratory qualitative study of soft skill development through individual internship experiences in a workplace setting (Publication No. 10784634) [The George Washington University]*. ProQuest Dissertation and Theses Global.

Woolsey, L., & Groves, G. (2012). *State sector strategies coming of age: Implications for state workforce policymakers.* National Governors Association. Retrieved from The National Governors Association website www.nga.org/center

Yin, R. K. (2009). *Case study research: Design and methods* (4th ed.). Newbury Park, CA: Safe.

APPENDICES

Appendix A
SCANS Five Competencies

FIVE COMPETENCIES

Resources: Identifies, organizes, plans, and allocates resources

A. *Time* — Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
B. *Money* — Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
C. *Material and Facilities* — Acquires, stores, allocates, and uses materials or space efficiently
D. *Human Resources* — Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

A. *Participates as a Member of a Team* — contributes to group effort
B. *Teaches Others New Skills*
C. *Serves Clients/Customers* — works to satisfy customers' expectations
D. *Exercises Leadership* — communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
E. *Negotiates* — works toward agreements involving exchange of resources, resolves divergent interests
F. *Works with Diversity* — works well with men and women from diverse backgrounds

Information: Acquires and uses information

A. *Acquires and Evaluates Information*
B. *Organizes and Maintains Information*
C. *Interprets and Communicates Information*
D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

A. *Understands Systems* — knows how social, organizational, and technological systems work and operates effectively with them
B. *Monitors and Corrects Performance* — distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
C. *Improves or Designs Systems* — suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

A. *Selects Technology* — chooses procedures, tools or equipment including computers and related technologies
B. *Applies Technology to Task* — Understands overall intent and proper procedures for setup and operation of equipment
C. *Maintains and Troubleshoots Equipment* — Prevents, identifies, or solves problems with equipment, including computers and other technologies.

Appendix B
SCANS Three-Part Foundation

A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

A. *Reading* — locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
B. *Writing* — communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
C. *Arithmetic/Mathematics* — performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
D. *Listening* — receives, attends to, interprets, and responds to verbal messages and other cues
E. *Speaking* — organizes ideas and communicates orally

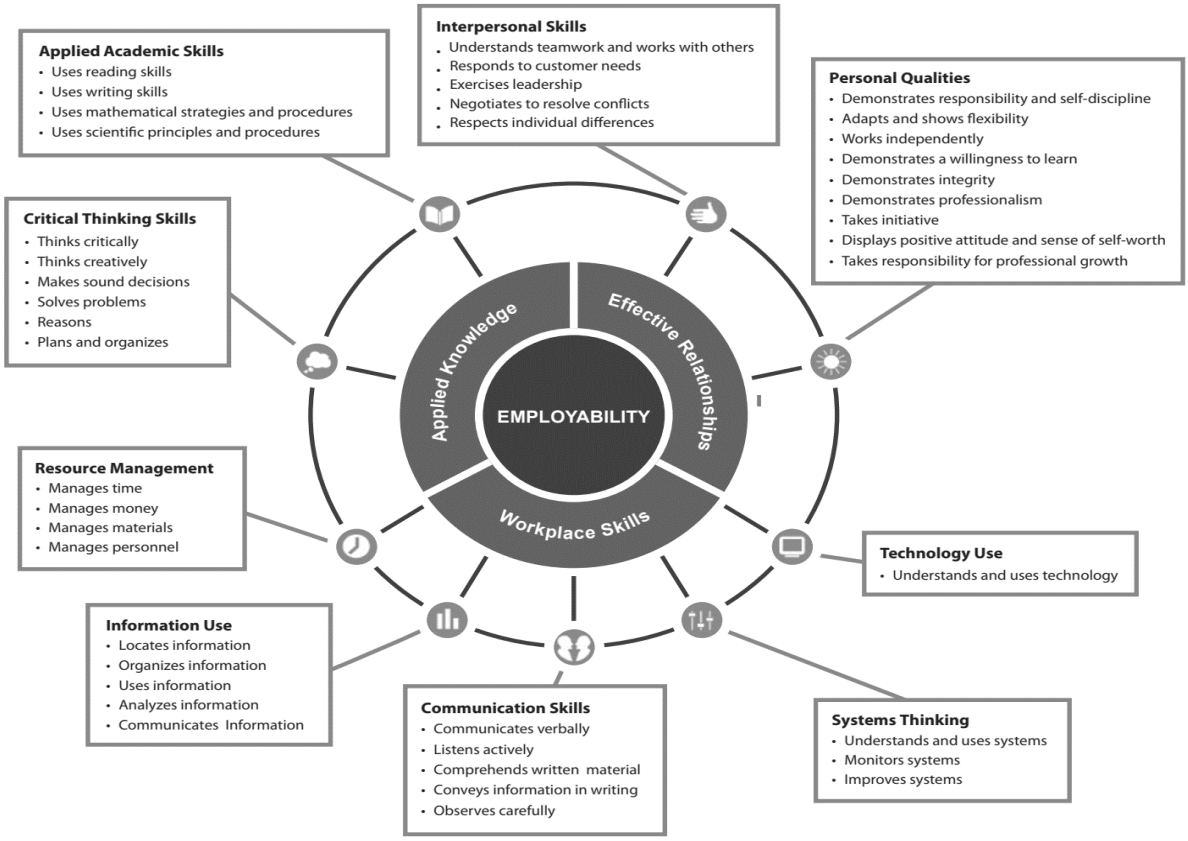
Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn and reasons

A. *Creative Thinking* — generates new ideas
B. *Decision Making* — specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
C. *Problem Solving* — recognizes problems and devises and implements plan of action
D. *Seeing Things in the Mind's Eye* — organizes, and processes symbols, pictures, graphs, objects and other information
E. *Knowing How to Learn* — uses efficient learning techniques to acquire and apply new knowledge and skills
F. *Reasoning* — discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

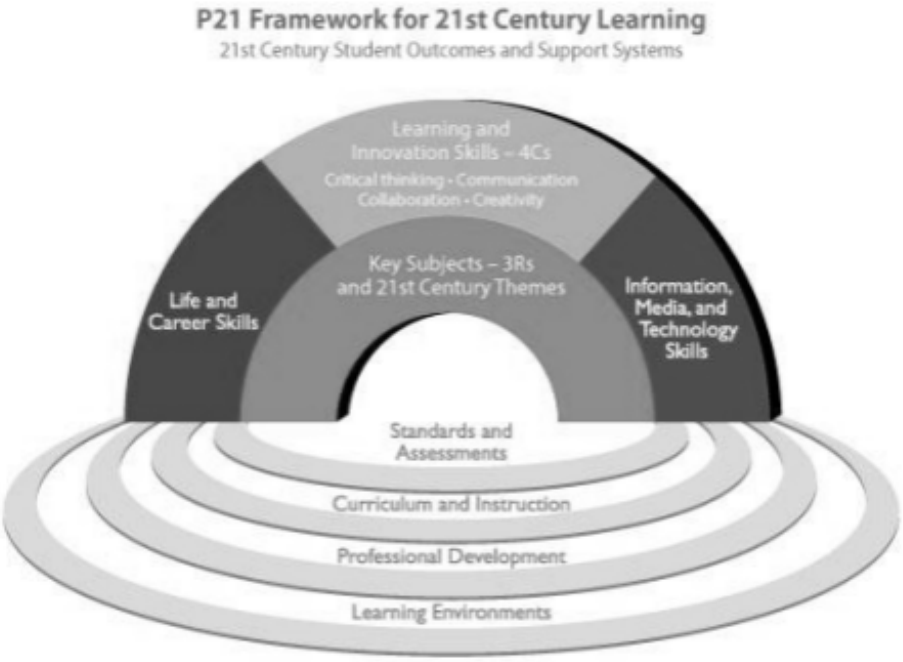
Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

A. *Responsibility* — exerts a high level of effort and perseveres towards goal attainment
B. *Self-Esteem* — believes in own self-worth and maintains a positive view of self
C. *Sociability* — demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
D. *Self-Management* — assesses self accurately, sets personal goals, monitors progress, and exhibits self-control
E. *Integrity/Honesty* — chooses ethical courses of action

Appendix C
21st Century Skills


Applied Academic Skills
• Uses reading skills
• Uses writing skills
• Uses mathematical strategies and procedures
• Uses scientific principles and procedures
Interpersonal Skills
. Understands teamwork and works with others
. Responds to customer needs
. Exercises leadership
. Negotiates to resolve conflicts
. Respects individual differences
Personal Qualities
• Demonstrates responsibility and self-discipline
• Adapts and shows flexibility
• Works independently
• Demonstrates a willingness to learn
• Demonstrates integrity
• Demonstrates professionalism
• Takes initiative
• Displays positive attitude and sense of self-worth
• Takes responsibility for professional growth
Critical Thinking Skills
• Thinks critically
• Thinks creatively
• Makes sound decisions
• Solves problems
• Reasons
• Plans and organizes
Applied Knowledge
Effective Relationships
EMPLOYABILITY
Workplace Skills
Resource Management
• Manages time
• Manages money
• Manages materials
• Manages personnel
Technology Use
• Understands and uses technology
Information Use
• Locates information
• Organizes information
• Uses information
• Analyzes information
• Communicates Information
Communication Skills
• Communicates verbally
• Listens actively
• Comprehends written material
• Conveys information in writing
• Observes carefully
Systems Thinking
• Understands and uses systems
• Monitors systems
• Improves systems

Appendix D
P21 Framework


P21 Framework for 21st Century Learning
21st Century Student Outcomes and Support Systems
Learning and Innovation Skills – 4Cs
Critical thinking • Communication
Collaboration • Creativity
Key Subjects – 3Rs and 21st Century Themes
Life and Career Skills
Information, Media, and Technology Skills
Standards and Assessments
Curriculum and Instruction
Professional Development
Learning Environments

Appendix E
Content Analysis Code Book

Human skills content analysis codebook

A990 Higher-order thinking/thinking/analytical skills/problem-solving skills/critical thinking skills/critically thinking and problem solving

A	1	Thinks critically
A	2	Thinks creatively
A	3	Makes sound decisions/judgments
A	4	Solves problems
A	5	Reasoning/reason
A	6	Plans and organizes
A	7	Knowing how to learn/ability to learn
A	8	Seeing in the mind's eye
A	9	Uses systems thinking
A	10	Collect and analyze information/synthesize/interpret information
A	91	Ability to deal with complexity and ambiguity

B991 Communication skills/basic skills/communication

B	11	Communicates verbally/orally/speaking
B	12	Listens actively/effectively
B	13	Comprehends written material/reading
B	14	Conveys information in writing
B	15	Observes carefully
B	16	Articulates thoughts and ideas effectively
B	17	Use communication for a range of purposes
B	18	Utilize multiple medias and technologies/utilize the right medium
B	19	Communicate effectively in diverse environments
B	20	Mathematics
B	21	Open-mindedness
B	22	Friendliness/sociability/interpersonal skills/social skills/interact effectively with others
B	23	Feedback
B	24	Confidence
B	25	Non-verbal communication
B	26	Clarity and concision
B	27	Respect
B	93	Presenting skills

C992 Social skills/interpersonal skills/emotional intelligence/teamwork skills/group effectiveness/collaborate with others

C	27	Showing respect
C	28	Using context-appropriate behavior
C	29	Resolving conflict/conflict management
C	30	Serve customers and clients/others/customer focus/client management
C	31	Participate as a team member/collaborate/participate actively/ cooperation/teamwork
C	32	Work with diversity/people from culturally diverse backgrounds
C	33	Exercise leadership
C	34	Negotiate a decision/compromise/negotiation
C	35	Teach/guide/coach others
C	36	Empathy
C	38	Flexibility
C	86	Relationship building
C	94	Courtesy/manners/politeness/etiquette/graciousness/please-thankyou

D993 Positive self-concept/personal qualities/self-management/developmental skills/personality traits

D	90	Agility
D	81	Ambitious/drive
D	84	Assertiveness/self-advocacy
D	50	Career planning/professional growth
D	87	Demeanor
D	53	Demonstrates professionalism
D	49	Goal-setting/goal-oriented
D	89	Growth mindset
D	51	Initiative
D	45	Integrity/honesty/ethical/trustworthy
D	85	Passion
D	54	Positive attitude/work positively/positivity/optimism/happy/enthusiastic
D	83	Proactive
D	46	Responsibility
D	41	Self-awareness
D	39	Self-confidence
D	40	Self-efficacy
D	43	Self-esteem/self-worth
D	47	Self-management/self-discipline/self-control/works independently/ability to work with minimal or no supervision/self-regulation
D	48	Self-motivation/motivation
D	44	Sense of well-being and pride
D	42	Strong personal beliefs, morals/values
D	82	Strong work ethic
D	52	Willingness to learn/lifelong learner/self-directed learner/enthusiasm for ongoing learning
D	92	Stress management
D	95	Loyalty/commitment
D	96	Dependable

E994 Adaptability skills/creativity/innovation

E	55	Persistence/resilience/grit
E	56	Resourcefulness
E	57	Curiosity/inquiring mind
E	58	Innovation
E	77	Adaptability

F995 Systems

G996 Informational skills

G	59	Communicates information
G	60	Use information
G	61	Organize/maintain/manage information
G	62	Use computers to process information
G	63	Share ideas/willing to share new ideas

H	64	Time-management
H	65	Money management
H	66	Materials/facilities management
H	67	Personnel management/human resources
H	71	Project management/prioritize, plan, and manage work
H	80	Productivity
H	88	Execution skills/follow-through

I998	Leadership skills		
	I	68	Understanding organizational culture
	I	69	Sharing leadership
	I	76	Motivate team members
	J	70	Multitasking
	J	72	Reliability
	J	73	Punctuality/attendance
	J	74	Present oneself professionally (appearance)
	J	75	Be accountable for results/accountability
K1000	Entrepreneur skill		
	K	37	Able to identify business opportunities
	K	78	Managing resources
L1001	Continuously learning		
	L	79	Assess personal strengths and areas for development

Note. The letters were used to distinguish skills extracted from human skill frameworks. Thus, when codes were applied, some skills had variations in the number or the letter. However, the frequency count was determined by the number alone.

Appendix F
Phase 1 - Content Analysis of the Literature

The following is a list of all human skills found through the content analysis of the literature. Each skill has been coded and sorted into groups of like skills with the same code. Often references to human skills included more than one skill, so multiple codes were used. In these cases, the references were counted for each code. Some skills did not fit clearly into any code; these skills can be found at the end of the list.

A990 A1 A2 E58 A91 A3 G63 Critical and problem solving - think in a critical, creative, innovative, and analytical manner as well as apply knowledge. The ability to identify and analyze complex situations as well as make evaluations that are justifiable -- provide ideas and alternative solutions

A990 Analytical Skills

A990 analytical skills

A990 multi-disciplinary thinking

A990 Analytical/quantitative skills

A1 A4 Critical thinking and problem solving

A1 A4 Critical thinking/problem solving

A1 A4 Problem Solving/Critical Thinking

A1 Critical Thinker

A1 Critical Thinking

A1 Critical thinking

A1 Critical Thinking

A2 Clever

A2 Creative Thinking

A2 Creativity

A2 Creativity Skills

A2 E58 Creativity/Innovation

A2 D47 G61 K1000 Organizing Self: The entrepreneurial spirit, creativity, and discovery, and the ability to self-organize, and the organization of events and activities.

E2 E58 Creativity and innovation

A3 A4 Problem solving & decision making

A3 D42 D45 D46 Ethics and professional moral -- practice high moral standards. Understand the effects of economy, environment, and socio-cultural factors on the perspective professional practice. Analyze and arrive at decisions in matters concerning ethics. Practice good ethics while having a sense of responsibility toward society

A3 Decision making

A3 Decision Making

A3 Decision making

A3 Decision Making

A3 Decision-making

A3 Judgement

A4 C30 Client focused/solution driven

A4 D20 Mathematical/problem solving: Solving problems including using mathematical ideas and techniques

A4 D51 D83 E58 initiative/self-motivation - Able to act on initiative, identify opportunities and proactive in putting forward ideas and solutions

A4 Problem Solving

A4 Problem Solving

A4 problem solving

A4 Problem solving

A4 Problem solving

A4 problem solving

A4 problem solving

A4 Problem Solving

A4 Problem Solving Skills

A4 Problem-Solving

A4 Problem-solving

A4 Problem-solving skills

A4 Problem-Solving Skills

A4 Problem-solving skills

A5 Reasoning

A5 Reasoning

A6 H64 Planning and time management

A6 Organization

A6 Organizational Abilities

A6 Organizational skills

A6 planning and organizing - able to plan activities & carry them out effectively

A7 Knowing how to learn

A8 Seeing in Mind's Eye

A91 Ability to deal with complexity and ambiguity

A10 A990 Investigative and analytical skills - gather information systematically to establish facts and principles

A10 G61 Information: Collecting, analyzing, organizing and applying information in a given context

A10 D18 Technology (ICT): Applying information and communication technologies

A10 D52 Life-long learning and information management

A10 Gathering Data

A10 Information

A10 Interpret Information

A10 Synthesize

B11 B14 B12 B93 B991 B11 B14 B12 B93 Communication - oral, speaking capability, written, presenting, listening

B11 B14 Communication (verbal and written)

B11 B14 Written and oral communication

B11 B991 communication/oral communication

B11 Communication - verbal

B11 Communication (oral)

B11 Communication Skills (verbal)

B11 Oral Communication

B11 Oral Communication

B11 Oral communication

B11 Speaking

B11 Verbal Communication

B12 Active Listening

B12 Listening

B12 listening skills

B14 Communication - written

B14 Communication (Written)

B14 Communication Skills (written)

B14 Good Writing Skills

B14 Written Communication

B14 Written Communication

B14 Written Communication

B20 Numeracy

B20 Quantitative/Statistical/Math Skills

B22 E45 Ethics/Social Responsibility

B22 C992 Interpersonal Relationships

B22 C36 C992 D47 Interpersonal skills - nice, personable, sense of humor, friendly, nurturing, empathetic, has self-control, patient, sociability, warmth, social skills

B22 D54 friendliness or having a positive attitude."

B31 Team Player

B48 Motivation

B54 Positive attitude

B93 Ability to public speak

B93 Presentation skills

B11 B12 B14 B26 B991 D39 Communication - convey thoughts with clarity and confidence both in written and oral forms. Active listeners

B991 C992 Good Communication/Interpersonal Skills

B991 Communication skills

B991 Communication

B991 Communication

B991 Communication

B991 communication

B991 communication

B991 Communication

B991 Communication

B991 communication - Ability to express ideas clearly, confidently in writing and speech

B991 Communication skills

B991 Communication Skills

B991 Communication Skills

B991 Communication: Communicating information, concepts and ideas

B991 Communicative

B991 General Communication

C27 Respectful of Others

C27 C31 C32 H88 Teamwork - ability to work and cooperate with people from various social and cultural backgrounds so as to achieve a common goal. Respect others attitudes, behaviors, and beliefs.

B27 C86 D45 work and personal relationships, are honest, and show respect

C29 C34 Conflict resolution & negotiation
C29 Conflict management
C29 Conflict Management
C29 Conflict resolution
C29 Conflict resolution

C30 Client management
C30 Customer Focus
C30 Customer Service
C30 Serve clients & customers

C31 C992 Teamwork/interpersonal/collaboration
C31 C32 C33 C992 Working with Others: working with others in teams, including leadership
C31 C992 Teamwork - cooperative, gets along with others, agreeable, supportive, helpful, collaborative
C31 Capacity for teamwork
C31 Collaboration
C31 Collaboration
C31 collaboration
C31 Cooperative/Team Player
C31 D39 teamwork - work confidently with a group
C31 Participate as team member
C31 Team working
C31 Teamwork
C31 Teamwork
C31 Teamwork
C31 Teamwork
C31 teamwork
C31 Teamwork
C31 Teamwork
C31 Teamwork Skills
C31 Teamwork Skills
C31 Teamwork skills
C31 Teamwork/Collaboration
D31 Ability to work in a team

C32 Diversity
C32 Handling Diversity
C32 C992 Social and cross--cultural skills

C33 D46 Leadership and responsibility
C33 D51 Leadership/initiative
C33 Exercise Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership
C33 Leadership Ability
C33 Leadership Skills –

C34 Negotiate a Decision
C34 Negotiation
C34 Negotiation
C34 Negotiation

C35 C992 EI Coaching others
C35 Objective guidance
C35 Teach Others

C36 C992 EI Empathy
C36 empathy

C86 Positive relationships
C86 C992 Interpersonal skills/Relationship building

C94 Courtesy - manners, etiquette, business etiquette, gracious, says please and thank you

C992 D47 Self-regulation/calm
C992 D40 Social competence
C992 D45 Societal: Participating in social and civil life including ethical practice
C992 D92 Emotional control
C992 Emotional intelligence
C992 Interpersonal relations
C992 Interpersonal Skills
C992 Interpersonal skills
C992 Social skills
C992 Social Skills

D32 Work with diversity
C32 for diverse cultures."

D38 D90 flexibility/agility
C38 D52 E57 E77 Adaptability, open-mindedness, flexibility, teachable

B24 Self-confidence
D39 D54 Positive attitude - optimistic, enthusiastic, encouraging, happy, confident
D39 Self Confidence
D39 self-confidence
D39 Self-Confidence
D39 Self-Confident
D39 Self-confident

D41 D46 D47 D48 D96 Self-Management - individually
D41 Self-awareness

D42 D45 D53 Ethics, Moral, and Professional
D42 D45 Integrity - honest, ethical, high morals, has personal values, does what's right

D43 Self Esteem
D43 D54 Optimism - tied to one's self esteem and is seen by others as

D45 Integrity - pay attention to ethics in their
D45 J72 Honesty and reliability
D45 Ethics
D45 General Ethics
D45 Good Ethics
D45 Integrity/honesty
D45 Trustworthy, Honest, and Ethical

D46 D57 E56 H88 J72 Responsibility - accountable, reliable, gets the job done, resourceful, self-disciplined wants to do well, conscientious, common sense
D41 D46 D48 D96 Responsible, self-aware, dependable, and self-motivated,
D46 Personal/social responsibility
D46 Responsibility
D46 Takes Responsibility

D47 Self Management
D47 Self-management
D47 Self-Management
D47 Self-management
D47 Self-management
D47 Self-Motivated
D47 D48 Self-Motivation and Self-Direction
D47 Self-regulate
D47 D51 initiative and self-direction
D47 D52 Lifelong learning/Self-direction
D47 D52 E57 G61 Life-long learning and information management - self-regulated learning independently - be receptive to new ideas and develop an inquiry mind

D48 D82 Achievement Motivation
D48 D51 D82 J73 Work Ethic - hard working, willing to work, loyal, initiative, self-motivated, on time, good attendance.

D49 goal oriented

D51 Active initiative
D51 Initiative
D51 Initiative
D51 Takes initiative

D52 Continuing learning
D52 Lifelong learning
D52 Willingness to learn
D52 Willingness to learn

D53 D82 Professionalism/Work Ethic
D53 J74 Professionalism - businesslike, well-dressed, appearance, poised
D53 Professionalism
D53 Professionalism
D53 Business Etiquette

D54 D85 Passion and Optimism
D54 Positive Attitude
D54 Positive Attitude
D54 Positive attitude
D54 D82 Work ethic and attitudes
D54 D87 Demeanor/attitude

D58 E57Adaptation to changes/innovations

D81 Ambitious

D81 D83 H88 E58 Drive - determination to get things done, make things happen & constantly looking for better ways to do things

D82 Hard worker

D82 Strong Work Ethic

D82 Work Ethic

D82 Work Ethic

D82 Work ethic

D82 having a work ethic, and an ability to follow directions."

D83 Proactive

D83 Proactive Skills

D83 Proactivity

D84 Assertive

D84 self-advocacy

D89 Growth mindset

D92 Stress resistance

D95 Loyalty and commitment

D993 Personality traits

E55 H88 Grit and follow through

E55 Resilience

E58 Innovation

E58 Innovation invention and development

E77 Adaptability

E77 Adaptability

E77 Adaptability skills

E77 Adaptability to Change

E77 adaptive strategies to tackle tasks

E77 G60 Intellectual flexibility

D52 E77 Flexibility - adaptability, willing to change, lifelong learner, accepts new things, adjusts, teachable

E77 Flexibility/Adaptability

E77 Flexibility/adaptability

E77 Flexibility/Adaptability

E77 Flexibility

E77 Flexibility

E77 flexibility - Adapt successfully to changing situation & environments

E77 Flexibility & adaptability

G61 Organizational skills

H64 Allocate Time

H64 H71 time management - manage time effectively, prioritizing tasks and able to meet deadlines.

H64 Time management

H64 Time Management

H64 Time management

H64 Time management

H64 Time Management

H64 Time Management

H64 Time Management/Organization

H65 Allocate Money

H67 Allocate Human Resources

H80 C33 task leadership

H80 J75 Productivity and accountability

H88 execution skills

I76 Team management

J72 Reliability

J74 D87 Dress/Demeanor/Personal Appearance

J74 Personal Appearance

J74 personal presentation

K1000 Entrepreneurship

K1000 K37 Entrepreneurship skill - ability to venture into business and work-related opportunities while creating risk awareness - ability to identify business opportunities and be able to prepare, build, explore business plans that eventually lead to self-employment

No Clear Code

Knowledge of global or international business
Knowledge of Major Field
Locus of control
Technical Skills
Travel in Austria
Value clarification
Work Experience
Working with technological tools
Ability to work in safety and security
Active in Student Professionalism organizations
Being patient
Commercial awareness
Computer Literacy
Computer Software Skills
General knowledge & Skills
Good Sense of Humor
Eastern languages
English
Foreign language
Foreign Languages
High Grades
ICT Skills
Information Technology Application
International travel
Other languages

Appendix G
Phase 2 - Content Analysis of the OAC Meeting Minutes

Table 46

OAC Meeting Minute Content Analysis Results by Industry Cluster

Industry cluster	Number of unique codes	Total number of references
Business and Technology	52	198
Construction	28	51
Health Professions	65	333
Manufacturing`	27	95
Service Professions	48	228
Transportation	20	27

Table 47

OAC Meeting Minutes Content Analysis Results Aggregated Across Industry Clusters

Human skill name	Number of Industry clusters in which skills were found	*f* of times mentioned
D39 Self-Confidence	3	65
C30 Customers and Clients	5	60
B 991 Communication	6	59
Soft Skills	6	54
D53 Professionalism	5	47
B18 Communicate using multiple medias	5	40
Interviewing	6	39
C31 Teamwork - Collaborating	6	36
D82 Work Ethic	5	32
D52 Willing to Learn	5	31
B11 Verbal Communication	4	21
J73 Attendance and Punctuality	5	21
C35 Teach, Guide, Coach, Consult	3	20
D54 Positive Attitude - positivity	6	18
A1 Critical Thinking	2	17
B23 Give and Receive Feedback	4	17

Human skill name	Number of Industry clusters in which skills were found	*f* of times mentioned
Workplace Success	5	17
D48 Motivation	3	16
J74 Present oneself professionally (appearance)	3	16
B13 Reading	5	15
Resumes	6	14
A4 Problem Solving	5	13
B14 Written Communication	4	12
C Interpersonal Skills	3	11
C28 Work appropriate behavior	4	11
B93 Presenting	4	10
E77 Adaptability	4	10
B22 Friendliness, social skills	2	9
C27 Respect	4	9
C86 Relationships	3	9
D46 Responsibility	4	9
Job Seeking Skills	4	9
D51 Initiative	3	8
B25 Non-verbal communication	2	7
D45 Integrity, honesty, ethics	5	7
D47 Self-Management	5	7
D84 Assertiveness	1	7
D92 Stress Management	2	7
E55 Resilience, Persistency, Grit	3	7
H64 Time Management	3	7
A990 Analytical Thinking	3	6
Proofreading -- Grammar	4	6
D85 Passion	2	6
B12 Listening	2	5
C94 Courtesy, manners, etiquette	1	5
Following Directions	3	5
I68 Organizational Culture	3	5
A2 Thinking Creatively	3	4
Personality	3	4
J72 Reliability	4	4
Workplace Skills	2	4
A3 Decision Making	2	3
B16 Articulate thoughts and ideas effectively	3	3
B21 Open-minded	2	3
D41 Self-Awareness	3	3
D50 Career Planning	3	3
D95 Loyalty and commitment	3	3

Human skill name	Number of Industry clusters in which skills were found	*f* of times mentioned
G60 Use Information	2	3
H65 Money Management	3	3
Patience	2	3
A10 Collect and analyze material	2	2
C36 Empathy	2	2
C38 Flexibility	1	2
D43 Self worth	1	2
D83 Proactive	1	2
E57 Curiosity	2	2
E58 Innovation	2	2
H71 Project Management	2	2
J Life and Career	2	2
A6 Plan and Organize	1	1
A7 Know how to learn	1	1
B95 Loyalty	1	1
C29 Conflict Resolution	1	1
C32 Working with Diverse populations	1	1
C34 Negotiation	1	1
D Personal Qualities	1	1
G Information Skills	1	1
I Leadership	1	1
E Adaptability and Creativity	0	0
H Project or Resource Management	0	0

Appendix H
Survey of Davis Technical College Faculty

Faculty Human Skills Survey - Lamoreaux

Start of Block: IRB

Q8
You are invited to participate in a research study by Dr. Gary Straquadine, a professor in Applied Sciences, Technology & Education at Utah State University.

The purpose of this research is threefold. The first purpose will be to discover what human skills employers in Northern Utah and faculty at Davis Technical College perceive as most important for their employees to possess to 1) be hired for entry-level jobs, 2) be successful in those jobs, and 3) advance to higher-level jobs. The second purpose will be to discover what human skills the faculty at Davis Technical College believe are important to teach in their programs and how their programs help students develop those skills. The third purpose will be to draw comparisons about human skills perceptions in the following ways: 1) between entry-level and higher-level jobs, 2) among employers of various industries, and 3) between employer and faculty perceptions. You are being asked to participate in this research because of your affiliation with Davis Technical College.

Your participation in this study is voluntary, and you may withdraw your participation at any time for any reason. You are able to skip questions if you wish. Only responses that are submitted will be analyzed. In the case that you want to end your participation in the study, simply close the web browser prior to the final question. Since this survey is anonymous, once you complete and submit it, we will not be able to withdraw you from the study. If you take part in this study, you will be asked to complete one survey that will take approximately 10 minutes. There is no cost to you except your time. You may answer all, some, or none of the questions.

This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. The foreseeable risks include the potential for the loss of confidentiality. However, confidentiality will be kept to the extent permitted by the technology being used. Although every precaution will be taken to ensure confidentiality, the security of information collected from you online cannot be guaranteed. Information collected online can be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. In order to minimize those risks and discomforts, the researchers will securely store data collected in a restricted-access folder on Box.com. We cannot guarantee that you will directly benefit from this study, but it has been designed to learn more about what human skills should be taught in technical training programs in your geographical region.

We will make every effort to ensure that the information you provide remains confidential. We will not reveal your identity in any publications, presentations, or reports resulting from this research study.

We will collect your information via Qualtrics. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. This survey data will be securely stored in a restricted-access folder on Box.com.

You can decline to participate in any part of this study for any reason, as all data has e will use systems and processes that minimize breach opportunities. This survey data will be compiled in the electronic analysis program, and quality confirmation is complete. If you have any questions about this study, you can contact Dr. Gary Straquadine at gry.straquadine@usu.edu or Kari Lamoreaux @ kari.lamoreaux@usu.edu. Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at (435) 797-0567 or irb@usu.edu.

By clicking "Next" below and continuing to the survey, you agree that you are 18 years of age or older and wish to participate. You agree that you understand the risks and benefits of participation and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

End of Block: IRB

Start of Block: Introduction

Q10 Thank you for taking the time to complete this survey. Your anonymous responses will be combined with feedback from your OAC members to provide detailed information about the human skills needed by employees in your industry.

Human skills (also known as "soft skills") are a cluster of essential nontechnical skills and attributes that are uniquely human. They include work habits, behaviors, attitudes, character traits, and competencies that are believed to be important to success in today's workforce. These skills shape how employees work both on their own and with others. Human skills are broadly applicable and transferable to any workplace environment at any level of experience.

Do not click the back button/arrow on your internet browser, instead, use the "Back" and "Next" buttons to navigate through the survey.

End of Block: Introduction

Start of Block: Exclusion

Exclusion Survey Are you a current instructor for Davis Technical College? Clicking "no" will terminate the survey.

- No
- Yes

Skip To: End of Survey If Are you a current instructor for Davis Technical College? Clicking "no" will terminate the survey. = No

End of Block: Exclusion

Start of Block: Industry Demographics

Q2 Select the Davis Technology College program you represent:

- Architectural and Engineering Design
- Business Administrative Services
- Cybersecurity
- Information Technology
- Software Development
- Web and Graphic Design
- Building Construction Technology
- Electrician Apprentice
- Heating and Air Conditioning
- Plumbing Apprentice
- Advanced Emergency Medical Technician
- Dental Assistant
- Emergency Medical Technician
- Firefighter
- Medical Assistant
- Medical Office Administration
- Nurse Assistant
- Pharmacy Technician
- Phlebotomy
- Practical Nurse
- Surgical Technology
- Automation and Robotics
- CNC Machining
- Composite Materials Technology
- Injection Molding
- Welding
- Cosmetology
- Culinary Arts
- Esthetician
- Hair Designer
- Master Esthetician
- Nail Technician
- Automotive Technology
- Diesel/Heavy Duty Technology

Q3 Select the option that describes your role at Davis Technical College.

- Full-time faculty
- Part-time faculty
- Adjunct instructor

End of Block: Industry Demographics

Start of Block: Question Block 1

Q1 Please rank the importance of each human skill or attribute within your industry for entry-level employees.

	Entry-Level Employees			
	Not at all Important	Slightly Important	Very Important	Extremely Important
Adaptability	○	○	○	○
Attendance/Punctuality	○	○	○	○
Attitude	○	○	○	○
Behavior	○	○	○	○
Communication Technology (phones, video conferencing, email)	○	○	○	○
Consulting	○	○	○	○
Critical Thinking	○	○	○	○
Customer Service or patient care	○	○	○	○
Decision making	○	○	○	○
Independence	○	○	○	○
Initiative	○	○	○	○
Integrity	○	○	○	○
Job Interview Skills	○	○	○	○
Leadership	○	○	○	○
Motivation	○	○	○	○
Presenting	○	○	○	○
Problem Solving	○	○	○	○
Professional appearance	○	○	○	○
Professionalism	○	○	○	○

Respect	○	○	○	○
Responsibility	○	○	○	○
Self-confidence	○	○	○	○
Social Skills	○	○	○	○
Teamwork	○	○	○	○
Time Management	○	○	○	○
Verbal Communication	○	○	○	○
Willingness to learn and receive feedback	○	○	○	○
Work ethic	○	○	○	○
Written Communication	○	○	○	○

Q24 Use the textbox below to enter additional human skills you believe were missing from the previous list:

_____

Page Break

Q29

Technical skills (also known as hard skills) are the knowledge and skills needed to perform a particular task or activity; technical skills are unique to a specific occupation and often require specialized training and practice for proficiency.

Human skills (also known as “soft skills”) are a cluster of essential nontechnical skills and attributes that are uniquely human. They include work habits, behaviors, attitudes, character traits, and competencies that are believed to be important to success in today’s workplace.

Select the spot on the continuum that you believe best represents which is more important for employment success and career advancement: technical skills or human skills.

	1	2	3	4	5	6	7	8	9	
Technical Skills	○	○	○	○	○	○	○	○	○	Human Skills

Page Break

Q33 Please select all of the ways your program helps students develop human skills?

1) Through the program orientation
2) In a course syllabus
3) In a required course on human skills (e.g., workplace success)
4) By completing assignments explicitly about human skills
5) By completing assignments that embed human skills (e.g., giving a presentation)
6) Through end-of-course self-assessments that require student reflection on human skill use
7) Through student-teacher conferencing
8) Through program expectations (e.g., students learn to be on time because attendance is taken)
9) Through teacher evaluation (e.g., use of human skills is graded)
10) Through teacher feedback (e.g., written comments on assignments)

Q34 Please describe any other methods you use to develop human skills among your students:

_____

End of Block: Question Block 1

Appendix I
Survey of Davis Technical College OAC Members

OAC Human Skills Survey - Lamoreaux

Start of Block: IRB

Q10
You are invited to participate in a research study by Dr. Gary Straquadine, a professor in Applied Sciences, Technology & Education at Utah State University.

The purpose of this research is threefold. The first purpose will be to discover what human skills employers in Northern Utah and faculty at Davis Technical College perceive as most important for their employees to possess to 1) be hired for entry-level jobs, 2) be successful in those jobs, and 3) advance to higher-level jobs. The second purpose will be to discover what human skills the faculty at Davis Technical College believe are important to teach in their programs and to what degree they believe they are teaching those skills. The third purpose will be to draw comparisons about human skills perceptions in the following ways: 1) between entry-level and higher-level jobs, 2) among employers of various industries, and 3) between employer and faculty perceptions. You are being asked to participate in this research because of your affiliation with Davis Technical College.

Your participation in this study is voluntary, and you may withdraw your participation at any time for any reason. You are able to skip questions if you wish. Only responses that are submitted will be analyzed. In the case that you want to end your participation in the study, simply close the web browser prior to the final question. Since this survey is anonymous, once you complete and submit it, we will not be able to withdraw you from the study. If you take part in this study, you will be asked to complete one survey that will take approximately 10 minutes. There is no cost to you except your time. You may answer all, some, or none of the questions.

This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. The foreseeable risks include the potential for the loss of confidentiality. However, confidentiality will be kept to the extent permitted by the technology being used. Although every precaution will be taken to ensure confidentiality, the security of information collected from you online cannot be guaranteed. Information collected online can be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. In order to minimize those risks and discomforts, the researchers will securely store data collected in a restricted-access folder on Box.com. We cannot guarantee that you will directly benefit from this study, but it has been designed to learn more about what human skills should be taught in technical training programs in your geographical region.

We will make every effort to ensure that the information you provide remains confidential. We will not reveal your identity in any publications, presentations, or reports resulting from this research study.

We will collect your information via Qualtrics. Online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. This survey data will be securely stored in a restricted-access folder on Box.com.

You can decline to participate in any part of this study for any reason and can end your participation at any time. If you have any questions about this study, you can contact Dr. Gary Straquadine at gary.straquadine@usu.edu or Kari Lamoreaux @ kari.lamoreaux@usu.edu Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at (435) 797-0567 or irb@usu.edu.

By clicking "Next" below and continuing to the survey, you agree that you are 18 years of age or older, and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation, and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

End of Block: IRB

Start of Block: Introduction

Q8 Thank you for taking the time to complete this survey. Your support of Davis Technical College and its technical education programs is extremely valuable. Your responses will be used to develop a responsive curriculum for Davis Technical College students and to create a trained workforce for business and industry partners.

Human skills (also known as "soft skills") are a cluster of essential nontechnical skills and attributes that are uniquely human. Human skills include work habits, behaviors, attitudes, character traits, and competencies that are believed to be important to career success in today's workplace. These skills shape how employees work both on their own and with others. Human skills are broadly applicable and transferable to any workplace environment at any level of experience.

Do not click the back button/arrow on your internet browser, instead use the "Back" and "Next" buttons to navigate through the survey.

End of Block: Introduction

Start of Block: Exclusion

Exclusion Survey Are you a current Occupational Advisory Committee member for Davis Technical College?

- No
- Yes

Skip To: End of Survey If Are you a current Occupational Advisory Committee member for Davis Technical College? = No

End of Block: Exclusion

Start of Block: Industry Demographics

Q28 Select the Davis Technology College program you represent:

- Architectural and Engineering Design
- Business Administrative Services
- Cybersecurity
- Information Technology
- Software Development
- Web and Graphic Design
- Building Construction Technology
- Electrician Apprentice
- Heating and Air Conditioning
- Plumbing Apprentice
- Advanced Emergency Medical Technician
- Dental Assistant
- Emergency Medical Technician
- Firefighter
- Medical Assistant
- Medical Office Administration
- Nurse Assistant
- Pharmacy Technician
- Phlebotomy
- Practical Nurse
- Surgical Technology
- Automation and Robotics
- CNC Machining
- Composite Materials Technology
- Injection Molding
- Injection Molding
- Cosmetology
- Culinary Arts
- Esthetician
- Hair Designer
- Master Esthetician
- Nail Technician
- Automotive Technology
- Diesel/Heavy Duty Technology

End of Block: Industry Demographics

Start of Block: Question Block 1

Q1 Please rank the importance of each human skill or attribute within your industry for both entry-level employees and employees interested in advancing their career.

	Entry-Level Employee				Career Advancement			
	Not at all Important	Slightly Important	Very Important	Extremely Important	Not at all Important	Slightly Important	Very Important	Extremely Important
Adaptability	○	○	○	○	○	○	○	○
Attendance/Punctuality	○	○	○	○	○	○	○	○
Attitude	○	○	○	○	○	○	○	○
Behavior	○	○	○	○	○	○	○	○
Communication Technology (phones, video conferencing, email)	○	○	○	○	○	○	○	○
Consulting	○	○	○	○	○	○	○	○
Critical Thinking	○	○	○	○	○	○	○	○
Customer Service or patient care	○	○	○	○	○	○	○	○
Decision making	○	○	○	○	○	○	○	○
Independence	○	○	○	○	○	○	○	○
Initiative	○	○	○	○	○	○	○	○
Integrity	○	○	○	○	○	○	○	○
Job Interview Skills	○	○	○	○	○	○	○	○
Leadership	○	○	○	○	○	○	○	○
Motivation	○	○	○	○	○	○	○	○
Presenting	○	○	○	○	○	○	○	○
Problem Solving	○	○	○	○	○	○	○	○
Professional appearance	○	○	○	○	○	○	○	○
Professionalism	○	○	○	○	○	○	○	○
Respect	○	○	○	○	○	○	○	○
Responsibility	○	○	○	○	○	○	○	○

Self-confidence	○	○	○	○	○	○	○	○
Social Skills		○	○	○	○	○	○	○
Teamwork	○	○	○	○	○	○	○	○
Time Management	○	○	○	○	○	○	○	○
Verbal Communication	○	○	○	○	○	○	○	○
Willingness to learn and receive feedback	○	○	○	○	○	○	○	○
Work ethic	○	○	○	○	○	○	○	○
Written Communication	○	○	○	○	○	○	○	○

Q24 Use the textbox below to enter any additional human skills you believe were missing from the previous question:

_____

Page Break

Q29

Technical skills (also known as hard skills) are the knowledge and skills needed to perform a particular task or activity; technical skills are unique to a specific occupation often require specialized training and practice for proficiency.

Human skills (also known as “soft skills”) are a cluster of essential nontechnical skills and attributes that are uniquely human. They include work habits, behaviors, attitudes, character traits, and competencies that are believed to be important to success in today’s workplace.

Select the spot on the continuum that you believe best represents which is more important for **entry-level employees**: technical skills or human skills.

	1	2	3	4	5	6	7	8	9	
Technical Skills	○	○	○	○	○	○	○	○	○	Human Skills

Q30 Select the spot on the continuum that you believe best represents which is more important for **employment success and career advancement**: technical skills or human skills.

	1	2	3	4	5	6	7	8	9	
Technical Skills	○	○	○	○	○	○	○	○	○	Human Skills

End of Block: Question Block 1

Appendix J
IRB Approval

Institutional Review Board

Exemption #2
Certificate of Exemption

From: Melanie Domenech Rodriguez, IRB Chair

Nicole Vouvalis, IRB Director

To: ***Gary Straquadine***

Date: ***December 9, 2021***

Protocol #: ***12292***

Title: ***Responsive technical education curriculum: A quantitative case study approach toward understanding human skills alignment***

The Institutional Review Board has determined that the above-referenced study is exempt from review under federal guidelines 45 CFR Part 46.104(d) category #2:

> *Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met: (i) The information obtained is recorded in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subject; (ii) Any disclosure of the responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation, or (iii) the information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and the IRB conducts a limited IRB review to make required determinations.*

This exemption is valid for five years from the date of this correspondence, after which the study will be closed. If the research will extend beyond five years, it is your responsibility as the Principal Investigator to notify the IRB before the study's expiration date and submit a new application to continue the research. Research activities that continue beyond the expiration date without new certification of exempt status will be in violation of those federal guidelines which permit the exempt status.

If this project involves Non-USU personnel, they may not begin work on it (regardless of the approval status at USU) until a Reliance Agreement, External Research Agreement, or separate protocol review has been completed with the appropriate external entity. Many schools will not engage in a Reliance Agreement for Exempt protocols, so the research team must determine what the appropriate approval mechanism is for their Non-USU colleagues. As part of the IRB's quality assurance procedures, this research may be randomly selected for audit during the five-year period of exemption. If so, you will receive a request for completion of an Audit Report form during the month of the anniversary date of this certification.

In all cases, it is your responsibility to notify the IRB prior to making any changes to the study by submitting an Amendment request. This will document whether or not the study still meets the requirements for exempt status under federal regulations.

Upon receipt of this memo, you may begin your research. If you have questions, please call the IRB office at (435) 797-1821 or email to irb@usu.edu.

The IRB wishes you success with your research.

Appendix K
Respondent Percentage for each Likert Scale Option

Table 48

OAC Entry-Level Percentage of Respondents for each Likert Scale Option

Human skills	1 Not at all important	2 Slightly Important	3 Very Important	4 Extremely Important	*n*
Integrity	0%	0%	17%	83%	46
Work ethic	0%	0%	22%	78%	46
Willingness to learn and receive feedback	0%	2%	28%	70%	46
Attitude	0%	2%	30%	68%	47
Attendance/punctuality	0%	2%	34%	64%	47
Behavior	0%	4%	36%	60%	47
Respect	0%	4%	37%	59%	46
Teamwork	2%	4%	39%	54%	46
Responsibility	0%	4%	47%	49%	49
Customer service or patient care	2%	19%	30%	49%	47
Motivation	0%	4%	50%	46%	46
Verbal communication	0%	16%	42%	42%	45
Professionalism	0%	15%	48%	37%	46
Critical thinking	0%	21%	43%	36%	47
Adaptability	0%	9%	57%	34%	47
Initiative	2%	15%	50%	33%	46
Decision making	0%	26%	43%	30%	46
Time management	0%	11%	61%	28%	46
Problem solving	0%	22%	52%	26%	46
Professional appearance	7%	15%	52%	26%	46
Social skills	0%	22%	52%	26%	46
Self-confidence	2%	30%	52%	15%	46
Independence	4%	33%	50%	13%	46
Written Communication	7%	37%	46%	11%	46
Communication technology	2%	40%	49%	9%	47
Presenting	16%	57%	18%	8%	49
Job interview skills	2%	37%	54%	7%	46
Consulting	21%	45%	30%	4%	47
Leadership	9%	41%	50%	0%	46

Table 49

OAC Career Success Percentage of Respondents for each Likert Scale Option

Human skill	1 Not at all important	2 Slightly Important	3 Very Important	4 Extremely Important	*n*
Integrity	0%	0%	4%	96%	45
Work ethic	0%	0%	4%	96%	45
Responsibility	0%	0%	11%	89%	45
Attitude	0%	0%	15%	85%	46
Decision making	0%	0%	20%	80%	44
Motivation	0%	0%	20%	80%	45
Problem solving	0%	0%	20%	80%	45
Teamwork	0%	4%	18%	78%	45
Attendance/punctuality	0%	0%	24%	76%	46
Verbal communication	0%	2%	22%	76%	45
Behavior	0%	0%	26%	74%	46
Initiative	0%	0%	27%	73%	45
Willingness to learn and receive feedback	0%	2%	24%	73%	45
Professionalism	0%	4%	22%	73%	45
Time management	0%	4%	22%	73%	45
Critical thinking	0%	2%	26%	72%	46
Respect	0%	2%	27%	71%	45
Customer service or patient care	2%	7%	28%	63%	46
Leadership	0%	9%	29%	62%	45
Independence	2%	0%	40%	58%	45
Social skills	0%	4%	40%	56%	45
Adaptability	0%	0%	46%	54%	46
Self-confidence	0%	2%	44%	53%	45
Written Communication	0%	9%	42%	49%	45
Professional appearance	2%	16%	47%	36%	45
Communication technology	0%	17%	54%	28%	46
Job interview skills	2%	25%	48%	25%	48
Presenting	2%	29%	47%	22%	45
Consulting	4%	33%	46%	17%	46

Table 50

Faculty Entry-Level Percentage of Respondents for each Likert Scale Option

Human skill	1 Not at all important	2 Slightly Important	3 Very Important	4 Extremely Important	*n*
Responsibility	0%	3%	19%	78%	73
Work ethic	1%	0%	21%	78%	73
Integrity	1%	4%	21%	74%	73
Critical thinking	0%	1%	27%	71%	73
Attendance/punctuality	1%	1%	29%	68%	73
Behavior	0%	6%	26%	68%	72
Respect	0%	7%	25%	68%	73
Willingness to learn and receive feedback	1%	1%	30%	67%	73
Attitude	0%	4%	30%	66%	73
Problem solving	1%	3%	34%	62%	73
Time management	0%	3%	36%	62%	73
Motivation	0%	8%	36%	56%	73
Initiative	0%	7%	38%	55%	73
Decision making	0%	8%	38%	53%	73
Teamwork	0%	7%	40%	53%	73
Adaptability	0%	8%	42%	49%	73
Professionalism	0%	11%	40%	49%	73
Verbal communication	0%	7%	44%	49%	73
Customer service or patient care	3%	19%	30%	48%	73
Independence	0%	12%	44%	44%	73
Self-confidence	0%	14%	47%	40%	73
Social skills	3%	19%	42%	36%	73
Professional appearance	4%	30%	37%	29%	73
Written Communication	4%	19%	48%	29%	73
Communication technology	0%	23%	51%	26%	73
Consulting	5%	26%	47%	22%	73
Leadership	3%	37%	43%	17%	76
Job interview skills	4%	26%	53%	16%	73
Presenting	14%	41%	32%	14%	73

Appendix L
Email Messages sent to OAC Member

Dear Davis Technical College OAC Member:

If you have already completed this survey, please accept our thanks. We will be sharing the results at the next OAC meetings.

If you have not already done so, this will be the final reminder to please support Kari Lamoreaux, a USU doctoral candidate, and her advisor, Dr. Gary Straquadine on their important research of human skills (also known as soft skills) in technical training related to your industry.

Because this research only uses data from Davis Tech faculty and OAC members, your participation is essential to ensure enough data is collected from each training program. This research has significant implications for developing a responsive technical education curriculum to prepare students with the skills needed for success in their chosen career field.

Please complete the short survey. It does not collect any identifiable information and is anonymous. The survey will take less than 10 minutes to complete.

The hyperlink to begin the survey is found here: Human Skills Davis Tech OAC Survey

IRB Protocol #11981
Kari Lamoreaux M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, Ph.D.
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

DAVISTECH
DAVIS TECHNICAL COLLEGE

Jenna Snyder
Accreditation Coordinator
Davis Technical College
550 E 300 S Kaysville, UT 84037
Office 801-593-2587
Cell 801-750-6586
Jenna.snyder@davistech.edu

Dear Davis Technical College OAC Member,

The workplace continues to evolve at a rapid pace. Employees need to have a broad range of abilities beyond technical skills. Training beyond technical skills has caused employers and educators alike to question what abilities are needed for success in the 21st-century workplace.

Kari Lamoreaux (Phillips) and her advisor Dr. Gary Straquadine are conducting research to answer the question of which human skills (also known as soft skills) are essential to employee success. As a valued member of Davis Technical College's occupational advisory committee (OAC) and as experts in your industry, we ask that you provide us with your perspective on human skills and how they relate to the training program you help advise at Davis Technical College.

Attached is a short survey asking you to rank the importance of specific human skills for entry-level employees and for career success after completing a Davis Technical College training program. The survey does not collect any identifiable information and is anonymous and should take approximately 10 minutes to complete.

Here is the hyperlink to begin the survey: Human Skill Survey

IRB Protocol #12292

Kari Lamoreaux, M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, PhD
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

DAVISTECH
DAVIS TECHNICAL COLLEGE

Jenna Snyder
Accreditation Coordinator
Davis Technical College
550 E 300 S Kaysville, UT 84037
Office 801-593-2587
Cell 801-750-6586
Jenna.snyder@davistech.edu

Dear Davis Technical College OAC Member:

If you have not already done so, please support Kari Lamoreaux, a USU doctoral candidate, and her advisor, Dr. Gary Straquadine on their important research of human skills (also known as soft skills) in technical training related to your industry.

Because this research only collects data from Davis Tech faculty and OAC members, your participation is essential to ensure enough data is collected to support statistical analysis. This research has significant implications for developing a responsive technical education curriculum to prepare students with the skills needed for success in their chosen career field.

Please complete the short survey. It does not collect any identifiable information and is anonymous. The survey will take approximately 10 minutes to complete.

The hyperlink to begin the survey is found here: Human Skills Davis Tech OAC Survey

IRB Protocol #11981
Kari Lamoreaux M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, Ph.D.
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

DAVISTECH
DAVIS TECHNICAL COLLEGE

Jenna Snyder
Accreditation Coordinator
Davis Technical College
550 E 300 S Kaysville, UT 84037
Office 801-593-2587
Cell 801-750-6586
Jenna.snyder@davistech.edu

Appendix M
Email Messages sent to Faculty

Good afternoon everyone,

Please take a minute to take a survey that Kari Lamoreaux is working on as part of her research and Doctorate. Many of you may remember and know Kari when she worked here at Davis Tech and brought many talents, knowledge, skills and success. Her research will help us as we navigate our need for teaching soft skills in our programs.

Dear Davis Technical College Faculty,

The workplace continues to evolve at a rapid pace. Employees need to have a broad range of abilities beyond technical skills. Training beyond technical skills has caused employers and educators alike to question what abilities are needed for success in the 21st-century workplace.

Kari Lamoreaux (Phillips) and her advisor Dr. Gary Straquadine are conducting research to answer the question of which human skills (also known as soft skills) are essential to employee success. As a valued member of Davis Technical College's faculty and as experts in your industry, we ask that you provide us with your perspective on human skills and how they relate to your training program at Davis Technical College.

Attached is a short survey asking you to rank the importance of specific human skills for entry-level employees and for their career success after completing your training program. The survey does not collect any identifiable information and is anonymous. The survey will take approximately 10 minutes to complete.

Here is the hyperlink to begin the survey: Human Skill Survey

IRB Protocol #12292
fin
Kari Lamoreaux, M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, PhD
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

Thank you so much for your help with this research,

Leslie
Leslie Mock, MSN-Ed, RN
Vice President and Chief Academic Officer
Davis Technical College
Office: 801.593.2334 | Cell: 801.529.6372
leslie.mock@davistech.edu | https://www.davistech.edu

Dear Davis Technical College Faculty Member:

If you have not already done so, please support Kari Lamoreaux (Phillips), a USU doctoral candidate, and her advisor, Dr. Gary Straquadine on their important research of the human skills (also known as soft skills) related to your technical education training program.

Because this research only collects data from Davis Tech faculty and OAC members, your participation is essential to ensure enough data is collected to support statistical analysis. This research has significant implications for developing a responsive technical education curriculum to prepare students with the skills needed for success in their chosen career field.

Please complete the short survey; it does not collect any identifiable information and is anonymous. The survey will take approximately 10 minutes to complete.

The hyperlink to begin the survey is found here: Davis Tech Faculty Human Skills Survey

IRB Protocol #11981

Kari Lamoreaux, M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, Ph.D.
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

Leslie

Leslie Mock, MSN-Ed, RN
Vice President and Chief Academic Officer
Davis Technical College
Office: 801.593.2334 | Cell: 801.529.6372
leslie.mock@davistech.edu | https://www.davistech.edu

Dear Davis Technical College Faculty Member:

If you have already taken the survey, please accept our thanks!

If you have not already done so, this will be the final reminder to please support Kari Lamoreaux (Phillips), a USU doctoral candidate, and her advisor, Dr. Gary Straquadine on their important research of the human skills (also known as soft skills) related to your technical education training program.

Because this research only collects data from Davis Tech faculty and OAC members, your participation is essential to ensure data is collected for your program. This research has significant implications for developing a responsive technical education curriculum to prepare students with the skills needed for success in their chosen career field.

Please complete the short survey; it does not collect any identifiable information and is anonymous. The survey will take less than 10 minutes to complete.

The hyperlink to begin the survey is found here: Davis Tech Faculty Human Skills Survey

IRB Protocol #11981

Kari Lamoreaux, M.Ed.
Lecturer
Aviation and Technical Education
Utah State University

Gary Straquadine, Ph.D.
Applied Sciences, Technology, and Education Department
Utah State University
435-613-5294

Leslie

Leslie Mock, MSN-Ed, RN
Vice President and Chief Academic Officer
Davis Technical College
Office: 801.593.2334 | Cell: 801.529.6372
leslie.mock@davistech.edu | https://www.davistech.edu

Appendix N
Results of Open-Ended Survey Question

OAC responses	
Business technology	• Dependable, Honest
Health professions	• Trustworthy, Honest - Perhaps these are considered to be characteristics of 'Integrity'. • work ethic and customer service/social skills are most important • Confidence in the skills learned is extremely important. That helps patients feel comfortable. • Approachable
Manufacturing	• Personal values (those mentioned above i.e. integrity, respect, etc.) that are foundationally independent of a "companies values." They can be one in the same but only because they agree with ones personal convictions...doing the right thing for the right reason because it personally is right. • Calm demeanor under pressure.
Service Professions	• The single most important factors are attitude and work ethics!
Transportation	• Reading and comprehending technical data. Also, reading in general. Thank you for taking the time to create this survey and passing it on to the students. It is critical that young people understand how important these skills are.
Faculty responses	
Business and technology	• Research Skills (Ability to effectively search the internet) • Tenacity and perseverance • De-escalation Techniques • Intuitive, ethical
Electrician Apprentice	• Suspension of ego
Health professions	• Dependable • Empathy
Manufacturing	• Customer interview skills. In sales we called this Qualifying the Customer. Many times an operator only tells you that it is "broken" and being able to ask qualifying questions to get to the root of the issue will make you a better Tech. • Make goals and review with team weekly and boss monthly. Not just a yearly, forgotten goal.
Transportation	• Learning from mistakes

Appendix O
Correlation Tables

Table 51

Intercorrelations for Entry-Level Importance as Perceived by OAC

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Adaptable	–													
2. Attendance and Punctuality	.28*	–												
3. Attitude	.46**	.08	–											
4. Behavior	.29*	.36**	.55**	–										
5. Communication Technology	.21	.07	.09	.25*	–									
6. Consulting	.34**	.25	.18	.10	.63**	–								
7. Critical Thinking	.38**	.02	.23	.03	.32**	.40**	–							
8. Customer Service	.25	.17	.19	.27*	.16	.11	.37**	–						
9. Decision Making	.28*	.26*	.27*	.20	.25*	.20	.50**	.26*	–					
10. Independence	.19	.12	0	.03	.15	.11	.14	-.18	.49**	–				
11. Initiative	.44**	.16	.32**	.16	.07	.22	.45**	.05	.51**	.57**	–			
12. Integrity	.27*	.20	.60**	.35**	.34**	.23	.32**	.07	.33**	.15	.42**	–		
13. Job Interview Skills	.27*	.24	.05	.11	.26*	.24	-.04	.04	.31**	.22	.22	.20	–	
14. Leadership	.33**	.23	.35**	.26*	.26*	.30**	.16	-.03	.46**	.51**	.43**	.39**	.42**	–
15. Motivation	.64**	.19	.47**	.16	.01	.38**	.38**	.02	.21	.26*	.64**	.34**	.17	.30**
16. Presenting	.24	.20	.13	.30**	.49**	.26*	.16	.13	.21	.21	.25	.30**	.31**	.44**
17. Problem Solving	.46**	.05	.16	.05	.22	.30**	.58**	.21	.67**	.50**	.55**	.20	.19	.30**
18. Professional appearance	.24	.23	.29*	.26*	.30**	.40**	.08	.39**	.21	-.08	.15	.20	.28*	.27*
19. Professionalism	.31**	.30**	.33**	.41**	.32**	.29*	.24	.59**	.40**	-.01	.20	.32**	.33**	.33**
20. Respect	.55**	.43**	.69**	.60**	.20	.29*	.24	.13	.30**	.14	.43**	.55**	.23	.38**
21. Responsibility	.33**	.27*	.17	.32**	.07	.17	.16	.16	.35**	.46**	.50**	.19	.17	.34**
22. Self-confidence	.47**	.49**	.18	.43**	-.06	.17	.09	.19	.26*	.40**	.40**	.11	.28*	.42**
23. Social Skills	.46**	.32**	.51**	.41**	.25	.30**	.16	.20	.30**	.12	.34**	.39**	.36**	.44**
24. Team Work	.51**	.27*	.38**	.24	.28*	.35**	.10	.22	.26*	.29*	.43**	.32**	.28*	.41**
25. Time Management	.32**	.36**	.33**	.23	.11	.21	.10	-.08	.22	.35**	.49**	.23	.16	.32**
26. Verbal Communication	.49**	.46**	.30**	.40**	.35**	.47**	.18	.11	.39**	.22	.43**	.42**	.45**	.24
27. Willingness to learn and receive feedback	.53**	.24	.50**	.17	.21	.28*	.12	.09	.15	.12	.37**	.38**	.11	.29*
28. Work Ethic	.38**	.30**	.59**	.24	.18	.30**	.24	.03	.31**	.24	.41**	.59**	.04	.35**
29. Written Communication	.23	.12	.24	.22	.41**	.52**	.28*	<.01	.18	.25*	.26*	.30**	.32**	.23

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
15. Motivation	–														
16. Presenting	.10	–													
17. Problem Solving	.45**	.23	–												
18. Professional appearance	.25*	.28*	.16	–											
19. Professionalism	.27*	.30**	.21	.63**	–										
20. Respect	.56**	.36**	.32**	.44**	.52**	–									
21. Responsibility	.38**	.26*	.38**	.16	.39**	.38**	–								
22. Self-confidence	.37**	.26*	.24	.14	.18	.43**	.39**	–							
23. Social Skills	.38**	.23	.13	.48**	.49**	.47**	.09	.35**	–						
24. Team Work	.40**	.31**	.28*	.53**	.43**	.58**	.43**	.33**	.51**	–					
25. Time Management	.48**	.29*	.14	.10	.17	.48**	.38**	.34**	.24	.39**	–				
26. Verbal Communication	.48**	.38**	.33**	.46**	.46**	.56**	.38**	.37**	.56**	.47**	.35**	–			
27. Willingness to learn and receive feedback	.47**	.13	.16	.40**	.21	.55**	.25	.30**	.38**	.69**	.40**	.42**	–		
28. Work Ethic	.48**	.29*	.26*	.24	.40**	.70**	.45**	.22	.37**	.52**	.51**	.43**	0.59**	–	
29. Written Communication	.36**	.22	.24	.44**	.20	.37**	.21	.19	.30**	.33**	.38**	.59**	0.30**	.29*	–

Note: Pearson's *r* is .1 = small, .3 = medium, .5 = large. Highlighted cells have a large, significant intercorrelation.
*p < .10, **p < .05

Table 52

Intercorrelations for Career Success Importance as Perceived by OAC

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Adaptable	–													
2. Attendance and Punctuality	.42**	–												
3. Attitude	-.04	-.04	–											
4. Behavior	.32**	.27*	.62**	–										
5. Communication Technology	.49**	.33**	.06	.25	–									
6. Consulting	.08	.17	.08	.10	.43**	–								
7. Critical Thinking	.24	0	.09	.21	.23	.13	–							
8. Customer Service	-.10	.20	.16	.13	.25	.33**	.08	–						
9. Decision Making	.10	.23	<-.01	.23	.09	.21	.29*	.13	–					
10. Independence	.29*	.25*	.08	.34**	.28*	.21	.04	.07	.36**	–				
11. Initiative	.26*	.24	-.06	.12	.18	-.18	.08	-.05	.20	.29*	–			
12. Integrity	.24	.38**	-.08	-.13	.36**	-.06	-.12	.16	-.11	.02	.36**	–		
13. Job Interview Skills	.35**	.30*	.16	.30*	.55**	.20	.14	.12	.25*	.19	.29**	.26*	–	
14. Leadership	.03	.19	.33**	.36**	.39**	.26*	-.01	.30**	.38**	.50**	.23	.02	.38**	–
15. Motivation	.33**	.23	.17	.23	.09	-.22	.18	.06	.16	.36**	.58**	.16	.25*	.19
16. Presenting	.40**	.32**	.13	.12	.46**	.25*	-.02	.27*	.14	.32**	.11	.25	.40**	.47**
17. Problem Solving	.28*	.27*	.02	.14	.25	.46**	.34**	.18	.35**	.23	.24	.18	.12	.05
18. Professional appearance	.31**	.33**	.26*	.46**	.44**	.25	.24	.51**	.03	<.01	.13	.19	.53**	.29*
19. Professionalism	-.11	.14	.18	.14	.40**	.20	.02	.59**	-.09	-.02	.02	.27*	.43**	.20
20. Respect	.32**	.26*	.20	.56**	.30**	-.07	.20	.14	.02	-.03	.32**	.29*	.41**	-.08
21. Responsibility	.11	.12	-0.13	.29*	.17	.08	-.05	-.14	-<.01	.20	.26*	-.08	.07	-.13
22. Self-confidence	.37**	.46**	.21	.36**	.39**	.01	-.06	.17	.07	.37**	.31**	.21	.16	.33**
23. Social Skills	.25	.10	.10	.19	.51**	.08	.22	.26*	-<.01	.20	.24	.22	.53**	.30*
24. Team Work	.22	0	-.05	.29*	.40**	.12	.15	.25	.06	.17	.26*	.09	.34**	.26*
25. Time Management	.38**	.24	.18	.24	.22	-.01	.18	.25	.32**	.24	.48**	.27*	.17	.13
26. Verbal Communication	.33**	.21	.09	.21	.50**	.07	.07	.08	.06	.04	.28*	.32**	.37**	.06
27. Willingness to learn and receive feedback	.51**	.32**	-.05	.53**	.50**	.02	.25*	-.05	.18	.19	.18	.10	.37**	.14
28. Work Ethic	.02	.13	-.08	.13	.04	-.06	.10	-.14	.16	.02	.11	-.05	.13	-.15
29. Written Communication	.22	.12	-.11	-.04	.41**	.22	.06	-.02	.15	.24	.31**	.31**	.47**	.16

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
15. Motivation	–														
16. Presenting	.22	–													
17. Problem Solving	.05	.08	–												
18. Professional appearance	.11	.37**	.25	–											
19. Professionalism	-.09	.13	.05	.49**	–										
20. Respect	.24	-.03	.17	.59**	.36**	–									
21. Responsibility	-<.01	-.05	.02	.07	.05	.34**	–								
22. Self-confidence	.38**	.20	.02	.24	.02	.19	.08	–							
23. Social Skills	.10	.31**	.26*	.56**	.43**	.38**	.10	.04	–						
24. Team Work	.06	.04	.09	.44**	.32**	.51**	.09	.10	.51**	–					
25. Time Management	.52**	.23	.47**	.44**	.04	.44**	.05	.33**	.28*	.17	–				
26. Verbal Communication	.18	.22	.22	.30*	.18	.29*	.24	.19	.39**	.15	.26*	–			
27. Willingness to learn and receive feedback	.18	.16	.10	.42**	.02	.56**	.24	.19	.22	.49**	.18	.44**	–		
28. Work Ethic	.16	-.03	.18	.05	.07	.08	.27*	-.19	.22	-.11	.07	.32**	.32**	–	
29. Written Communication	.23	32**	.48**	.23	.05	.19	.23	.04	.46**	.19	.36**	.49**	.28*	.31**	–

Note: Pearson's *r* is .1 = small, .3 = medium, .5 = large. Highlighted cells have a large, significant intercorrelation.
*p < .10, **p < .05

Table 53

Intercorrelations for Entry-Level Importance as Perceived by Faculty

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Adaptable	–													
2. Attendance and Punctuality	.11	–												
3. Attitude	.32**	.52**	–											
4. Behavior	.12	.62**	.75**	–										
5. Communication Technology	.28**	.16	.34**	.29**	–									
6. Consulting	.28**	-.06	.21*	.23*	.15	–								
7. Critical Thinking	.26**	.22*	.46**	.49**	.15	.20*	–							
8. Customer Service	.30**	.09	.27**	.20*	.38**	.44**	.13	–						
9. Decision Making	.45**	.26**	.47**	.34**	.03	.18	.56**	.23*	–					
10. Independence	.24**	.18	.28**	.26**	-.05	.28**	.53**	.16	.46**	–				
11. Initiative	.15	.37**	.52**	.50**	.22*	.06	.29**	.18	.34**	.32**	–			
12. Integrity	.38**	.51**	.79**	.68**	.31**	.22*	.51**	.38**	.42**	.25**	.45**	–		
13. Job Interview Skills	.20*	.15	.38**	.43**	.40**	.45**	.33**	.37**	.19	.19	.26**	.36**	–	
14. Leadership	.13	.38**	.45**	.46**	.24**	.39**	.25**	.34**	.31**	.41**	.45**	.23*	.46**	–
15. Motivation	.22*	.32**	.54**	.48**	.25**	.30**	.45**	.24**	.37**	.37**	.55**	.58**	.34**	.44**
16. Presenting	.30**	.32**	.29**	.25**	.51**	.45**	.05	.40**	.14	.17	.35**	.22*	.43**	.52**
17. Problem Solving	.42**	.26**	.37**	.32**	.15	<.01	.65**	.11	.60	.36**	.36**	.49**	.21*	.15
18. Professional appearance	.22*	.40**	.47**	.50**	.28**	.52**	.23*	.65**	.28**	.26**	.29**	.45**	.55**	.54**
19. Professionalism	.30**	.42**	.64**	.65**	.41**	.30**	.43**	.61**	.39**	.36**	.44**	.60**	.49**	.50**
20. Respect	.20*	.42**	.70**	.71**	.41**	.21*	.46**	.41**	.35**	.20*	.49**	.68**	.47**	.47**
21. Responsibility	.24**	.27**	.51**	.44**	.18	.11	.63**	.24**	.54**	.36**	.53**	.63**	.19	.24**
22. Self-confidence	.22*	.24**	.33**	.28**	.04	.34**	.48**	.20*	.48**	.53**	.25**	.34**	.22*	.25**
23. Social Skills	.31**	.29**	.58**	.56**	.46**	.52**	.33**	.58**	.33**	.26**	.31**	.54**	.61**	.60**
24. Team Work	.24**	.51**	.58**	.52**	.22*	.17	.32**	.47**	.46**	.27**	.45**	.48**	.41**	.53**
25. Time Management	.22*	.36**	.44**	.34**	-.08	.14	.54**	.09	.58**	.39**	.43**	.49**	.14	.18
26. Verbal Communication	.33**	.38**	.57**	.51**	.26**	.26**	.50**	.34**	.39**	.34**	.52**	.54**	.48**	.48**
27. Willingness to learn and receive feedback	.48**	.35**	.47**	.37**	.16	.20*	.61**	.34**	.62**	.36**	.37**	.66**	.21*	.17
28. Work Ethic	.23*	.53**	.53**	.60**	.17	.17	.59**	.23*	.42**	.34**	.42**	.69**	.18	.19
29. Written Communication	.34**	.10	.35**	.33**	.34**	.54**	.37**	.40**	.26**	.34**	.21*	.34**	.44**	.34**

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
15. Motivation	–														
16. Presenting	.29**	–													
17. Problem Solving	.42**	.06	–												
18. Professional appearance	.51**	.47**	.13	–											
19. Professionalism	.52**	.37**	.37**	.70**	–										
20. Respect	.51**	.37**	.44**	.53**	.76**	–									
21. Responsibility	.56**	.10	.65**	.27**	.50**	.55**	–								
22. Self-confidence	.37**	.19	.37**	.32**	.38**	.21*	.48**	–							
23. Social Skills	.48**	.49**	.23**	.65**	.66**	.62**	.31**	.42**	–						
24. Team Work	.40**	.38**	.38**	.55**	.62**	.63**	.38**	.42**	.61**	–					
25. Time Management	.50**	.08	.50**	.15	.29**	.30**	.64**	.48**	.20*	.46**	–				
26. Verbal Communication	.33**	.38**	.36**	.39**	.57**	.57**	.43**	.33**	.55**	.54**	.39**	–			
27. Willingness to learn and receive feedback	.50**	.13	.68**	.31**	.42**	.46**	.70**	.41**	.41**	.39**	.57**	.49**	–		
28. Work Ethic	.57**	.13	.53**	.32**	.51**	.52**	.62**	.46**	.33**	.49**	.61**	.50**	.57**	–	
29. Written Communication	.36**	.41**	.18	.44**	.50**	.35**	.29**	.49**	.57**	.29**	.17	.46**	.31**	.31**	–

Note: Pearson's *r* is .1 = small, .3 = medium, .5 = large. Highlighted cells have a large, significant intercorrelation.

*p < .10, **p < .05

Appendix P
Example of Human Skills Assessment

This assessment is an example that is currently being used in one of Davis Technical Colleges' manufacturing programs. Students are asked to complete the assessment on their own, then review it with an instructor at the end of each course in the program.

Work Ethics Assessment					
Criteria	Skill Level			Evaluation	
	Exceeds	Meets	Needs Improvement	Student	Instructor
	4	3	2		
Attendance Class attendance and being punctual (demonstrating self-management)	Attends 100% of class and arrives/leaves on time; notifies instructor prior to absence due to extraordinary circumstances	Rarely misses class and rarely arrives late/leaves early(attendance is above 90%); notifies instructor prior to abscesses	Frequently misses class (attendance is below 85%); does not notify instructor prior to absence		
Time Management Ability to meet deadlines and submit work on time	Completes course on time; and always demonstrates self-responsibility	Needs a final module extension to complete the course, regularly demonstrates responsibility with little direction from faculty	Frequently arrives late/leaves early; needs to retake the course, does not demonstrate responsibility		
Professionalism Behavior, attitude, personal presentation/appearance	Always demonstrates a positive attitude, self-control, good personal presentation, and appropriate language use; embraces new ideas, skills, and assignments.	Always demonstrates a positive attitude, self-control, good personal presentation, and appropriate language use; embraces new ideas, skills, and assignments.	Resists new ideas, skills, and assignments; seldom exhibits a positive attitude; frequently uses inappropriate language		
Communication Listening; oral & written; making sure message is received; prioritizing urgent communication	Always uses clear, organized language; effectively exchanges ideas and information (i.e. ensures that the message is received AND understood)	Regularly uses clear, organized language; regularly effective in exchanging ideas and information (i.e., ensure that the message is received AND understood);	Seldom uses clear, organized language; seldom effective in exchanging ideas and information (i.e. ensure that the message is received AND understood);		
Productivity & Quality Strong work ethic; preparedness; quality of work; safety procedures & rules	Always comes to class prepared & gives best effort; produces quality work; maximizes class time; always follows safety procedures and rules	Regularly gives best effort & produces above-average work; almost always prepared; regularly uses classtime effectively. Regularly follows safety procedures andrules.	Frequently unprepared for class; demonstrates minimal effort; work is below average or incomplete; poor use of class time; seldom follows safety procedures and rules.		
Problem Solving & Troubleshooting Critical thinking used to solve problems independently	Consistently solves problems and troubleshoots issues independently in an organized manner; offers assistance to peers	Needs some help from instructor or peers to solve problems and troubleshoot issues; occasionally collaborates with other students	Unable to solve problems or troubleshoot issues without continual assistance from instructors or peers		

Curriculum Vita

KARI LAMOREAUX

1575 Driftwood Lane, Kaysville, Utah 84037 • kari.lamoreaux@usu.edu

EDUCATION

Career and Technical Education Doctorate of Philosophy (Ph.D.) Spring 2022

Utah State University, Logan, Utah, USA
Applied Sciences, Technology, and Education
Research Area: Human Skills in Technical College Training
Class Project: Collaborated with The Thesis and Dissertation Reviewer from the School of Graduate Studies to update the *USU Publication Guide* and create tutorial videos

Master of Education 2009

Weber State University, Ogden, Utah, USA
Area of Emphasis: Curriculum and Instruction
Thesis: Phillips, K.L. (2009) *How to Measure Success at Davis Applied Technology College*. Weber State University, Ogden, Utah.

Bachelor of Science in Business Education 2009

Weber State University, Ogden, Utah, USA

Bachelor of General Studies: Management 2003

Brigham Young University, Provo, Utah, USA

PROFESSIONAL EXPERIENCE - EDUCATION

UTAH STATE UNIVERSITY, *Logan, Utah*

Full-time lecturer **August 2020 – Present**
Graduate student teacher **5 semesters**

Develop curriculum, including selecting textbooks, creating learning activities, and creating both formative and summative assessments to be delivered through Canvas in an online method for a variety of credit courses

THE UTAH SYSTEM OF TECHNICAL COLLEGES **1997 – 2020**

Instructor for Custom Fit and Continuing Education **August 1996 - Present**
Davis, Ogden-Weber, and Bridgerland Technical Colleges

Develop and teach custom training on an as-needed basis for corporate customers, including AutoLiv, HAFB, Lifetime, Sceptre, Janicki, UTA, Grant Victor, and others.

Training Division Project Manager **May 2018 – July 2020**
Davis Technical College

- Served as a member of college accreditation steering committee, co-chair of self-study committee, and chair of Standard 2: Educational Programs committee for six-year Council on Occupational Education (COE) reaffirmation visit resulting in no findings and two commendations

- Completed the first Perkins V institutional needs assessment by collaborating with multiple departments throughout the college and facilitating six focus groups
- Held annual program modification meetings with 36 technical programs in order to guide
- Facilitated the creation of 35+ articulation agreements with academic partners, including Weber State University, Salt Lake Community College, Utah Valley University, Utah State University, LDS Business College, and Western Governors University, to increase opportunities for technical college students to receive credit for technical training toward academic degrees
- Developed process for accurately calculating and communicating the cost of each program for high schools students
- Collaborated with faculty to evaluate program admission requirements to ensure alignment with program content and worked jointly with the assessment center coordinator to remove barriers created by excessive admissions testing. Results were to reduce admissions requirements in over 75 percent of programs and increase enrollment by
- Manage eight Strategic Workforce Initiative Grants to ensure compliance and accurate reporting
- Manage over 100 contracts establishing clinical sites and work-based learning opportunities for 36 technical programs
- Support accreditation specialist in gathering data and performing the annual audit of the institution's compliance with COE's regulatory standards
- Provide technical editing for institutional documents, including college website, marketing materials, and policies and procedures

Instructional Systems Design Coordinator **Dec 2015 – May 2018**
Davis Technical College

- Managed a team of full-time employees who were responsible for collaborating with instructors to create and manage curriculum, including learning activities, assessments, and delivery
- Developed curriculum quality checklist to ensure high-quality, engaging, and responsive curriculum across all programs
- Provided administrative support and training for Canvas (a learning management system)
- Developed institutional style guide to promote accuracy and consistency
- Coordinated ongoing maintenance and modifications for 36 separate technical programs, including conducting annual evaluations for each program to ensure alignment of program objectives with current industry needs
- Managed ISD budgetary planning, purchasing, and reporting
- Analyzed program and institutional data to guide changes to training programs, courses, classroom management, and curriculum
- Oversaw Occupational Advisory Committees (OAC) by collaborating with curriculum and instructional management specialists to plan, host, and document OAC semi-annual meetings for regulatory compliance and program modifications
- Developed professional business documents and provided technical editing for other college departments
- Organized Davis Tech's first professional development conference with two breakout sessions, four courses, and over 100 attendees, and provided ongoing support for quarterly conferences

Full-Time Faculty, Business Administrative Services program **Apr 2003 – Dec 2015**
Davis Technical College

- Taught as many as 38 different open-entry, competency-based courses simultaneously for a diverse population of students, including high school, adult, and special needs.
- Developed curriculum, including selecting textbooks, creating learning activities, and developing both formative ad summative assessments to be delivered on Canvas in a hybrid method
- Managed a classroom of up to 50 students and worked one-on-one with students as needed
- Collaborated with team other full- and part-time faculty to provide a successful technical training program
- Participated in semi-annual Occupational Advisory Committee meetings with a goal of continually improving the business program and providing responsive training that aligned with current workforce needs
- Tracked program completers and placements, ensuring the program exceeded 60 percent completers and 70 percent placements as required by the Council of Occupational Education

WEBER STATE UNIVERSITY, *Ogden, Utah* **2014 – 2017**
Adjunct instructor

- Worked collaboratively with a team of four other faculty to ensure consistency in content and quality. Created Canvas course to be used with both face-to-face and online courses.

THE CENTER FOR YOUNG ADULTS, *Salt Lake City, Utah* **1994-1996**

- Instructed students in basic computer skills, developed individual teaching methodologies, wrote curriculum, prepared lesson plans, and completed performance evaluations in a pilot program designed to teach basic business and professional skills to disabled adults.

PROFESSIONAL EXPERIENCE - ADMINISTRATIVE SUPPORT

SOS STAFFING SERVICES, *West Valley City, Utah* 1995

- Office manager

BELLWETHER COMPANIES, INC., *Midvale, Utah* 1994-1995

- Network manager/administrative assistant

ALLEN COMMUNICATION, *Salt Lake City, Utah* 1989-1981

- Quality control manager for Commercial Software Department
- Administrative assistant for Training Division

MATRIXX MARKETING, *Ogden and Salt Lake City, Utah* 1988-1989, 1991 -1994

- Corporate Finance Department programmer / analyst
- Administrative assistant to VP of Marketing

TECHNICAL EDITING EXPERIENCE

TEXTBOOK REVIEWER
Write for Work, UP write Press, 2011

JOHN WILEY & SONS, INC.

- Technical Editor: Microsoft Official Academic Course, Word 2013 January 2013
- Technical Editor: Microsoft Official Academic Course, Outlook 2013 June 2013

TEACHING EXPERIENCE

Developed curriculum for each course, including learning activities and assessment.

BUSN 1021 PERSONAL FINANCE COMMUNICATION (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY: 30 UNDERGRADUATE STUDENTS/SEMESTER 4 SEMESTERS
This course is designed for all students, introducing them to personal financial planning throughout all stages of life. Emphasis is placed on planning for, acquiring, protecting and investing wealth to meet personal financial objectives.

BUSN 2200 BUSINESS COMMUNICATION (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY: 30 UNDERGRADUATE STUDENTS/SEMESTER 3 SEMESTERS
This course is designed to give students the knowledge and opportunity to write clear, concise, and correct business correspondence. The course focuses on the most common forms of business writing: sales letters, memos, proposals, research reports and resumes.

BUSN 1091 BUSINESS PRESENTATIONS (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY: 25 UNDERGRADUATE STUDENTS/SEMESTER 2 SEMESTERS
Designed to help students develop skills in the art of expressing themselves by visually presenting business topics or proposals to individuals or groups. A variety of business presentations are given using microcomputer presentation software.

TESY 3020 TECHNICAL ENTERPRISES (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY: TEAM TEACH 70 UNDERGRADUATE STUDENTS/SEMESTER 1 SEMESTER
This course is designed to teach soft skills referenced by the industry as being key for student success, including leadership, teamwork, communication, problem-solving, project planning, presentation, and professionalism. Students use these skills to solve problems and participate in national competitions.

CETT 5220 PROGRAM AND COURSE DEVELOPMENT (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY, CAREER AND TECHNICAL TEACHER ACADEMY: 15 UNDERGRADUATE AND GRADUATE STUDENTS/SEMESTER
Review of basic principles and practices of curriculum and course development used in applied technology and technology education. Emphasizes components needed to develop a curriculum guide.

TESY 5910 CLASSROOM MANAGEMENT (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY, CAREER AND TECHNICAL TEACHER ACADEMY: 15 UNDERGRADUATE AND GRADUATE STUDENTS/SEMESTER
This class presents students with a multiple-strategy approach for increasing teachers' effectiveness and satisfaction in classroom management and discipline with a focus on competency-based education.

ASTE 3050 TECHNICAL AND PROFESSIONAL COMMUNICATION (ONLINE) 3 CREDITS
UTAH STATE UNIVERSITY: 25 UNDERGRADUATE STUDENTS/SEMESTER 5 SEMESTERS
Technical communication principles and practices used in the workplace. Emphasizes technical writing of reports and correspondence using electronic information retrieval and presentation.

NTM 3250 BUSINESS COMMUNICATION (FACE-TO-FACE AND ONLINE) 3 CREDITS
WEBER STATE UNIVERSITY, 30 STUDENTS/SEMESTER 10 SEMESTERS
Application of oral and written communication, including diversity and international aspects of communication.

BUSINESS ADMINISTRATIVE SERVICES PROGRAM, DAVIS TECHNICAL COLLEGE 13 YEARS
Responsible for writing and updating curriculum and teaching the following courses in an open-enrollment, competency-based classroom. Instructed six hours a day, five days a week, year-round.

BUSINESS ENGLISH 90 HOURS
Content focuses on the essentials of business English, including writing, sentence structure, grammar, punctuation, and proofreading real-world business documents.

BUSINESS CORRESPONDENCE 90 HOURS
Content reinforces essential English skills while developing and applying effective written business communication skills. Students practice correct sentence and paragraph structure, word usage, grammar and punctuation, and style while producing clear and concise business documents in a deliverable format.

TECHNICAL COMMUNICATION 90 HOURS
Content focuses on technical communication, ethical and legal considerations, the writing process, and writing collaboratively. Students explore how to plan a document, develop the textual and visual elements, and edit a final draft using technical communication applications.

BUSINESS COMMUNICATIONS 90 HOURS
Course content facilitates the development and application of skills necessary to communicate effectively and comprehensively covers workplace communication skills, including writing, speaking, and listening in both formal and informal settings.

BUSINESS CALCULATIONS 30 HOURS
Content focuses on performing basic business math calculations using the touch method on the 10-key calculator and a spreadsheet application, including addition, subtraction, multiplication, division, percentages, fractions, and combining operations.

CUSTOMER SERVICE **60 HOURS**
Content focuses on skills and attitudes necessary to build strong customer relations and provide outstanding customer service in a diverse workplace serving a diverse population, including how time, stress, and anger management relate to customer service.

COMPUTER LITERACY **90 HOURS**
This course provides an overview of basic hardware components and software concepts including how to launch Windows programs, manage the program windows to enable multitasking, manage files, access information on the Web, and use Email. Basic features in Microsoft Word, Excel, and PowerPoint are also introduced.

DIGITAL NOTE TAKING AND COLLABORATION APPLICATIONS **30 HOURS**
Content explores how to effectively navigate the Microsoft OneNote environment, share and collaborate with other users, organize and find notes, and edit and link content in OneNote.

WORD PROCESSING I **90 HOURS**
Content focuses on basic word processing features used in creating and managing business documents in Word, including modifying existing documents; formatting text, paragraphs, and sections to create professional business documents; and inserting and customizing visual elements, such as tables, lists, shapes, SmartArt graphics, and images. This course prepares students for the Microsoft Office Specialist (MOS) Exam for Word.

WORD PROCESSING II **60 HOURS**
Content focuses on a variety of advanced features to create and format business documents, such as online forms, personalized mailings, and reference tools. It covers managing and sharing multiple documents and customizing various Word elements. This course prepares students for the Microsoft Office Specialist (MOS) Expert Exams for Microsoft Office Word.

EMAIL APPLICATIONS (MICROSOFT OUTLOOK) **90 HOURS**
Email Applications focuses on basic email features used in creating, sending, and receiving email messages in Outlook. Practical business applications involving managing email messages, contacts, tasks, notes, and journal entries, as well as using the calendar features, will be covered. Successful completion of this course prepares you to take the Microsoft Office Specialist (MOS) Outlook exam.

SPREADSHEET APPLICATIONS I (MICROSOFT EXCEL) **60 HOURS**
Spreadsheets I introduces basic spreadsheet functions and applications using Microsoft Excel. You will practice creating, formatting, and managing worksheets and charts. You will also work with data and use formulas, functions, analysis tools, and management techniques. Successful completion of this course prepares you to take the Microsoft Office Specialist (MOS) Excel Core exam.

ELECTRONIC PRESENTATIONS **60 HOURS**
Electronic Presentations focuses on basic electronic presentation features used in creating and managing presentations in PowerPoint. You will create new presentations, as well as modify existing presentations. You will practice adding new layouts, adding background images, changing themes, and inserting headers and footers to create professional business presentations. You will enhance presentations by inserting and customizing visual elements. You will also apply transitions, animate slide content, and set the timing for each one. This course prepares students to take the Microsoft Office Specialist (MOS) Exam for PowerPoint.

DATABASE APPLICATIONS (MICROSOFT ACCESS) **90 HOURS**
Content focuses on the design and creation of databases and introduces the application of database capabilities for information management and data manipulation. Students practice designing, creating, manipulating, extracting, and presenting data using Microsoft Access. This course prepares students to take the Microsoft Office Specialist (MOS) Certification Exam for Access.

OPERATING AND EMAIL APPLICATIONS **30 HOURS**
Content covers essential skills needed to successfully use a computer in school and at work. Students study how to maneuver within the Windows environment through hands-on activities, including launching programs, working with windows and the taskbar to enable multitasking, customizing the desktop, managing files, using the Internet to efficiently search for information on the Web, and sending and receiving email.

RECORDS MANAGEMENT **45 HOURS**
Content covers records retention systems and presents a systematic approach to organizing and controlling paper, image, and computer records through their life cycles.

KEYBOARDING I, II, AND III
Keyboarding I introduces you to the computer keyboard and is designed to help you develop proper keyboarding techniques with an emphasis on increasing keyboarding speed and accuracy to a minimum job-market level of 40 wpm. During this course, you will be given intensive skill-building practice using drills and timed tests.

INTRODUCTION TO SOCIAL MEDIA MARKETING **90 HOURS**
Content introduces social media marketing and explains how it is different from traditional marketing. Students explore why social media should be part of a company's overall marketing plan and the characteristics of a successful social media plan, including quantitative and qualitative measurement tools. Content includes social media ethics.

PROFESSIONAL DEVELOPMENT COURSES, LIFETIME PRODUCTS, OGDEN, UTAH

LEADERSHIP SERIES:
Four 2-hour professional development courses developed for new supervisors
Two sessions – 25 students each

- **Are you a Leader or a Manager?**
- **Bringing Leadership into Focus.**
- **A Guide to Great Managing.**
- **The Good, The Bad, and the Great: Strategies for Bringing Leadership and Management Together.**

CRITICAL CONVERSATIONS
One-hour breakout session – part of annual leadership conference
Two sessions – 35 attendees each

GENERATIONAL DIFFERENCES
One-hour professional development course
Two sessions - 100 attendees each

PROFESSIONALISM
One-hour professional development course
Two sessions - 100 attendees each

COMMUNICATING WITH EMPLOYERS
Two-hour professional development course, part of the leadership track.
One session, four times a year, three years – 25 attendees each session

25 TIPS FOR BETTER COMMUNICATION
One-hour breakout session – part of an annual leadership conference
Two sessions – 35 attendees each

THE WRITING PROCESS, PROFESSIONAL DEVELOPMENT COURSE DEVELOPED FOR UTA
Two-hours a day for two weeks; 25 students

PROFESSIONAL DEVELOPMENT COURSES, SCEPTRE MANAGEMENT, KAYSVILLE, UTAH

DEALING WITH DIFFICULT CUSTOMERS
One-hour breakout session – part of an annual leadership conference
Two sessions – 35 attendees each

CRITICAL CONVERSATIONS
One-hour breakout session – part of an annual leadership conference
Two sessions – 35 attendees each

COMMUNICATING WITH EMPLOYERS
Two-hour professional development course, part of the leadership track.
One session, four times a year, three years – 25 attendees each session

TRAIN THE TRAINER, JANICKI,
Four 3-hour professional development courses developed for on-the-job training partnerships
Two sessions – 25 students each

- Telling ain't Training
- Know the Learner
- Five-Step Training Model
- Selecting Training Activities

BUSINESS ALLIANCE, DAVIS CHAMBER OF COMMERCE, DAVIS COUNTY, UTAH
Monthly BUSINESS Alliance Luncheons or Business and Breakfasts

- Business Writing
- The Three Cs of Business Writing: Clear, Concise, and Correct
- Social Media at Work
- Take Control of Your Email
- Workplace Writing

MICROSOFT OFFICE 1997, 2000, XP, 2003, 2007, 2010, 2013, 2016 1997 - 2016
One-day, eight-hour continuing education courses taught in a computer lab for tech colleges
Multiple sessions; 15-25 students each

- Word Levels 1, 2, and 3
- Outlook
- Excel Levels 1, 2, and 3
- OneNote
- PowerPoint Levels 1 and 2
- Access Levels 1 and 2

JOHN WILEY & SONS, INC.

SUBJECT MATTER EXPERT FOR MOAC WILEYPLUS **2013 -2015**
Provided online technical assistance for instructors using MOAC textbooks

GUEST LECTURE: TEACHING WORD PROCESSING **FEBRUARY 2014**
One-hour webinar with over 100 participants

SCHOLARLY PRESENTATION

*Stackable Credentials and Improved Pathways: CTE from high school to a degree (June 2022).*Utah State Board of Education Sumer Conference: Business and Marketing, Herriman, Utah.

Building Relationships in Online Courses through Personalized Feedback (August 2021). Utah State University Empowering Teaching Excellence Conference, Logan, Utah. Asynchronous virtual session.

Support Learning through Competency-Based Assignments (August 2021). Utah State University Empowering Teaching Excellence Conference, Logan, Utah. Synchronous virtual session.

Using Microsoft Word to Provide Feedback. (June 2016). Professional Development Day, Davis Technical College, Kaysville, Utah.

Developing Rubrics. (June 2016). Annual Utah Colleges of Applied Technology Professional Development Conference. Cedar City, Utah.

Technology in the Classroom. (June 2015). Annual Utah Colleges of Applied Technology Professional Development Conference. Lehi, Utah.

Bystander Intervention: It's up to Us. (December 2016). Safer Utah Conference, Davis Conference Center, Layton, Utah.

Economics in the Classroom: Accessing Federal Reserve Resources. (February 2014). Annual Teaching Economics Conference, Robert Morris University, Pittsburgh, Pennsylvania.

Pathways from High School CTE to Utah Technical Colleges. (February 2014). Utah Association of Career and Technical Education Annual Conference. Saratoga Springs, Utah.

LEADERSHIP AND SERVICE

SKILLS USA JUDGE **2019**
Utah State Finals, Salt Lake Community College, Utah

MEMBER OF UBEA AND UACTE **2012 - 2016**

SECRETARY **JUNE 2015 – JUNE 2016**
Utah Business Education Association (UBEA)

MEMBER OF EDUCATION ADVISORY GROUP **2013**
Federal Reserve Bank of San Francisco

CONFERENCES & PROFESSIONAL DEVELOPMENT

BYSTANDER INTERVENTION TRAIN-THE-TRAINER WORKSHOP
Davis Technical College — March 2017

COUNCIL ON OCCUPATIONAL EDUCATION
Annual Conference, San Antonio, Texas — November 2-4, 2016
Summer Conference, Salt Lake City, Utah — July 20-22, 2017

GENERAL FINANCIAL LITERACY PROFESSIONAL DEVELOPMENT COURSE, USOE JULY 29-30, 2013
Jordan Academy for Technology Careers, West Jordan, Utah

INSTRUCTURECON
Canvas and Bridge LMS Annual Conference — July 2017
Instructure, Keystone, Colorado

LEARNING DEVCAMP
University of Utah, Salt Lake City, Utah — June 2016

UBEA SUMMER CONFERENCE – BUSINESS AND MARKETING
CTE 2013 - Business & Keyboarding Education — June 12-13, 2013
Murray High school, Murray, Utah — June 8-9, 2015
Corner Canyon High School, Draper, Utah — June 6-7, 2016

UTAH ASSOCIATION FOR CAREER & TECHNICAL EDUCATION (ACTE) ANNUAL CONFERENCE
Westlake High School, Saratoga Springs, Utah — January 31& February 1, 2014
Corner Canyon High School, Draper, Utah — February 6 & 7, 2015
Desert Hills High School, St. George, Utah — February 5 & 6, 2016

UTECH ANNUAL PROFESSIONAL DEVELOPMENT CONFERENCE
(Formerly Utah Colleges of Applied Technology)
Ogden-Weber Applied Technology College, Ogden, Utah — June 2012
Davis Applied Technology College, Kaysville, Utah — June 2013
Tooele Applied Technology College, Tooele, Utah — June 2014
Thanksgiving Point, Lehi, Utah — June 2015
Southwest Applied Technology College, Cedar City, Utah — June 2016
Ogden-Weber Technical College, Ogden, Utah — June 2017
Uintah Basin Technical College, Vernal, Utah — June 2018

UVU INSTRUCTIONAL DESIGN SUMMIT
Summer 2015 ID Summit, Salt Lake Community College, Salt Lake City, Utah June 20, 2015
Summer 2016 ID Summit, Salt Lake Community College, Salt Lake City, Utah May 18, 2016
Spring 2017 ID Summit, University of Utah, Salt Lake City, Utah March 21, 17
Fall 2017 ID Summit, Utah Valley University, Orem, Utah October 9, 2017

WESTERN BUSINESS EDUCATION ASSOCIATION CONFERENCE
Weber State University, Ogden, Utah February 2013

PROFESSIONAL LICENSES/CERTIFICATES

Utah State, Secondary Education License, 2009 - 2017
Microsoft Office Specialist Word: 2007, 2010, 2013
Microsoft Office Expert Word: 2010, 2013
Microsoft Office Specialist Excel: 2007
Microsoft Office Specialist PowerPoint: 2007. 2010. 2013
Microsoft Office Specialist Outlook: 2010, 2013

AWARDS AND HONORS

- Teamwork Award 2017
  President's Awards, Davis Technical College

- Graduate Assistantship 2017-2019
  Utah State University, School of Applied Sciences, Technology & Education

- Student of the Year 2009
  Weber State University, College of Telecommunication and Business Education

- Recipient of Master of Education Tuition Waiver 2008 & 2009
  Weber State University