

The Business Communities' Perspectives on Work-based Learning and Career Readiness  
for High School Students

by  
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Submitted in Partial Fulfillment of the Requirements  
for the  
Degree of Doctor of Education  
in the  
Educational Leadership Program

Youngstown State University

May, 2021

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for High School Students

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## Abstract

This study examines the factors that contribute to a student's career readiness during the secondary years. The study attempts to identify the skills employers most value, the skills employers identify as the most difficult to find in prospective employees, and the experiences that employers believe high school students should engage in frequently to develop these workplace skills. Exploratory factor analysis is utilized to examine the quantitative results of the study. The results indicate social emotional literacy is needed most often in jobs for employees to successfully perform job-related tasks. The results suggest that digital literacy skills, while not as highly valued by employees, are found less frequently in newly hired employees. The research examines the frequency in which employers believe high school students should participate in various instructional activities. The research results indicate that employers believe high school students should most frequently participate in activities that help develop their mathematics and technology skills.

*Keywords:* Career Readiness, Digital Fluency, Employability Skills, Social and Emotional Learning (SEL), Transportable Skills

## Acknowledgements

I am forever grateful for the support of my family during the many years of this research process. I want to thank my husband Jason Clare for all the hours he tolerated me disappearing to the attic to research and write. I also want to thank my beautiful children, Jonah and Julia. I hope that this process demonstrates how hard work and persistence will always pay off in the end.

My dissertation chair, Dr. Karen H. Larwin, is an incredibly patient and caring professor – one of a kind I think! Her expectations, although grueling at times, are the reason I was able to make it to the finish line. A big thank you to my committee members. Your guidance and feedback has been invaluable.

I want to thank my mom, who always believed I would one day pursue this degree. Without her support from a very young age, I would not likely have the courage to walk down this path.

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## Chapter 1

The business community has lamented for some time about the skills required for in-demand jobs. The development of career-ready skills that are considered essential for today's workplace include technological capability, flexibility, self-awareness, an ethical outlook, and other social and emotional skills (Collaborative for Academic, Social, and Emotional Learning, 2020; Finch et al., 2016). Students, therefore, must be trained in educational systems that support the development of these skills (Anderson & Gantz, 2013). Along with higher education institutions, the K-12 system must take the lead in developing students who are prepared for the jobs of tomorrow. The requirements for these jobs are continuously changing, and in order to be and to stay competitive, students who will eventually become prospective employees must develop core competencies and essential skills that are valuable and transportable (Baird & Parayitam, 2019; McMurray et al., 2016). Unfortunately, many reports indicate that prospective employees do not have the required skills demanded by the broader business community (McMurray et al.). To stay economically competitive, the United States needs its educational institutions to focus on the development of skills indicated as valuable to the business community (Baird & Parayitam, 2019). There seems to be a conundrum between the development of skills required to pass a standardized assessment and the development of skills required to be considered career ready. Alignment between a school's curriculum and the needs of the workforce must be examined in order to graduate career ready students (Baird & Parayitam, 2019).

### **Problem Statement**

Leaders across political, business, and educational organizations recognize the need to prepare the future workforce, and the changing economic landscape provides employers with access to workers across the globe, which makes finding a job even more difficult for those lacking workplace skills (King & Thorpe, 2012). In today's economy, a high school diploma is not enough to ensure future prosperity (Hackmann et al., 2018; West Virginia Department of Education [WVDE], 2019). Although many career positions require post-secondary training or credentialing, not all will require a four-year degree. In fact, many well-paying positions require just a pre-baccalaureate degree, and these positions are often referred to as mid-level jobs. Concerns over rising college tuition, student debt, and remedial course enrollment have shed light on the value of a traditional degree from a four-year university, and students and educators are starting to consider alternative pathways to a successful future (Fletcher et al., 2018; Friedman, 2018; Indiviglio, 2011; Whitmire, 2019).

State and federal legislation, over the last few decades, has influenced the resurgence of career education as a vehicle for closing the skills' gap recognized by many hiring organizations (Frueh, 2017). The School-to-Work Opportunities Act of 1994 and the Workforce Investment Act (1998) influenced policy at the state level. Pennsylvania, for instance, adopted the Career Education and Work Standards in 2006, requiring that all students in K-12 participate in learning around "career awareness and preparation, career acquisition, career retention and advancement, and entrepreneurship" (Pennsylvania Department of Education [PDE], 2019b, para. 3). School leaders must consider how best to prepare students for life after graduation.

## **Statement of Purpose**

The research in this study will examine the factors that contribute to a student's career readiness during the secondary years. The study attempts to identify the skills employers most value, the skills employers identify as the most difficult to find in prospective employees, and the experiences that employers believe high school students should engage in frequently to develop these workplace skills. The research differs from previous studies as it seeks to identify specific experiences for high school students who employers believe will develop the necessary skills needed in the workplace; many studies have already examined the skills valued by employers, thus this study will validate those studies.

As many state education departments challenge the K-12 system to offer career readiness programs, school leaders must identify how to allocate resources most efficiently to meet the demands. School leaders could use this research to make decisions about the development of the career readiness programs in their schools and systems.

## **Research Questions**

The following questions will be explored in this research study:

1. What skills are required by employers in a northwestern county of Pennsylvania?
2. What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?
3. What types of learning activities do employees in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?

## **Background**

The current literature has identified some elements of career readiness and highlighted some programming features that indicate positive benefits for students. The inclusion of career education programs has shown many benefits for students, some well beyond high school graduation.

On-time graduation, postsecondary enrollment, employment, and earnings have been shown to increase when students are required to enroll in at least one career-and-technical course during high school (Dougherty et al., 2019). Many states, such as Michigan and Texas, have revised graduation requirements to make room for more career-and-technical education courses (Sutton et al., 2016). Other states are connecting students to work-based learning that includes pre-apprenticeship and apprenticeship programs (Sutton et al.). Pennsylvania, along with requiring all students to participate in activities based on the Career Education and Work (CEW) standards, now includes accountability measures in its public-facing school report card for career readiness indicators (PDE, 2019).

College and career readiness, once separate domains, are now recognized by educational leaders as overlapping concerns (Conley, 2012). David Conley's research on college and career readiness, for instance, has identified four dimensions of college and career readiness (Conley, 2012).

These include:

key cognitive strategies; key learning skills and techniques, such as goal setting and progress monitoring, test-taking and note-taking methods, and persistence with challenging tasks; and key transition knowledge and skills, such as 'college knowledge' of admissions requirements and

processes, financial aid, the culture of college, and self-advocacy. (Conley, 2012, para. 23)

These dimensions are indicative of the foci for school leaders looking to develop career readiness programs for high school students. Combining the best of college and career readiness could allow school leaders to meet the various needs of a diverse population. In fact, providing career classes to students does not need to be a separate endeavor from college preparation. “[Career and Technical Education] CTE is not a path away from college: Students taking more CTE classes are just as likely to pursue a four-year degree as their peers” (Dougherty, 2016, para. 2).

In order to graduate career-ready students, school leaders must decide what elements of work-based learning should be integrated into the academic programming of their schools. The Youth-to-Work Coalition (2011) recommended implementing work-based learning in three primary stages: self-exploration beginning in elementary/middle grades, followed by career exploration until 11<sup>th</sup> or 12<sup>th</sup> grade, and career planning and management through postsecondary education. Employers offering work-based learning opportunities through partnerships with local high schools recognize how participation allows students to develop 21st Century skills like teamwork and collaboration (Knepler & Zapata-Gietl, 2019).

Some school leaders restructure the entire academic program around career pathways; this programmatic approach is often referred to as career academies (Hackmann et al., 2018). Career academies often provide students with learning opportunities beyond the classroom, like job shadowing and internships (Brand, 2009). Career academies have shown promise in improving students’ noncognitive skills, and

there is evidence that career academies could improve attendance and the likelihood of graduating from high school ( Hemelt et al., 2019; Kautz et al., 2014).

Even without restructuring the whole school program, school leaders may consider instituting job shadowing and internship opportunities for students. These types of work-based learning opportunities allow students to apply academic and technical knowledge in work settings (National Association of Colleges and Employers [NACE], 2011). High school students have indicated that job shadowing is their preferred exploration activity (Strom et al., 2014). Job shadowing experiences have also been found to increase relevance for students' academic learning pursuits, connecting the dots for students to how their classroom assignments connect with their career goals (Jahn & Myers, 2014). Internships allow students to take on more or all of the work-based responsibilities at a job site, and surveys show that students and employers find these internship opportunities valuable (Brooks & Stephen, 2015). Job shadowing and internship opportunities provide students with a low-cost experience for deciding to pursue the career pathway further (Mulkerrin et al., 2018).

### **Overview of Methodology**

This research will be conducted through a survey of employers in a northwestern county of Pennsylvania. The survey includes three primary sections for each of five factors considered to be related to career readiness. The sections include the frequency of jobs that require a basic mastery of skills to perform job-related tasks, the frequency of applicants who would be able to show a basic mastery of skills, and the preference for secondary students to participate in particular activities to gain these skills. The five factors included in the survey are English-language arts (ELA) skills, mathematics skills,

technology skills, digital literacy skills, and soft skills. The survey will be emailed to employers from a list compiled by CareerLink, a part of the Pennsylvania Department of Labor and Industry. The results of the survey will be analyzed through exploratory factor analysis.

### **Rationale and Significance**

As secondary schools across the United States, and, specifically, in Pennsylvania, are tasked with providing high school students with career programming, school leaders need to reflect upon the instructional activities that make the most impact on a student's career readiness. Many research studies have examined the skills required to be considered ready for the workforce, but there is limited research on the distinct activities that develop these skills in students. This research study can enhance the literature on workplace ready skills, as well as extend the current literature to examine the instructional activities that the business community believes makes the most difference for students to develop these workplace ready skills.

### **Researcher Assumptions**

The bias of the researcher includes a preference for instructional activities that are student-centered versus teacher-centered. Through the researcher's experience as mathematics teacher, instructional coach, and school administrator, the researcher has gained professional experience that indicates the many benefits of student-centered instruction. The researcher also firmly believes that all students should be given access to career opportunities and understand the limits some students may have due to a lack of access or knowledge to certain career opportunities. The researcher believes that many students choose a career based on a limited set of knowledge, and, therefore, the

researcher believes it is the obligation of the school system to widen the opportunities for all students.

Five underlying factors will be identified through the exploratory factor analysis of the survey results. These constructs - ELA skills, mathematics skills, technology skills, digital literacy skills, and soft skills - are assumed to impact the overall career readiness for a student soon graduating from high school.

### **Definition of Key Terminology**

The following definitions are given here to provide clarity and focus within the study.

*American Diploma Project*: Effort that began in 2002 to develop college and career readiness standards (Haycock, 2010)

*Apprenticeship*: Training program for adults that includes structured classroom instruction and paid job training with a mentor (Case Western Reserve University [CWRU], 2016)

*Career Academy*: A programmatic approach to structuring high schools to allow students individualized pathways to a future career (Hackmann et al., 2018; Conley & McGaughey, 2012; Brand, 2009)

*Career-and-Technical Education (CTE)*: In Pennsylvania, career-and-technical education is a curricular program in which students take both academic courses and hands-on technical courses to apply knowledge to real situations (PDE, 2020a).

*Career Education and Work Standards (CEW)*: Standards adopted by the PDE in 2006 for all students to learn four areas of knowledge: career awareness and preparation, career acquisition, career retention and advancement, and entrepreneurship (PDE, 2020b)



*Career Readiness:* The ability to gain a well-paying job with the appropriate employability skills (Cease-Cook et al., 2015)

*Carl D. Perkins Vocational and Technical Act:* Authorized in 2006 to provide federal funds to programs that offer rigorous coursework integrating academic learning with career and technical learning (Hackmann et al.)

*College-For-All Mentality:* The thinking that all students should be prepared for education, primarily four-year university level, after secondary school graduation (McDonald, 2018)

*College Readiness:* The ability to begin post-secondary studies without having to take remedial courses (Conley & McGaughy, 2012)

*College and Career Readiness:* A model for educational programs that includes the cognitive and non-cognitive dimensions of “key cognitive strategies, key content knowledge, key learning skills and techniques, and key transition knowledge and skills” (Conley & French, 2014, p. 1018)

*Common Core State Standards (CCSS):* Standards developed to assist state education departments in aligning with the expectations of college and career readiness (CCSS Initiative, 2020)

*Common Career Technical Core:* Standards developed to assist career and technical schools to integrate academic standards with career programs to ensure that graduates are prepared for today’s economy (Cease-Cook et al., 2015)

*Digital Fluency:* The ability to use technology and apply technological advancements to many areas of daily life (WVDE, 2019)

*Dual Enrollment:* An academic program at the secondary level that allows students to earn credits in both high school and post-secondary (An, 2013)

*Elementary and Secondary Education Act (ESEA):* This federal legislation, also known as No Child Left Behind Act, created a system of accountability for schools through testing (Council for Exceptional Children, 2020).

*Employability Skills:* Workplace skills, applied knowledge, and effective relationship skills that are needed across many, if not all, workforce development and education sectors (U.S. Department of Education, 2012)

*Every Student Succeeds Act (ESSA):* “Signed by President Obama on December 10, 2015” (U.S. Department of Education, n.d., para. 1), the federal legislation “requires—for the first time—that all students in America be taught to high academic standards that will prepare them to succeed in college and careers” (U.S. Department of Education, n.d., para. 6).

*Future Ready PA Index:* Pennsylvania’s system of school accountability created through the ESSA to recognize various pathways of success for students to demonstrate graduation readiness (PDE, 2019)

*Historically underperforming:* Used to describe students who do not typically show proficiency on standardized testing measurements; oftentimes includes students with disabilities and students from low socioeconomic backgrounds (PDE, 2014)

*Individuals with Disabilities Education Act:* Federal legislation that requires that a student with a disability graduate from high school prepared for post-secondary schooling and/or employment (Individuals with Disabilities Education Act [IDEA], 2004)

*Job shadowing:* A work-based learning activity that allows a student to spend a short period of time with a competent worker so that the student can decide whether the career fits his or her aspirations (PDE, 2017)

*Internship:* A highly-structured, sustained career preparation activity in which students are placed at a workplace for a defined period of time to participate in and observe work first-hand within a given industry” (PDE, 2017, p. 19)

*No Child Left Behind Act of 2001:* Federal legislation that emphasized more funding for schools that serve students from low socioeconomic backgrounds, increased achievement levels for historically underperforming students, and new accountability measures that will expand standardized testing across the United States (Klein, 2015)

*P-16 pipeline:* A reform initiated by the United States Department of Education to align the educational system from pre-kindergarten to postsecondary education (National Governors Association, 2010)

*Pre-apprenticeship:* A structured work-based learning program that allows junior and senior level high school students to gain paid work experience with a mentor and classroom instruction related to the work at their high school; pre-apprenticeships often lead to registered apprenticeship positions for students (Cantor, 1997)

*Pre-baccalaureate degree:* A degree that is less than a bachelor’s degree (Ross et al., 2014)

*Remedial courses:* Courses at the college level that help fill gaps in students’ understanding to take entry-level coursework (Conley, 2012)

*School-to-Work Opportunities Act:* An act co-developed by the United States Department of Labor (DOL) and the United States Department of Education that provided seed

money to states for establishing more formalized career exploration and counseling programs (School-to Work Opportunities Act, 1994)

*Social and emotional learning (SEL):*

The process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions. (Collaborative for Academic, Social, and Emotional Learning, 2020, para. 1)

*Sub-baccalaureate degree:* A degree that can be obtained usually in two years; a degree that takes less time than a traditional four-year college degree (Bailey et al., 2004)

*Transportable skills:* Skills, like collaboration and communication, needed in the workforce that are relevant among many career pathways (Burning Glass Technologies et al., 2016)

*Upskilling:* The process of adding knowledge and skills as the workforce demand shifts (Burning Glass Technologies, The Council for Adult and Experiential Learning, & Allegheny Conference on Community Development, 2016)

*Work-based learning:* –A range of approaches and strategies where individuals learn through a work environment, while also enrolled in an education program that leads to a degree, vocational certificate, or credential” (Knepler & Zapata-Gietl, 2019, p. 2)

*Workforce Development Act:* State legislation enacted by Pennsylvania in 2001 to expand workforce investment opportunities to youth, students in postsecondary schooling, and adults (Pennsylvania General Assembly, 2001)

*Workforce Investment Act:* Adopted in 1998 by the United States federal government to build the foundation of career and job readiness through local workforce investment boards (Workforce Investment Act, 1998)

### **Summary**

This chapter introduced the construct of work-based learning and how the demand in the workforce has shifted the focus of high schools from college-for-all to postsecondary-for-all. The chapter also provided a rationale for the study of work-based learning and includes a discussion of the problem that will be explored further in the study. The role of the researcher was given, as well as assumptions made about work-based learning. A series of important terms are defined at the end of the chapter.

## Chapter 2

### Review of Literature

In the state of Pennsylvania, as well as across the United States, the turn of the 20th Century brought a massive swing in technological advances, shifting the market from industrial based to an information-based economy (Center for International and Religious Studies, 2012). Many reports identify a large gap in skill attainment and career readiness for high school graduates (Secretary's Commission on Achieving Necessary Skills [SCANS], 1991). Recognizing the global society, leaders across political, business, and educational organizations recognize the need to prepare the future workforce, and the changing economic landscape provides employers with access to workers across the globe, making finding a job even more difficult for those lacking workplace skills (King & Thorpe, 2012). A high school diploma is not enough to ensure future prosperity (Hackmann et al., 2018).

For many decades, schools, particularly high schools, have adopted a college-for-all mentality, encouraging even underprepared and uninterested students to apply to four-year degree programs (Substance Media Inc., 2015). “In October 2019, 66.2 percent of high school graduates ages 16 to 24 were enrolled in colleges or universities” (U.S. DOL, 2020, para. 1). This is a slight change from the previously reported year of 2017 high school graduates at 66.7%. Rosenbaum and Person (2003) found that “counselors rarely discourage college plans or suggest alternatives” (p. 252). As college becomes more accessible to students, the United States sees a ballooning in the total amount of college debt, with graduates owing around \$90 billion in 1999 with that debt tripling over the next four years (Indiviglio, 2011). Currently, student loan debt in the United States is at

an all-time high. Friedman (2018) called it a \$1.5 trillion crisis; \$1.5 trillion representing the total amount of debt from college loans taken out by 44 million students. As the cost of a college degree continues to rise, students and educators are starting to consider alternative pathways to a successful future. An expansion of the college-for-all mentality that dominated secondary schooling for many years is being debated, and, in some communities celebrated, as many college graduates find themselves either unemployed or underemployed. Fletcher et al. (2018) noted “a college degree is not necessarily equivalent to being career ready” (p. 79). Students from Pennsylvania have some of the highest loan debt per capita in the country as of 2016, averaging a little under \$38,000 (Friedman, 2018).

Although more students were being accepted to colleges across the country, many were forced to enroll in remedial courses, while those and others found themselves ill-prepared to complete their degrees. —“The 3.2 million 16- to 24-year-olds who completed high school in the first 9 months of 2018, some 2.2 million, or 69 percent, were enrolled in college in October 2018” (U.S. Department of Education & National Center for Education Statistics, 2019, para. 1). Of course, many point out that the public problem is not a college acceptance problem but a college graduation problem. —“The National Center for Education Statistics tracked a 2002 cohort of U.S. students, finding that only 14.6 percent of those whose families are in the lowest-income quartile earned bachelor’s degrees within 10 years, compared with 46 percent from the highest-income group” (Whitmire, 2019, para. 2).

Focusing on college-for-all policies does more damage than producing massive amounts of college debt for our country and our young people; it also leaves many

without the knowledge, skills, and dispositions to tackle the jobs that are available, many of which that do not require more than a certification or two-year program after high school graduation. Many students are not made aware of many high-demand career pathways and intentional time has not been given to students in their high school years to determine how their individual passions or interests may align with these career pathways.

Conley and McGaughey (2012) recommended establishing an expectation that all students must attend some type of post high school training. The shift goes from college for all, which for too long has been interpreted as university-for-all, to an expectation of postsecondary for all. The state of Pennsylvania's Governor, Tom Wolf, has embraced this idea by developing the goal that 60% of Pennsylvanians will have earned some type of postsecondary credential or degree by 2025 (Commonwealth of Pennsylvania, 2020).

### **Theoretical Framework**

A secondary student's career readiness is thought to be related to many overlapping theories. The Human Capital Theory (HCT) provides a broader understanding of the importance of career readiness for high school graduates, while the Experiential Learning Theory helps describe a learning framework that influences student's understanding of concepts. The Career Development Stage Theory helps explain the impact of a student's individual development on their career readiness. An understanding of career readiness is contingent on an understanding of these broad theories.

#### ***Human Capital Theory***



HCT emerged primarily from Theodore Schultz (1961), Gary Becker (1964), and Jacob Mincer (1974). In 1960, Schultz (1961) proposed to “treat education as an investment in man and to treat its consequences as a form of capital” (p. 571). Schultz’s (1961) proposal justified government investments in education over investments in physical property (Choo, 2018). In 1961, Schultz wrote, “Although it is obvious that people acquire useful skills and knowledge, it is not so obvious that these skills and knowledge are a form of capital, that this capital is in substantial part a product of deliberate investment” (p. 1).

The basic premise of HCT is one can mathematically measure the investments made in individuals based on the economic contributions they bring to society (Simple Economist, 2019). Becker (1962) sought to show how investing in education could improve an individual’s earnings. Mincer (1974) developed the human capital earnings function, also referred to as the Mincerian wage equation. This equation allows for the exploration of the relationship between education and earnings (Cornacchio & Daugherty, 2013). As argued by Sidorkin (2007), HCT “rests on one mesmerizing empirical fact: more education generally means higher lifetime income” (p. 159). A belief in human capital theory would provide the rationale for the push to get students to pursue postsecondary studies.

HCT emphasizes the need to equip people with the skills required for the workplace (Choo, 2018). Human capital is developed through multiple categories, often grouped as cultural capital, social capital, economic capital, and symbolic capital (Simple Economist, 2019).

### ***Experiential Learning Theory***

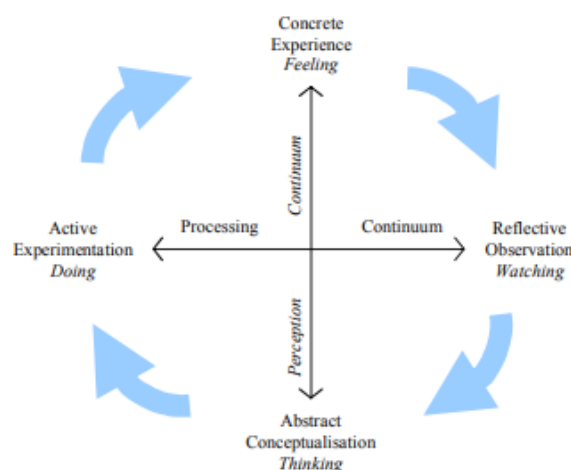
Kolb's model of experiential learning (1984) includes four phases: stimulation, reflection, abstraction, and experimentation. Abdulwahed and Nagy (2009) argued that "the optimal learning takes place when learners have adequate balance of these four stages during their learning experience" (p. 284). Learning can begin in any phase, as each phase is supportive of the next (McLeod, 2017). McLeod (2017, para. 4) described the stages further:

- (1) having a concrete experience followed by (2) observation of and reflection on that experience which leads to (3) the formation of abstract concepts (analysis) and generalizations (conclusions) which are then (4) used to test a hypothesis in future situations, resulting in new experiences.

Kolb (1984) proposed that optimal learning would cycle through Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE) (Abdulwahed et al.). The cycle of CE, RO, AC and AE is called Kolb's (1984) experiential learning cycle (McLeod, 2017).

### Figure 1

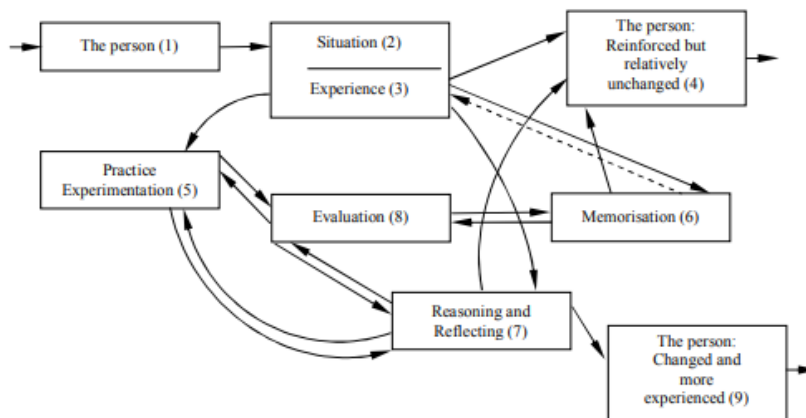
*Kolb's Experiential Learning Cycle, 1984*



Jarvis's model of experiential learning (1987) was a reaction to Kolb's (1984) theory, as Jarvis (1987) believed Kolb (1984) did not explicate the complexities of experience with the social context in which learning takes place (Kuk & Holst, 2018). Brown (2015) described Jarvis's (1987) model as the interaction of emotion, thought/reflection, and action. These three dimensions are the cognitive, affective, and practical processes of learning supported by Jarvis (1987) (Brown, 2015). Jarvis's (1987) model combines the elements of situation and practical experimentation, reasoning and reflection, memorization, and evaluation, with various pathways possible for learning (Sălăvăstru, 2014).

**Figure 2**

*Jarvis's Model of Experiential Learning (1987)*



### ***Career Development Stages Theory***

Donald Super's 1957 theory of career development is based on the premise that the development of self is critical to career planning (New Zealand Government, 2019). Super (1957) began his theory with 10 propositions, which were updated to 12, and again

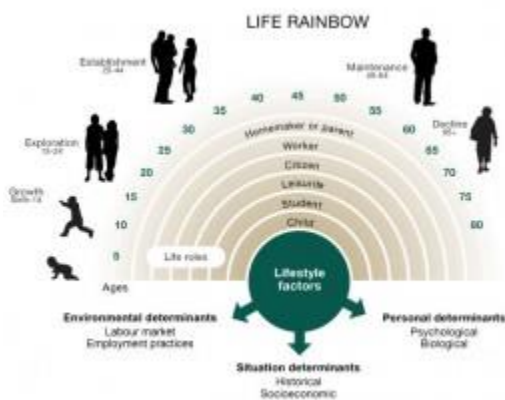
updated to its current 14 (Gothard et al., 2001). According to Super's (1957) theory, career development is a lifelong task, with a person's self-concept changing with experience (New Zealand Government, 2019). Super (1957) also developed the concept of vocational maturity, surmising that a vocational choice is an expression of one's understanding of self (New Zealand Government, 2019). "[A]n individual's parental socio-economic level, mental ability and personality characteristics, and by the opportunities to which he is exposed" have a major impact on the work roles selected (Gothard et al., p. 16). Work roles are selected as avenues to further develop an individual's self-concept and as an outlet for a person's interests, values, and attitudes (Gothard et al.; New Zealand Government, 2019).

Super (1957) expanded his theory of career development by identifying five life stages, each of which is exemplified in his life-career rainbow (pictured below) (Gothard et al., 2001). During the first life stage, namely Growth, children ages four through 13 begin to develop a basic understanding of the world of work. The Growth stage includes a growing concern about the future and the increase of a person's control over his or her life (Giannantonio & Hurley-Hanson, 2006). The next stage called Exploration involves acting on information gained during the growth stage in an attempt to match personal interests and capabilities to work roles (Super, 1957). The images formed about work roles are influenced by experiences with individuals in various jobs and part-time work experiences (Gibson, 2004). The third life stage identified by Super (1957) is called the Establishment. Career advancement is important during the third life stage (Giannantonio & Hurley-Hanson, 2006). The Maintenance life stage of career development follows the establishment. Individuals may be faced with career choices,

selecting to maintain their current career, or choosing to leave their current company (Giannantonio & Hurley-Hanson, 2006). This is heavily influenced by a person's self-concept at the time (Super, 1957). During the last stage, the Disengagement stage, individuals are concerned about creating a self-concept that is separate from the world of work (Giannantonio & Hurley-Hans, 2006).

### Figure 3

*Super's Career Development Theory (1957)*



### Review of Literature on Career Education

Career education for students in the United States has been influenced for over two decades by federal and state policies. Through various legislation, government leaders recognized the importance of career education as a vehicle for closing the skills gap. State government leaders have influenced the work of high school students through graduation requirement mandates and school evaluation tools. The push for college readiness by all high school graduates has morphed into a more comprehensive outlook that now includes career readiness. Business, organization, and education leaders recognize the importance of academic, behavioral, and technical skills, but a persistent gap in skills for today's workforce remains (Frueh, 2017). For many of today's jobs, it is

not enough to graduate from high school with a core set of academic knowledge. The jobs of today require high levels of digital fluency, transportable skills like creativity and collaboration, and a sincere desire for constant upskilling. Employers in today's knowledge economy desire a skilled workforce (Haigh & Clifford, 2011; World Economic Forum, 2018). Various partnerships developed throughout the country show promise at the local and state levels. These partnerships require innovative leadership from educational administrators willing to network with the business and workforce organizations in the local community. Promising examples of partnerships show school leaders who are able to develop programs of work-based learning at the secondary level. These work-based learning initiatives allow students to participate in job shadowing, career academies, and gain industry-based certifications, all of which increase the career readiness of today's high school graduates (PDE, 2017).

## **Federal Policy on Career Education**

### ***Workforce Investment Act***

In 1994, the United States DOL and Education collaborated on the School-to-Work Opportunities Act (School-to-Work Opportunities Act of 1994, 1994). With a focus on strengthening what is learned in school with the requirements of what is needed at work, the act provided seed money to each state for establishing more intentional career exploration and counseling programs (School-to-Work Opportunities Act of 1994, 1994). The intention was to remedy a concern about the gap between the skills and education required to be competitive in the workforce and the skills of students graduating from the school system (School-to-Work Opportunities Act of 1994 (SWO)). The federal legislation requires SWO programs to:

(1) integrate work-based and school-based learning and academic and occupational learning, and establish effective linkages between secondary and postsecondary education; (2) provide students with the opportunity to complete career majors; (3) incorporate specified program components including work-based and school-based learning and connecting activities; (4) provide participating students with experience in and understanding of the industry they are preparing to enter; and (5) provide all students equal access to program components and to recruitment, enrollment, placement, and related activities. (School-to Work Opportunities Act of 1994, para. 1)

The school-based learning component seemed to provide the necessary foundation for Pennsylvania's future Career and Work Education Standards. The school-based learning component included a push for career awareness and exploration, a curriculum integrating career learning with academic learning, and the creation of a transition plan from high school to post-secondary training or schooling (School-to-Work Opportunities Act of 1994). These elements of the school-based learning component mirror many of the elements included in the 2006 adoption of Pennsylvania's CEW Standards.

Four years later, the United States federal government enacted the Workforce Investment Act of 1998 (Workforce Investment Act [WIA], 1998). The law replaced the Job Training Partnership Act of 1982 and was meant to build the foundation of career and job readiness through local workforce investment boards (Workforce Investment Act, 1998). There were five titles of the WIA, all with the purpose of developing systems that increase employment, individual earnings, and retention (Workforce Investment Act,

1998). Although no one title of the WIA specifically mentions secondary schools or K-12 settings, the establishment of local workforce investment boards increased the focus of career readiness and awareness in a more regional manner, allowing local schools to begin tapping into local resources through more strategic initiatives (Pennsylvania General Assembly, 2001). The WIA was replaced by the Workforce Innovation and Opportunity Act (WIOA), signed into law on July 22, 2014 (U.S. DOL, 2014).

### ***Common Core State Standards***

The P-16 pipeline, initiated by the United States Department of Education, is a reform initiative intended to align the educational system from pre-kindergarten to postsecondary education (National Governors Association, 2010). From the P16 movement, the Common Core State Standards emerged (Mazzotti et al., 2014). During the last decade, states across the country have adopted the Common Core State standards in ELA and mathematics or updated existing standards to align more with expectations for college or career readiness. Additionally, career-and-technical education schools have worked to align their curricula to include both academic standards and career programs (Cease-Cook et al., 2015). Some career and technical education schools are using standards from the Common Career Technical Core of 2014, with a common goal of developing students into graduates ready for today's economy (Cease-Cook et al.).

In 2010, President Barack Obama set a goal that 10 years hence the United States would again be a world leader for college completion rates (U.S. Department of Education, 2010). Through the reauthorization of the Elementary and Secondary Act of 1965 (ESEA), the United States Department of Education guided the state departments of education to raise ELA and mathematics learning standards for all students, develop



college and career ready assessments, and implement evidence-based instruction and support through enhanced professional development. From Obama's blueprint of success to testimony given by acting U.S. Secretary of Education, Arne Duncan, it was clear that success in college and the workplace was the target for students and schools. The aim of college and career readiness came from the notion that many college students took remedial coursework and employers often commented on the inadequacy of high school graduates' skills (U.S. Department of Education, 2010).

### **State Policy on Career Education**

Shortly after the WIA, Pennsylvania's General Assembly enacted the Workforce Development Act of 2001. A direct response of the federal legislation, the Workforce Development Act 114 (Act 114) was meant to expand workforce investment opportunities to youth, students in postsecondary schooling, and adults (Pennsylvania General Assembly, 2001). Pennsylvania specifically addressed the coordination of services for young adults through Act 114 (Pennsylvania General Assembly, 2001). Pennsylvania, along with many other states across the country, seemed to have an increased focus on increasing the career preparedness of its high school graduates.

### ***Graduation Requirements***

Many jobs of the 21st Century require more than a high school diploma (WVDE, 2019) and determining the necessary graduation requirements for high school students is a pressing challenge for school leaders. Research shows that increasing career education before graduation from high school can have many benefits, some well beyond high school graduation. Dougherty et al. (2019) found that requiring students to take at least one career-and-technical education class during high school increases the likelihood of

graduating high school on time, increases the likelihood of enrolling in a postsecondary institution, increases the likelihood of becoming employed, and increases initial earnings. Other research concluded that graduation requirements should be amended to expect college and career readiness from all of its students (Gaertner et al., 2014). WVDS (2019) recommended building student awareness during the secondary years of the educational requirements and credentials expected by local employers.

States across the United States are considering how to best situate high school graduates to be successful with the mid-level jobs that will be available. Michigan and Texas have made requirements more flexible so that students can take more career-and-technical education courses aligned with local workforce demand (Sutton et al. 2016). Other states like South Carolina, Pennsylvania, Wisconsin, and Louisiana are connecting students with pre-apprenticeship and apprenticeship programs (Sutton et al.). States such as Oregon are also requiring the teaching of essential skills. Oregon's Department of Education requires students to demonstrate proficiency in essential skills such as reading and comprehending a variety of tasks, writing clearly and accurately, and applying mathematics in a variety of settings (Oregon Department of Education, 2020). These process skills are demonstrated through approved assessments in local school districts in which students are expected to score a minimum cut score (Oregon Department of Education, 2020).

### ***Future Ready PA Index***

For many years, the PDE only recognized the passing of standardized assessments in algebra, biology, and literature. The PDE now recognizes various pathways of success for students to demonstrate graduation readiness (PDE, n.d). –Pennsylvania believes that

as postsecondary success looks different for different students, different measures of readiness can look different too” (PDE, 2019, p. 3). Through the ESSA, the Department created a system of student accountability - called the PA Future Ready Index - that includes measures of career readiness (PDE, 2019). These measures of school performance include a Career Standards Benchmark, High School Graduation Rate, Industry-Based Learning, Rigorous Courses of Study and Post-Secondary Transition to School, Military, or Work (PDE, 2019).

### **College and Career Readiness**

The current landscape of college and career readiness for all students is bleak; many students do not graduate, while those who do graduate are unprepared for the necessary training for a prosperous life (Barnes & Slate, 2010). Historically, college and career readiness had separate definitions. As the 21st Century progresses, educational leaders and others are recognizing the overlapping components of college and career readiness (Conley, 2012).

The American Diploma Project was an effort started in 2002 by Achieve, the Fordham Foundation, the National Alliance of Business, and the Education Trust to develop standards that would define college and career readiness (Haycock, 2010). The results of an ACT study in 2006 found that schools “should be educating all high school students according to a common academic expectation, one that prepares them for both postsecondary education and the workforce” (ACT, Inc., 2006, p. 1). Formal adoption of the National Common Core Standards for College and Career Readiness by many states and territories demonstrate the commitment of legislatures to raising the learning expectations for students. These standards aim to define expectations in language arts

and math for students in kindergarten through high school. Studies have found that an overlap of skills is needed for students to be college and career ready; these skills, primarily behavioral in nature, “include study skills, time-management skills, persistence, and ownership of learning” (Conley & McGaughy, 2012, p. 30). Whether college or career development is the goal, students need to have a range of cognitive strategies at their disposal, such as the ability to formulate problems, collect information, interpret, and analyze findings, communicate in a variety of modes, and do all of this with precision and accuracy (Conley & McGaughy, 2012. p. 30).

Schools looking to prepare secondary students for college and the workforce should assist students in seeing the connections between learning and postsecondary goals (Conley & McGaughy, 2012).

### ***College Readiness***

In 2003, the Standards for Success were published to communicate the requirements needed to be successful in entry-level coursework at the college level (Conley & McGaughy, 2012). “A student who is ready for college...can qualify for and succeed in entry-level, credit-bearing college courses leading to a baccalaureate or certificate... without the need for remedial or developmental coursework” (Conley, 2012, p. 1). More than one-half of two-year college students and one-fifth of four-year college students have been found to need remediation coursework (Complete College America, 2012). College readiness includes both cognitive factors such as memory and non-cognitive factors such as perseverance (An & Taylor, 2015; Porter & Polikoff, 2012). It seems intuitive that developing a student’s readiness for college must begin before senior

year, so educators spanning elementary, middle, and high school must find ways to imbed college readiness in instruction (Royster et al., 2015).

Researchers have extensively examined which variables seem to positively impact a student's college readiness. One study indicated that "students who participated in dual enrollment tend to be more college ready than those who did not earn college credit in high school" (An & Taylor, 2015, p. 1). The relationship between college readiness and dual enrollment has been explained as a transition experience that helps students learn the rules and behaviors necessary in college (Karp, 2012). Dual enrollment has also been found to reduce the likelihood of a student needing remedial coursework at the college level (An, 2013). When given college aspirations and college preparatory coursework, students can meet college readiness benchmarks during the high school years, even when they leave middle school off track (Royster et al., 2015).

To reduce the need for college remedial courses, some high school administrators choose to provide interventions for students prior to high school graduation. A study by Creech and Clouse (2013) described how four high schools collaborated with a local university on the development and implementation of an English transition course (ETC). The purpose of the ETC was to "reduce the need for remediation in reading and writing" (Creech & Clouse, 2013, p. 316) for students. Students who participated in the ETC were found to "show significant gains in [both] reading... and writing achievement" (Creech & Clouse, 2013, p. 327). States such as Florida have gone as far as to require college readiness testing by all students through the College and Career Readiness Initiative (FCCRI). Students who do not achieve a particular benchmark score on the assessment

are then required to take a college readiness course prior to graduation (Mohker et al., 2018).

As the skills required in the workplace shift, it is important to recognize that college readiness is not synonymous with the attainment of a four-year university degree. In fact, the changing economy and increased costs of postsecondary education make the value of a four-year university degree complex (WVDE, 2019). Although a bachelor's degree can still lead to a well-paying job, the choice of a college major plays a critical role (Carnevale et al., 2017). Post-secondary certifications, associate degrees, licenses, and trade certificates can lead to viable jobs and are considered a good alternative to a four-year degree (Carnevale et al., 2018; WVDE, 2019).

### ***Career Readiness***

Recognizing that college may not be the path of all students, schools are developing programs and curricula that prepare students for career readiness. Beyond the core academic disciplines, career ready students learn technical and employability skills such as time-management and empathy (Cease-Cook et al., 2015).

Conley and McGaughy (2012) recommend beginning both career planning and research during the middle school years. CTE courses offer an applied approach to learning that has been found to increase engagement, and these courses show a positive impact on all graduates, not just those going directly to employment (Dougherty et al., 2019).

The ACT WorkKeys Assessment is a possible measurement tool for indicating a high school student's career readiness (Schultz & Stern, 2013). Students can demonstrate workplace readiness by earning the WorkKeys National Career Readiness Certificate, a

valuable credential for students and job seekers seeking to verify foundational workplace skills... in Applied Math, Graphic Literacy, and Workplace Documents.” (ACT, Inc., 2020, para. 5). WorkKeys “appears to be an assessment that could respond to the needs of both employers and educators and serve as an indicator to test takers of their readiness for further education or a career” (Schultz & Stern, 2013, p. 164). The business community is also slowly recognizing the need to look past a college degree as the only indicator of a successful employee; Google is often hailed as a front runner for a hiring practice that often does not require submission of a college transcript (Nisen, 2013). Although a majority of Google hires still do have a college degree, Google's Senior Vice President for People Operations, Laszlo Bock, identifies the upward swing of hiring more and more non-college graduates, making it possible for a team of Google employees to be composed of up to 14% of people without college degrees (Nisen, 2013). According to a report published by Georgetown University (2013), “by 2020, 65 percent of all jobs will require some form of postsecondary education or training” (p. 15). The post-secondary training does not always mean a four-year degree, although it is noted that in the Pittsburgh, Pennsylvania region, many employers require a college degree as part of the application process, even when the skills required of a position do not align with a college degree (Burning Glass Technologies, The Council for Adult and Experiential Learning, and Allegheny Conference on Community Development, 2016). Due to the ever-changing nature of the job marketplace in today’s global economy, it is difficult to gain all the necessary skills through one training or degree program. As noted by Strom et al. (2014), “[f]ormer U.S. Secretary of Education William Bennett and David Wilczol (2013) have challenged a common assumption that getting a 4-year college degree in any

subject will lead to a well-paid position and middle-class status” (p. 171). Many presidents have also remarked on the value of college degree programs, including Barack Obama who said, “But I promise you, folks make a lot more, potentially, with the skilled trades and manufacturing than with an art history degree” (Office of Press Secretary, 2014, para. 20).

Combining the best of college readiness and career readiness could allow school leaders to meet the various needs of a diverse population. In fact, providing career classes to students does not need to be a separate endeavor from college preparation. Students taking more career classes are “just as likely to pursue a four-year degree as their peers” (Dougherty, 2016, p. 2).

### ***David Conley’s College and Career Readiness***

David Conley (2012) defined college and career readiness through a model that includes the following cognitive and noncognitive dimensions: “a) key cognitive strategies; b) key content knowledge; c) key learning skills and techniques, and d) key transition knowledge and skills” (p. 3). This model has been updated from an original version that also included four dimensions - “key cognitive strategies, key content knowledge, academic behaviors, contextual skills and awareness” (Conley, 2007, p.12), but the operationalization of the latter two dimensions focused more so on college than career readiness. The definition of college and career readiness is also thought of “as the level of preparation a student needs in order to enroll and succeed - without remediation - in a credit-bearing course at a postsecondary institution” (Conley, 2010, p. 21). Conley (2010) challenged schools to measure a student’s readiness in all four of the dimensions and reflect upon the impact that the learning experiences help develop each of these



dimensions. Although other factors outside these dimensions impact a student's readiness, the dimensions of Conley's (2010) model included those areas that high schools can take responsibility to provide to all students (Conley, 2010). The key cognitive strategies identified by Conley (2012) needed for college and career readiness include "ways of thinking that are necessary for college-level work" (p. 2). These strategies assist the learner in conceptual understanding of most topics taught at the entry-level of universities and material presented in careers (Conley, 2010). As a companion to the key cognitive strategies, Conley (2010) identified key content knowledge as critical to the application of the cognitive strategies. The key learning skills and techniques portion of Conley's (2010) model encompassed self-management behaviors such as self-monitoring and self-control, behaviors that are completely independent of any particular content area (Conley, 2010). Key transition knowledge and skills encompasses the contextual awareness required to be successful in college and career (Conley, 2010). "This particular dimension represents the information about the campus [or workplace] system and norms necessary for successful academic and social navigation" (Baber et al., 2010, p. 4). These four dimensions interrelate to encompass Conley's (2013) model of college and career readiness. Conley's (2013) model provided a visual for school leaders to consider the interrelated components needed to prepare students to be college and career ready.

#### **Figure 4**

*Diagram 1 Conley (2013)*



The dichotomy of college or career does not clearly communicate the complexity of current workforce trends (WVDE, 2019). Preparing today's students means more than choosing to enter a four-year institution or an immediate career after high school (WVDE, 2019). Many graduates may choose to enter the workforce after graduation but choose or be selected later by an employer to receive academic training. Others may find that a certificate from a technical or community college is sufficient for their career goals.

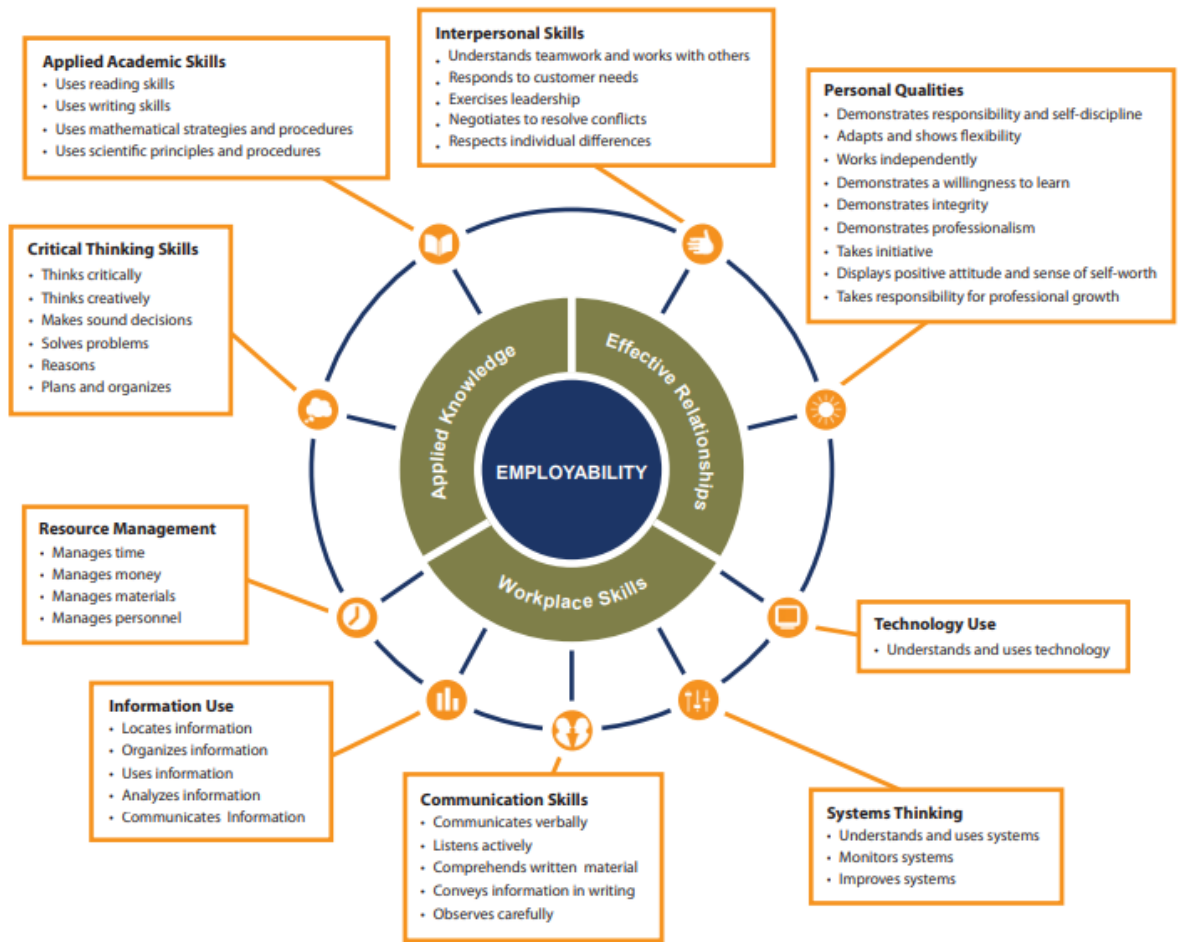
### **Employability Skills**

The Office of Career, Technical, and Adult Education within the U.S. Department of Education's Division of Academic and Technical Education, in partnership with workforce development, business organizations, and others, developed the Employability Skills framework that identifies important components of college and career readiness. The framework includes three main constructs of employability - workplace skills, applied knowledge, and effective relationships. The specific skills identified for each of these three constructs are needed across many, if not all, workforce development and education sectors (U.S. Department of Education, 2012). Like Conley's (2010) model of college and career readiness, the Employability Skills framework provides a visual for

school leaders to develop work-based learning programs most effectively for secondary school students.

**Figure 5**

*U.S. Department of Education (2012)*



***Digital Fluency***

The shifting nature of work includes rapid changes in automation, artificial intelligence, and the integration of technology in many areas of daily life (WVDE, 2019). Knowledge and use of technology are at an unprecedented demand among employers (World Economic Forum, 2018). Digital and Science, Technology, Engineering, and Mathematics (STEM)-related skills are increasingly valued (Shearer & Shah, 2018).

Literacy and numeracy continue to be considered core competencies, with computer skills being added to the list of skills —determining the prospects for employment among graduates” (Baird & Parayitam, 2019, p. 625). The need for digital fluency amongst prospective employees may require a shift in instructional strategies used in secondary schools.

### ***Transportable Skills***

The skills gap of prospective employees in the area of transportable skills, namely collaboration, communication, critical thinking, and problem solving, has been well documented (Labi, 2014; Casner-Lotto, & Barrington, 2006). In a Canadian University study, employers were found to assess employees on their time management, team spirit, work attitude, and other transportable skills (Chhinzer & Russo, 2018). Transportable skills are those that transcend particular job positions or career, the skills that are valued in many sectors or industries. Many in the business community would agree —that the U.S. is not doing enough, fast enough, to prepare for a vibrant economic future for our children and our nation” (Casner-Lotto, & Barrington, 2006, p. 7). Tension is evident between the need for a skilled workforce that can compete globally and the training gap of blue-collar workers (Sutton et al., 2016). —Oral and Written Communications, Professionalism/Work Ethic, and Critical Thinking/Problem Solving” are highlighted as critical areas in which over half of new employee entrants were rated as deficient (The Conference Board et al., 2007, p. 11). Similarly, a study conducted by Kleckner and Marshall (2014) aimed to assess employer perceptions of recently hired employees’ communication skills and compare those among business students and their teachers. Through regional and national surveys, the study found dissatisfaction from employers on

recent hires' ability to employ soft skills and a need for increased dialogue about curriculum and course competencies between business faculty and employers (Kleckner & Marshall, 2014). West Virginia employers identify soft skills as a critical challenge for filling open positions (WVDE, 2019).

The Collaborative for Academic, Social, and Emotional Learning (CASEL, 2020) identified core elements that contribute to a student's social emotional learning (SEL). The SEL framework includes the five core competencies of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (CASEL, 2020). Each of these core competencies relate to a student's college and career readiness. For instance, "[s]elf-management is defined as regulating one's emotions to handle stress, control impulses, and persevere in overcoming obstacles; setting and monitoring progress toward personal and academic goals; and expressing emotions appropriately" (College & Career Readiness & Success Center at American Institutes for Research, 2013, p. 3). Employees and their prospective employers in all career fields will benefit from well-developed self-management skills.

Graduating with a high school diploma is not enough; in order to guarantee continued employment success, students will be expected to continue learning beyond high school (WVDE, 2019). Opportunities for those with just a high school diploma are on the decline, and the demand for pre-baccalaureate credentials are in rising demand (Carnevale et al., 2018). Employers also indicate "that K-12 schools should be responsible for providing the necessary basic knowledge and applied skills for their new entrants" (The Conference Board et al., 2007, p. 54). Mupinga and O'Connor (n.d.) noted "[w]ith businesses calling for more properly trained workers, many are questioning

the value of a traditional four-year college education” (p. 69). Who takes the sole responsibility of developing students into career-ready graduates is unclear; however, “[a]ll stakeholders (business, educators, and community members) should consider methods of enhancing important workplace skills” (The Conference Board et al., p. 58). A concerning picture is painted for high school graduates going straight to work. High school graduates were rated deficient in the basic knowledge and skills of Writing in English, Mathematics, and Reading Comprehension, deficient in Written Communications and Critical Thinking/Problem Solving, deficient in Professionalism/Work Ethic, and adequate in three skills identified by the employers as very important - Information Technology Application, Diversity, and Teamwork/Collaboration (The Conference Board et al., p. 11). The report highlighted a need for further research in identifying case study programs that effectively develop young graduates’ workforce readiness (The Conference Board et al.). Scogin et al. (2017) noted many employers rate noncognitive skills as a critical need but also rate recent hires as deficient in these areas. The gap between acquired skills from academic training and employer organizations is reiterated many times in the literature.

“It is estimated that students will change jobs as many as 10 times in their work career. This job change indicates that students will be using job searching and preparation skills throughout their lifetime” (Mupinga et al., n.d., p. 72). The 2016 Inflection Point report also highlighted the importance of developing lifelong learners, future employers who are willing, able, and resourceful enough to “upskill” as available careers and positions change (Burning Glass Technologies et al., 2016). “The world of work no longer guarantees long-term career progressions within the security of hierarchical

organizations” (O'Connor et al., n.d., p. 47). The notion that young people will retire in the same job at the same company that they initially begin their careers is unlikely.

Even with all of the recommendations related to career development and the critical need verbalized by employers, many institutions of education are slow to change. College programs, as well as high school programs, are consistently called out for not doing enough to prepare graduates. It is less common for an institution to advocate for an ongoing, targeted course curriculum that prepares students to enter the workplace, despite consistent and repeated messages from employers indicating that students entering the workplace lack communication skills, flexibility, tactfulness, initiative, and teamwork skills (Mills & Sutera, 2010, p. 75).

### **Partnerships**

Preparing students for life after graduation requires partnerships with post-secondary institutions, businesses, and other community organizations. Workforce preparedness does not happen in a secondary vacuum but rather requires an intersection of education and industry (WVDE, 2019).

### ***K-12 and the Business Community***

In order to successfully prepare students for available careers, it is important that employers and educational institutions find ways to understand the needs of each group (WVDE, 2019). The *Are They Really Ready To Work?* report is a clear call for the business community to outline the skills necessary for the workforce and a call for business leaders to create opportunities for students to cultivate these skills. A Workforce Readiness Report Card is provided in the report, with the following conclusion: —Employers expect young people to arrive in the workplace with a set of

basic and applied skills, and the Workforce Readiness Report Card makes clear that the reality is not matching expectations” (The Conference Board et al., 2007, p. 10).

In the Pittsburgh region, an in-depth look at the future of the workplace in the region was conducted by key community groups - Burning Glass Technologies, The Council for Adult and Experiential Learning, and Allegheny Conference on Community Development (2016). The organizations produced a comprehensive document entitled *Inflection Point 2017-18: Supply, Demand and the Future of Work in The Pittsburgh Region*, making a call for action from local educators and future employers of the region concerning career readiness and development. With a possible shortfall of around 80,000 workers by 2026, the report demanded Pittsburghers do what they do best - collaborate across sectors in support of the entire region. Bill Demchak, President and Chief Executive Officer of The Pittsburgh National Corporation (PNC) Financial Services Group, Inc., called for the employer community to —move from being simply consumers of talent, to becoming investors in the labor marketplace” (Burning Glass Technologies et al., 2016, p. 2). Demchak also called on the employer community to work more closely with the education community. —Changing skill sets across virtually all occupations means that a much tighter education and industry connection must be created to align supply and demand” (p. 2). Recognizing that many job sectors are being automated and others require more technological skills, Demchak asked for the K-12 system to ensure —a future workforce with digital fluency” (p. 2). Grubb (as cited by Sutton et al., 2016,) states —the sub-baccalaureate labor market is largely local, with employers searching for workers locally and developing relationships with community educational providers” (p.



723). With this said, Sutton et al. surmised that students are still not yet mastering the necessary skills in high school for these career positions.

A working group of community leaders provided an update of the initial *Inflection Point* report one year later, titling the update *Inflection Point 2017-18: Supply, Demand, and the future of Work in the Pittsburgh Region*. Finding that “[g]iven current estimates that 65% of children currently entering elementary (or preK-6) school will work as adults in occupations that currently do not exist, a focus on future skill demand is critical”

(Burning Glass Technologies & The Council for Adult and Experiential Learning, n.d, p.

24). Although less than 10% of employers are working closely with the educational community in the Pittsburgh region, the updated *Inflection Point* report pointed out that “[i]ndustry and educators must equally stress the need for everyone to have digital skills, work-ready behavioral skills, and the ability to continue to learn and grow on the job”

(Burning Glass Technologies, n.d., p 7). To help employers find individuals with the appropriate skillset, educational institutions and industry will need to become more interconnected (WVDE, 2019).

Scogin et al. (2017) highlighted one particular school program in the midwest of the United States where teachers work closely with local professionals of a nonprofit, outdoor education organization to develop learning experiences for students. The students were found to have no significant difference in test scores for the experiential group and traditional learning group (Scogin et al.). Sutton et al. (2016) identified legislation allowing local employers an opportunity to design career development high school courses, many with a focus on careers in blue-collar fields. Emphasis on these sub-baccalaureate pathways can lead to —axed academic requirements to grant students

greater flexibility in taking industry-designed courses, such as construction and welding classes” (Sutton et al., p. 725). Many other programs emphasizing alternate pathways are being developed and supported across the country, including “Youth Apprenticeship Carolina” in South Carolina, “Urban Skilled Trades Connection” in Wisconsin, and the “Jump Start” program in Louisiana” (Sutton et al., p. 725).

Fletcher et al. (2018) reaffirmed the need for both basic and applied skills: “college and career readiness should involve an appropriate set of academic skills in addition to generalizable and specific occupational skills required in broad industry clusters” (p. 79). A clear disconnect exists between the school curriculum and instruction and what the hiring organizations in a community need from their hires. The findings of Scogin et al. (2017) “suggest disconnects between what modern-day business want in their employees and what academic training provides” (p. 41). To help establish stronger connections between education and industry, WVDE (2019) recommended school districts to connect with local employers within high-value careers and conduct regular meetings with these employers (p. 4).

The business community can assist educational institutions in providing a rich career preparation program. Baird and Parayitam (2019) recommended that employers conduct classroom visits, serve on panel discussions, engage in resume critiques with students, conduct mock-interview workshops, and serve on boards. Each of these recommendations can help “form a shared and mutual partnership” (p. 631) between the employers, students, and educational institutions.

Mupinga and O’Connor (n.d.) provided a list of 10 reasons to include career preparation programs in the general curriculum for secondary schools, including but not

limited to unprepared graduates, diminishing career opportunities for the ill-prepared, and increased remedial courses at the college level. Bringing together employers with academicians can make instruction more meaningful and relevant to students, as well as increase alignment between classroom instruction and the needs of the workplace (Busteed, 2014).

### ***K-12 and Postsecondary Institutions***

Other partnerships are being formed between secondary school programs and postsecondary institutions. Conley and McGaughey (2012) recommended getting feedback from postsecondary settings about reading and writing expectations, technological skills, etc., to ensure students are prepared for academic life after graduation. Recommendations have been made to increase collaboration between teaching faculty and employers when creating course expectations and curriculum (Kleckner & Marshall, 2014).

With a growing demand for post-secondary credentials, it is incumbent for colleges and universities to consider how to build upon the career readiness programs of secondary schools. Also, with the rising cost of a traditional college degree, it is critical that colleges and universities prove the value of a degree, and furthermore, colleges should ensure that the educational experiences during the postsecondary years align with the expectations of business and industry (McAleer, 2013). Curriculum at the higher education levels could include the development of employability skills for graduates (Baird & Parayitam, 2019). Many employers also value work experience that could be acquired before graduation through the curricular programming at a postsecondary

institution (Finch et al., 2016). It would be most effective to align the efforts of local high schools with the resources and programs of local post-secondary institutions.

### **Work-based Learning**

More and more education departments are mandating career development and readiness programs and curriculum in schools. For many high school students, these mandates result in work-based learning opportunities. Operationally, work-based learning is defined as a range of approaches and strategies where individuals learn through a work environment, while also enrolled in an education program that leads to a degree, vocational certificate (e.g., an apprentice aircraft mechanic), or credential” (Knepler & Zapata-Gietl, 2019, p. 2). Work-based learning can take many forms, including whole-school initiatives like career academy programs or individual opportunities of job shadowing or industry-based credentialing. Luecking (2009) identified job shadowing, informational interviews, workplace tours,... workplace mentoring, volunteer work, serving learning, on-the-job training, internships, apprenticeships, and paid employment” (p. 11) as forms of work-based learning. The Youth to Work Coalition (2011) recommended implementing work-based learning in three primary stages: self-exploration beginning in elementary/middle grades and continuing until 9th or 10th grade, career exploration until 11th or 12th grade, and career-planning and management through postsecondary education. In short, in order to identify and pursue career goals, youth need a wide range of exploration and on-the-job experiences, as well as opportunities to practice soft skills and specific career pathway skills (U.S. DOL, 2013).

In a 2019 study by the National Science Foundation Division of Undergraduate Education at the University of Chicago, the Business-Higher Education Forum, and Northeastern University, researchers aimed to better understand work-based learning programs through the lens of the partnering employer organizations. Of the nine employers surveyed, all offered at least one type of WBL experience, with the most common experience being a summer internship lasting from 6-12 weeks (Knepler & Zapata-Gietl, 2019). Although the frequency that high school students participate in WBL is unclear, the surveyed employers recognize how WBL participation allows students to develop 21st Century skills like teamwork and collaboration (Knepler & Zapata-Gietl, 2019). Local employers need to be aware of the WBL programs offered at the secondary school (WVDE, 2019).

### ***Career Academies***

Career academies are a programmatic approach to structuring high schools to allow students individualized pathways to a future career. Generally, career academies are composed of a small set of students taught by a core team of teachers. The curriculum of a career academy is organized around a particular career, with the goal of connecting classroom learning with real-world problems (Hackmann et al., 2018). Enrollment in a career academy provides students with learning opportunities beyond the classroom like job shadowing and internships (Brand, 2009). Many career academy programs situate academic learning into a specialized career pathway. Focusing on a career pathway rather than specific training for a career can be a beneficial way to develop career ready students (Conley & McGaughey, 2012). In a study of an Information Technology career

academy program in Wake County, NC, researchers found students have an increased likelihood of graduation, a reduced number of absences during their 9<sup>th</sup>-grade year, and increased likelihood of earning an industry certification in the field. An interesting finding was that the study also found enrollment in the academy has little effect on academic performance (Hemelt et al., 2019).

Through internship and other real-world experiences, career academies have also shown promise in improving students' non-cognitive skills (Kautz et al., 2014).

In order to successfully implement a career academy program, Hackmann et al. (2018) noted the following elements to be in place: (1) Cross-sector collaboration amongst a variety of community members, including school administrators, business and industry leaders, parents, etc.; (2) Interdisciplinary curriculum that promotes both college and career readiness; (3) School leaders who are committed and opportunities for distributed leadership beyond school principals; and (4) Data collection measures and monitoring processes (pp. 182-184).

Research studies have been conducted examining the particular models of programs to develop students career readiness in partnership with the local community. Fletcher et al. (2018) found three important elements of a successful career academy program: "shared understanding of purpose, clear vision for implementation and recognition of the need for the development of local capacity" (p. 87). The qualitative case study highlighted some interesting shortcomings of the specific career academy, notably a lack of teacher collaboration and a lack of connection between the work-based experiences and class curricula. Partnerships between the local school district and the local

business community were found to be a critical attribute of an effective career academy program (Fletcher et al.).

### ***Job Shadowing and Internships***

Along with mandates from the state level, individual schools and districts are looking to increase the opportunities available to students for career preparation. Job shadowing and internships are avenues that allow students to apply academic and technical knowledge in work settings (National Association of Colleges and Employers [NACE], 2011). A job shadow is a career exploration activity that allows a student to spend a short period of time with a competent worker so that the student can decide whether the career fits his or her aspirations (PDE, 2017). An internship is a highly-structured, sustained career preparation activity in which students are placed at a workplace for a defined period of time to participate in and observe work firsthand within a given industry” (PDE, 2017, p. 19). While job shadows usually enrich a course of study and can be integrated as one piece of a teacher’s course objectives, students are likely able to earn one or more high school credits through an internship opportunity (PDE, 2017). Using the Educational Longitudinal Study of 2002, Hutchins and Akos (2013) found that only one-half of schools from the study offered job shadowing and community service opportunities and only one quarter of the schools provided more intensive work-based learning opportunities like internships and school-based enterprise. Although sampling limitations exist, the data indicates a need to increase job shadowing and internship programs at the secondary level. A study conducted by Strom et al. (2014) revealed that the exploration activity preferred by most

students (51%) was job shadowing, going to work with someone, and observing what they do on the job” (p. 172). Job shadowing experiences have also been found to increase relevance for students’ academic learning pursuits, connecting the dots for students on how their classroom assignments connect with their career goals (Jahn & Myers, 2014). Internships are a more intensive type of job shadowing opportunity with students taking on more or all of the work-based responsibilities. Surveys show that students find these internship opportunities valuable, and employers state valuing internships as a way to find entry-level employees (Brooks & Simpson, 2014).

Shadowing and internship opportunities during high school can open up future career-related doors for students, like college internships or entry-level career positions, as well as increase student confidence with career-related tasks (Mulkerrin et al., 2018). Another benefit to students is determining whether the shadowing or internship opportunity seems like the right career pathway for them to pursue (Mulkerrin et al.). The shadowing or internship opportunity provides a low-cost opportunity for students to learn about the ins and outs of a career, and at the high school level, students can determine this before acquiring college debt. For employers, interns can be evaluated as a prospective employee, and if granted a position, student interns begin employment with valuable training experiences (Mulkerinn et al.). The dual advantage to students and employers has been documented by NACE. Interns are interested in contributing to the work of the organization, benefiting themselves through the application of classroom knowledge and benefitting the employer through the student’s engagement in



organizational tasks and projects (NACE, 2011). Although primarily focused on internships at the collegiate level, NACE defined a legitimate internship as one that meets seven criteria statements, including transferable knowledge and skills, definitive beginning, and end, plus a job description for the experience, and regular feedback by a supervisor (2011). Internships by definition and operationalization are much lengthier and involve more frequent work-based opportunities than a job shadowing experience; however, both have perceived benefits for high school students that deserve further exploration.

Schools in rural communities have been shown to offer fewer work-based learning opportunities overall, but students in rural schools may have more access to job shadowing programs when compared to urban schools (Hutchins & Akos, 2013). An interesting finding is that, when controlling for available programming, students in rural communities were less likely to participate in these job shadowing experiences (Hutchens & Akos, 2013).

### ***Historically Underperforming Students***

Career development programs and curriculum are critical for all learners, and many benefits have been documented for disadvantaged students. IDEA (2004) requires that a student with a disability graduate high school ready for postsecondary education and employment. —Eighty-five percent [of students with disabilities] were reported to have engaged in employment, postsecondary education, or job training since leaving high school” (National Center for Special Education Research, 2011, p. 32). This is 10 percentage points less than reported by same-age peers (National Center for Special Education Research, 2011). Students with disabilities are also identified as less likely to

enroll in postsecondary school. —Within 6 years of leaving high school, of the 63 percent of young adults with disabilities who had ever enrolled in postsecondary education, but no longer were attending, 38 percent had graduated or completed their programs” (National Center for Special Education Research, 2011, p. 19). Holland and Deluca (2016) found that students of color and those from low socioeconomic backgrounds typically receive little to no career development during the high school years. Holland and Deluca (2016) argued “that disadvantaged youths’ poor understanding of careers and postsecondary education is especially detrimental to their attainment, because it makes them vulnerable to costly for-profit programs that require them to commit to occupations they know little about” (p. 262). Students from low socioeconomic backgrounds can benefit greatly from work-based learning and career readiness opportunities during the secondary school years, increasing the chances of making informed decisions about the future of their careers.

Students with disabilities also benefit from work-based learning opportunities and may receive a boost in postsecondary labor outcomes when the opportunities include paid employment (Gold et al., 2013). Postschool outcomes have been shown to improve for these students when they are afforded work-based learning experiences (Carter et al., 2011; Austin & Trainor, 2011; Test et al., 2009). Even with the documented and assumed benefits of work experience, few students with disabilities typically secure paid work experience during high school (Carter et al.; Landmark et al., 2010). When participating in a work-based learning program, students gain a broader understanding of available careers, develop various work styles, identify enjoyable work types, discover how learning occurs in work settings, and identify supports that may be available in a natural

work setting (Cease-Cook et al., 2015). In addition, the U.S. DOL (2013) recommended that students with disabilities learn to ask for support and reasonable accommodations according to their individual needs in a work-based learning program. Students with disabilities are afforded transition services to ensure their readiness for postsecondary education, work, and independent living. Gold et al. recommended that school districts allocate resources to support students with disabilities in securing jobs in their local communities. Mazzotti et al. (2014) recommended that students with disabilities are taught job-search skills, practice completing job applications, and participate in mock interviews (p. 11). They also recommend that career awareness courses be offered and access to the courses be given to students with disabilities. In regards to paid employment and work experience, teachers conducting transition services should identify employment opportunities for students with disabilities (Mazzotti et al.). Work studies where students take classes for part of the day and work the rest of the day are also considered an essential predictor of transition services (Mazzotti et al.). Work-based learning experiences should be offered early and often for students with disabilities, allowing them multiple opportunities to build a strong foundation for college and career success (Gold et al.).

Students from minority groups have also historically lagged in the school-to-work transition. With a push for particular academic initiatives such as STEM, enrollment of minority students, particularly African American students, has shown to decrease in career-based programs (Fletcher & Cox, 2012). By offering off-campus experiences such as internships, minority students can broaden their understanding of career pathways and clear up misunderstandings or assumptions about particular career fields (Sansone et al.,

2019). This increased knowledge and experience ultimately leads to social capital, networking, and increased access to information about career opportunities (Sansone et al.). Sansone et al. found that focusing the work-based learning program on holistic approaches to the students' needs is critical to success.

Each school district within a community is quite unique, and therefore, it is possible to have varied career development programs at individual schools. O'Connor et al. (2015) recommended a three-component process to create a career program that is unique to the community the school serves. The first component involves doing an analysis of the student groups at the school to determine the career needs of each student group. The second component requires a matching of career development activities to the various student groups, using both existing internal and external resources, identifying new resources needed, and shifting existing resources to meet the needs of the student groups (O'Connor et al.). The last component is the implementation phase of the career development phase, which provides opportunities for students to assess, explore, search, and prepare for a career (O'Connor et al.).

School leaders are tasked with developing programs that suit the needs of their learners, but these programs must also focus on the needs of the local employers. By providing work-based learning opportunities like job shadowing, internships, or more robust career academy programs, school leaders can help students make connections between academic learning and on-the-job training.

### **Summary**

Although many studies have identified the skills gap and others document evidence of successful programs for increasing high school graduation and postsecondary enrollment,

limited research can be found to identify the specific programs or work-based learning opportunities for high school students that the business community identifies as promising for filling the skills gap with future employees. Some research shows that job shadowing and internship opportunities have promise, while other studies indicate that a whole-school remodel into a career academy promotes a student's career readiness. As the nation calls for more job-ready employees, educational organizations will need to look closely at the work-based learning opportunities afforded to students.

## Chapter 3

### **Methodology**

A high school graduate's career readiness is an important topic in today's educational landscape. The purpose of this research study is to extend the current research on work-based learning to identify the experiences employers believe high school students should participate in before graduation to develop the necessary skills for career readiness. Secondary administrators have been tasked with incorporating work-based learning opportunities into curricula programming, so this research study should help identify the specific educational opportunities that employers believe should be incorporated within the work-based learning programs during the high school years. Additionally, this investigation explored career readiness at the secondary level. Specifically, research suggests a connection between work-based learning activities and career readiness of students. Work-based learning was included in the quantitative survey for the participants. Implementing a quantitative design gauged the statistical significance, if any, of career readiness and work-based learning activities in the secondary setting. The two sets of questions in the survey were based on the aforementioned research.

### **Research Questions**

The research will discuss the following questions:

1. What skills are required by employers in a northwestern county of Pennsylvania?
2. What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?

3. What types of learning activities do employees in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?

### **Research Design**

The research conducted was quantitative survey research. Since qualitative data were not used, intrusion on the validity of the actual numbers and possible correlating relationships were not a concern. The data were collected through a survey given to employers across a northwestern county in Pennsylvania. The survey included demographic and employer background questions, as well as questions probing an employer's perspective on ELA, mathematics, technology, digital literacy, and soft skills required and valued by employers. The survey also included a section asking employers their perspective on the frequency they believe high school students should participate in particular activities to develop ELA, mathematics, technology, digital literacy, and soft skills.

### **Setting**

The setting for the current investigation was a northwestern county of Pennsylvania. The county is home to approximately 112,000 residents. The median household income is \$48,768, while the unemployment rate in the county for July 2020 was 14.2% (Pennsylvania Department of Labor and Industry, 2020). Some of the top employers in the county include Steward Sharon Regional Health System, Wal-Mart Associates, Grove City College, and First National Bank of Pennsylvania (Pennsylvania Department of Labor and Industry, 2020). The population by race in the northwestern county of Pennsylvania is 91.2% White, 5.7% Black, 3.1% Other, and 1.4% Hispanic Origin (all races) ( Pennsylvania Department of Labor and Industry, 2020). Of the

46,300 members of the labor force, 8.8% are unemployed (Pennsylvania Department of Labor and Industry, 2020).

The survey method was selected to gather information about the opinions of the business community from the United States. —A survey is a systematic way of asking people to volunteer information regarding their opinions and behaviors” (Trochim et al., 2016, p. 172).

### **Participants**

The sample for this research study was employers located within a northwestern county of Pennsylvania. The county was selected because the researcher serves as an administrator at a high school in the county. School districts and other organizations in the county are slowly creating work-based learning programs, and it is important to understand the perceptions, beliefs, and opinions of employers who will ultimately work with and potentially hire high school students. Using an email list provided by the Career Link located in the northwestern county of Pennsylvania, the survey was digitally sent to 200 employers. Of the 200 employers who were sent the survey, 41 employers participated (20.5% participation rate).

### **Instrumentation**

The instrumentation for this research was an electronic survey. The survey consisted of a combination of questions focused on the employer’s background and demographics, relative number of jobs that require specific skills, relative number of employers that show a basic mastery of specific skills, and the relative frequency that high school students should participate in particular work-based learning activities. An electronic survey was selected to reduce paper, postage, and postage and data entry costs



(Trochim et al., 2016). The five background and demographic questions asked the employers' industry type, employers' tenure, involvement with hiring, average age of new hires, challenge for finding qualified employees, and the reasons for struggling to fill open positions. The survey was designed to address three main focus areas outlined below.

#### Focus Area 1: Skill Needs

- What skills are needed from employees for job-related tasks?
- Do employers find it challenging to find employees for specific skills? Which hard and soft skills do employers perceive as the most challenging to find in the workforce?
- What skills do employers need from the following broad categories?
  - English Language Arts (ELA)
  - Mathematics
  - Technology
  - Digital Literacy
  - Soft Skills (WVDE, 2019)

#### Focus Area 2: Activities and Experiences

- What learning activities do employers believe high school students should participate in to develop skills required in the workplace?
- What specific educational experiences do employers value most from the work-based learning opportunities offered?

For each focus area, multiple questions were used to examine employer beliefs, preferences, and opinions. Background information from each respondent and employer

was included at the beginning of the survey. The survey questions included for the focus areas of Skill Needs, Experiences, and Credentials were created using a unidimensional scaling method called Likert scaling (Trochim et al.). The Likert scale was selected to measure an employer's preference or agreement towards the need for a particular skill and an employer's preference or agreement towards a high school student's participation in a particular work-based learning activity or experience.

The survey included a total of 20 Likert scale and selected-response questions. The first five questions were selected-response questions. The focus of these first five questions were on the background of the employer. The first 10 Likert questions required participants to select options that indicated the relative frequency (5=Does Not Apply, 0=None, 1=Very Few, 2=Some, 3=A Fair Number, and 4=A Lot) of jobs that require specific skills and the relative frequency of applicants who demonstrate a basic mastery of the same skills. The last five Likert questions required participants to select options that indicated the relative frequency (5=Does Not Apply, 0=Never, 1=Rarely, 2=Sometimes, 3=Often, and 4=Daily) that secondary students should participate in job-related tasks. Appendix A includes a sample of the survey questions from each of the three focus areas described above (WVDE, 2019).

The survey instrument described here is an extension of a previous research study conducted by WVDE. The WVDE conducted a study focusing on skill needs and availability, preference for degrees or skills, and awareness of WVDE Career Programs. Survey questions from the needs and availability focus area from the WVDE were taken word-for-word. The survey questions in the awareness of the WVDE Career Programs focus area were revised to gain insights about the work-based learning programs offered

in the northwestern county of Pennsylvania. Additional questions (numbers 16-20) concerning learning activities and experiences preferred by employers were added to the survey.

### **Procedures: Data Collection and Management**

After receiving approval from the Youngstown State University (YSU) Institutional Review Board (IRB), the northwestern Pennsylvania Career Team teachers electronically distributed this survey for data analysis for the northwestern Pennsylvania Career Team. The northwestern Pennsylvania school district superintendent provided permission with a letter of support to analyze this data for this specific research. In addition to other requirements, this letter was submitted to the IRB for approval. The survey consisted of a total of 20 questions, and it was sent to employers via email using a contact list provided by the West Central Job Partnership Career Link. The email invitation described the survey's purpose to support the work-based learning programs at local high schools in the northwestern county of Pennsylvania.

The survey was attached to the email using the online survey platform Google Forms. A copy of the survey was included in the body of the email to provide easy access. Personal information was not collected and data collection was anonymous to protect the privacy of respondents and employers.

### **Analysis Plan**

The data analysis plan for this investigation included the following steps. Initially, all background information was aggregated and reported. This provided the reader with a snapshot of the participating employers. Second, reliability estimates and Pearson's zero-order correlations were conducted in an effort to assess the quality of the

responses. Correlational analyses such as regression or factor analysis were used to address each research question separately. Item responses were turned into factors for the purpose of analyses. A more detailed analysis plan will be provided for Chapter 4.

## Chapter 4

### Results

The current investigation sought to explore the factors that affect a secondary students' career readiness. Exploratory factor analysis was selected for this research study. With a goal of finding the constructs and concepts that employers believe help students develop career readiness skills, the researcher used exploratory factor analysis (EFA). Exploratory factor analysis was selected to identify the unobserved factors that might contribute to the development of career readiness in high school students.

Research question 1:

- *What skills are required by employers in a northwestern county of Pennsylvania?*

Research question 2:

- *What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?*

Research question 3:

- *What types of learning activities do employees in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?*

This chapter presents a discussion of the quantitative analysis that was conducted based on the research questions guiding the study. Quantitative results examined the consistency of the participants' responses and employers' perceptions of each of the factors. The results also examined the significance among employers who struggle to find qualified applicants and those that do not, as well as the significance between groups for the average age of new hires.

#### **Descriptive Statistics: Employers**

A total sample of 41 out of 200 employers in a northwestern county of Pennsylvania participated in the survey, a response rate of approximately 21%. Employers across a range of career clusters participated in the survey, including manufacturing to healthcare. A full description of how each participant described his or her organization/industry can be found in the Appendix A. The majority of the participants indicated they have worked at their organization for more than 10 years. A breakdown of the participants by the length of employment at the current organization is provided in Table 1.

**Table 1**

*Breakdown of Employer Participants by Length of Employment*

Length	Frequency	Percent
< 1 year	2	4.88
1-3 years	4	9.76
4-6 years	5	12.20
7-9 years	4	9.76
10+ years	26	63.41

Table 2 provides a breakdown by which participants indicated being involved with hiring.

**Table 2**

*Breakdown of Employer Participants by Hiring Involvement*

Response	Frequency	Percent
Yes	36	87.80
No	5	12.20

Table 3 provides a breakdown by which participants indicated whether they struggle to find new qualified employees when hiring for open positions.

**Table 3**

*Breakdown of Employers Who Struggle to Find New Employees*

Response	Frequency	Percent
Yes	30	73.17
No	11	26.83

Many participants indicated multiple reasons for struggling to find qualified candidates to fill open positions. Close to half of the participants indicated that they cannot find individuals with the necessary skills, individuals with necessary work experience, and the qualified candidates attracted to the salary or hourly rate.

Participants were asked to provide responses across three general lines of questions: What they identified as required skills to hire (Required), basic level of mastery to hire (Hire), or skills that need to be developed in 9<sup>th</sup> -12<sup>th</sup> grade students (Develop). These were further delineated by areas: ELA, Mathematics, Technical, Digital Literacy, or SEL. Factors were computed for each area by computing the mean of the responses provided for each. Table 4 provides reliability estimations for each of the factors.

**Table 4***Reliability Estimation for Each Factor*

Factor	N	Reliability
Required ELA	10	0.908
Hire ELA	10	0.934
Develop ELA	8	0.815
Required Math	10	0.928
Hire Math	10	0.949
Develop Math	8	0.830
Required Tech	10	0.866
Hire Tech	10	0.88
Develop Tech	12	0.867
Required Digital Literacy	10	0.929
Hire Digital Literacy	10	0.903
Develop Digital Literacy	8	0.910
Required Social Emotional Literacy	10	0.726
Hire Social Emotional Literacy	10	0.936
Develop Social Emotional Literacy	8	0.867

As indicated in Table 4, all of the reliability estimates for each of the factors are within an acceptable level (Field, 2013). The lowest reliability estimate for the factor involving the required SEL skills for employment is an acceptable level ( $>.70$ , Field, 2013) for the number of employers completing the survey.



**Research Question 1:** *What skills are required by employers in a northwestern county of Pennsylvania?*

The survey consisted of three primary sets of questions to which the participants responded. One set of questions asked participants how many jobs in their business/company require a basic mastery of particular skills for reading, writing, and language (Req ELA), mathematics (Req Math), technology (Req TEch), digital literacy (Req DigLit), and social emotional literacy (Req SEL) to successfully perform job-related tasks. Table 5 provides descriptive statistics for each of the factors related to the frequency of jobs that require each skill.

**Table 5**

*Descriptive Statistics of Factors Related to the Required Skills for Successfully Performing Job-related Tasks*

Factor	Mean	Std. Deviation	Skewness	Kurtosis
Req ELA	3.26	0.73	-0.89	-0.07
Req Math	2.90	0.87	-0.56	-0.77
Req Tech	3.03	0.80	-1.01	0.63
Req DigLit	2.74	1.00	-0.56	-0.90
Req Sel	3.76	0.33	-1.89	4.08

Req is Required.

As indicated in Table 5, the factors demonstrate good levels of skewness and kurtosis ( $| 2.0 |$  and  $| 5.0 |$  as indicated by Field, 2013). The kurtosis in the factor related to the frequency of jobs that require SEL is the highest value. The highest mean was in the frequency of jobs employers require a basic mastery of SEL. The lowest mean was in the frequency of jobs employers require a basic master of digital literacy skills.

**Research Question 2:** *What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?*

The second set of questions asked participants to select how many applicants their business/company encountered when hiring who would be able to show a basic mastery of particular skills in reading, writing, and language (Hire ELA), mathematics (Hire Math), technology (Hire Tech), digital literacy (Hire DigLit), and social emotional literacy (Hire SEL). Table 6 provides descriptive statistics for each of the factors related to the skills employers find in applicants.

**Table 6**

*Descriptive Statistics of Factors Related to the Skills Employers Find in New Employees*

Factor	Mean	Std. Deviation	Skewness	Kurtosis
Hire ELA	2.94	0.78	-0.49	-0.34
Hire Math	2.84	0.79	-0.37	-0.14
Hire Tech	2.94	0.76	-0.56	-0.34
Hire DigLit	2.74	0.83	-0.26	-0.60
Hire Sel	2.81	0.79	0.01	-0.92

As indicated in Table 6, all of the factors demonstrate good levels of skewness and kurtosis (  $| 2.0 |$  and  $| 5.0 |$  as indicated by Field, 2013). The highest mean was in the technology skills and the ELA skills employers find in applicants. The lowest mean was in the digital literacy skills employers find in applicants.

**Research Question 3:** *What types of learning activities do employers in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?*

The third set of questions asked participants to select how often students in grades 9–12 should participate in particular instructional activities to develop reading, writing, and language (Dev ELA), mathematics (Dev Math), technology (Dev TEch), digital literacy (Dev DigLit), and social emotional literacy (Dev SEL) to successfully perform job-related tasks at their company/business. Table 7 provides descriptive statistics for each of the factors related to developing a student’s basic career skills.

**Table 7**

*Descriptive Statistics of Factors Related to the Activities in Which Employers Believe Students Should Participate*

Factor	Mean	Std. Deviation	Skewness	Kurtosis
Dev ELA	2.72	0.47	-0.40	-0.53
Dev Math	2.97	0.61	-0.71	1.52
Dev Tech	2.85	0.60	-0.26	-0.49
Dev DigLit	2.38	0.65	-0.61	0.90
Dev Sel	2.70	0.47	-0.45	-0.13

Dev is Develop.

As indicated in Table 7, all of the factors demonstrate good levels of skewness and kurtosis (  $| 2.0 |$  and  $| 5.0 |$  as indicated by Field, 2013). The highest mean was in the developing mathematics skills factor. The lowest mean was in the developing digital literacy factor.

To investigate the research questions in more depth, analysis was used to determine if any significant differences exist in the responses of employers who struggle to hire qualified applicants and those employers who do not struggle to hire qualified candidates. Participants were asked to respond yes or no to the following question, ~~When applications come in, does your business/company struggle to find qualified~~

employees for most open positions?” Additionally, this analysis examined if the responses of participants based on the age group of individuals whom they are hiring. Participants were asked the average age of most new employees hired into their business/company. Participants selected from the following responses were coded as shown: 18-25 years = 1, 26-35 years = 2, 36-45 years = 3, 46-55 years = 4, 56-65 years = 5, 66-75 years = 6, and 76+ years = 7. MANOVA was also used to determine if any significant differences exist between participants who hire employees at various age groups since there is a high correlation between the responses across the require, hire, and development responses. The results of the MANOVA for each predictive value is included in Table 8.

**Table 8**

*Results of MANOVA Between Average Age and Employee Hire Struggle*

Effect		Value	F	Hypothesis df	Error df	Sig.
Average age	Roy's Largest Root	0.308	1.725c	5	28	0.162
Employee hire struggle	Roy's Largest Root	0.211	1.099b	5	26	0.385

Table 9 looks at the results of the MANOVA between the average age of hired employees and whether employers struggle to hire qualified applicants on the individual factors of the investigation related to the required skills when hiring.

**Table 9***Results of MANOVA Between Average Age and Employee Hire Struggle on Required**Factors*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig
Average Age	Req ELA	1.594	3	0.531	1.347	0.278
	Req Math	2.199	3	0.733	1.029	0.394
	Req Tech	1.738	3	0.579	1.355	0.275
	Req DigLit	1.678	3	0.559	0.59	0.626
	Req SEL	0.227	3	0.076	0.732	0.541
Employee hire struggle	Req ELA	0.1	1	0.1	0.252	0.619
	Req Math	2.622	1	2.622	3.68	0.065
	Req Tech	0.226	1	0.226	0.529	0.473
	Req DigLit	0.633	1	0.633	0.668	0.42
	Req SEL	0.022	1	0.022	0.214	0.647

Req is Require.

Table 10 looks at the results of the MANOVA between the average age of hired employees and whether employers struggle to hire qualified applicants on the individual factors of the investigation related to the skills employers find when hiring.

**Table 10***Results of MANOVA Between Average Age and Employee Hire Struggle on Hire Factors*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig
Average Age	Hire ELA	1.268	3	0.423	0.733	0.541

	Hire Math	0.264	3	0.088	0.139	0.936
	Hire Tech	0.898	3	0.299	0.767	0.523
	Hire DigLit	0.804	3	0.268	0.330	0.906
	Hire SEL	0.400	3	0.133	0.185	0.541
Employee hire struggle	Hire ELA	0.350	1	0.350	0.607	0.443
	Hire Math	0.002	1	0.002	0.003	0.957
	Hire Tech	0.211	1	0.211	0.539	0.469
	Hire DigLit	0.001	1	0.001	0.001	0.979
	Hire SEL	0.012	1	0.012	0.017	0.898

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Table 11 reveals the results of the MANOVA between the average age of hired employees and whether employers struggle to hire qualified applicants on the individual factors of the investigation related to the skills students in grades 9-12 should develop.

**Table 11***Results of MANOVA Between Average Age and Employee Hire Struggle on Develop**Factors*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig
Average Age	Dev ELA	0.401	3	0.134	0.529	0.666
	Dev Math	1.765	3	0.588	1.668	0.194
	Dev Tech	1.072	3	0.357	1.030	0.393
	Dev DigLit	0.109	3	0.036	0.070	0.976
	Dev SEL	1.368	3	0.456	2.171	0.111
Employee hire struggle	Dev ELA	0.054	1	0.054	0.214	0.647
	Dev Math	0.116	1	0.116	0.328	0.571
	Dev Tech	0.128	1	0.128	0.370	0.547
	Dev DigLit	0.026	1	0.026	0.050	0.824
	Dev SEL	0.214	1	0.214	1.019	0.321

Dev is Develop.

As indicated in Tables 9, 10, and 11, the results of the F-test show no significant differences among employers who typically hire candidates at the various age groups. The results of the F-test also show no significant differences between the average response of employers who struggle to hire qualified candidates and those who do not struggle to hire qualified candidates.

## **Summary**

In total, 41 of 200 employers in the northwestern county of Pennsylvania participated in this investigation. Participants ranged from various career clusters, including manufacturers and healthcare workers. Descriptive statistics were run to investigate the various skills required by employers in the county, the skill deficits employers find when hiring employees, and the skills employers believe will appropriately develop candidates for a position at their organization. Multivariate statistics were run to further investigate these three areas, and no statistical difference was found between the average age groups of newly hired employees and between those employers who struggle to hire qualified candidates and those who do not. Chapter 5 will describe the results of this study in relation to implications of current research on career readiness for secondary students.



## Chapter 5

### Summary of Findings

Preparing students for future careers involves a complex array of factors, and educators have the responsibility to create programs that meet the individual needs and pathways of a diverse group of students. The current investigation focused on career skills employers believe are valuable to the workplace, skills employers find in recently hired employees, and instructional activities in which employers believe secondary school students should participate. This investigation included quantitative results from an employer-administered inventory. Employers were asked to respond to questions related to the required skills for employment, skills that applicants possess, and activities in which they believe secondary students should participate. The intent is for educators, specifically, those at the secondary level, to use the results to inform their work-based learning programs.

The research question central to this investigation is: *What factors do employers believe are valuable in a career readiness program for secondary school students?* More specifically, the research questions for this study are:

- What skills are required by employers in a northwestern county of Pennsylvania?
- What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?
- What types of learning activities do employees in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?

The research suggests that employers in a northwestern county of Pennsylvania require SEL skills the most often in job-related tasks. The research also suggests that

employers are less likely to find new employees with digital literacy skills and more likely to find new employees with reading, writing, and language skills and technology skills. The quantitative research also suggests that employers feel students should participate more often in tasks to develop mathematics' skills and least often in tasks to develop digital literacy. In closer examination of the five factors, the research suggests no significant difference in responses, when grouped by average age of hired employee, and no significant differences in responses when grouped by those employers who struggle to find qualified applicants and those who do not struggle.

## **Discussion**

**Research Question 1:** *What skills are required by employers in a northwestern county of Pennsylvania?*

### **Summary of Findings**

Employers indicated the highest frequency of jobs require social, emotional, and literacy skills to perform job-related tasks. Employers indicated the next most frequency of jobs require reading, writing, and language skills. Next, the frequency of jobs requiring technology skills was indicated by employers. The second to lowest mean found was for the frequency of jobs requiring mathematics' skills. The lowest mean found was for the frequency of jobs requiring digital literacy.

The multivariate analysis indicated no significant differences for responses to questions related to the required skills to perform job-related tasks for the employers who struggle to hire qualified applicants and those employers who do not struggle to hire

qualified applicants. No significant difference was found for the groups of employers who hire new employees at various age groups.

### **Interpretation of Findings-Research Question One**

SEL encompasses five broad competencies – self-management, self-awareness, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning, 2020). These five broad competencies are not job or career specific. Rather, the competencies interrelate to help develop young people with healthy identities who can set and reach goals and carry out responsible decision making (Collaborative for Academic, Social, and Emotional Learning, 2020). In the results, employers indicated SEL is needed most often in jobs within their business/company for employees to successfully perform job-related tasks. SEL is related to employability skills, defined by the U.S. Department of Education as “general skills that are necessary for success in the labor market at all employment levels and in all sectors” (Employability Skills Framework, n.d.). Employers in the research survey indicated that to perform job-related tasks applicants must be able to frequently show initiative, communicate, problem-solve, and network. Whether an applicant is considering a job in manufacturing or one in healthcare, they will be expected to show enthusiasm for the work, collaborate with colleagues, demonstrate professionalism, and use interpersonal skills.

The lack of statistical significance amongst the average age groups of hired employees also indicates that employees will be expected to demonstrate SEL at the start, middle, or end of their working career. When considering career preparation, the ability to continue learning and developing SEL is paramount to an employees’ long-term value

in a company or organization. The research results indicate the value of SEL among a wide age group of newly hired employees.

### **Context of Findings- Research Question One**

The context of these research findings should be considered. The survey was sent to employers in a northwestern county of Pennsylvania. The survey was sent to 200 employers, and 41 employers responded. The majority of the employers who responded indicated challenges with hiring qualified candidates. Even within this context, the results found were consistent with other studies. The Association for Career and Technical Education (ACTE), National Association of State Directors of Career Technical Education (CTE) Consortium, and the Partnership for 21<sup>st</sup> Century Skills (2010) reports the value employers place on “critical thinking and problem solving, communication, collaboration, and creativity and innovation skills” (p. 7). SEL and transportable skills are valued across employment sectors and are noted beyond the northwestern county of Pennsylvania. The Office of Career, Technical, and Adult Education within the U.S. Department of Education’s Division of Academic and Technical Education, indicate the importance of SEL in their Employability Skills Framework (U.S. Department of Education, 2012). The framework includes three main constructs of employability - workplace skills, applied knowledge, and effective relationships. Each of these employability constructs is related to the SEL framework defined by The Collaborative for Academic, Social, and Emotional Learning (CASEL). Within Conley’s (2010) model of college and career readiness is self-management behaviors such as self-monitoring and self-control, behaviors that are completely independent of any particular job or career (Conley, 2010). Conley’s (2010) model aligns

with the research results in this study, indicating the results are consistent with the theoretical framework of college and career.

The existing literature on SEL skills required in the workplace align with the results of the current study. A research study conducted by the WVDE (2019) concluded that soft skills are one of the most critical workforce needs. In a survey of 200 senior-level academic and business individuals, Bloomberg Next (2018) found the most important soft skills included “teamwork, analytical reasoning, complex problem-solving, agility, adaptability, and ethical judgment” (p. 2). Anderson and Gantz (2013) found the most notable skills for high-growth and high-wage jobs “include oral and written communication skills, attention to detail, customer service focus, organizational skills, and problem-solving skills” (p. 6). A study of employers in a northeastern part of USA suggest that the top six skills and competencies rated with highest importance by employers were: interpersonal skills/works well with others; critical thinking/problem-solving skills; listening skills; oral/speech communication skills; professionalism; and personal motivation” (Baird & Parayitam, 2019, abstract). Each of these studies aligns directly with the results of the current study indicating the high value employers place on SEL.

### **Implications of Findings- Research Question One**

The findings have implications for the educators within the northwestern county of Pennsylvania, as well as providing generalizations that may provide future research for secondary school educators across the United States. The results indicate that the majority of newly hired employees will require SEL skills within the workplace. Secondary schools would be amiss if they did not consider implementing SEL into the

curriculum. SEL has been indicated by others as important to workplace and college success (College & Career Readiness & Success Center at Academic Institutes for Research, 2013). SEL can assist students to become better communicators, develop more collaborative team skills, learn to advocate for themselves, and participate more positively and productively in their own communities (College & Career Readiness & Success Center at Academic Institutes for Research, 2013). From a leadership perspective, it is important to consider how SEL is included within the academic curriculum. The research indicates that SEL will provide great value to students, no matter their individual career path, and serve students well as their career plan changes. Additionally, school leaders should consider ways to assess the SEL of students throughout grades 9-12. The assessment of a student's SEL can provide opportunities for self-assessment, further promoting self-advocacy within the individual student. In today's high stakes standardized testing, school leaders will need to support teachers to find ways to incorporate SEL without lower expectations for academic knowledge and skills. A survey conducted by Civic Enterprises with Peter D. Hart Research Associates (2013) concluded that the majority of teachers surveyed want a focus on SEL in schools. Due to the value the current research found for SEL in the workplace, school leaders and educators should further investigate the implications of integrating SEL strategies within the current academic curriculum. The research indicates, for instance, the value employers also place on reading, writing, and language skills, so it is critical that secondary school educators find ways to teach both SEL, writing, and language in complementary ways.

School leaders will also need to consider who in the school is responsible for teaching SEL. The Civic Enterprises (2013) study found teachers to agree that SEL is teachable. The findings in the research may require that local educators find new ways of teaching and assessing reading, writing, and language that allow students to work in teams and then be given authentic feedback on their ability to collaborate. The work of SEL should not fall just to ELA educators. Again, the research of this study indicates that SEL is valued across employment sectors.

**Research Question 2:** *What skill deficits do employers in a northwestern county of Pennsylvania find when hiring employees?*

### **Summary of Findings**

The lowest mean for the factors was digital literacy, indicating that employers find less applicants who can demonstrate digital literacy skills. The highest mean was tied between applicants who can demonstrate reading, writing, and language skills and those applicants who can demonstrate technology skills. The second highest mean was for the number of applicants who can demonstrate mathematics' skills. Following this, the mean for the number of applicants who can demonstrate SEL is found.

A multivariate analysis was also calculated to find any significant differences between employers who struggle to find qualified applicants and those who do not struggle to find qualified applicants within the survey questions regarding the frequency of applicants who are able to show a basic mastery of the five factor areas. No significant differences were found between the two groups.

A multivariate analysis was also calculated to find any significant differences between employers who hire new employees at various groups with the same survey questions. No significant differences were found between these two groups.

### **Interpretation of Findings-Research Question Two**

The mismatch between schoolwork and career work has been noted for many decades. Federal policies, like the School-to-Work Opportunities Act of 1994, and state policy, such as Pennsylvania's Career and Work Education Standards, aim to remedy a concern about the gap between skills and education required to be competitive in the workforce and the skills of students graduating from the school system (School-to-Work Opportunities Act of 1994, 1994; PDE, 2020b). Although, many employers in this study indicated finding fewer applicants with digital literacy skills, it is noted that the research indicates employers in the northwestern county of Pennsylvania place less value on developing digital literacy skills. Employers indicated fewer jobs that require digital literacy as well. If fewer jobs in the northwestern county of Pennsylvania require digital literacy, the participants of the study may be less likely to assess an applicant's ability to perform tasks involving digital literacy. Digital literacy, according to this research, involves using technology to communicate with others, using digital sources to learn new skills, and gathering or sharing information from digital sources. Employers in the northwestern county of Pennsylvania indicated less frequency of new employees who could show a basic mastery of these and other digital literacy skills. The finding contradicts what was noted in the Burning Glass Technologies et al. report (2016). Recognizing the automation in many job sectors, Bill Demchak, President and CEO of The Pittsburgh National Corporation, called on the K-12 system to ensure digital fluency



amongst the future workforce (Burning Glass Technologies et al., 2016). The rural location of the northwestern county of Pennsylvania in this study could contribute to the contradicting value of digital literacy amongst newly hired employees.

The research also indicates that employers struggle to find applicants with the SEL required in the workplace compared to the skills involved in reading, writing, and language and mathematics. The results indicate that SEL is of high value for performing job-related tasks successfully, so the struggle to find highly qualified applicants in this area is concerning. The Conference Board et al. (2007) found that employers expect young people to arrive at the job with the necessary basic and applied skills, and the Workforce Readiness Report card published in their study indicate, along with the results of the current study, that this is not happening, particularly in the area of social and emotional learning. The results of this study, along with a report published by Burning Glass Technologies & The Council for Adult and Experiential Learning (n.d.), indicate that educators must stress the importance of work-ready skills.

The research demonstrates that employers in a northwestern county of Pennsylvania find a high frequency of new employees who can demonstrate technology skills to perform job-related tasks. This finding is noted due to the rapid changes in automation, artificial intelligence, and the integration of technology in many areas of daily life (WVDE, 2019). The World Economic Forum (2018) found an unprecedented demand for knowledge and use of technology among employers.

Reading, writing, and language skills, as indicated by the research results, continue to be an important skill found in new applicants. Literacy continues to be a core

competency, while computer skills are being added as a core skill needed for employment (Baird & Parayitam, 2019).

### **Context of Findings- Research Question Two**

Many participating employers indicated that a lack of skills or training contributed to the difficulty of hiring qualified candidates. The assumption is that those who participated in the research survey may be motivated by this difficulty in hiring; therefore, the participants may have been more likely to respond less favorably to the ability to hire qualified applicants. However, this assumption is not held when considering the multivariate analysis of the participant group that struggles to find qualified applicants compared with the participant group that does not struggle. No significant difference is found in the responses of these two groups within the questions asking about skills found when hiring new employees.

The inability of employees to demonstrate a strong command of transportable skills, such as those in SEL, has been well documented (Labi, 2014; Casner-Lotto & Barrington, 2006). The Conference Board (2007) noted the deficiency of recently hired employees' communication skills, professionalism, work ethic, critical thinking and problem solving. In a study conducted by the WVDE, West Virginia employers identify soft skills as a critical challenge for filling open positions (2019). The evidence in a study completed by the National Academies of Sciences, Engineering, and Medicine (NASEM, 2017) suggested that the workforce does not have the appropriate skills for the 21<sup>st</sup> Century. The current study found reading, writing, and language skills to be ranked as appearing most frequently with newly hired employees, while the NASEM (2017) study points out the lagging assessment scores in literacy, with the United States ranking 16<sup>th</sup>

among the working-age in the 24 Organization for Economic Co-operation and Development countries. Based on the nature of the survey questions regarding skills found in newly hired employees, the comparison between the current study and that by NASEM may not be a contradiction at all. Employers in the current study were not asked to compare newly hired employees with internationally benchmarked expectations. The current study focused on the frequency that newly hired employees demonstrate basic level abilities. Further research can clarify how employers rank the proficiency of newly hired employees in reading, writing, and language, mathematics, technology, digital literacy, and SEL.

In a study of high school graduates going straight to work, the Conference Board (2007) found high school graduates deficient in the basic knowledge and skills of writing in English, mathematics, and reading comprehension. The research of this study found a higher frequency of new employees with basic reading, writing, and language skills compared to those with mathematics' skills. The results of the current study are not statistically different across the average age of newly hired employees. Additional research is needed to find how employers in the northwestern county of Pennsylvania might rate high school graduates in the realm of writing in English, mathematics, and reading comprehension across a continuum of excellent, adequate, and deficient.

### **Implications of Findings- Research Question Two**

The importance of reading, writing, and mathematics, as well as technology, is apparent across many career fields, so the research results are promising for these three factors. The factors of reading, writing, and language and technology resulted in the highest means for the questions regarding the skills demonstrated by new employees. The

mean for the mathematics' factor was not far behind. This indicates that employees, across various ages, are able to demonstrate an ability to read, write, do mathematics, and use language and technology appropriately. The Common Core Standards involved a greater alignment of expectations in ELA and mathematics across the nation (Mazzotti et al., 2014), and the reauthorization of the ESEA triggered many state education departments to develop career-ready initiatives. In many ways, it seems inevitable that new applicants would demonstrate greater degrees of reading, writing, and mathematics; the push for higher standards in both areas has occurred for more than a decade.

Professionals across the K-12 system should be concerned about the study results indicating fewer employees who can demonstrate SEL. As stated previously, these skills are transportable across all career fields. Research outside of the current study has shown that work-based learning programs can contribute positively to a student's soft skills (Knepler & Zapata-Gietl, 2019; U.S. Department of Labor, 2013). Professionals across the K-12 system should consider how work-based learning programs can help students graduate with SEL skills.

Professionals within the northwestern county of Pennsylvania who work closely with students who plan to stay in the area after graduation should take note of the skills employers find least frequently in applicants but are required frequently in job-related tasks, namely SEL. The research results highlight the value of partnerships between secondary schools and post-secondary institutions, businesses, and other community organizations. Workforce preparedness does not happen in a secondary school vacuum but rather requires an intersection of education and industry (WVDE, 2019). Local schools and school leaders should work closely with community partners to further

develop curriculum that will better develop the required skills for career preparedness.

Local school leaders can work closely with local employers to design career development high school courses that will enhance the necessary skills of high school students.

Alternate pathways of high school to career can be developed and research regarding the success of students who pursue these pathways should be done.

**Research Question 3:** *What types of learning activities do employees in a northwestern county of Pennsylvania believe will best develop the basic skills required for employment?*

### **Summary of Findings**

The highest mean was found to be in the frequency of the activities in which employers believe high school students should participate to develop mathematics skills.

The next highest mean was found to be in the frequency of the activities in which employers believe high school students should participate to develop technology skills.

After technology, the next highest mean found was in the frequency of activities to develop reading, writing, and language skills. Not far behind reading, writing, and language skills was the mean for the frequency of activities to develop SEL. The lowest mean found was in the frequency of activities in which employers believe students in Grades 9-12 should participate to develop digital literacy skills.

A multivariate analysis showed no significant difference between those employers who struggle to find qualified applicants and those who do not for the questions related to developing skills in the five factor areas. A multivariate analysis also indicated no significant differences among employers who hire employees at different average age groups for the same questions.

### **Interpretation of Findings-Research Question Three**

Employers have an important perspective to contribute regarding career readiness of high school students. Some high school students will go straight to work after graduation, while others will decide to pursue a post-secondary degree or certificate. Either way, high school students will carry the knowledge and skills learned in secondary school into their future pathways. A report published by The Conference Board et al. (2007) called for the business community to outline the necessary skills required in the workforce. The results of this research extend this outline by providing the employer perspective on activities completed by high school students while in school. Employers in the northwestern county indicate that students in Grades 9-12 should frequently participate in activities that will develop their mathematics' skills. Overall, employers in the northwestern county of PA believe high school students should frequently do the following: copy lecture notes given by the teacher, solve problems with one correct answer, solve problems with many possible answers, solve problems with and without a calculator, solve non-standard word problems, defend solutions to problems with many answers, and work in teams to solve problems.

Employers in a northwestern county of Pennsylvania also believe high school students should frequently participate in activities that will develop technology skills. The survey questions asked these employers how often high school students should master the following and more: completing assignments using a computer, sending emails to school personnel or classmates, researching information using a computer, using mobile devices to send files, and reading text materials from a computer. The research indicates that

employers believe high school students should be participating in these activities fairly often.

In terms of the average, the research indicates that employers believe high school students should participate in activities to develop reading, writing, and language skills and SEL at about the same amount of frequency. The questions regarding the development of reading, writing, and language surveyed employers about the frequency of high school students participating in activities such as in-person discussions with classmates, online discussions facilitated by the teacher, giving presentations to small and large groups, and writing five-page essays on a topic given by the teacher. The questions regarding the development of SEL surveyed employers about the frequency of high school students participating in activities such as group assignments where students complete some work outside of regular class time, solving problems with many possible solutions, building their own schedule to complete independent learning activities, and debates that require persuading others of a particular viewpoint. Although the research indicates employers believe high school students should participate in these activities less often than those to develop mathematics' skills, the research indicates that high school students should be participating in activities to develop SEL, and reading, writing, and language. Coupled with the results indicating the frequency of jobs that require SEL, and reading, writing, and language, both factors are notable in the context of career readiness.

### **Context of Findings- Research Question Three**

The results of the employer survey are in the context of the northwestern county of Pennsylvania in which the employers surveyed work. The northwestern county of Pennsylvania is home to around 111,000 people, with an unemployment rate of 7.6% (PA

Department of Labor, 2021). The top employers of the county include two large health organizations, state government, and a manufacturing company (PA Department of Labor and Industry, 2021). The context of the research study must be considered. The survey should be replicated across various counties in Pennsylvania to investigate the consistency of the results.

The literature review of studies indicating the employers' perspectives on developing particular skills in high school students was limited to various work-based learning programs such as career academies. The current research aimed to extend beyond the current literature, offering new insight on employers' perspectives of particular tasks to develop skills in high school students. Nonetheless, commonalities can be found with the current research and previous studies. A related study conducted by the WVDE (2019) included a larger sample size and was more geographically expansive than the current study. While the WVDE (2019) study surveyed employers about work-based learning programs and this study focused more on the participation of high school students for specific instructional activities, the need for alignment between secondary schools and the workplace is clear. A recommendation of the WVDE (2019) study was to "encourage and enhance employer access to information about WVDE career programs" (p. 45). The current research extends the results of the WVDE study by exemplifying the specific activities employers believe high school students should participate in frequently.

A case study completed by Hoanca and Craig (2019) exemplified a K-16 industry partnership that relates directly to the business communities' perspective on the development of career readiness skills by high school students. Working collaboratively, the educators and business people designed a set of 13 micro-credentials to define a



pathway from high school to a career in information technology (IT). Although this study indicated the importance of hard technical knowledge such as Operation Systems and Servers, the development of SEL is seen in the micro-credentials of Professional Ethics and Customer Service & Support. Reading, writing, and language skill development is noted in the micro-credential of Technical Writing & Documentation.

### **Implications of Findings- Research Question Three**

The results of this study suggest a skills‘ gap between what is needed in the workforce and what applicants possess, specifically in the area of SEL. The section of the survey asking for employee perceptions of the frequency in which high school students participate in particular activities aimed to offer insight in ways to close this skills gap. Many employers who participated in this research survey indicated a struggle to find qualified employees due to applicants lacking the necessary skills. The awareness of the skills‘ gap was identified by the West Virginia Department of Education (2019) as the first and most critical step in —migate[ing] negative outcomes, both for industry and individuals seeking employment” (p. 35). Additional studies should be conducted to determine if a skills‘ gap persists in the northwestern county of Pennsylvania. Studies beyond this one county should be conducted to determine the pervasiveness of the skills‘ gap. After identifying the specific skill needs of employers in the northwestern county of Pennsylvania, which the first and second research questions attempt to identify, the results regarding development of the five factor areas attempts to provide solutions to closing the skills‘ gap.

A critical need in the northwestern county of Pennsylvania is in the development of SEL. Employers reported SEL as a critical need yet reported that high

school students should participate more frequently in mathematics and technology. Secondary school educators can look for creative ways in which to integrate SEL within mathematics' courses. For instance, mathematics' educators can structure their lessons to include opportunities for students to collaborate with peers in solving non-standard word problems. The Collaborative for Academic, Social, and Emotional Learning (2018) exemplifies how the mathematics' standard of constructing viable arguments and the corresponding SEL standard of relationship management can intersect within the classroom. Introducing teachers to the standards of SEL and providing time for teachers to integrate these standards within their own academic standards can be the first steps to closing the identified skills' gap. The development of SEL, in fact, need not be a separate endeavor from academic pursuits.

The development of technology skills should also not happen in a vacuum. There should be no need to require students to pass a technology course when school leaders can promote the use of technology in all academic subjects. While the Collaborative for Academic, Social, and Emotional Learning has developed a framework for educators to integrate SEL within the classroom at all levels and within all content areas, the International Society for Technology in Education (ISTE) has done the same for the integration of technology skills. School leaders can work with teachers to integrate these standards within daily instruction. The student standards are divided into seven areas – Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator (ISTE, 2021). Even the titles of these standards indicate a relationship with SEL. These

standards can help educators consider how technology will contribute to classrooms that are student-driven, enhancing not only the technology skills but the SEL.

### **Limitations**

A limitation of this study is generalization. The study only surveys employers from a northwestern county of Pennsylvania; therefore, the study has external validity limitations due to a lack of a representative sample from all United States employers (Trochim et al., 2016). A small sample size of 41 employers also limits the results of this research. Replicating this study with additional employers in the northwestern county of Pennsylvania or also including employers from other counties could provide more information due to a larger and more diverse sample. However, using the proximal similarity model, it is feasible that the results of the study can be generalized to other small, rural communities like the county of this research study (Trochim et al.). The survey relies on self-report measures from employers, so social desirability bias and common method bias are possible.

### **Future Research**

The results of the current study serve as a catalyst for future research. The need for SEL, as well as the deficit of SEL in recently hired employees, was apparent in the current research. It would be valuable to determine if this need continues to persist. As workforce trends continue to change, it will be important to determine what needs continue to be identified by employers.

The current study attempted to extend research related to skill needs by identifying employer perceptions concerning the frequency in which high school students participated in particular instructional activities to develop skills in reading, writing, and

language, mathematics, technology, digital literacy, and SEL. Additional research is needed to determine if employee perceptions in the northwestern county of Pennsylvania are consistent with results of studies with larger sample sizes or studies conducted in different parts of the state or nation. The research could also be extended to include employee perceptions of specific activities secondary schools offer within their work-based learning programs. These research extensions could contribute to the curriculum development regarding soft skills, like that developed by the Office of Disability Employment Policy called “Skills to Pay the Bills: Mastering the Soft Skills for Workplace Success” (Office of Disability Employment Policy, n.d.), and the curriculum being developed across the state of Pennsylvania regarding local school districts’ work-based learning programs.

### **Conclusion**

Based on the high mean scores for SEL skills as a required skill for employment and the challenge in finding qualified candidates in this area, the research suggests the high value employers place on SEL in the workplace. The research also indicates that employers believe high school students should participate frequently in activities that develop mathematics’ and technology skills. The mean scores for mathematics’ and technology skills as a requirement for employment were higher than the mean scores for digital literacy. The research indicates that employers less frequently require employees to hold digital literacy skills and employers less frequently find new employees with basic digital literacy skills. The research also suggests that employers less frequently recommend that high school students participate in activities to develop digital literacy skills. The research suggests no significant difference among employers who struggle to

find qualified candidates and those who do not struggle to find qualified candidates. The research also suggests no significant differences among employers hiring new employees among various average age groups.

As a school administrator, the results of the current investigation challenge the local educational institutions to consider the current preparation of secondary school students. School leaders should consider the implications of their work-based learning programs and work closely with the workforce organizations to further develop these programs. In the northwestern county of Pennsylvania, school administrators across the county should use the research results to identify the expected skills for newly hired employees, consider how instructional opportunities in Grades 9-12 can decrease deficits in work-based learning skills, and develop activities and tasks that high school students can participate in to further enhance their readiness to work. To accomplish this task with the most impact, partnerships outside of the educational bubble will be necessary for the educational leaders across the county.

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## Appendix A

### Participant Responses

<b>How would you best describe your organization or industry?</b>
Healthcare
Electrical Services
Management Consulting & Real Estate Development
We develop and manufacture industrial coatings.
REAL ESTATE CLOSING COMPANY
County-wide Economic Development Agency
Hospital- healthcare
Manufacturing - Non-ferrous metals
Manufacturing
Staffing Agency
OEM Manufacturer
Social Services
Non-profit Foundation
Home Health Care
Workforce Development
Education-based: we provide staffing services to schools and school districts.
Electrical Construction
Manufacturing (Machine Shop)
Healthcare
In-Home Health Care
Professional design firm
Accounting & Income Tax Services
largest car carrier mfg. in the world
Steel processing
Government
Trade and Technical College
Nonprofit social service organization
A family owned manufacturing company.
Workforce Development

Manufacturing
Law firm
Heavy Manufacturing
MANUFACTURE STEEL CONTAINERS FOR THE REFUSE, OIL/GAS AND CONSTRUCTION INDUSTRIES
Economic Development/Water and sewage companies
Food Manufacturing and Distribution
Commercial Construction
Health Care
Non-profit
Insurance
Human Services
Education

Appendix B

Frequency Tables for Survey Questions

How many jobs in your business/company require a basic mastery of the following reading, writing, and language skills to successfully perform job-related tasks?	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
	5	4	3	2	1	0
Reading and Understanding at a reasonable speed	0	34	6	1	0	0
Recalling and applying information that is read	0	31	9	1	0	0
Assessing credibility and accuracy of written content	0	23	15	3	0	0
Identifying key facts and main points from written content	5	13	8	9	5	1
Writing about a topic using facts and supporting details	4	19	9	7	2	0
Production of clear and coherent	4	16	12	4	5	0



writing that is appropriate for specific audiences						
Editing and revising self-written content	9	7	8	4	10	3
Generation of original content that is not plagiarized	0	30	8	2	1	0
Correct spelling and grammar in writing and speaking	3	24	5	6	3	0
Determining meaning of unknown words from language cues, context, and dictionaries	5	14	7	5	6	4
When hiring new employees, how many applicants has your business/company encountered who would be able to show a basic master of the following reading, writing, and language skills?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Reading and Understanding at a reasonable speed	1	20	15	5	0	0
Recalling and applying information that is read	1	18	16	5	1	0
Assessing credibility and accuracy of written content	1	12	17	11	0	0
Identifying key facts and main points from written content	7	8	13	8	5	0
Writing about a topic using facts and supporting details	6	9	14	6	6	0
Production of clear and coherent writing that is appropriate for specific audiences	8	11	9	6	5	2
Editing and revising self-written content	11	7	9	7	4	3
Generation of original content that is not plagiarized	1	12	18	9	1	0
Correct spelling and grammar in writing and speaking	5	11	14	9	2	0
Determining meaning of unknown words from language cues, context, and	8	9	12	7	4	1

dictionaries						
To develop basic English, writing, and reading skills to successfully perform job-related tasks at your company/business, how often do you feel students in grades 9-12 should participate in the following?						
	Does Not Apply	Daily	Often	Sometimes	Rarely	Never
Sending emails to school personnel (teachers, principals, etc)	1	7	27	6	0	0
In-person discussions with their classmates	1	27	11	2	0	0
Online discussions facilitated by their teachers	1	10	21	8	1	0
5-page written essays on a topic given by teachers	2	1	10	17	10	1
Creative writing prompts	1	1	20	14	5	0
Giving presentations to small groups of 25 or less	1	5	23	8	4	0
Giving presentations to larger groups of 25 or more	2	0	13	19	7	0
Copying lecture notes given by the teacher	2	12	13	9	3	2
How many jobs in your business/company require a basic mastery of the following mathematics skills to successfully perform job-related tasks?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Adding and subtracting	1	30	5	4	1	0
Multiplying and dividing	1	29	4	4	3	0
Using fractions, decimals, and percentages	2	23	6	9	1	0
Solving real-world math problems	2	17	10	6	6	0
Taking or interpreting measurements	3	20	8	4	5	1

Calculating or using basic statistics	4	12	9	9	7	0
Reading graphs and charts	3	14	11	8	5	0
Interpreting negative numbers	6	6	9	7	11	2
Using basic geometry	6	9	5	5	11	5
Using basic algebra	6	5	9	7	11	3
When hiring new employees, how many applicants has your business/company encountered who would be able to show a basic mastery of the following mathematics skills?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Adding and subtracting	3	21	13	2	2	0
Multiplying and dividing	3	15	19	2	2	0
Using fractions, decimals, and percentages	4	11	16	8	2	0
Solving real-world math problems	5	7	15	10	3	1
Taking or interpreting measurements	8	9	13	9	2	0
Calculating or using basic statistics	7	6	13	10	5	0
Reading graphs and charts	6	7	14	11	3	0
Interpreting negative numbers	11	5	13	8	2	2
Using basic geometry	11	4	12	7	5	2
Using basic algebra	10	5	11	8	6	1
To develop basic mathematics skills to successfully perform job-related tasks at your company/business, how often do you feel students in grades 9-12 should participate in the following?						
	Does Not Apply	Daily	Often	Sometimes	Rarely	Never
Copying lecture notes given by the teacher	0	12	13	11	3	2
Solving problems with one correct answer	0	17	17	6	1	0
Solving problems with many possible	0	13	17	7	2	0

answers						
Solving problems with a calculator	0	12	20	8	1	0
Solving problems without a calculator	0	8	24	6	3	0
Solving non-standard word problems	2	8	19	7	4	1
Defending solutions to problems with many possible answers	0	8	21	7	4	1
Working in teams to solve problems	0	20	15	5	1	0
How many jobs in your business/company require a basic mastery of the following technology skills to successfully perform job-related tasks?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Using computers and computer programs	2	29	6	3	1	0
Writing and responding to emails	3	25	7	4	2	0
Entering data (keyboarding, 10-key, etc)	2	22	6	7	2	2
Using mobile devices	2	23	8	5	3	0
Using word processing programs (MS word)	3	20	7	7	3	1
Learning to use new technology	3	27	5	6	0	0
Using spreadsheet programs (excel)	3	12	13	8	5	0
Using presentation programs (powerpoint)	5	13	8	7	4	4
Using data storage and retrieval	4	15	10	4	6	2
Generating and using computer code	10	5	4	5	8	9
When hiring new employees, how many applicants has your business/company encountered who would be able to show a basic mastery of the following technology skills?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Using computers and computer	3	21	9	7	1	0

programs						
Writing and responding to emails	4	20	11	5	1	0
Entering data (keyboarding, 10-key, etc.)	4	16	11	7	1	2
Using mobile devices	3	30	6	1	1	0
Using word processing programs (MS word)	4	13	14	6	4	0
Learning to use new technology	4	12	16	8	1	0
Using spreadsheet programs (excel)	4	6	19	6	5	1
Using presentation programs (PowerPoint)	9	5	15	8	3	1
Using data storage and retrieval	9	5	15	8	3	1
Generating and using computer code	17	2	3	5	9	5
To develop basic technology skills to successfully perform job-related tasks at your company/business, how often do you feel students in grades 9-12 should participate in the following?						
	Does Not Apply	Daily	Often	Sometimes	Rarely	Never
Completing assignments using a computer	0	22	15	4	0	0
Typing essays on a word processor (Microsoft Word, Google Docs, etc.)	1	12	19	8	0	1
Sending emails to school personnel or classmates	1	11	19	9	1	0
Creating presentations using relevant software (Microsoft PowerPoint, Google Slides, etc.)	2	5	15	15	4	0
Participating in online discussions with peers and teacher	3	11	17	9	1	0
Researching information using computer tools (Google Search, etc.) to answer basic questions	1	11	23	5	1	0
Texting classmates or teachers	3	3	13	16	5	1
Using computer applications that allow schoolwork to be digitally submitted	1	10	24	6	0	0

Using mobile devices to send files and other attachments	0	7	25	8	1	0
Posting on social media using a mobile device	4	3	16	8	8	2
Summarizing information from previously created video materials	3	7	18	8	3	2
Reading text materials from a computer or mobile device	0	12	21	5	2	1
How many jobs in your business/company require a basic mastery of the following digital literacy skills to successfully perform job-related tasks?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Using technology to communicate with others	3	27	3	6	2	0
Using digital sources to learn new skills	5	18	4	8	6	0
Using digital search strategies	5	18	7	6	4	1
Understanding online security risks	5	20	6	4	5	1
Gathering/sharing information from digital sources	5	17	6	7	5	1
Finding information to resolve technology problems	6	10	6	7	10	2
Accessing social media to promote business	7	9	8	6	10	1
Using mobile apps for task management	8	14	6	4	6	3
Evaluating credibility of digital sources	10	6	6	5	11	3
Examining computer outputs	10	5	5	3	11	7
When hiring new employees, how many applicants has your business/company encountered who would be able to show a basic mastery of the following digital literacy skills?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None

Using technology to communicate with others	5	23	5	7	1	0
Using digital sources to learn new skills	6	12	10	10	3	0
Using digital search strategies	6	14	11	5	5	0
Understanding online security risks	7	12	3	12	7	0
Gathering/sharing information from digital sources	6	13	11	6	5	0
Finding information to resolve technology problems	10	7	6	10	8	0
Accessing social media to promote business	13	12	8	5	3	0
Using mobile apps for task management	13	14	9	4	1	0
Evaluating credibility of digital sources	13	5	7	7	9	0
Examining computer outputs	14	6	3	8	10	0
To develop basic digital literacy skills to successfully perform job-related tasks at your company/business, how often do you feel students in grades 9-12 should participate in the following?						
	Does Not Apply	Daily	Often	Sometimes	Rarely	Never
Participating in virtual meetings (Zoom, Google Hangouts, etc.)	2	6	17	14	2	0
Locating videos and other resources that support a given task	3	6	18	13	0	1
Taking fully online courses	3	1	8	23	5	1
Taking blended courses with a mix of face-to-face and online instruction	4	6	17	13	1	0
Creating professional social media accounts	3	3	16	13	5	1
Documenting learning experiences in a digital portfolio	3	4	13	16	3	2
Creating websites to share information	4	1	11	16	8	1
Writing blogs to share information	4	0	12	16	7	2
How many jobs in your business/company require a basic						

mastery of the following social and emotional literacy skills to successfully perform job-related tasks?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Enthusiasm and attitude	0	37	4	0	0	0
Teamwork	0	37	4	0	0	0
Initiative	0	38	3	0	0	0
Communication	0	39	2	0	0	0
Professionalism	0	35	5	1	0	0
Self-management	0	33	5	3	0	0
Problem solving and critical thinking	0	34	6	1	0	0
Interpersonal skills	1	33	6	1	0	0
Cultural competence	5	26	6	2	2	0
Networking	5	19	7	7	3	0
When hiring new employees, how many applicants has your business/company encountered who would be able to show a basic mastery of the following social and emotional literacy skills?						
	Does Not Apply	A Lot	A Fair Number	Some	Very Few	None
Enthusiasm and attitude	1	11	19	9	1	0
Teamwork	1	14	17	9	0	0
Initiative	1	9	16	11	4	0
Communication	1	11	16	13	0	0
Professionalism	1	10	17	10	3	0
Self-management	2	8	15	13	3	0
Problem solving and critical thinking	2	8	16	12	3	0
Interpersonal skills	3	9	19	7	3	0
Cultural competence	6	7	14	10	3	1
Networking	9	6	11	6	8	1



To develop basic social and emotional literacy skills to successfully perform job-related tasks at your company/business, how often do you feel students in grades 9-12 should participate in the following?	Does Not Apply	Daily	Often	Sometimes	Rarely	Never
Group assignments where students complete some work outside of regular class time	3	5	19	11	3	0
Presentations to groups of approximately 20-30 people	3	0	17	17	4	0
Solving problems with many possible solutions	1	6	23	10	1	0
Projects with specific requirements developed by the teacher	2	6	28	3	2	0
Building their own schedule to complete independent learning activities	3	5	15	17	1	0
Debates that require persuading others of a particular viewpoint	3	4	17	15	2	0

### Appendix C

#### Statistics for each factor

Group Statistics					
	StrugFindNewEmploy	N	Mean	Std. Deviation	Std. Error Mean
Req ELA	0	11	3.5091	.58558	.17656
	1	30	3.2833	.87969	.16061
Hire ELA	0	11	3.4636	.68011	.20506
	1	30	3.0567	.97581	.17816
Dev ELA	0	11	2.8182	.35516	.10708
	1	30	2.7875	.65993	.12049
Req Math	0	11	2.7455	.73262	.22089
	1	30	3.1433	1.05559	.19272
Hire Math	0	11	3.4182	.84240	.25399
	1	30	3.0767	1.06178	.19385

Dev Math	0	11	3.0795	.41560	.12531
	1	30	2.9500	.67242	.12277
Req Tech	0	11	3.4909	.43693	.13174
	1	30	3.1100	.92786	.16940
Hire Tech	0	11	3.6000	.63087	.19022
	1	30	3.1233	.87953	.16058
Dev Tech	0	11	3.0379	.39328	.11858
	1	30	2.9250	.65957	.12042
Req DigLit	0	11	2.9727	.78242	.23591
	1	30	3.0733	1.26952	.23178
Hire DigLit	0	11	3.1727	.81252	.24498
	1	30	3.3567	1.02879	.18783
Dev DigLit	0	11	2.5682	.58460	.17626
	1	30	2.6125	.93792	.17124
Req Sel	0	11	3.9000	.20976	.06325
	1	30	3.7633	.34188	.06242
Hire Sel	0	11	3.1182	.87386	.26348
	1	30	2.9067	.80897	.14770
Dev Sel	0	11	2.7121	.44153	.13313
	1	30	2.8667	.77854	.14214

Req is Require. Dev is Develop.

## Appendix D

### Descriptive Statistics of each factor

Descriptives									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Req ELA	1	7	3.1857	.89149	.33695	2.3612	4.0102	1.80	4.50
	2	23	3.1870	.86408	.18017	2.8133	3.5606	1.50	4.60
	3	9	3.8222	.30732	.10244	3.5860	4.0584	3.40	4.30
	4	2	3.5500	1.20208	.85000	-7.2503	14.3503	2.70	4.40
	Total	41	3.3439	.81057	.12659	3.0881	3.5998	1.50	4.60
Hire ELA	1	7	3.0571	.89788	.33937	2.2267	3.8875	1.50	4.20

	2	23	3.0522	.94092	.19620	2.6453	3.4591	1.10	4.20
	3	9	3.3444	.93690	.31230	2.6243	4.0646	2.40	5.00
	4	2	4.0500	.07071	.05000	3.4147	4.6853	4.00	4.10
	Total	41	3.1659	.91614	.14308	2.8767	3.4550	1.10	5.00
Dev ELA	1	7	2.9286	.38768	.14653	2.5700	3.2871	2.13	3.25
	2	23	2.8478	.64618	.13474	2.5684	3.1273	2.00	5.00
	3	9	2.6389	.62639	.20880	2.1574	3.1204	1.63	3.25
	4	2	2.4375	.08839	.06250	1.6434	3.2316	2.38	2.50
	Total	41	2.7957	.58946	.09206	2.6097	2.9818	1.63	5.00
Req Math	1	7	3.4571	.49618	.18754	2.9983	3.9160	2.60	4.00
	2	23	2.8000	.99772	.20804	2.3686	3.2314	1.00	4.50
	3	9	3.3000	.95525	.31842	2.5657	4.0343	1.80	5.00
	4	2	3.1000	2.26274	1.60000	-17.2299	23.4299	1.50	4.70
	Total	41	3.0366	.98685	.15412	2.7251	3.3481	1.00	5.00
Hire Math	1	7	3.1571	.73905	.27933	2.4736	3.8406	2.00	4.00
	2	23	2.9348	1.03027	.21483	2.4893	3.3803	1.00	5.00
	3	9	3.6333	1.05000	.35000	2.8262	4.4404	2.40	5.00
	4	2	3.8000	1.13137	.80000	-6.3650	13.9650	3.00	4.60
	Total	41	3.1683	1.00907	.15759	2.8498	3.4868	1.00	5.00
Dev Math	1	7	3.3036	.28738	.10862	3.0378	3.5694	3.00	3.75
	2	23	3.0543	.58488	.12196	2.8014	3.3073	1.88	4.00
	3	9	2.6667	.76801	.25600	2.0763	3.2570	1.00	3.50
	4	2	2.5000	.17678	.12500	.9117	4.0883	2.38	2.63
	Total	41	2.9848	.61186	.09556	2.7916	3.1779	1.00	4.00
Req Tech	1	7	3.2286	.52825	.19966	2.7400	3.7171	2.70	4.00
	2	23	3.0435	.91643	.19109	2.6472	3.4398	.70	5.00
	3	9	3.5333	.84261	.28087	2.8856	4.1810	1.90	4.80
	4	2	3.6500	.49497	.35000	-.7972	8.0972	3.30	4.00
	Total	41	3.2122	.83732	.13077	2.9479	3.4765	.70	5.00

Hire Tech	1	7	3.1143	.53363	.20169	2.6208	3.6078	2.50	4.00
	2	23	3.1391	.85320	.17790	2.7702	3.5081	1.70	5.00
	3	9	3.5778	1.03414	.34471	2.7829	4.3727	1.60	5.00
	4	2	3.5500	.63640	.45000	-2.1678	9.2678	3.10	4.00
	Total	41	3.2512	.84027	.13123	2.9860	3.5164	1.60	5.00
Dev Tech	1	7	2.7857	.26289	.09936	2.5426	3.0289	2.58	3.33
	2	23	3.0326	.59126	.12329	2.7769	3.2883	1.83	4.25
	3	9	3.0000	.81223	.27074	2.3757	3.6243	1.50	4.00
	4	2	2.4583	.17678	.12500	.8701	4.0466	2.33	2.58
	Total	41	2.9553	.59719	.09326	2.7668	3.1438	1.50	4.25
Req DigLit	1	7	2.7429	.88102	.33299	1.9281	3.5577	1.60	3.70
	2	23	3.1217	1.22806	.25607	2.5907	3.6528	.70	5.00
	3	9	3.1333	1.17580	.39193	2.2295	4.0371	.90	4.90
	4	2	2.8500	1.76777	1.25000	-13.0328	18.7328	1.60	4.10
	Total	41	3.0463	1.15046	.17967	2.6832	3.4095	.70	5.00
Hire DigLit	1	7	2.6857	.71281	.26942	2.0265	3.3450	2.00	3.70
	2	23	3.4391	1.03429	.21567	2.9919	3.8864	1.10	5.00
	3	9	3.5556	.85016	.28339	2.9021	4.2090	2.70	5.00
	4	2	2.8500	1.06066	.75000	-6.6797	12.3797	2.10	3.60
	Total	41	3.3073	.96912	.15135	3.0014	3.6132	1.10	5.00
Dev DigLit	1	7	2.8036	1.13159	.42770	1.7570	3.8501	1.63	4.63
	2	23	2.4620	.70754	.14753	2.1560	2.7679	1.13	4.25
	3	9	2.8611	1.04479	.34826	2.0580	3.6642	.88	5.00
	4	2	2.3125	.08839	.06250	1.5184	3.1066	2.25	2.38
	Total	41	2.6006	.85065	.13285	2.3321	2.8691	.88	5.00
Req Sel	1	7	3.7286	.33523	.12671	3.4185	4.0386	3.20	4.00
	2	23	3.7435	.34880	.07273	3.5926	3.8943	2.50	4.00
	3	9	3.9444	.15899	.05300	3.8222	4.0667	3.70	4.20
	4	2	4.0500	.07071	.05000	3.4147	4.6853	4.00	4.10
	Total	41	3.8000	.31544	.04926	3.7004	3.8996	2.50	4.20

	al								
Hire Sel	1	7	2.7286	.75656	.28595	2.0289	3.4283	1.70	4.00
	2	23	2.8565	.80160	.16715	2.5099	3.2032	1.40	4.00
	3	9	3.3444	.94883	.31628	2.6151	4.0738	2.20	5.00
	4	2	3.3000	.14142	.10000	2.0294	4.5706	3.20	3.40
	Tot al	41	2.9634	.82121	.12825	2.7042	3.2226	1.40	5.00
Dev Sel	1	7	2.6905	.48523	.18340	2.2417	3.1392	1.83	3.50
	2	23	2.9203	.65880	.13737	2.6354	3.2052	1.67	4.67
	3	9	2.8889	.90906	.30302	2.1901	3.5877	1.83	5.00
	4	2	1.9167	.35355	.25000	-1.2599	5.0932	1.67	2.17
	Tot al	41	2.8252	.70213	.10965	2.6036	3.0468	1.67	5.00

Req is Require. Dev is Develop.

## Appendix E

### Multivariate Analysis for each factor

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Req ELA	Based on Mean	2.528	3	37	.072
	Based on Median	2.323	3	37	.091
	Based on Median and with adjusted df	2.323	3	28.839	.096
	Based on trimmed mean	2.506	3	37	.074
Hire ELA	Based on Mean	1.562	3	37	.215
	Based on Median	.822	3	37	.490
	Based on Median and with adjusted df	.822	3	35.668	.491
	Based on trimmed mean	1.445	3	37	.245
Dev ELA	Based on Mean	1.252	3	37	.305
	Based on Median	1.046	3	37	.384
	Based on Median and with adjusted df	1.046	3	34.117	.385
	Based on trimmed mean	1.257	3	37	.303
Req Math	Based on Mean	4.279	3	37	.011
	Based on Median	3.462	3	37	.026
	Based on Median and with adjusted df	3.462	3	32.507	.027
	Based on trimmed mean	4.277	3	37	.011
Hire Math	Based on Mean	.643	3	37	.592
	Based on Median	.354	3	37	.786

	Based on Median and with adjusted df	.354	3	31.682	.786
	Based on trimmed mean	.631	3	37	.600
Dev Math	Based on Mean	2.019	3	37	.128
	Based on Median	1.705	3	37	.183
	Based on Median and with adjusted df	1.705	3	25.742	.191
	Based on trimmed mean	1.970	3	37	.135
Req Tech	Based on Mean	.477	3	37	.700
	Based on Median	.441	3	37	.725
	Based on Median and with adjusted df	.441	3	32.315	.725
	Based on trimmed mean	.454	3	37	.716
Hire Tech	Based on Mean	.920	3	37	.441
	Based on Median	.714	3	37	.550
	Based on Median and with adjusted df	.714	3	29.917	.551
	Based on trimmed mean	.953	3	37	.425
Dev Tech	Based on Mean	2.209	3	37	.103
	Based on Median	2.264	3	37	.097
	Based on Median and with adjusted df	2.264	3	29.004	.102
	Based on trimmed mean	2.264	3	37	.097
Req DigLit	Based on Mean	.403	3	37	.752
	Based on Median	.413	3	37	.744
	Based on Median and with adjusted df	.413	3	32.783	.745
	Based on trimmed mean	.409	3	37	.747
Hire DigLit	Based on Mean	.584	3	37	.629
	Based on Median	.596	3	37	.622
	Based on Median and with adjusted df	.596	3	35.479	.622
	Based on trimmed mean	.645	3	37	.591
Dev DigLit	Based on Mean	1.306	3	37	.287
	Based on Median	1.233	3	37	.312
	Based on Median and with adjusted df	1.233	3	28.637	.316
	Based on trimmed mean	1.337	3	37	.277
Req Sel	Based on Mean	1.639	3	37	.197
	Based on Median	.787	3	37	.509
	Based on Median and with adjusted df	.787	3	30.889	.510
	Based on trimmed mean	1.282	3	37	.295
Hire Sel	Based on Mean	1.204	3	37	.322
	Based on Median	1.000	3	37	.403
	Based on Median and with adjusted df	1.000	3	35.223	.404
	Based on trimmed mean	1.170	3	37	.334
Dev Sel	Based on Mean	.605	3	37	.616
	Based on Median	.517	3	37	.673
	Based on Median and with adjusted df	.517	3	29.102	.674

	Based on trimmed mean	.507	3	37	.680
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Req is Require. Dev is Develop.

## Appendix F

### Multivariate Analysis for each factor

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Req ELA	Between Groups	2.886	3	.962	1.521	.225
	Within Groups	23.395	37	.632		
	Total	26.281	40			
Hire ELA	Between Groups	2.230	3	.743	.878	.461
	Within Groups	31.342	37	.847		
	Total	33.572	40			
Dev ELA	Between Groups	.664	3	.221	.619	.607
	Within Groups	13.235	37	.358		
	Total	13.899	40			
Req Math	Between Groups	3.158	3	1.053	1.088	.366
	Within Groups	35.797	37	.967		
	Total	38.955	40			
Hire Math	Between Groups	3.999	3	1.333	1.343	.275
	Within Groups	36.729	37	.993		
	Total	40.729	40			
Dev Math	Between Groups	2.203	3	.734	2.128	.113
	Within Groups	12.771	37	.345		
	Total	14.975	40			
Req Tech	Between Groups	1.968	3	.656	.931	.435
	Within Groups	26.076	37	.705		
	Total	28.044	40			
Hire Tech	Between Groups	1.559	3	.520	.720	.546
	Within Groups	26.684	37	.721		
	Total	28.242	40			
Dev Tech	Between Groups	.851	3	.284	.782	.512
	Within Groups	13.415	37	.363		
	Total	14.265	40			

Req DigLit	Between Groups	.921	3	.307	.218	.883
	Within Groups	52.021	37	1.406		
	Total	52.942	40			
Hire DigLit	Between Groups	4.077	3	1.359	1.501	.230
	Within Groups	33.491	37	.905		
	Total	37.568	40			
Dev DigLit	Between Groups	1.507	3	.502	.678	.571
	Within Groups	27.437	37	.742		
	Total	28.944	40			
Req Sel	Between Groups	.422	3	.141	1.463	.240
	Within Groups	3.558	37	.096		
	Total	3.980	40			
Hire Sel	Between Groups	2.182	3	.727	1.085	.367
	Within Groups	24.793	37	.670		
	Total	26.975	40			
Dev Sel	Between Groups	2.022	3	.674	1.409	.255
	Within Groups	17.697	37	.478		
	Total	19.720	40			

Req is Require. Dev is Develop.



YOUNGSTOWN STATE UNIVERSITY



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Dear Investigators,

Your protocol "The business communities' perspectives...career readiness..." has been reviewed and is deemed to meet the criteria of an exempt protocol, category #2. You will be surveying employers at community businesses. You will be using email to distribute the surveys. No identifying information will be gathered.

The research project is now approved, and you can begin the investigation immediately. Please note that it is the responsibility of the principal investigator to report immediately to the YSU IRB any deviations from the protocol and/or any adverse events that occur. Please reference protocol #058-21 in all correspondence about the research associated with this protocol.

Good luck. Dr. Diana Fagan, YSU HSRC  
Sincerely,

~~XXXXXXXXXX~~

Diana Fagan, Ph.D.