AN EXAMINATION OF HIRING MANAGERS' PERCEPTIONS OF AN EPORTFOLIO AS A TOOL FOR HIRING COLLEGE GRADUATES

by

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ABSTRACT

Employers have noted the competencies essential for college graduates to possess upon entry into the workforce and the lack of workforce preparedness on the part of graduates, especially as they relate to competencies such as teamwork and problem solving. Students, for their part, need to convey their competencies to employers in a way that provides proof of their competencies. In doing so, the employer can better understand that person's capabilities and personality.

This exploratory case study aims to examine hiring managers' perceptions of a hypothetical ePortfolio as a tool for hiring someone from a welding program. Ten hiring managers in the welding industry within the Austin, Texas, metroplex were interviewed for this case study that emphasized transferable skills, specifically teamwork and problem solving. The results indicate that ePortfolios are a good tool for assessing potential employees. Other key findings indicate welding and non-welding projects connected to transferable skills and the welding industry serve as proof of possessing that competency. One challenge with ePortfolio development resides in balancing the breadth and depth of information provided to employers. An inductive analysis generated additional categories concerning communication, work ethic, pictures, posing questions, and life experiences.

While generalizability is limited, the results suggest ePortfolios help employers see potential employees' competencies and obtain a better understanding of the "whole" person. Workforce and non-workforce-specific educational examples helped prove the existence of transferable skills and other attributes not specifically stated in the ePortfolio. This information

underscores the importance of a well-rounded education. Future studies can compare and contrast multiple ePortfolios or examine more in-depth information on welding knowledge and skills with various transferable skills. Results can help determine the ratio of workforce-related information to general education course experiences that need to be on an ePortfolio directed to potential employers. Also, additional research on connecting experiences from projects to competencies directly related to workforce needs can highlight curricula needs as they relate to workforce preparedness.

KEY WORDS: ePortfolios, Transferable Skills, Teamwork, Problem Solving, Workforce Readiness

DEDICATION

This work is dedicated to my loving wife, Dr. Stephanie Vidrine, and children. Your love and unwavering support during this time motivated me to achieve this incredible milestone. Life is definitely an adventure, and I am glad to experience it with you. My sincere thanks to my mother, mother-in-law, and other family members for your prayers and encouragement.

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INTRODUCTION

Texas community colleges provide a number of services, with some emphasizing the need to address workforce needs (Texas Education Code, 2017). Community colleges offer many diverse workforce programs ranging from automotive to accounting to computer science. The field of welding is one community college program that needs to produce competent workers, especially in a time of economic growth. Welders, solderers, cutters, and brazers can expect an 8% increase in jobs between 2020 and 2030 in the United States (Bureau of Labor Statistics, 2021a). Texas, one of those states experiencing a growing economy at the time of this writing, is the largest employer of welders with just under 49,000 employees in this line of work and is expecting to see an increase in the demand for welders, solderers, cutters, and brazers (Bureau of Labor Statistics, 2021b). Therefore, in fulfilling their mission to address local community needs, community colleges will need to graduate students with the basic hard and transferable skills required to succeed in this workplace.

Employers expect recent graduates to exhibit various competencies (also referred to as transferable skills throughout this paper) to include work ethic, written and oral communication, critical thinking, problem solving, and teamwork (National Association of College and Employers [NACE], 2020; Rios et al., 2020). Interestingly, these sought-after competencies may differ by job sector and degree attainment (Hendrix & Morrison, 2018; Rios et al., 2020).

Regardless of the competency type needed, higher education is responsible for helping students develop these much-needed hard and transferable-skill competencies.

One challenge with satisfying this expectation is determining employer expectations and developing curricula that denote student competencies. Rhew et al. (2019) highlighted discrepancies between a business program's outcomes, accreditation standards, and employer's needs. Even if an alignment exists, the curriculum must allow students to explain competencies from the employers' perspectives. A study exploring marketing professionals' perceptions of various student artifacts, such as real-world projects and case studies, indicated different artifacts suggest students possess different competencies (Honea et al., 2017). Therefore, colleges and students need to understand employers' perceptions of student work so students can demonstrate workforce readiness.

One way that students can track their learning experiences and acquired competencies is through ePortfolios. This platform allows students to reflect upon their experiences in order to improve their understanding of concepts and experiences, and then communicate their understanding and competencies to a specific audience (Eynon & Gambino, 2017, pp. 65-66). A review of the research revealed minimal research on employers' perceptions of ePortfolios, especially related to transferable skills and specific workforce programs. That said, some research has been done in the area of ePortfolios and employability. Employers are one such audience who appreciate examining an ePortfolio and a resume more than a resume alone (Hart Research Associates, 2018). Additionally, Ring et al. (2017) found reflecting upon and recording one's learning through ePortfolios can improve interviewing skills, a skill needed upon graduation. Furthermore, a study found employers believe ePortfolios surpass resumes as a resource for learning about potential employees, thus underscoring the importance of

understanding the structure and content needed to improve the communication of competencies (Chen, 2014, as cited in Eynon & Gambino, 2017, p. 215). The ePortfolio platform can be used to differentiate candidates by assessing the fit with the company (Weber, 2018), though some employers do not believe it is a decisive factor when hiring someone (Clayson, 2019).

This information suggests ePortfolios are a rich medium for conveying information about potential employees' competencies to employers who can make a more informed decision during the hiring process. Therefore, for the purpose of this study, an ePortfolio was viewed as a high-impact practice grounded in experience and reflection that uses an electronic medium to showcase a student's work that integrates knowledge and skills across disciplines over time, the process for learning skills and knowledge, and the acquisition of various competencies as a result of one's educational experience. Also, the information placed in an ePortfolio can be tailored to various audiences.

PURPOSE STATEMENT

As previously stated, minimal research exists concerning hiring managers' perspectives on using ePortfolios as a tool for hiring people, especially when assessing a student's claim of possessing transferable skills needed in the workplace. Therefore, the purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. A moderately structured list of interview questions was used to examine employers' perceptions of a hypothetical welding student's competencies concerning teamwork and problem-solving skills as revealed in written artifacts and pictures. Also, the research was designed to obtain information concerning the ePortfolio design and the amount and type of information provided in the ePortfolio. Lastly and specific to the purpose of the research study, the researcher sought information about the ePortfolio as a tool for assessing a

job applicant. This information will help practitioners discern the effectiveness of ePortfolios as a means of conveying one's competencies to potential employers. The exploratory case study focused primarily on the following factors: welding students, welding hiring managers, ePortfolios, teamwork, problem solving, and welding and non-welding course activities.

Information garnered from this study can benefit many audiences. Students and higher education employees can obtain a better understanding of how hiring managers might view ePortfolios. Subsequently, results from this research can affect ePortfolio training modules and curricula that will improve a student's ability to effectively communicate their skills and competencies to potential employers. Also, hiring managers can reflect on their hiring practices, specifically with the role that ePortfolios and transferable skills — especially teamwork and problem solving — play in the determination of one's employability. Lastly, researchers can use this research to advance our understanding of how to convey transferable skills within ePortfolios. To summarize this section, the purpose of this exploratory case study is to describe welding hiring managers' perceptions of ePortfolios used as a tool to convey students' transferable skills.

RESEARCH QUESTIONS AND FOCUS

This exploratory case study contains one over-arching research question that focuses on hiring managers' overall perspective of ePortfolios as a tool for hiring people. The research is bounded by examining one hypothetical ePortfolio that focuses on two transferable skills (i.e., teamwork and problem solving) in addition to a homepage containing basic information about the hypothetical student's education, work history, hobbies, etc. Each transferable skill highlights an example of a project from a welding and non-welding course. The problem-solving skills page contained an additional non-education example of problem solving. Only hiring managers

in the Austin-area welding industry were considered for this study. That said, the research question is as follows:

RQ: What perceptions do welding hiring managers in the Austin-area of Texas have of a community college graduate's transferable skills conveyed through ePortfolios?

The focus of the research was to examine the hiring manager's perception of students' teamwork skills and problem-solving skills through welding and non-welding projects and personal information. The research also focused on the effect of the portfolio structure, including the layout and pictures on the interviewee's perception of the ePortfolio's usefulness as a tool for assessing potential employees.

SIGNIFICANCE OF THE STUDY

Research results will benefit researchers and practitioners in higher education as well as employers hiring community college graduates. As previously stated, minimal research exists concerning workforce-oriented ePortfolios, especially those with an emphasis on transferable skills. This study will provide new perspectives on how an audience other than students and faculty (i.e., hiring managers in the welding industry) views students' competencies and whether the students' welding and non-welding experiences support their claims of being competent in teamwork and problem solving. Information gleaned from this study will help practitioners work with students to design ePortfolios in a way that clearly and effectively conveys substantive information about their competencies to potential employers. Furthermore, educators can understand the effect projects and assignments have on helping students develop and convey sought-after transferable skills on an ePortfolio.

Educators play a vital role in the way students develop their ePortfolios. Using course learning outcomes, educators determine the types of papers, projects, and experiential activities

students will complete to satisfy said learning outcome in order to obtain credit for the course. Secondly, educators can encourage individual or class reflection over the assignments as a way for students to explore what they learned, how they learned the information, and how the information relates to the course and other aspects of their lives. This process coincides with the *Catalyst Framework,* which is a three-pronged approach using ePortfolios that involves (1) inquiry, an attempt to address a problem within an assignment; (2) reflection, a purposeful review of the experience to deepen one's understanding of the problem; and (3) integration, an attempt to determine the interconnections of the experience with concepts and theories from other courses and life in order to attain a better understanding of the whole (Eynon & Gamino, 2017, pp. 33-35). Educators implementing this framework can help students improve the way they communicate their learning through ePortfolios. Also, this method reveals the students' approach to learning, competencies obtained, and personality characteristics as opposed to listing projects and assignments completed during their tenure at a community college.

Various ePortfolio designs exist, some of which depend upon the software, college expectations, and student creativity. Also, the software typically allows students to control who can access different parts of the ePortfolio. Study results can inform practitioners about effective ePortfolio designs directed toward hiring managers to prevent hiring managers from becoming overwhelmed with numerous tabs, links, and excessive explanations of projects and personal growth. Also, practitioners can help students identify and adapt projects, papers, and experiences that highlight competencies and connect the competencies directly or indirectly to their chosen career field.

An exploratory case study is best suited for this research as it allows for deeper understanding of the context in which numerous variables are being examined that can be used,

if so desired, to pave the way for future qualitative or quantitative research (Merriam, 1998, p. 19). A review of research has not revealed any research specific to welding ePortfolios. Therefore, an exploratory case study allows for a contextual examination of ePortfolios, welding hiring managers' perceptions of ePortfolios and competencies needed in the workplace, and artifacts suitable for conveying these competencies.

Lastly, this study exposes hiring managers to new methods for showcasing competencies. Hiring managers participating in this study will now be aware of ePortfolio links that can be added to cover letters, resumes, or emails. Also, introducing ePortfolios can begin the process of creating an expectation that future job applicants will include a link to an ePortfolio that discusses various competencies.

DEFINITION OF TERMS

This case study examines hiring managers' perceptions of students' claims of possessing competencies that are explained in an ePortfolio. A list of terms is posted and defined in order to promote clarity and create boundaries for the reader. A discussion of different definitions for each term occurs in Chapter Two.

Competency is identified by other terms, such as employability skills, marketable skills, soft skills, and transferable skills (Texas Higher Education Coordinating Board, 2018a). Competency can be defined as the knowledge, skills, and abilities a person possesses regarding a specific value needed to contribute successfully to general and specific tasks in the workplace (Carneval et al., 2020).

ePortfolios, for the purpose of this study, refers to an electronic portfolio containing student experiences in written and visual form for the purpose of conveying technical and transferable skills to a potential employer.

Hiring managers, for the purpose of this study, is the term that refers to the person who reviews cover letters, resumes, and other materials in addition to participating in the hiring process.

Perception is defined by the American Psychological Association (n.d.) as

> the process or result of becoming aware of objects, relationships, and events by means of the senses, which includes such activities as recognizing, observing, and discriminating. These activities enable organisms to organize and interpret the stimuli received into meaningful knowledge and to act in a coordinated manner.

Problem solving is composed of skills and abilities regarding an ability to learn about an issue through the use of data and reasoning, develop and assess the positive and negative aspects of potential solutions, and select and employ the most appropriate solution given the goal and situational factors present at that moment (American Association of Colleges & Universities [AAC&U] n.d.-c; Carnevale et al., 2020; National Association of Colleges and Employers [NACE], n.d.).

Teamwork can be defined as an ability to manage relationships while working with others to complete various structured and unstructured tasks through an ability to motivate others, provide assistance, effectively convey and understand ideas, and manage conflicts (AAC&U, n.d.-d; Carnevale et al., 2020; NACE, n.d.).

ASSUMPTIONS

The following information provides the philosophical assumptions for this study. The interpretive framework is social constructivism, which is the subjective understanding of one's lived experience related to some object or event that prompts the researcher to examine the complexity of interrelated factors (Creswell & Poth, 2018, p. 24). Open-ended questions help provide insight into the participants' understanding, and this information, using an inductive

approach to category development, allows the researcher to make sense of the participants' views.

Connecting social constructivism to this study, participants are individuals who hire welders and have different experiences with people seeking a job, the hiring process, and a new hire's ability to contribute immediately. The participants in this study have different personalities and work experiences that influence the way they analyze and draw conclusions about workers' needs and ePortfolios. These differences compel the researcher to use open-ended questions and probing questions to ascertain participants' perspectives on specific aspects of the ePortfolio, the overall interpretation of ePortfolios, and the ePortfolio's connection to the workforce. These varied viewpoints require the researcher to make sense of their perspectives individually and collectively about various aspects of the ePortfolio.

The researcher's epistemological belief is that the hypothetical students' competencies and their connection to welding will be co-constructed between the researcher and hiring managers' discussions. A follow-up examination of the transcripts and video recording entails the use of additional methods for determining how participants' collective, overall perspective is known (i.e., epistemology). From a pragmatist angle, the study has both inductive and deductive elements. The open-ended questions allow for varied answers that may reveal common claims and explanations among participants resulting in emerging categories. A deductive approach exists through the structured questions that give rise to a priori categories concerning teamwork, problem solving, and the ePortfolio layout.

As just stated, the methodology entails interviews to examine the participants' verbal and nonverbal responses for teamwork and problem-solving competencies located in the ePortfolio as well as the overall structure of the ePortfolio during and after the interview. Discussing the

ePortfolio's homepage, teamwork and problem-solving pages, and the layout creates consistency between interviews. However, as previously discussed, participants' experiences vary, and the goal is to obtain their perspective. Therefore, the researcher will implement probing questions to elucidate a clearer understanding of their perspective, which corresponds with a social constructivist interpretative framework.

LIMITATIONS

This exploratory case study, while novel in its attempt to examine welding hiring managers' perceptions of transferable skills discussed in ePortfolios, has some limitations. One issue pertains to responder bias, known as social desirability, which is an attempt to be seen in a positive light (Trochim et al., 2016, p. 180). The goal is to obtain hiring managers' thoughts about the ePortfolios' content and design unobstructed by outside factors. Some of these factors may include the chance to participate in a study and an assumption that the researcher wants positive feedback so the participant avoids making negative comments about the research.

Another limitation is the potential effect video recording will have on participant answers. Knowing one is being recorded can affect the interviewee's degree of comfortability and the breadth and depth of the answers (Al-Yateem, 2012; James & Busher, 2009). A statement about the interview being recorded will occur when securing the interviews so participants can mentally prepare themselves for this type of interview. Also, a modified-structured interview can ameliorate this issue by posing probing questions to ascertain additional information if the interviewee does not elaborate on the initial questions. Lastly, a list of primary questions can be provided upon request so some participants can prepare their thoughts before the interview and help reduce minimal responses.

Finally, a limitation with navigating the software containing the ePortfolio may exist, thus inhibiting a detailed review of the students' ePortfolios. That said, if this problem occurred, the researcher would identify ways to overcome these barriers to reviewing ePortfolios since a review of students' competencies is predicated on navigating the ePortfolio. A pilot study can clarify how the participant or the researcher should proceed through the information to ensure participants' insights are provided.

DELIMITATIONS

A study's delimitations are specific and intentional decisions to create boundaries around the research that narrow the research's scope (Bloomberg & Volpe, 2019, p. 207). The boundaries stated below affect the generalizability of the study's findings even though the exploratory case study provides insight into how hiring managers view ePortfolios in the welding industry. Bloomberg and Volpe (2019) suggest that multiple case studies can improve the generalizability of the results. A decision was made to focus on only one case, as additional cases would require additional resources, such as time and money (Creswell & Poth, 2018, p. 102). Adding additional case studies would require finding artifacts for different workforce programs, interviewing people outside of the Austin, Texas, area, etc. Bounding the case to welding ePortfolios directed to welding hiring managers in the Austin area prevented complications with answering the research question and determining emerging categories as the transferable skill needs may differ by area or job.

The projects for review were not created by an actual student. An attempt was made to locate student welding ePortfolios online, but only a few welding instructor ePortfolios were located. The researcher decided to create a hypothetical ePortfolio after conducting an online examination of the way students structured and conveyed information on their ePortfolios. The

structure of ePortfolios appears to vary by institutional expectations since some consistency existed within but not among various higher education institutions.

The researcher made a decision to design his own ePortfolio to ensure it was explicitly directed to hiring managers. The ePortfolio contained a homepage followed by pages for two transferable skills — teamwork and problem solving. The ePortfolio design is a delimitation in that other designs, such as placing everything on one page or having pages sectioned by course rather than transferable skill, could affect the hiring managers' perceptions of the ePortfolio's usefulness.

The content placed on the ePortfolio was another delimitation. Content for the ePortfolio was either the researcher's creation or a student's work was modified and redacted to resemble the work of a first-year student. While attempting to create an ePortfolio resembling the work of a student enrolled in a two-year welding program, the researcher realized important information about welding or one's college experience may be absent or may not completely reflect a student majoring in welding. This absence of information can affect the hiring manager's perception of the person's capabilities. Also, experiential learning activities can shape how hiring managers view the student's learning experience and its connection to the transferable skill and welding.

Visuals can alter someone's view of a person's abilities, especially in a skills-based job like welding. Personal pictures of people welding were taken to make the ePortfolio appear more authentic and avoid copyright concerns. A couple of pictures were included in the ePortfolio to prompt the hiring manager to examine the transferable skills in addition to the welding skills mentioned in the examples.

The structure of the content posted on each page created another delimitation. The information reflected a functional resume to emphasize transferable skills developed from

projects rather than skills learned at different jobs. The skills were noted as key takeaways from the experiential learning activity described previously and then related to welding. This delimitation does not indicate the amount of personal growth that occurred while using each skill while attending college. The description of how much one has improved a skill can influence one's interpretation of the hypothetical student.

Another delimitation related to the study's participants. A convenient sampling of participants across the Austin-area occurred for this study. One may conclude that convenience sampling altered the results. The goal is to obtain saturation by conducting multiple interviews. Creswell and Poth (2018) noted that saturation of information occurs as this will suggest no new information can be obtained (p. 318). The researcher's target was to interview 10 people who hired welders. Reaching saturation with this number of participants from different parts of the sampling area can provide quality insight into ePortfolios that would offset the convenient sampling method.

The geographical area and type of welding industry created other delimitations. Participants were from the Austin, Texas, area and were those who hire welders for the construction industry. Isolating the participants to this metropolitan area reduced generalizability to companies outside the Austin area. Welding in the construction industry in other metropolitan and rural areas may differ from the Austin, Texas, region. Also, the selection process attempted to exclude welding hiring managers in non-construction businesses, such as the semiconductor and oil and gas industries. These industries may have different expectations for welders that can affect hiring managers' perceptions of the ePortfolio. However, interviews with people in these other industries can confirm differences and similarities, which subsequently informs the

researcher and practitioners of nuances that need to be researched and accounted for when developing more audience-specific ePortfolios.

SUMMARY

This chapter explained the background for the study that included workforce needs, educational experiences, and ePortfolios. The ability of ePortfolios to convey competencies and learning, along with the need for more research focusing on employment-centered ePortfolios, transferable skills, and workforce-specific areas, laid the groundwork for this exploratory study. Specifically, the purpose of the study is to examine Austin-area welding employers' perceptions of community college graduate students' transferable skills as conveyed through ePortfolios. The significance of the study was discussed, followed by the definition of terms, assumptions, limitations, and delimitations.

The following chapters cover relevant literature, the methodology used to conduct the study, the study's results, and implications and further research. The next chapter is the literature review, which concerns ePortfolios, student preparedness, and various definitions of teamwork and problem-solving skills — the two transferable skills discussed in the ePortfolio.

CHAPTER TWO: LITERATURE REVIEW

INTRODUCTION

The purpose of this chapter is to review the relevant literature related to the study's overarching concepts. The literature review highlights past research that will give the reader a clearer understanding of the factors related to the study and how the factors shape the main research question and methodology. Given this research's exploratory nature to understand the intersection of competencies, ePortfolios, and hiring managers' perceptions of those two factors, the literature review will discuss the research related to the major factors and not necessarily seek a gap in the literature or a way to extend a particular theory. Instead, the review highlights the over-arching research question and the methodology described in Chapter Three. The main research question is "What perceptions do welding hiring managers in the Austin-area of Texas have of a community college graduate's transferable skills conveyed through ePortfolios?" The information generated from this question provides more insight into the way ePortfolios communicate competencies to employers within the welding industry.

The chapter examines five factors differentiated by headings. The review starts with workforce readiness, which provides a broader context in which this study is occurring and points to college graduates' preparedness. The next section examines different organizations' definitions of competencies. The variations help underscore how perceptions differ when defining competencies needed in the workplace. The literature review will focus on two competencies — teamwork and problem solving — that are both valued in the workplace and

provide boundaries for the study. The last two sections examine welding and ePortfolios. Welding research is limited but provides the reader with a basic understanding of the context in which the study was conducted. The ePortfolio literature examines the purpose of ePortfolios as a hiring tool.

WORKFORCE READINESS

Workforce readiness is one of the main goals for colleges and universities across the country. Workforce or career readiness can be defined as "a foundation from which to demonstrate requisite core competencies that broadly prepare the college educated for success in the workplace and lifelong career management" (NACE, n.d.). Another definition is "A 'work ready' individual possesses the foundational skills needed to be minimally qualified for a specific occupation as determined through a job analysis or occupational skills" (ACT, 2013, p. 3). These definitions point to essential skills and competencies that colleges ought to teach and that are transferable to jobs related to students' selected majors and other types of work. However, the definitions differ in that the latter definition focuses on "a specific occupation" while the first definition is broader. The definition's specificity can affect the way one examines different competencies.

Unfortunately, research indicates that over half of employers surveyed do not believe that college graduates possess the necessary skills and knowledge needed to perform their duties at entry-level positions and that colleges need to do more to prepare students for the workforce (Finey, 2021; Hart Research Associates, 2015; NACE, 2021; Stewart et al., 2016). A survey of almost 500 employers indicated a strong belief in the competencies taught in higher education (Finey, 2021). Of the same employers, 60% claimed graduates were deficient in entry-level job skills and knowledge. Another study of executives and hiring managers indicated a need for

knowledge and skills to be exhibited in all majors. While 74% of hiring managers are satisfied with the skill and knowledge application, many believe colleges can improve graduate preparedness (Hart Research Associates, 2018). Another study of employers examined employers' view of the importance of eight competencies and graduates' proficiency with each competency (NACE, 2021). Technology was the only competency whereby proficiency (79.8%) neared importance (81.5%). The proficiency of other competencies was much lower than their rated importance. Critical thinking was rated 98.5% in importance and 55.8% in graduate proficiency, while teamwork's importance was 98.5% and proficiency was 77.5%.

Some positive aspects of workforce readiness exist in the research literature. The Hart Research Associates 2018 study showed an improvement in employer perceptions from their 2015 study. All but 10% of employers in one study note the worth of obtaining a college degree, and these results were more prevalent among young employers and those with higher levels of degree attainment (Finey, 2021). The same respondents see the importance of 13 liberal education skills, such as working in teams and critical thinking. The literature does not convey how or which college-related experiences inside or outside the classroom verify their competencies to potential employers.

COMPETENCIES

Students and employers have their own perspectives of graduate competencies, and one group's perspective may not coincide with the other group's perspective. For their part, students typically view their competencies favorably, even though employers' assessment of their readiness is lower than students (Hart Research Associates, 2015; Stewart et al., 2016). A study conducted at one university found almost 88% of students had a high level of confidence in their problem-solving skills, which was 64 percentage points lower than the national average of served

employers (Stewart et al., 2016). Likewise, the same study found a 46-percentage point differential between students and employers.

Students from various programs, such as agriculture and marketing, had a positive view of their competencies related to workforce readiness (Hartley et al., 2019; Hendrix & Morrison, 2018). A self-report study of marketing students indicated an improvement in their teamwork skills, identified as "working cooperatively," especially when compared to other business majors' self-assessment scores (Hartley et al., 2019). However, they did not suggest an improvement in their "analytics and problem solving" skills. Likewise, a study of agriculture majors' perceptions of workforce readiness noted a high degree of confidence in problem-solving skills but not with "working well with others" (Hendrix & Morrison, 2018). The first study focused on one's growth in various competencies but did not connect this growth to required competencies in their future positions. In other words, students stating they developed "working cooperatively" skills during college may believe they still have room for growth when comparing that skill to their future job duties. That being said, the Hendrix and Morrison (2018) study had students assess the importance of each skill followed by their perceived readiness for an agricultural job. This study produced mixed results in that students stated they possessed some skills but were aware of a deficiency in other competencies, such as teamwork.

Various definitions for the term *competency* exist and should be discussed prior to examining different types of competencies, as this discrepancy reveals variations in how the broader category can be interpreted by people in academia and the workforce. The National Postsecondary Educational Cooperative (NPEC, 2002) defined competency as "the result of integrative learning experiences in which skills, abilities, and knowledge interact to form bundles that have currency in relation to the task for which they are assembled" (p. 7). The Texas

Workforce Investment Council (TWIC, 2015) defines competency as "a major skill or ability needed to perform effectively and efficiently in the workplace" (p. 19). TWIC clarifies this definition by mentioning two additional terms — *skill standard* and *employability knowledge and skills*. The first term focuses on specific occupational areas, while the second term examines transferable skills across occupations. The Texas Higher Education Coordinating Board (THECB, 2015) oversees Texas higher education, and it defines a competency profile as "a list of skills and abilities defined and validated by business/industry as necessary to perform tasks related to a particular occupation or cluster of occupations" (p. 48). Their skill standards definition emphasizes the level of competence needed to perform tasks in a certain area.

These definitions highlight a type of knowledge or skill needed to successfully complete a specific task, with some requiring different skills within a particular industry. One may interpret these definitions as specific knowledge and skills that need to be developed in order to possess a particular competency. However, other approaches to examining competencies exist. Carnevale et al. (2020) distinguished between cognitive and physical competencies, of which teamwork and problem solving are in the former. This differentiation highlights the degree of blue-collar occupational needs from services and support as well as professional and technical needs. ACT (2013) examined the noncognitive and foundational cognitive skills needed to be workforce ready. Both skills are portable, so they are seen in different occupations. Foundational skills, of which problem solving is one, are work readiness skills employers identified as needed for a particular occupation. Noncognitive skills, such as cooperation and adaptability, amplify other aspects of the person's character and skill set. On the other hand, NPEC (2002) begins with traits and characteristics (i.e., first foundational level) that makes up the person's being or personality on which skills, knowledge, and abilities are learned (i.e., second tier). Competencies

are the third tier and are the abilities acquired through learning experiences that pertain to occupational tasks.

Lastly, the Competency Model Clearinghouse (n.d.-d) provides a pyramid model to highlight various competencies. The first competency is known as foundational competency and is composed of three competency tiers called personal effectiveness, academic, and workplace. Teamwork and problem solving reside in the latter category. Foundational competencies support industry and occupation-related competencies, such as material resources and regulations and quality assurance, then the pyramid-shaped model narrows to management competencies and occupation-specific requirements at the top.

The competencies needed to be successful vary by degree attainment, degree field, and job type. Jobs requiring an associate degree seek social intelligence and oral communication skills more than higher degree levels, while written communication and collaboration increased with more advanced degrees, i.e., bachelor and graduate (Rios et al., 2020). The same study noted a difference in job postings by degree field, and collaboration skills were requested more for social sciences than business, while problem solving was found more in STEM than social sciences. These differences clarify what competencies are needed for the employer and the graduating student looking for a job in a specific industry.

The literature reveals numerous terms and definitions related to what this research calls "competencies." Some terms are couched in a specific context, as seen in the Competency Model Clearinghouse, and other terms focus on cognitive and non-cognitive skills. While the literature contains a variety of ways to differentiate competencies and skills, all of the competencies and skills indicate the requisite skills needed to succeed in the workforce. Lastly, and as stated previously, these are the same competencies employers value but fail to see in their employees.

TEAMWORK

As mentioned in the previous section, many skills or (non)cognitive factors help form a competency that makes one workforce ready. These competencies work in combination with other competencies so people can competently complete tasks in various occupations. Also, the way a specific competency is utilized varies based on the context and required tasks. For example, the U.S. Department of Labor/Employment and Training Association sponsors the Occupational Information Network (O*NET). An examination of O*NET Occupation Codes for accountants and welders found that both required teamwork; however, reading for information was a priority for accountants but not for welders (ACT, 2013). This information suggests that certain skills work in conjunction with other skills. Likewise, one competency may be utilized differently in one occupation than another, as seen in a basketball leader motivating people and a surgeon conveying leadership through extensive knowledge of a medical procedure (NPEC, 2002).

Teamwork is a top-rated competency that has various definitions. As mentioned in Chapter One, teamwork is identified using various synonyms, such as collaboration and an ability to work in a group. NACE (n.d.) defined teamwork as a way to "build and maintain collaborative relationships to work effectively toward common goals, while appreciating diverse viewpoints and shared responsibilities." The organization proceeded to list teamwork behaviors, such as careful listening, managing conflict, being accountable, utilizing strengths, and collaborating.

Teamwork definitions specific to the workforce exist. Competency Model Clearinghouse (n.d.-a) defines teamwork as being able to "work cooperatively with others to complete work assignments." Their subcategories for teamwork focus on knowing roles, responsibilities, and hierarchy; assisting others; communicating effectively; resolving conflicts; learning from others;

and assisting others. Texas Workforce Investment Council (2015) defines working in teams as "Work cooperatively and collaboratively with others to achieve goals by sharing or integrating ideas, knowledge, skills, information, support, resources, responsibility, and recognition" (p. 21). Carnevale et al. (2020), associated with the Georgetown University Center for Education and the Workforce, utilized O*NET's data to develop a list of skills and definitions associated with teamwork, though they did not provide a formal teamwork definition. The skills include persuasion, service orientation, social perceptiveness, and speech recognition.

Various entities within the educational sector created their own definitions of teamwork. American Association of Colleges and Universities (AAC&U, n.d.-b) lists teamwork as an "essential learning outcome" and defines teamwork as "behaviors under the control of individual team members (effort they put into team tasks, their manner of interacting with others on the team, and the quantity and quality of contributions they make to team discussions)" (p. 1). The Texas Higher Education Coordinating Board (THECB) developed a list of core objectives students should obtain when completing the foundational component areas in pursuit of an associate's or bachelor's degree at a Texas higher education institution. Teamwork is one of the objectives and is defined as the "ability to consider different points of view and to work effectively with others to support a shared purpose or goal" (THECB, 2018c, p. 6). The organization provided additional aspects of teamwork for students to consider when examining their own career readiness. These transferable skills falling under teamwork included "sharing credit," "conveying feelings," "cooperating," "perceiving feelings," "motivating," and "developing rapport" (THECB, 2018b, p. 9).

These definitions of teamwork contained similar words that showed their commonality as well as unrelated words. For example, Texas Workforce Investment Council (TWIC)

emphasized merging knowledge, skills, resources, etc., when working together to attain a goal. On the other hand, THECB focused on working together toward a common goal through the consideration of different viewpoints. The emphasis on "resources" in one definition and "different viewpoints" in another definition can alter the conceptualization, operationalization, and assessment of teamwork.

A review of the definitions revealed the use of similar keywords. These words are *goal, relationship, viewpoints, collaboration, responsibilities, knowledge,* and *tasks*. These terms focus on the goal, team relationship, and contributions. One may consider teamwork to be selected individuals called to collaborate with each other to attain a goal(s) through effective communication concerning their viewpoints of the goal and the process, implementation of their skills to complete tasks or help others complete tasks at the appropriate time and in the appropriate manner, and a willingness to share resources and assist others.

Teamwork consistently ranks as one of the top workplace competencies (Baird & Parayitam, 2019; Carnevale et al., 2020; Hart Research Associates; 2018; NACE, 2021). The Georgetown University Center for Education and the Workforce found teamwork to be the second most in-demand competency (Carnevale et al., 2020). NACE (2021) has teamwork ranked third behind critical thinking and communication. While 77.5% of employers view students as very/extremely proficient in teamwork, 86.9% of students provide themselves with the same rating. However, the Hart Research Associates' (2018) survey results showed a 37% gap between viewing teamwork as being very important and college graduates possessing that quality. Likewise, AAC&U's report noted teamwork being ranked in the top five, with a 14% gap between employers' views on teamwork's importance and graduates' preparedness with this

competency (Finey, 2021). Just as importantly, the highly coveted teamwork competency varies by required degree level and job sector (Rhew et al., 2019; Rios et al., 2020).

Studies on students' views of teamwork by discipline have occurred. For example, agricultural students consider teamwork the most valuable, and a review of agricultural job postings indicated that just under half of them seek teamwork skills (Hendrix & Morrison, 2018). Interestingly, these same students rated themselves as competent with "work well with others" but lower with the oral communication skill "participate effectively with others." Along the same lines, 85% of surveyed marketing majors reported that their ability to work cooperatively with others increased over their collegiate career and to a higher degree than non-marketing business majors (Hartley et al., 2019). These studies reflect students' perceptions of their competencies. No research was located on welding students' perceptions of their teamwork skills.

PROBLEM SOLVING

Another competency deemed necessary in the workplace is problem solving (Baird & Parayitam, 2019; Carnevale et al., 2020; Hart Research Associates; 2018; NACE, 2021). A study focusing on 21 skills and competencies found that 94% of respondents believe critical thinking/problem-solving skills to be important in the workplace (Baird & Parayitam, 2019). Carnevale et al. (2020) reviewed O*NET data on cognitive competencies and noted that problem solving and complex thinking increased from 44% to 63% over 49 years, with this skill ranking in the top five cognitive skills needed in the workplace. This competency was one of the top competencies listed for the intensity of use and high demand. Likewise, employers sought problem-solving skills more than any other skill on a resume (NACE, 2021).

Not all research rated problem solving highly. Hart Research Associates (2018) reported that being "able to analyze and solve complex problems" was a second-tier outcome, with nine

other skills receiving a higher rating of importance. A different angle on problem solving found that the ability to solve problems with people of diverse backgrounds was increasing. Also, a 33% gap existed between the skill being important (67%) and recent graduates being prepared to use this skill (33%).

As with teamwork, organizations define problem solving similarly, yet they contain subtle nuances. Starting with business-focused definitions, Competency Model Clearinghouse (n.d.-b) provides a list of foundational competencies, of which "Problem Solving and Decision Making" is one. Their simple definition, "Generating, evaluating, and implementing solutions to problems," becomes more complex. Additional information on problem solving reveals three additional categories (i.e., Identify the Problem, Generate Alternatives, and Choose and Implement a Solution), with each category containing multiple subpoints (Competency Model Clearinghouse, n.d.-b).

O*NET (n.d.-a) defines problem solving in a category and as a specific skill on their website. The definition for the category labeled *Complex Problem Solving Skills* is to have "developed capacities used to solve novel, ill-defined problems in complex, real-world settings," while the term *Complex Problem Solving* is "identifying complex problems and reviewing related information to develop and evaluate options and implement solutions." The National Skills Standards Board (NSSB) was composed of various organizations, such as education, workers, and business leaders, who voluntarily worked to create common standards for skill identification and assessment (NSSB, 2000). Their definition of analyzing and solving problems is to "anticipate or identify problems and their causes; develop and analyze potential solutions or improvements using rational and logical processes or innovative and creative approaches when needed" (p. 2). The TWIC uses the NSSB's definition for analyzing and solving problems.

Specific to education-focused organizations, AAC&U (n.d.-c) defined problem solving as "the process of designing, evaluating and implementing a strategy to answer an open-ended question or achieve a desired goal" (p. 1). This definition appears to emphasize solution development more than problem analysis. Interestingly, AAC&U (n.d.-a) merged teamwork and problem solving into one essential learning outcome.

An examination of the definitions revealed some overlap of keywords or their synonyms. Most definitions highlight a need to identify and explore various aspects and causes of the problem, then transition to developing and analyzing potential solutions. NSSB elaborated more on solution development by stressing the use of logical processes and creativity. The research defined problem solving broadly to encompass all job types; therefore, the definitions should apply to problem solving in the welding industry, though it remains uncertain if one aspect of the definition may be emphasized more than the others.

Some organizations have combined the two competencies under examination for this study and called it collaboration problem solving. One such organization is the Organization for Economic Co-Operation and Development (OECD), which works internationally to address various issues: education and the workforce. They defined collaborative problem solving as

> the capacity of an individual to effectively engage in a process whereby two or more agents attempt to solve a problem by sharing the understanding and effort required to come to a solution and pooling their knowledge, skills and efforts to reach that solution. (OECD, 2017, p. 6)

The National Center for Educational Statistics (NCES, 2017) created their own definition after examining other sources: "multiple people working interdependently towards a common goal" (p. 12).

The collaborative problem-solving definitions point out the need to solve problems in groups whereby multiple people work together by sharing knowledge and skills to reach some

goal. The definitions did not emphasize exploring facets of the problem or solution, nor did they emphasize the social component to the degree seen in the teamwork definitions. However, an attempt is made to discuss problem solving among multiple people. One can foresee welders working together to resolve onsite issues.

Multiple surveys of employers concluded that problem solving is an essential skill for the workplace. Problem-solving skills surpassed teamwork from the previous year to become the top competency employers wanted to see on resumes for 2022 (NACE, 2021). A separate study noted critical thinking/problem solving as the second most sought-after skill that should be learned in the education system to help students address a dynamic and changing workplace (Baird & Parayitam, 2019). However, some executives' and hiring managers' assessment of learning outcomes ranked problem solving behind finding, organizing, and evaluating information in the second tier of competencies (Hart Research Associates, 2018). The first tier contained eight competencies.

Regardless of where problem-solving skills were ranked, employers did not believe graduates were well prepared to utilize this skill in the workplace. One study found a 14% gap between believing this skill to be very important in the workplace and graduates being very prepared with an ability to solve problems (Finey, 2021). A profound difference of 33% between problem-solving importance and preparedness was noted in a separate study that had a 46% gap when the study was conducted in 2014 (Hart Research Associates, 2018). Some indication exists that problem-solving development occurs after surveying 40,000 students from 600 colleges (Hartley et al., 2019). The same study accounted for marketing curricula affecting marketing majors' gains in problem solving.

WELDING

Community colleges offer welding programs through Career and Technical Education. O*NET labels this occupation as "Welders, Cutters, Solderers, and Brazers" under the occupational code 51-4121.00 and describes the work as using any of the four terms mentioned above to weld or fill indentations, holes, or seams of metal products (O*NET, n.d.-b). The welding industry recognizes the importance of problem solving and teamwork within the industry. According to O*NET's website, complex problem solving was ranked 8th in "Work Activities" and 10th in "Skills." Teamwork was 8th in "Work Context." An examination of other categories revealed different aspects of teamwork. "Concern for Others" and "Cooperation" are under the "Work Styles" section, and "Relationships" is under "Work Values." The definition of these terms suggests that the competencies examined in this study manifest themselves in different ways and to different degrees within O*NET's description of the welding industry.

The American Welding Society (2014) discussed the traits needed to show proof of long-term employability. The list was not rank ordered and included dependability, sociability, initiative, communication skills, reading skills, problem-solving skills, math skills, science skills, knowledge of welding codes, and knowledge of welding. Many of these needs can be referred to as transferable skills, and only a few are specific hard skills related to welding.

Welding educators can address problem solving and teamwork within their curriculum. Welding Technician National Core Curriculum expresses a need for students to work in problem-solving teams and resolve problems regarding processes and materials using various competencies (Goodheart-Willcox, n.d.). Also, the American Welding Society & National Center for Welding Educational Training (n.d.) provided a curriculum that embeds teamwork throughout the activities. They help develop the teamwork competency through a structured

process of goal and individual role determination, gathering information, and reflection questions to complete.

Identifying problem-solving skills and teamwork within O*NET and emphasizing these competencies in educational materials underscores their importance in the field. However, more research on curriculum activities and communicating the activities are needed to determine whether student experiences convey the degree of competency an employer expects from a recent graduate. This research can become more nuanced given the variety of ways employers may define or conceptualize teamwork and problem solving in the workplace.

EPORTFOLIO

ePortfolios are a way to communicate student learning experiences to prospective employers. Students and employers can benefit from ePortfolio usage before and during the recruitment process. Students and faculty noted they were able to track student competencies related to the public health course outcomes through ePortfolio usage (Crowell & Calamidas, 2016). This information, while not from an employer's perspective, suggested that ePortfolios could be used to identify competency attainment. That said, most ePortfolio platforms assessed in a case study were considered lacking in their ability to track the development and mastery of competencies (Bair et al., 2019). This information suggests that students may struggle with communicating their competencies to potential employers. However, ePortfolios can still assist students with interview preparation. Students trained in ePortfolio, resume, and cover letter construction outperformed students who were trained only in resume and cover letter development (Ring et al., 2017). One reason may stem from developing a professional identity (Cordie et al., 2019).

Professionals, for their part, claim that students are improving their ability to communicate knowledge and skills acquired during their collegiate studies (Finey, 2021). Some studies revealed that ePortfolios are more valuable than transcripts for evaluating potential employees (Hart Research Associates, 2018; Leahy & Filiatrault, 2017). Furthermore, professionals who hired business and technical communication graduates sought visually appealing, organized information on ePortfolios that included writing samples connecting their skills to a specific position; however, they did not see ePortfolios as a deciding factor (Clayson, 2019). On the other hand, interviews with engineering professionals pointed to ePortfolios assisting with candidate differentiation and cultural fit (Weber, 2018).

Hiring personnel's age and degree-level attainment appear to influence the value of ePortfolios. One study found that employers under 40 years of age and those with a post-graduate education are more likely to consider hiring someone with an ePortfolio (Finey, 2021). A second study revealed that recruiters with less than two years of job experience are more likely to visit someone's ePortfolio if a link was provided on a cover letter, email signature, or follow-up email (Leahy & Filiatrault, 2017).

Despite the advantages ePortfolios provide for assessing candidates, some drawbacks exist (Weber, 2018). A qualitative study of hiring engineers noted the amount of information created information overload — the average time spent reviewing one ePortfolio was 30 minutes — and personal information could potentially result in biases (Weber, 2018). The study also mentioned effort duplication since much of the same information is on LinkedIn. The literature did not discuss the type and amount of information provided or the amount and type of information needed to convey some type of competency to the hiring manager.

SUMMARY

This literature review examined the workforce readiness among graduates and an overview of competencies before narrowing the concept to teamwork and problem solving competencies. An examination of skills needed in the welding industry was covered. The literature review ended with an examination of ePortfolios as a tool students can use for obtaining employment and hiring managers' perceptions of ePortfolios in the hiring process.

The literature did not examine certain aspects of ePortfolio usage as a means for obtaining employment. First, research concerning specific transferable skills, such as teamwork, is needed in program-specific and non-program-specific courses to determine the type of academic work best suited for developing these competencies. Secondly, the research did not discuss the best way to communicate these transferable skills through an ePortfolio to a potential employer. These research questions can be examined through an exploratory case study and are discussed in more detail in the methodology chapter.

CHAPTER THREE: RESEARCH METHODOLOGY

INTRODUCTION

The purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. The competencies under consideration are teamwork and problem-solving skills, as employers deem these competencies to be in high demand (National Association of Colleges and Employers [NACE], 2021). The specific area of focus is welding; thus, welding and non-welding experiences are described in the ePortfolio and connected to the two competencies. Additional information concerning the ePortfolio's structure and style was sought to determine the degree to which the ePortfolio's design facilitated or inhibited the employers' understanding of the candidates' competencies.

This chapter focuses on the description and justification for selecting an exploratory case study as the methodology for this qualitative study. Next, information concerning participant involvement is provided to justify the sampling method, followed by the procedures used to collect data, develop an audit trail, and analyze data. The chapter transitions to issues related to trustworthiness and ethical concerns so the reader understands that the researcher's approach to ensuring validity, reliability, and subject concerns is addressed in the study.

RESEARCH DESIGN AND METHODOLOGY

ePortfolios allow users to upload various content using different designs. This flexibility, coupled with a lack of current research concerning hiring managers' perspectives of ePortfolios,

makes qualitative research conducive for this study. According to Yin (2011), common qualitative research practices allow for flexible research designs in order to ascertain contextual factors and the participants' perspectives (p. 10). Creswell and Poth (2018) add to this claim by stating that qualitative research is appropriate when needing to detail a complex issue. The authors also state qualitative research is needed when quantitative research does not "fit" the research problem. Therefore, an exploratory case study is needed to explore hiring managers' perceptions of ePortfolios for two reasons. First, little information about welding hiring managers' perceptions of transferable skills in ePortfolios exists. Secondly, the research examines different factors related to transferable skills described in an ePortfolio within the welding industry (Yin, 2014, as cited in Bloomberg & Volpe, 2019).

Research Questions and Focus

As previously stated, the purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. The researcher sought to determine the hiring manager's perception of the hypothetical students' teamwork and problem-solving skills through welding and non-welding projects and basic personal information posted on the ePortfolio's homepage. Also, the researcher was interested in knowing if comments about the layout, pictures, etc., affected the interviewee's perception of the ePortfolio's usefulness as a tool for assessing potential employees.

Case Study Methodology

A case study is the best approach to obtaining answers to this specific research problem. After examining the work of Creswell and Poth (2018) and Yin (2011) and considering the goals and research complexities related to this study, the researcher defined this case study as an

interview-driven inquiry into a social group bounded by persons, time, and place for the purpose of determining constructs common to the social group's perspectives. The case study was bounded by examining hiring managers who interview and hire welders in the construction industry within the Austin, Texas, metroplex. These interviews were conducted either virtually or in person.

The definition of this case study was further refined, given this is an exploratory case study, to determine perceptions of ePortfolios designed for a specific audience — hiring managers. Previous use of exploratory case studies in higher education research was seen in the examination of ePortfolios and advising as well as mentoring and career advancement (Ambrose, 2013; Steele, 2016). Lastly, this case study included a hypothetical ePortfolio designed by the researcher since online ePortfolios directed toward hiring managers in the welding industry do not exist.

Exploratory case studies seek new information or constructs. This study intends to determine constructs that can inform students on ways to develop future ePortfolios — a move toward developing best practices. Yin (2011) defines an instrumental case study as "a case study of a particular situation but, in spite of its uniqueness, being conducted because of its potential applicability to other like-situations" (p. 310). As previously stated, these constructs may have generalizability to other hiring managers' views of ePortfolios; therefore, this study can be identified as an instrumental case study. In terms of the future applicability of ePortfolios designed for hiring managers, Yin argues for generalizing findings in a two-step process that entails connecting the conclusions to constructs and then the constructs to other situations (p. 225). The themes garnered from this study can serve as constructs in future research.

Furthermore, future quantitative research can focus on the strength of the relationship between constructs and hiring managers in other lines of work.

IRB AND INTERVIEW QUESTIONS

Preparing for the study required multiple steps. One step was to obtain and modify institutional consent forms to reflect the study. Ferris State University provided access to Zoom for the virtual meetings that included automatic transcript production. After developing questions, which are discussed in more detail below, the paperwork for Ferris State University's Institutional review board was submitted.

The predetermined questions structured the interview discussion, though probing questions provided additional insight into their perceptions of ePortfolios. The interview questions listed later in this chapter focused on the way hiring managers define these two transferable skills, how the skills are operationalized in welding jobs within the construction industry, the degree to which the ePortfolio content conveys competency with these skills, and the effects the ePortfolio content and structure had on their perception of the hypothetical student. Understanding how hiring managers viewed students' written comments about welding and non-welding coursework and its linkage to their future careers in welding underscored the complexity of the case and the need for the researcher to be flexible in designing the ePortfolio and posing pertinent interview questions. Furthermore, a quantitative study cannot answer these questions since the hiring managers' perceptions may focus on the "whole" of the ePortfolio, specific parts of the ePortfolio, or a combination of multiple pieces of information within the ePortfolio and the person's experience with that information and new welders. On the other hand, an exploratory case study allowed the researcher to locate other pertinent information that might not have been considered when designing the study. Therefore, this qualitative research

helps obtain a rich and meaningful understanding of the hiring managers' perspectives of ePortfolios and college graduates of welding programs.

ePortfolio Selection and Development

An examination of different online college ePortfolios indicated various challenges with using existing student ePortfolios. First, the ePortfolios did not mention the intended audience. As stated in Chapter One, ePortfolios are typically intended for self-reflection, assessment, and potential employment, meaning the audience can be oneself, college employees, or potential employers. Each audience has different expectations for the content, the writing style, and the amount of content within the ePortfolio. For example, the student may focus on their own personal growth, while a potential employer may want to know if the person is competent and a good fit with the organization. In the same vein, the students did not structure the content in the ePortfolios for potential employers to review; they were not the intended audience. Much of the information appeared to be self-reflection papers that discussed various activities one could use to determine self-growth or as an assessment tool. While some ePortfolios' content focused on a competency or classwork related to a competency, the information did not appear to connect the experience to the competency and the competency to future employment.

A second complication arose when examining online student ePortfolios for this study. One of the main issues resided with ownership. While some community colleges house students' ePortfolios, they do not necessarily own the ePortfolio. This ownership concern can complicate the way the researcher locates and obtains approval for using ePortfolios in the study. After locating ePortfolios that fit the research question, the researcher would have to seek permission to use the ePortfolios in the study, which would require a determination of ownership.

Another concern with using online student ePortfolios resided with student contact information and other identifiable information posted on the ePortfolio. Many ePortfolios contain a resume with students' phone numbers, email addresses, home addresses, etc. Also, personal pictures and personal information, through artifacts like reflection papers, are provided in some ePortfolios. The researcher did not want to intentionally provide the students' contact information to participants, especially if the students were not aware that the study included access to their personal information. Furthermore, releasing this information could result in unwanted communication from interviewees to the students owning the ePortfolios.

In order to mediate these issues, the researcher decided to develop two ePortfolios to guarantee that the design and content were directed toward potential employers and that the content within the ePortfolio addressed the competencies under consideration for this study. Wix was the software used to build the ePortfolio since there was no cost for building the website. The ePortfolios contained fictional information about basic categories, such as hobbies and coursework examples. The information provided reflected a typical college student. Any information that may reflect a real person was purely coincidental.

The ePortfolio's structure attempted to provide clear information about the hypothetical student so the participant could easily locate competencies to review. The ePortfolio's overall structure resembled aspects of a functional resume. A functional resume highlights competencies through various accomplishments rather than focusing on one's work history, which a chronological resume emphasizes (Kessler, 2005, p. 64). The researcher believed this approach to ePortfolio development ensured the ePortfolio conveyed the student's competencies to the potential employer and avoided content or details a potential hiring manager might find

irrelevant. However, answers to the research questions helped to clarify whether this approach was effective or if hiring managers wanted details resembling a chronological resume.

The homepage contained basic information (see Appendix A). The researcher believed a half-completed ePortfolio would negatively affect the participants' initial perception, so having tabs and basic information gave the homepage a finished look. The ePortfolio included a picture of a person welding, though no identifiable features were provided due to the welding mask, gloves, and long-sleeved shirt. The researcher sought to avoid creating a bias toward the hypothetical student.

The top right corner of the page contained four categories: welding skills, teamwork, problem solving, and communication. However, only the teamwork and problem-solving tabs were linked to other web pages. The welding skills and communication tabs did not have links to help bound the case study around the two aforementioned transferable skills. This approach helped to ensure that the interview could be completed in the timeframe suggested when scheduling the interview, which was approximately 45 minutes.

The left side of the homepage contained information about the hypothetical student. The top portion of the homepage focused on basic contact information, followed by an "About" section that stated a goal statement and basic background information. The "Work Experience" section that summarized the person's work experience was last. A summary statement differs from a goal statement by highlighting the person's qualifications rather than what a person seeks from an employer (Callahan, 2017; Glassdoor Team, n.d.). This ePortfolio contained direct and indirect summary statements in both the "About" and "Experience" sections. The last two sections were "Education" and "Achievements & Interests," which noted basic welding skills, a few courses taken, and a few accomplishments. The researcher thought it appropriate to provide

some hypothetical information about the person prior to reading about the welding and non-welding coursework related to teamwork and problem solving. Transitioning directly to transferable skills after orienting the interviewee to the interview would seem abrupt if the participants did not have some background information to help orient themselves. Also, the homepage information helped personalize or humanize the student under examination.

The ePortfolio needed to highlight various competencies in order to showcase one's employability. Multiple competencies exist, including written communication, technology, work ethic, and leadership. The researcher focused on two competencies: problem-solving skills and teamwork. Reducing the number of competencies to two helped to minimize the amount of information in the ePortfolio and refine the interview questions so the answers concerned specific competencies. The reduction in the number of competencies under consideration minimized the possibility of interview fatigue occurring during the interview.

Two significant factors affected the researcher's decision to select teamwork and problem-solving skills. First, welding professor Brent Werner stated in an interview that teamwork and problem solving were two skills required to complete a job (personal communication, September 1, 2021). He continued to say that welders have to work with one another and other workers, such as electricians, carpenters, etc., to address unforeseen issues arising on the job site. This information coincided with other research suggesting problem-solving skills and teamwork are in high demand among employers (NACE, 2021).

The ePortfolio information should connect the student's academic experiences to teamwork and problem-solving skills, then the skills learned are related to the welding industry. The teamwork and problem-solving web pages (see Appendix B) were structured similarly to

each other to ensure the information flowed smoothly, which would help the hiring manager locate and read the information in a consistent manner.

The title for each webpage devoted to a specific competency began with "Teamwork and Welding" or "Problem Solving and Welding," followed by a brief description of how they are related. The purpose was to highlight the hypothetical student's understanding of how the transferable skill works in the welding industry. Each transferable skill contained an example from a welding and a non-welding course. The non-welding course for teamwork was a communication class, and the non-welding course for the problem-solving competency was a student success class. An additional non-course experience was included in the problem-solving section to determine whether experiences outside of college influenced the hiring managers' perceptions of that person having that particular transferable skill.

All courses and the non-education example had the same three-part structure: a description of the project, key takeaways, and how the person's learning connected to the workplace (see Appendix B). This design provides the potential employer with information showing the student's understanding of the competency's importance within welding, followed by a minimum of two examples revealing how the student demonstrated the competency in a welding course and general education course.

The experiences discussed in the hypothetical ePortfolio may occur in general education and welding courses. Students enrolled in workforce programs must take general education courses in addition to program-specific courses, or, in this case, welding. General education courses should help students receive a well-rounded education from their institution and help develop various competencies that will help them be successful in their careers and other aspects of life (Texas Higher Education Coordinating Board, 2018a).

The method for obtaining examples for each competency varied. The researcher brainstormed ideas to create the welding and communication examples and redacted and modified a relative's college student success paper. The non-education example for the problem-solving competency came from a friend's apparatus that he created to improve the process used to monitor the temperature of the grease when frying food. An effort was made for the writing to reflect community college students in a welding program.

Pilot Interview

A pilot interview was conducted virtually to clarify questions, the information in the ePortfolio, and the interview length. A convenient sampling method helped locate a participant by searching online for a local welding business and driving to the business to request an interview. The participant, who was a welder in addition to supervising welders, requested a virtual interview. The interview discussion occurred in the evening and focused on one ePortfolio that contained a homepage, a teamwork page, and a problem-solving page, in addition to the person's perception of teamwork and problem-solving skills observed in the workplace. That entire interview lasted an hour.

The pilot study provided insight into how the study should be structured. First, a decision was made for participants to focus on one ePortfolio instead of two ePortfolios. While important to determine hiring managers' perspectives on different courses, competencies, amount of information per competency, etc., interview fatigue had to be accounted for, given the amount of time needed to read and discuss two ePortfolios. One concern with reviewing two ePortfolios resided in being denied an interview after telling them the conversation would take over an hour. The other concern was being granted an interview only to have the participant experience interview burnout and not complete the interview.

Other outcomes from the pilot study occurred. The participant in the interview mentioned another welding business during the interview. However, a search for a welding business in the Austin area had not begun in earnest. In order to clarify convenience sample, a snowball method was added to the sampling method to clarify convenience sampling. This change avoided potential issues with participants making recommendations to contact people or businesses the researcher would have contacted during a search for welding businesses. Another clarification to the sampling method was to contact businesses while simultaneously asking higher education employees to forward information about the interview to potential participants. The former method would require the researcher to wait until the higher education workers sent messages before contacting companies directly.

The third modification to the research design concerned the interview format. Initially, the researcher wanted face-to-face interviews to obtain more nonverbal reactions and make the conversation more personable. However, the participant in the pilot study stated that a virtual interview occurring after working hours would be better for him. The researcher then understood that some people do not want to meet face-to-face, or they work at job sites that make face-to-face interviews challenging to complete. Allowing potential participants the opportunity to participate in the study through either interview format would increase the number of participants by allowing participants to self-select the interview format that was most suitable to their current work situation and comfortability with being interviewed. A modification to the IRB proposal adding the snowball method to the sampling method and holding face-to-face or virtual meetings was submitted.

Study Participants

This exploratory study examined hiring managers' perspectives of hypothetical student ePortfolios. To that end, the study needed to be bounded in various ways to explore a specific case, including the vocation, people, and location. The Texas construction industry is expected to grow over the next decade, placing a demand on businesses to sustain or increase the number of workers in this area (Bureau of Labor Statistics, 2021b). The July 2021 Economic Report noted that Austin's economy was growing faster than the state average (Torres et al., 2021). The Austin/Round Rock metroplex's economy is composed of different sectors, including the state government, higher education institutions, and a robust technology sector. A growing economy can result in a larger population, creating a demand for additional businesses, homes, and remodels. Given Austin's growth and eclectic culture, worker competencies might differ from nearby metropolitan areas, such as San Antonio and Waco, and rural areas.

Community colleges offer a variety of workforce programs that address different economic needs. A decision was made to further bound the study by focusing on the welding program because of its importance in the growing Austin, Texas, economy. Various welding jobs exist that require different welding techniques. Thus, a concerted effort was made to focus the study on welders in the construction industry instead of other welding industries, such as the automotive or software industry, as this would provide a richer perspective on the use of ePortfolios for a specific job. However, some interviews in this area would be acceptable to determine if the differences elucidated different perspectives than welding in the construction industry.

This study focused on welding in the construction industry. The general population included hiring managers from small, medium, and large welding businesses. According to an interview with Austin Community College welding instructor Brent Werner (personal

communication, September 1, 2021), welding students possessing basic welding skills can obtain entry-level jobs with any size company in the construction industry that hires welders. Knowing that various-sized companies hire local community college welding students improved the research's validity and the possible generalizability of the results to the Austin area.

The interview sample required participants who participated in the hiring process. A convenient and snowball sampling method was used and implemented in a few ways. One method was to email welding instructors at Austin Community College and Texas State Technical College with information about the research project (see Appendix C). The email sent to them requested that they forward information about this research study to hiring managers and to their advisory board members. The researcher targeted these individuals for the study since advisory board members have a vested interest in students' workforce preparedness and employment (Dunneback, 2018). Also, the advisory board members were urged to forward the information to hiring managers in the Austin area who hire community college welding students. Conversations occurred with two welding faculty members who either provided the names and numbers of people to contact or sent introductory emails. This method secured three interviews.

The second approach for locating participants entailed an online search for a list of welding companies in the Austin area. The researcher used the Google search engine and the words "welding" and the name of a city, such as Austin, Hutto, and Cedar Park. An examination of the companies that populated ensued to ensure they fit the study's focus. A telephone call, email, or personal visit occurred that described the study's purpose and benefits, followed by a request to participate in the study. Appendix D contains a standard email sent to various people. This method secured five interviews.

The third and last approach to obtaining interviewees was the snowball sampling method. Upon completion of the interview, the researcher asked the interviewee if she or he could recommend another person or company that might be interested in being interviewed. Some of the interviewees provided organizations' contact information. The snowball method accounted for two interviews. Also, some interviewees provided contact information, but the potential interviewees declined the opportunity to participate.

As seen in Table 1, different hiring managers within the welding industry participated in the study, which included seven men and three women. The participants had different experiences with hiring welders, in that two people worked only in human resources, two other participants were primarily in supervisory roles, and the other participants were owner/welders. Eight participants were employed in businesses that focused on welding in the construction business, and two participants' businesses were non-construction, such as the oil and gas industry. Lastly, six people requested face-to-face interviews, and four participants wanted to participate in virtual interviews.

Table 1: Participant Demographics

N = 10	GENDER	INDUSTRY	INTERVIEW FORMAT
Men	7		
Women	3		
Construction		8	
Non-Construction		2	
Face-to-Face Interview			6
Virtual Interviews			4

Some obstacles arose with the data collection. Some hiring managers agreed to participate but did not arrive at the agreed-upon location and did not return requests to

reschedule the appointment. Other hiring managers declined to participate due to long work hours, being behind schedule, and only hiring people with welding experience. Some of the face-to-face interviews had problems with the audio recordings catching all the comments. However, summarizing the conversations as part of the audit trail ensured their perceptions were documented.

INTERVIEW PROCESS

The interview of each participant entailed multiple steps. First, the researcher told the interviewee that the interview would be recorded, and the information would remain confidential, so a consent form must be signed. The consent form was either emailed to the participant through Docusign or provided in person. Next, the researcher offered the interviewee two options for conducting the interview — face-to-face or Zoom. Next, the researcher confirmed the date, time, and location (for the face-to-face interviews).

The determination of interview locations varied from interview to interview. Some interviewees wanted to conduct the interview virtually, while others wanted to meet in person. These in-person interviews occurred at the person's business, with one interview occurring at a restaurant. The participant decided where, when, and how the interviews would occur so the location and time would be suitable to them, which, in turn, would help the interviewee be comfortable during the interview process. These conversations regarding when and where to meet occurred through email or text messages.

RECORDING

In order to examine the participant's perception, Ferris State University provided a Zoom account to record the person's verbal and nonverbal responses and obtain a transcript for analysis

of the participants' comments on the ePortfolio. Some people preferred to meet virtually rather than face-to-face due to their work schedules. These different meetings required a different approach to recording the interviews. The virtual meetings required the researcher to send a Zoom meeting link to the participant. The researcher brought up the ePortfolio website prior to the start of the meeting and mentioned the need to record the meeting after the participant logged on.

The face-to-face meetings required some preparation. The researcher had to either use the company's internet or create a hotspot with a phone. After connecting to the internet, the researcher brought up the ePortfolio and Zoom websites. The Zoom meeting was started so the researcher could situate the camera at an angle that captured the participant. Depending on the location, the camera shot included the researcher. After reminding the participant that the interview needed to be recorded, the camera was activated, and the recording began. The recording was stopped after completing the interview. As stated previously, some of the audio recordings were garbled because the participant did not face the computer screen or turned away while talking. An attempt to rectify this problem occurred for later interviews.

DATA COLLECTION

While the goal was to obtain hiring managers' perceptions of transferable skills (i.e., teamwork and problem solving) in ePortfolios, the researcher wanted to get their impressions of recent graduates' teamwork and problem-solving skills, along with information on how these two competencies occur in the workplace. This information can provide more insight into how hiring managers understand the connection between transferable skills and being competent employees.

A modified-structured interview schedule was used to gather participants' perspectives. The primary questions the interviewer attempted to pose for every interview are posted below. Follow-up questions prompted the participants to provide more information that clarified their perceptions of the competencies and different aspects of the ePortfolio.

Interview Questions

Overall Impression

1. Think about past college graduates you hired for a welding position. What are your initial thoughts about this person's ability to perform the same type of entry-level welding job?

Teamwork

1. How would you define teamwork?
2. What are your initial thoughts about the person's ability to demonstrate teamwork?
3. What are your thoughts on the person's ability to demonstrate teamwork in welding?

Problem-Solving Skills

1. How would you define problem-solving skills?
2. What are your initial thoughts about the person's ability to demonstrate problem-solving skills?
3. What are your thoughts on the person's ability to demonstrate problem solving in welding?

ePortfolio Content and Structure

1. What thoughts do you have about the homepage, whether it is the "About," "Experience," "Education," or "Interests" sections?
2. What are your thoughts about this person's ability to work in a team? What stood out in the welding or non-welding courses?
3. What would improve the way teamwork and problem-solving skills were communicated to hiring managers?

4. What are your thoughts about this person's ability to work in a team? What stood out in the welding or non-welding courses?
5. What are your thoughts about the amount of information?
6. What is your overall opinion of ePortfolios as a tool for hiring welders coming out of college?

The interview process entailed a conversation about the competencies before examining the ePortfolio. Once the discussion pivoted to the information on the ePortfolios, the researcher either scrolled through the ePortfolio or let the face-to-face participant navigate the ePortfolio. For the virtual discussions, the researcher had to control movement through the ePortfolio and ask the participant to inform him of when they had read through a certain section.

VALIDITY/CREDIBILITY

Validity is one of the key aspects of producing a quality study. Credibility concerns "whether the participants' perceptions match up with the researchers' portrayal of them" (Bloomberg & Volpe, 2019, p. 202). Different strategies help ensure validity within the study, and researchers are encouraged to incorporate a minimum of two strategies (Creswell & Poth, 2018, p. 259). This research attempted to incorporate four of both Bloomberg and Volpe's (2019) and Creswell and Poth's (2018) recommended strategies for improving validity.

The first strategy was to engage in reflexivity to determine researcher biases as one's attitudes, beliefs, and values toward the research topic can skew the data interpretation (Bloomberg & Volpe, 2019, p. 203; Creswell & Poth, 2018, p. 261). The researcher mitigated this issue by selecting a workforce program with which he had little knowledge. This decision removed any preconceived notions regarding the program and students enrolled and graduating from this program. That said, some basic information about welding was obtained in order to have some foundational knowledge about the types of welds and welding processes that could

assist the researcher when conversing with the participant and asking probing questions. Also, self-talk during the interview allowed the researcher to maintain an open mind about new hires and ePortfolios during the interviews and after completing a few interviews.

Different types of memoing exist that can improve the analysis phase, thus improving credibility. Memoing throughout the process is method used to track of important or interesting data (Bloomberg & Volpe, 2019, p. 244). Two methods of memoing occurred. The first method was journaling after each interview, and the second method was utilizing the comments section of Microsoft Word within OneDrive to identify codes within the transcripts. Merriam (1998) refers to the latter as segment memos (p. 189). Analyzing the codes in an Excel spreadsheet within OneDrive helped to determine concepts and intriguing findings that provided additional credibility to the participants' perspectives.

In addition to memoing, a pilot study helped ensure the procedures were clear, the questions addressed the research problem, and the technology worked correctly. During the research process, the researcher noticed that interviewees mentioned communication, which is related to the researcher's educational background. While intrigued, the researcher was cognizant of this interest and made sure not to steer the conversation to communication but to remain focused on the competencies related to the research question. Afterward, the researcher asked himself whether he prompted this response or created a communication code because of his personal relationship to the topic of communication. A review of transcripts indicated that communication was mentioned when discussing other topics.

The second strategy concerns participant feedback. When developing the ePortfolios, the researcher conversed with a welding instructor about welding assignments. More specifically, the conversation concerned the relationship between teamwork and problem-solving skills and

students' use of technical jargon and syntax to ensure the ePortfolio reflects a typical community college student, so the interview might reflect something a student would submit to an employer. Thus, the ePortfolio would reflect reality (i.e., validity).

Member checks involve sending transcripts or research summaries to participants to determine the plausibility of or provide clarification to the findings (Bloomberg & Volpe, 2019, p. 204; Creswell & Poth, 2018, p. 261). An analysis of the transcripts resulted in categories related to the research question, a priori categories, and emerging categories that contained participant comments about each category. An email was sent to each participant seeking their comments about the categories to determine if they had any additional comments that might improve the accuracy of the interpretations (see Appendix E). None of the participants responded with information confirming or clarifying their interview comments.

The third strategy was to provide the reader with a rich, thick description of the interviews. Given that the study's goal is to explore the value of ePortfolios from a hiring manager's perspective, a thick description can provide insight into the process for obtaining hiring managers' perspectives of ePortfolios and graduates' competencies. Furthermore, providing thick descriptions can help readers determine the generalizability of the results (Bloomberg & Volpe, 2019, p. 204; Creswell & Poth, 2018, p. 263). To that end, the researcher used the audio transcripts to extract detailed comments related to each category that allowed the reader to examine the entire context in which the participants discussed the research question and categories. Furthermore, the thick descriptions allow one to see nuances between participants' answers that shed light on the topic from different perspectives, which is the goal of an exploratory case study.

The last validation strategy was to be open to the possibility of negative instances that highlight important discrepancies between participants' views of the same topic (Bloomberg & Volpe, 2019, p. 203; Creswell & Poth, 2018, p. 261). During the interview and transcript analysis, notes were made regarding comments that differed from other participants. Though subtle, these differences provided insight into the way participants examined the ePortfolio examples and explanations and their subsequent impact on the research question regarding the use of ePortfolios as a tool for hiring welders.

TRUSTWORTHINESS/DEPENDABILITY

Dependability, also known as trustworthiness, is an important aspect of qualitative research. The process for obtaining participants included using Google searches to locate welding businesses and networking through welders. After identifying businesses, cold calls and emails were sent to potential participants. Some participants wanted the primary questions ahead of time to prepare for the interview. These questions were sent via email with the Zoom link. Some participants signed consent forms in person, which were subsequently scanned into OneDrive, while others signed the consent form electronically using DocuSign. All participants were informed about the need to record the interviews prior to the interview. These explanations convey transparency.

The documentation in the appendices clarifies the transparency between the researcher and the reader. The information gives additional insight into the communication between the researcher and interviewees before the interview. The ePortfolio layout and content show what the interviewees were examining in order to answer the questions. The recorded interviews and transcripts were examined multiple times, and emails were submitted for member checks. Lastly, the framework used to analyze the data is provided in Appendix F. This information highlights

trustworthiness and coincides with Bloomberg and Volpe (2019), who wrote that dependability concerns the documentation process that allows the reader to clearly understand how the information was gathered and analyzed (p. 204). Similarly, Yin (2011) explains trustworthiness as a key aspect to conducting quality research and entails three objectives: transparency, methodic-ness, and adherence to evidence (pp. 19-20).

Recorded videos, written transcripts, and member checks helped ensure the results truly reflected participants' viewpoints. One person sought clarification about the process, but no one responded with information that confirmed or modified their comments. Having welders from other industries that use welders, such as oil and gas, state how the competencies related to welding in the construction industry helped confirm the other welders' viewpoints. This information adds confirmability by proving through clear communication of the process that the results and subsequent interpretations stem from a sound analysis of the data (Bloomberg & Volpe, 2019, p. 204).

TRANSFERABILITY

The ability to view the ePortfolio layout and content, along with the thick descriptions provided in the analysis, helps provide a context to the study that allows the reader to make inferences to similar contexts. These inferences relate to transferability or the readers' notion of the usefulness of context findings when applied to broader contexts that maintain the results' content richness (Bloomberg & Volpe, 2019, p. 205). That said, the author realizes that cross-case studies would improve the transferability of the results and the application of the results to the creation of welding student ePortfolios.

ETHICAL CONSIDERATIONS

As previously indicated, the study focused on hiring managers' perspectives of hypothetical ePortfolios. The researcher interviewed the participants and recorded this discussion using a virtual meeting platform to review the person's nonverbal and verbal messages and see how the person reviewed the ePortfolio. Participants were not asked to engage in any risky behaviors or divulge confidential information.

Other considerations regarding an ethical study were employed during and after the study. An IRB approval from Ferris State University was obtained before proceeding with the study to verify the safety of everyone involved (Appendix G). All participants signed a consent form discussing the confidentiality measures taken during and after the study. All participants' comments remained anonymous. Zoom was used to record all interviews. The recordings and transcripts were stored in Ferris State University's OneDrive associated with the researcher's institution. The information is password protected and will be deleted after three years.

DATA ANALYSIS

The data were interpreted using a combination of deductive and inductive approaches. This analysis is deductive in that certain concepts, like the overall perception of ePortfolios as a tool to convey one's competencies and teamwork, were embedded in the research and interview questions. These questions prompted answers to specific aspects of the ePortfolio, so the results would have participant statements and subsequent codes about these concepts (Bloomberg & Volpe, 2019, p. 233). In other words, the interview framework directed part of the analysis.

An inductive approach to analyzing the data was pertinent for this study since the person's explanation would provide more detail about their perception, generating additional codes. These comments are not directly related to the structured interview questions or major

components of the ePortfolio. The comments may relate to other aspects of conveying competencies, other competencies sought, or workplace needs. These ideas would produce additional codes and serve as constructs for creating a narrative concerning hiring managers' views of welding students' transferable skills as conveyed through an ePortfolio.

Multiple steps occurred to analyze the data. First, Zoom was used to record and transcribe the interviews. Having the recordings transcribed allowed for memoing (Merriam, 1998, p. 181) that included reflections on the hiring manager's communication regarding specific comments made throughout the interview. Furthermore, reviewing the recordings allowed the researcher to see the part of the ePortfolio the participant was examining when making insightful comments. This information played a vital role in reassembling and interpreting the codes.

The data analysis process entailed a constant comparative method whereby continual revisions to categories and emerging categories occurred during the timeframe for interviewing hiring managers and after the interview process was completed (Merriam, 1998, p. 159). The analysis process began after each interview. The researcher summarized his thoughts about the interview to include the person's perception, the context in which the interview occurred, and his interviewing skills. This self-reflection helped to check his own biases, such as not intentionally focusing on personal areas of interest and making notations in the transcripts of new insights from participants' answers that pointed toward potential categories.

Another method for determining codes was downloading the script into OneDrive and memoing the script while rewatching the video. The self-reflection process, watching and reading the interviews, and memoing helped to develop codes in an Excel spreadsheet within OneDrive (see Table 2 and Appendix F). Participant quotes or paraphrased comments were placed under each code (a priori and emergent) to help determine the code's validity as a code

and as part of the hiring managers' overall perception of ePortfolios. Some codes, such as punctuality and work ethic, were merged together.

Table 2: Data Analysis Framework

	INTERVIEWEE #1A	INTERVIEWEE #2B	INTERVIEWEE #3C	INTERVIEWEE #4D
ePortfolio Overall				
ePortfolio Teamwork				
ePortfolio Problem Solving				
ePortfolioWelding Course				
ePortfolio Non-Welding Course				
ePortfolio Breadth vs. Depth				
ePortfolio Layout				
ePortfolio Pictures				
ePortfolio Writing Style				

Note. Appendix F contains a complete list of categories.

Upon completion of the codes and quotes provided under each code, the researcher emailed each participant with that person's quotes or paraphrased comments for each code to check for accuracy and provide the opportunity for additional insight (see Appendix E). The codes were modified to determine the categories and enrich the thick descriptions in the results section.

SUMMARY

This chapter focused on the methodology used to attain the goal of this study, which pertains to ascertaining employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. The chapter described the method used to develop the ePortfolio,

obtain and interview participants, and analyze the results. Also, information covered credibility, trustworthiness, transferability, credibility, and ethical considerations. The following chapter focuses on the participants' perceptions of welding graduates' problem-solving and teamwork skills discussed on the ePortfolio and how this information relates to their workforce preparedness.

CHAPTER FOUR: RESULTS

INTRODUCTION

The purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. The over-arching research question was "What perceptions do welding hiring managers in the Austin-area of Texas have of a community college graduate's transferable skills conveyed through ePortfolios?" The results suggest that hiring managers believe ePortfolios are good for conveying one's skills and competencies. This chapter begins with a discussion of the process for determining the results, followed by the results of the research question. Lastly, a discussion of a priori and emerging categories arising from the interviews will occur.

The coding process to generate the results entailed multiple steps. First, the researcher summarized each interview and noted the unique aspects of the interview along with how the person addressed the research question and other interesting topics that might be considered an emerging category. Next, the researcher obtained the Zoom automated transcripts. These transcripts were copied and placed into a secured, cloud-based Microsoft Word document. The videos were reviewed again to correct any mistakes with the auto transcription.

During this time, the researcher identified and highlighted key ideas stated in an interview in the cloud-based document. The ideas frequently stated among interviewees that were not directly related to the structured interview questions were deemed potential emergent categories. The researcher created an Excel spreadsheet and posted these potential emergent

categories. Other categories listed in the spreadsheet were a priori categories based on the fact that the interview questions would generate information about certain topics regarding the ePortfolio or students' competencies. The a priori categories are graduates' general competencies coming out of college, teamwork and problem-solving skills, the layout of the ePortfolio, and breadth and depth of information. The emergent categories are work ethic, pictures, the writing style within the ePortfolio, life experience, asking questions, communication skills, and training needs. Some potential emergent categories, such as company advancement and starting position expectations, were removed from the list due to a lack of comments among all interviewees.

After identifying categories and placing them into the horizontal row of an Excel spreadsheet, labels for each interviewee were placed in the vertical columns. Another review of the transcripts occurred. This time, the interviewee's quotes or paraphrased comments were placed in the cell associated with the category to which the comment was related. A timestamp was added to identify when the remark occurred. The videos were reviewed multiple times to ensure correct mood and nonverbal messages were captured in the transcripts and the Excel spreadsheet. Examining comments in the Excel spreadsheet for each category clarified whether the category was indeed an emerging category and how to effectively present the results to the reader.

RESULTS

Three major categories comprise the results section: the answer to the research question, a priori categories, and the emerging categories arising from the participants' perspectives of the ePortfolio and recent graduates' workforce readiness. The emerging categories contain subheadings.

Overall Perception of ePortfolios as a Tool to Convey Competencies

The over-arching research question was "What perceptions do welding hiring managers in the Austin-area of Texas have of a community college graduate's transferable skills conveyed through ePortfolios?" Participants' overall perception was that the ePortfolio is a great tool for obtaining an overall picture of the person in addition to that person's skill set. Participant D said, "This is a great tool to use," and Participant B noted:

> I think it's great because you can learn a little bit about the personality of the individual. It mentions teamwork. It has some personal details as well. What he or she likes, of course . . . like repeat the skills they are learning in college so it is well rounded information to be able to see what he or she definitely . . . can contribute to the employer.

Participant E noted, "This is a well-rounded guy. He has a skill set. . . . He's well-rounded. He's a volunteer [referring to the Interest section of the homepage], so that means . . . he cares." Later on, Participant E assessed the ePortfolio again, exclaiming, "I love this platform. I do. I love this concept. So, there's things on there that I would not necessarily use, but I wouldn't change them," and Participant F mentioned, "Honestly, I've never seen any portfolio, and it's new to me and, but I see how it can bring a lot of value and really probably help convey your skill set. So, I think it's a positive thing."

Participant I mentioned how a complete picture of the hiring candidate allows the hiring manager to see how the potential employee might fit within the company's culture:

> I think it captures everything really well. I like seeing the things outside of welding . . . [to] get the full picture of him as a person . . . some people might not be a culture fit and you want to know what they offer as a whole package and make sure they're a good fit for the company, so I think this does a really good job at explaining that. . . . I think it's great. It's laid out really well. Yeah, I don't have many critiques about it.

Participant H connected the amount of information with helping determine the person's fit with the company and how the ePortfolio is better than a resume:

> So, if I was looking at this for a prospective employee fresh out of school, the difference this would make to me is . . . if they took the time to answer all these questions. Not

> necessarily what they answer per se, but just the fact that they sat down and did it. . . . It does give a better idea of what they've been exposed to than just a standard resume. . . . The fact that they . . . put it here, it's making them think about that and apply it to their prospective employers, or employment, or the job they're there to do, and then the employer reading it can get . . . a better idea of how well that person would match with their team . . . what they're doing. [It] makes it a little easier to figure out if they're going to be a good fit or no. It gives you a lot more insight to their individual experience, opposed to just filling in boxes on the job application or resume. . . . It's definitely better than your standard application or resume, and I think it's a lot more catered to the specific industry than . . . a LinkedIn profile.

Some participants mentioned resumes in conjunction with ePortfolio, or how "most guys don't have a resume" (Participant D). Participant E said, "This is a great platform. I mean, what you've got right there hands down beats a resume any day of the week." Participant J mentioned how the ePortfolio surpasses resumes on a hiring website:

> I think it's great. Like I said, it's easy to navigate. You're able to read a little bit about the individual in the very beginning. You know, their resume, talking about their experiences. That's great, and then I think it is nice to have "Interest" in there . . . it's good for me to look at an individual and know that they're active and can be on their feet all day, . . . and so I think the layout's great. I think it's a lot better than . . . just kind of scroll through Indeed next time you have time, and this is much, much better than the resumes and stuff that we're reading on Indeed.

Participant C, who emphasized the need for welding skills more than transferable skills (i.e., teamwork and problem solving), compared the ePortfolio to a resume:

> Couldn't hurt. The more important attribute I look for is, does the guy know how to weld? Does he want to work? That's . . . hard to tell from a resume . . . it's hard to figure out if they can do it. As a new person coming out of college, this would be nice.

A Priori Categories

In addition to assessing the hiring managers' perceptions of an ePortfolio as a tool to review potential candidates, the participants shed light on several other aspects of workforce preparedness and ePortfolios that generated a priori categories. The pre-planned questions focused on overall student competencies coming out of college, their definition of teamwork and problem solving, how these two skills were seen in the workplace, the layout of the ePortfolio,

and the amount of information provided. These questions helped orient the participant to the information in the ePortfolio and recognize its connection to the workplace. This approach allowed the person to discuss different aspects of the ePortfolio and its overall usefulness. Regarding the former, the questions allowed the researcher to examine the complexity of information, which is in line with an exploratory case study.

Overall Competency Entering the Workforce

An overwhelming number of participants claimed that some students possessed basic welding skills but lacked skills and understanding of the field in other areas. Participant H discussed the fact that colleges do their best, but students still lack some skills needed in the workforce:

> They do a pretty good job, at least Austin Community College and a few . . . other ones I've heard of, like the Lincoln school. I've heard good things about them. You know, a couple people go through the program. I think they prepare them as best they can, but at the same time, . . . regardless of professors' work experience in the industry and the students, there's still a big disconnect between what actually happens on the job and what they can teach in school.

Participant E mentioned the effects of being new:

> I mean some of the guys that come in here from school . . . it's overwhelming to them . . . it's very overwhelming. . . . Some of them come in, and they just [leave] . . . it's the field skills they're not getting. They can weld. But can they weld under pressure?

Participant H paints a similar picture for the majority of those with no prior experience:

> There's a large portion of them — I would say 40 to 60% — that [have] no experience, no exposure coming in. Their appeal is the money they see from advertising. They're not prepared for the level of manual labor involved in making that money that's advertised. That's to say at least half of those don't stick out the first eight weeks. And then there's the small percentage that walks in, and it's like, "Yeah, this thing's not for me" and drops it immediately. Yeah, it's probably my general rundown of what I've experienced.

One type of concern pertained to the "big picture" as it relates to the welding industry and completing jobs. Participant J discussed this point:

> You know, I think they have a good understanding of everything in a perfect situation. So, they're not really taught real life experience, and I think they have an unrealistic idea of what the workforce is going to be like once they get out on their own. Everything from how much they're going to make to start to expectations.

Participant H explained the idea of understanding the bigger picture with the project at hand:

> They can give you a code weld, but they can't make you a guardrail. . . . As far as overall competency goes, they come in as an entry-level employee . . . a lot of what they are teaching them in college and trade schools and stuff — like that's just code welding, which is good, something to put money towards. A lot of times it seems like that's what they do when they come out. They give you a code weld, but they can't make you a guardrail. They can't make you a custom stair. . . . So as far as overall competency goes . . . they come in as an entry-level employee. They just know how to put two pieces of steel together and make them not come apart, and I want to add that they might know how to put two pieces of steel together, but they know how to do it on a bench.

Participants D and J discussed the training and directions required of new hires due to a lack of skills upon entering the workforce:

> They usually come out okay. Knowing a little more about welding, about build up, how to set up a machine. . . . The quality of the student from 10 years ago to the student now is a lot different. . . . You mainly have to give directions. . . . They come to the job site and they don't know how to put on a harness. When they come out of college, they don't know how to rig up. They're fine because they're being told what to do. So as long as someone's telling them, they usually work good, but you have to tell them . . . next step . . . next step . . . (Participant D)

> You know a lot of the stuff that we do, especially when they're green and they're coming out, there's a lot of standing around and waiting, rather than thinking, "What's the next step? What is the person that I'm . . . helping going to need? What can I prepare so that the workflow stays continuous?" And they're also never taught . . . small skills like how to read a tape measure, which is really important. Like, yes, you can weld in ideal conditions, but if you can't read a tape measure, how are you ever going to make your cuts right, etc.? So I think there's a lot of skills that are lacking. (Participant J)

Participant F indicated, rather than their welding skills, concern resides more with their fabrication skills, which require additional training:

> We find that their welding skills are great. They can weld. The trouble that we have with new college graduates from the welding program is that they don't know how to fabricate . . . We can onboard them as welders, but we spend a lot of time training them to learn how to read a drawing, how to cut . . . and execute that in a competent manner.

Based on the skills lacking and training needs, many start out at a lower level. Participant I noted, “Most of the time we start them on the lower level . . . probably start as an apprentice or tech one . . . because we like to go through training with them.” Participant G stated, “Coming out of the program, they are a journeyman.”

Some participants noted the good qualities that recent graduates possess despite lacking in some areas of welding. One participant from the manufacturing industry (not construction) noted, “Overall, they’re relatively competent at welding” and will provide additional training. Participant A commented, “[Their overall competency is] . . . not very good. As far as teamwork and communicating, they’re definitely more high functioning.” Later on, the person said,

> Yeah, most people that I’ve found that . . . take the time to go to college or these programs are . . . they’re better at taking notes, they’re better at writing stuff down, and just overall, they’re better with our customers as far as communicating with them.

Transferable Skills

Before revealing the ePortfolio and discussing their thoughts on the information, the researcher posed a few questions about teamwork and problem-solving skills. Specifically, participants were asked to define the transferable skill and discuss how this skill is seen in the workplace and whether new hires possess this skill. After discussing the transferable skills, which reminded them of how employees should engage in teamwork and problem solving, they reviewed the ePortfolio.

The information is divided into their definitions of teamwork and problem solving, as seen in Table 3, how teamwork and problem solving occur in the workplace, and their perceptions of teamwork and problem-solving skills, as seen in the ePortfolio.

Table 3: Various Definitions of Competencies Examined

TEAMWORK DEFINITIONS	PROBLEM-SOLVING DEFINITIONS
"A group of people being able to communicate well with each other to create a result of a common goal."	"Just the general ability to work through different scenarios."
"Work together to solve problems."	"Yeah, so problem solving would be your ability to overcome challenges in the workplace on your own . . . utilizing other assets . . . figuring out the questions you need to ask and how . . . to find the solution to a problem."
"Three or more working together to achieve one goal."	"Just being able to progress the project in the direction it needs to go without hiccups or easily going over hurdles . . . so being able to focus on the objective of the project."
"Teamwork would be your ability to work with coworkers to reach a common goal."	"The first thing they're going to do is learn how to identify the problem and identify it. Uh I guess assess the problem and figure out if it's the welder's problem, the builder's problem, or the engineer's problem."
"The ability to work with people, even if you don't like them necessarily but and the ability to notice people's strengths and kind of get out of the way of those strengths. And you know, the ability to kind of just move the project along really the main objective and not focus so much on Emotions and you know things that affect teams."	"Looking at a situation and trying to think of as many solutions as you can to get it done that will actually work."
"Teamwork is all about effective collaboration. In order to do that, we need to look at where is the team going, who's doing what, and how the team works, work with each other."	
"Supporting each other's roles and positions . . . helping each other succeed."	

Teamwork in the Workplace

Some participants stressed the role life experiences play in being a competent team member on the job. Participant B noted, "Everybody's different," while Participants E, F, and H said the following:

> That's going to go back to personality. You're not going to get that from school. Yeah, you're not going to get that from school. . . . You know, you can go to school and the school can tell you, "Hey, you need to be a team player," but if you're raised your whole life — you're alone in your room and you don't learn to be a team player, you can tell somebody what to do. People . . . all the time they try to make somebody something they're not. (Participant E)

> I think teamwork, and your ability to work in a team, has a lot to do with who you are and how you've been brought up. So I wouldn't put a whole ton of weight in, well, you were well prepared or not well prepared. And your community college experience to me has more to do with personality, but that's just my perception. . . . So I wouldn't say it's a major problem, but again, I think it has more to do with who they are than their college experience, but it's my perception. (Participant F)

> I think personality factors in more of the teamwork aspect of it versus what you're taught. . . . So I think as far as preparing students for what to expect with teamwork when they get into the industry working, I think it's more associated with personality than it is with what the college can teach in the program. (Participant H)

Participant I discussed teamwork as needing to collaborate with others and not just working by oneself.

> Yeah, . . . you have to also not only be willing to work with other people, but listen to constructive feedback. I mean, we've had some people who are open to that and kind of just stay in their own lane and work on their [*pause*], which in welding I feel like could work, but in the end, it's not going to be a culture fit if you're not willing to work as a team, and, you know, maybe step up in a different area if you're needed. So that's super important . . . yeah, I mean, we've had some people who . . . wanted to stay in their own lane and kind of not collaborate with others, and that's been hard. And again, welding, like I said, it's different because you're working individually on a project, so you could get away with just working on that, but you need to be able to branch out . . .

Participant J stressed recognizing other people's differences "to be appreciative of seeing other people's lifestyles and objectives and communicating through all that. . . . I would say most of them do [build relationships], and the ones that don't tend to weed themselves out."

However, the leader has a role in working with the team. Participant D stated:

> The competent part is the person leading the group. . . . The younger guys, they need the older guys to tell them, "Don't do that." . . . Sometimes, yeah [they can take directions]. It depends on the person.

Participant J discussed the difficulty some leads have. "It's also really hard for some of our leads to communicate or teach. I mean that's basically what they're doing is they're teaching the people below them on how to succeed and evolve, and communication skills can be lacking."

The information concerning teamwork on the ePortfolio is found in Appendix B. The overwhelming majority of participants believe the teamwork information suggests the person would have this skill. Participant B stated, "That's pretty good" regarding the teamwork page and said it "definitely" conveyed teamwork skills because people have to get out of their comfort zones and become comfortable working with others. Participant G noted that he "would give this person a try . . . for sure . . . you can tell like he's had to work on something with other people."

Participant D agreed with the information conveying teamwork skills, saying, "Yes, sir. Yes, sir. He claims he's not just a welder. That's always good." Participant H agreed as well, explaining that the information provides the employer with

> a lot of insight into what they learned. What they're coming away with . . . I think it would make a big difference. I like it [*pause*] I like the way they have the description of . . . like the example of what they did in class and then their take on it . . . the connection to the workplace.

Participant J mentioned working with others as well and noticing

> the differences, and some people just want to weld, and other people want to talk about style, and figuring out what each person's strength is, and then working . . . from that is real life experience, so that's great.

A few participants provided recommendations of what they would like to see in relation to teamwork. Participant A liked the information in both courses, especially with "how timely manner is put in there" and where the person was "talking about where they created deadlines."

However, the participant would appreciate more information about reading deadlines or goals. Participant C explained that the information conveyed teamwork since they can "get all the people involved, which is what teamwork is." In addition to stressing how teamwork is not as important when some welder works alone reading off of a blueprint, the person mentioned that information about "the importance of teamwork, quality, show up on time" could be added to the ePortfolio teamwork page.

Problem-Solving

Problem solving is the second transferable skill mentioned in the ePortfolio. Posing specific questions about this skill was needed to understand the overall perception of ePortfolios. The following information pertains to their perception of problem-solving skills on the job, followed by their perception of the problem-solving section on the ePortfolio.

A majority of the participants believed that college graduates' problem-solving skills are dependent upon the person's personality. Participant G stated:

> I think it depends on the person. [Some] get more creative and they want to solve problems . . . and feel like they're contributing, but others, they get very daunted by this . . . too green to even like form a question.

Participant A's analysis of problem-solving skills is that those with experience in other trades understand the workflow better than recent graduates. However, many "are quick to point out the problems on site, and some don't give an answer with the problem," so they have half of the problem-solving skill.

Participants E, F, and J emphasized the "self-starters" as being better problem solvers. Participant E described the self-starter problem solver as someone who can "get this fixed with what I have. You McGyver it, figure it out. . . . Yes, that's what they have to [do]. McGyvers make the best welders." Participant F observed, "Individuals that are self-starters . . . think about,

‘Okay, I’ve got this problem. I need to figure it out,’ rather than . . . ‘Well, I don’t know. I’ll go ask my supervisor’ every single time.” Participant J stated:

> There’s so many different types of people. Some take the time and want to know and others don’t . . . just depends on the level of effort . . . if they really want to grow and/or if they’re just there for the paycheck.

The information about the problem-solving competency segued into the problem-solving ePortfolio page, which received mixed reviews. In terms of positive reviews, Participant A stated that “it definitely sticks out to me” and the person “would definitely have an opportunity.” Participant G highlighted the information “that sticks out” is the fact that the person will “talk to people . . . to understand the problem and solutions . . . find someone who knows what they are talking about.” Participant J

> loved reading it because it is one of the most common questions in an interview . . . and actually seeing some of the work and then walking through all the different steps . . . you can see forward thinking.

Participant I said the information “100%” conveys problem-solving skills since it notes the importance of looking “at all parts of the job, not just what you’re working on. You need to look at the bigger picture.” Having different problem-solving examples is important in that

> It’s teaching them the skills . . . how to problem solve in any situation, so you can use those skills and relate it to welding. . . . You don’t want to just see specific welding. You want to see how they problem solve outside [of welding]. . . . That’s going to help you problem-solve better in the specific workplace.

Participant E’s review contained mixed results in that problem solving in a welding class occurs under perfect conditions with a teacher present. “He can problem solve anything.” The example that stood out was the example from volunteering because it was “outside the classroom and . . . he’s gonna have to figure out how to make do with what he’s got.” Participant H liked the notion of expanding “on the subject, whereas a resume doesn’t because [it needs to be] one page.” However, more takeaways are needed. Likewise, Participant F said, “I don’t think

anything really stood out. . . . Yeah, I think overall that they can solve problems," though the information "gets a little redundant."

Layout and Breadth vs. Depth

There are two a priori categories related to the ePortfolio. The first category is the layout, followed by the breadth and depth of information.

Layout

The layout concerns how the information is structured in the ePortfolio (see Appendix B). The information was designed to make a connection between welding and the two transferable skills. The next part of the page contained a coursework example from a welding and non-welding class. The description contained three sections with bolded subtitles: a description of the project, key takeaways, and a connection to welding.

An overwhelming majority of the participants positively commented on the layout. Participant I stated, "I like the layout a lot, how it's concise and not too overwhelming with a lot of information, and you can easily read it," while Participant J explained the layout as "easy to navigate" and mentioned the layout in two different parts of the interview:

> I mean, one, I like the layout. I like how clean it is and easy to read. And second, I like how the person was describing, you know, past histories. . . . I love the layout. I love how simple it was and getting to know a little bit about them.

> I like the layout. I think it's very easy to read, and the one thing I think I would like to see is maybe some more images on projects that they've done welds that they've completed, something along those lines.

Participant A made specific comments about each transferable skill reflecting, "Nothing, nothing hindered it. . . . Everything looks really good" in the layout and in the Teamwork page. Regarding the Problem-Solving page, he said, "Everything is very informative. It's put together. Easier to read, telling stories." Participant F commented on the design of the Teamwork page by

saying, “So this, this is good. I think this format conveys that they’ve got teamwork, worked on teamwork, and are able to verbalize how teamwork is important, so I think it’s good. It’s a good format.” Participant I appreciated the connections between non-welding examples with welding: “Especially that last piece [non-welding teamwork example] about connecting it to welding specifically.”

Likewise, Participant G appreciated the connection made between classes:

> I just like how they explained, . . . sort of the connection they made the transferable skills, . . . like from a speech class to a welding project— just being able to make that connection, that’s important. I mean it definitely gives me a sense of intelligence.

Participant H reflected on how easy it is to assess the candidate:

> You know, they put their skills and then they put an example of their experience and their takeaway, so that that makes it easier for me to identify if this person is being honest and real, you know, with the job. . . . You know, that’s one of the things I like about this, because it [*pause*] — the way this is structured to where they actually have to go in with personal experience, personal takeaways, and how they think. This would apply to the workplace. It helps cut out a lot of that unknown. I like that aspect of it. Just give[s] you a lot better . . . you can get to know them and their skill set and their idea of what they’re expecting with this job.

Later on, the same person said:

> [It’s] a lot easier for the person to express their skills and strong suit, and it makes it quicker and easier on [the] employer side [*pause*] [to] assess those skills and strong suits and weaknesses, you know, with this portfolio.

A few participants were interested to know if students would design this type of an ePortfolio. Participant G commented:

> That stands out, you know, like just the . . . whole layout and everything. . . . So I guess . . . I would bring up that question like, “Did you make this?” . . . This is really nice, super impressive, and it’s really professional. It’s really to the point.

Participant H wanted to know how the college might help students design the ePortfolio.

> Yeah, I’d be interested to see one that a college set up with their . . . format, just to see what . . . give me some insight. What’s prompting these responses from these people? You know, it’s like this . . . Where did that project fall in their experience in college?

> Was . . . this the only project they did? Was this one of the first projects y'all did? What level was this project as far as skill set?

Breadth and Depth

While the participants had an overall positive impression of the layout, they cautioned about adding more information to the ePortfolio when discussing the breadth and depth of information provided. Participant J commented, "I don't think it should be longer . . . I think it's good. It's not too long, but I don't think it should be much longer, no." Participant A mentioned, "I wouldn't put any more in it. I wouldn't put any more in it" because the hiring manager might question why they are not a writer. One concern from Participant B was that hiring managers need to review many applications.

> I mean . . . it's definitely more. It's . . . a lot of information. . . . But as far as being good, it's great, but . . . you would have to read the whole thing. . . . It could be a little bit more basic. It could, . . . but it's great. Like I said, I don't know in other industries how much time for application — if they see thousands of applications, it might be a little too much.

Likewise, Participant F was concerned about efficiency when reviewing numerous applications.

> You might have plenty that you're evaluating, and so . . . when you're looking at these resumes or portfolios, you only have so much time, right? And so you want [it] to be an efficient process. So I would say, any . . . time you're spending a bunch of time on repeating something or . . . reiterating, it might be perceived as redundant.

Some interviewees noticed the challenge of providing the right amount of information to clearly convey one's skills and attributes. Participant I stated, "You don't want to miss any of your skills or miss a chance of explaining your work, but there's a fine line with too much and too little." Also, Participants G and H both struggled with the dilemma of being brief but having depth:

> No, I mean the more information, the better. Yeah, I don't think . . . it's like getting . . . oversaturated or anything. . . . No, I think this is just right. It is almost too much, but I mean . . . he's got the project key takeaways and transferring skills, like he's very to the point. . . . [I] don't hear exactly what I need to take away from this information, you

> know, so it's . . . Yeah, I think it's laid out really good. The only thing I would say, just show me more pictures of what you've done. (Participant G)

> And then the statement takeaways about it, but, so elaborate more on how you do that and keep it from being a book to read. Yeah, that's . . . the challenge, I guess. . . . I think you did a good job of trying to keep it short and sweet, get as much information into it and keep it all on one page, per se. You know, I think, maybe, I don't know how you implement it, but [*pause*] and keep it short and sweet, but to get them to elaborate a little bit, like instead of [*pause*], you know, I don't know how you can make it work, but to elaborate a little bit like that first line in this, for example, need to research the details of the project and talk to people [to] understand [the] problem solution. So, we . . . just elaborate, elaborate a little bit, but not too much. Yeah, which sounds like an almost impossible task to accomplish that. Maybe be a little more . . . find a way to encourage them to be a little more specific on their key takeaways. Not necessarily . . . the project description or the transferable skills, but I think if . . . they're a little more specific on the key takeaways, . . . that would help them communicate their strengths a little better, and it would help me assess their strengths a little better as an owner or supervisor. (Participant H)

Participant E realized that a person could add more tabs to the page:

> But man, . . . this is great. I love it. Look at every one of these things you have here. . . . You keep adding tabs, you're gonna be too much because you're already, like, I'm right on the edge of — I would stop.

Participant I discussed the number of examples provided:

> I think it's enough [three examples] . . . I think that really is enough, and if you add more on to that, it can be overwhelming. . . . So I think this is a good job. I think any more would be too much.

Homepage

The last a priori category is the ePortfolio's homepage. A homepage was developed to make the hypothetical ePortfolio appear more authentic. The homepage contained four sections: About, Experience, Education, and Activities/Interests (see Appendix B). A few of them did not have much to say about the homepage, while many others commented that the information helps the hiring manager get to know the student as a person.

Participants A, B, and G pointed out the idea of working hard and staying late. Along the lines of hard work, comments about the Activities/Interests section concerned hard work as well.

Participant A recognized that the hypothetical student "has some coaches that have made him sweat," and Participant E discussed how being a camper and hiker means "he's good with the elements." Participant J elaborated on identifying physical endurance in more depth:

> This is my opinion. I like the fact that they're active and strong because the job isn't very easy. It's really hard on the body so knowing that . . . you can rely on not get[ting] tired when you're working in [the extreme] heat, you know, on your feet all day. You have to be able to lift X amount of pounds, etc. So someone who is an active individual is always someone that I'm looking for to join my team.

Other people spent more time discussing the information that was or was not present regarding welding. One of the main comments pertained to welding experience, which was mentioned in the About and Experience sections. Participant I perceived their passion from the information.

> I like everything about this so far. They have links to their work. . . . You know, kind of getting to know them as a person, and why they got into it in the first place, or why they're passionate about it because that's huge. And there's one thing about being good at something, but being passionate about it, so I like having this personal part of it as well.

Participant F would appreciate more specific information about "what welding capabilities you have . . . certificates, what type of material they're welding on, what thickness, their proficiency level at TIG."

Grades were not a major concern to some participants. Participant A claimed that grades were "the last thing I'm looking for" unless they eventually wanted to "be more on the managerial side of things." Participant E said the English class would not be of much help in the field.

Emerging Categories

Emergent categories are another set of categories mentioned after a priori categories that arose from the analysis of interview transcripts. These emergent categories are related to aspects of the ePortfolio and various competencies expected of graduates entering the welding industry.

The emergent categories include pictures, writing style, communication, posing questions, life experiences, training needs, and work ethic.

Pictures

The first emergent category pertains to pictures. The overwhelming majority of participants clearly stated that they would like to see more welding pictures. Participant C suggested having pictures at different times during the interview. The first comment, "Maybe pictures of work they've done. I think that would be helpful," pertained to the Teamwork page, and he emphasized the need for pictures to prove one's welding skills when he said, "More important to me . . . do you have pictures?"

The interviewee clearly emphasized the importance of pictures throughout the interview. At one point, pictures were highly stressed. "I'm a see-it-to-believe that kind of guy, specifically for me if you're just — if you just blast me a bunch of projects you just made, I'm going to be like, 'This guy's done some stuff already,' you know." The person went into more detail about pictures at two different points in the interview.

> By the way, I would be, like, "Can I see the pictures of the barbecue pits you . . . can I look at them?" because then you can kind of tell. I can tell, like when . . . you walk into a building, you maybe don't look at all the welds and structural . . . but I do. . . . My point is, you know . . . I want to see what they can do, and a lot of times I have them show me pictures, like, "Well, let me see it," because any proud welders can take a picture of the front, you know. But I've gotten welders to where they're like, "Yeah, I help this company with this," . . . and they showed me these pictures of these beautiful projects. And then I get them out on site and they don't know how to do like a very basic layout, and I'm like "Okay, were you there?"
>
> The only thing I would say, "Just show me more pictures of what you've done." Like, you know, talk about it. Let's see what you know. . . . Now, . . . if you threw out like a . . . state championship football picture or something up there, like a family picture or something that's important to them that I got to learn a little bit about them, sure. But you know some people pull off Google images and put them on here. Yeah, so if it was more personal, then I wouldn't be opposed to, you know, as far as the pictures.

Participant J made a connection between having pictures from social media connected to the ePortfolio.

> The one thing I think I would like to see is maybe some more images on projects that they've done. Welds that they've completed. Something along those lines. I noticed that you had Facebook link on there, but no Instagram. I don't know if that's something that, you know, like a lot of our welders I see put projects on there.

A few participants did not understand the purpose of having non-welding pictures. Participant I commented, "I don't really know what the middle picture's [beach] supposed to be." Participant G stated, "I don't understand the Grand Canyon picture. I want to see like a guardrail he made or something like that." Later on, the person said,

> I mean, like the beach picture and stuff like that doesn't do anything for me, other than it makes me think you're trying to distract me from something. [*laughs*] You know it looks good, but I want to see — we're here for one thing. I want to see what that is you know.

Also, Participant A displayed disagreement with the picture of a beach:

> I see the beach right there. There in the center so that kind of makes me scratch my head. But, um, as I go through resumes, if somebody shows me a picture of things that they've built, I will look at the picture, but is that a beach in the middle? [Interviewer: Yeah] Yeah, take that out of there."

Writing Style

The writing style was a cause for concern for some participants, given they are not familiar with welders who have strong writing skills. Suggesting welders do not typically write in the style seen in the ePortfolio, the person commented, "Okay, welders, [I would] have to think, did they write this?" Participant J mentioned the writing on the ePortfolio at two different times. First, "I would also say that most of the resumes and stuff that I receive are not ever this well written or complete sentences, etc., but this is very nice." This comment occurred later in the interview.

> I think it's a lot better than, you know, like I said, just kind of scroll through Indeed next time you have time, and this is much, much better than the resumes and stuff that we're

> reading on Indeed. . . . They explain themselves very well, and it's well written, but like I said, I don't think most welders are very well written, well spoken.

Participant A also had some concerns about the writing style when mentioning, "I rarely see a resume that's this good that comes down from, from any trade." He also stated, "All that looks great. . . . The people that want to have these trades are not writers. I would think somebody helped him with that resume or something of that nature."

Communication

Communication is another transferable skill needed in the workplace (NACE, 2021). Many people commented on the importance of communication skills, making this skill an emergent category. Participant A included communication in the teamwork definition and stated, "Everybody that I know that has come out of the academic programs versus you know just OJT [On the Job Training] is better at communicating the issues." Participant D conveyed the fact that "being able to talk to people to get solutions is a really good one."

Some people discussed challenges with communicating effectively. Participant E lamented that "People do not know how to communicate that is essential . . . people don't communicate anymore; they just assume that everybody knows what they're thinking." Also, Participant J reflected on how

> it's also really hard for some of our leads to communicate or teach. I mean that's basically what they're doing is they're teaching the people below them on how to succeed and evolve and communication skills can be lacking at times.

Asking Questions

One emergent category that arose from the interviews was the ability to ask questions. While this need was mentioned in relation to other categories, it is important to highlight this skill as a category, given the importance of posting questions in order to engage competently in teamwork, problem solving, and welding. Participant C wanted people to learn to ask questions

when they are problem solving, and some participants want them to ask the leads. Participant I noted, "I think when they're first on board, they're more looking to ask questions of their leaders [to solve problems]. That said, not learning from asking a question can be problematic." Participant F stated,

> I think the problem is when you ask for help and you get assistance in solving that problem, and then the next time you come across that problem, you have to go ask again. . . . We don't ever get upset with people if they ask for help or ask for clarification. It's disappointing when they ask the same question over and over again.

However, many students are afraid or do not know what to ask. Participant G stressed the fear associated with not asking questions. "A lot of times, I get some guys who are too nervous or too green to even like form a question. You know what I mean. . . . They just get nervous like they're going to sound silly for asking." Participant D stated,

> A lot of these guys are afraid to ask questions, and I don't know why . . . I'm always like "Hey, if you don't know, tell me you don't know." Otherwise, they'll just try and fuck something up that I'll fix later."

Participant J placed the issue on being introverted. "[I] know that, especially students who are introverts . . . are scared to ask questions, have a much harder time with problem solving if they're afraid to ask, 'Well, why did that happen?' or 'What can I do to fix it?'"

Life Experiences

Life experiences are another emergent category that arose from the discussions about competencies. Many participants mentioned how everyone's different, and some participants proceeded to discuss how their experiences affect their competencies. Also, the information about welding with one's family or being exposed to other blue-collar trades improved their competencies. Participant A found that people who "may have been in some other trade . . . before they went to get a degree . . . those guys are my top picks because they've already

experienced some type of workflow." Participant D noticed the same thing, especially with students who may have taken workforce classes in other programs:

> A lot of them come out of there, maybe they took some automotive classes and work with their hands a little more, mechanically, gasoline motors. . . . They can fix more [stuff] and problem solve. . . . So the best, the best welders coming out of college are the ones who took woodworking, welding, auto mechanics. So now they have, you know, "This wood's in my way." Some guys are like, "Call the framer," you know, whereas those guys are "Hey, give me a saw or something, and I'll cut it."

Participant E focused more on being inclined to build and figure stuff out on your own time. "Tinkering in his garage. The guy that . . . after school, he goes over to Bud's house, and they're working and building stuff. That's going to be the one that's going to excel." Similarly, Participants F and G stressed field experience to excel in this line of work. "Some people are good at [problem solving] or have taught that over their lifespan and their life experiences and probably their community college experience as well" (Participant F).

> Yeah, those guys who are self-taught are fantastic fabricators because they learned from their uncle Luis who was a great fabricator. A lot of times, those guys have good fabricating skills. Especially with custom fabrication, you have to have a lot of experience with problem-solving skills. Whoever has the most field experience is usually the guys that are most effective and end up getting paid the most because they get a job done fast and don't need any kind of supervision. They just meet the goals and plans. (Participant G)

Training Needs

Discussions about competencies entail not only what new hires have but also what they do not possess. A majority of participants recognized the need for more training. The following information points to needs that colleges may or may not be able to address within their programs. However, these needs were stated and are considered an emergent category.

Project Flow

The concern frequently mentioned was the inability to see the entire project. Some people referred to this need using different words, such as "workflow," "big picture," or "getting from point A to point B."

Participant A underscored the importance of understanding how projects proceed from A to B that require competent communication with moving things "safely and in the right direction" to welding in different positions. In addition to welding in different positions, Participant G discussed the need for a broader education with fabrication in that "you spend 90% of your time doing layout, making . . . , checking measurements before you even get to welding." Likewise, Participant H commented that they need to be able "to review the plan and do a cost analysis," handle material properly, and address different scenarios like having "to get around plumbing."

Factors Affecting Welding

Other factors come into play that students need to understand. Participant A discussed changes in the weather, wind, and temperature, and Participant E stressed the need for students to know if they can weld in the air because they have seen some new welders become afraid of heights when welding. Some skills were more specific, such as correctly calling out measurements, putting on a harness, shooting grade, and welding different joints using different materials.

Sometimes examining problems can help. Participant J recommended:

> pulling people's mistakes out of the recycle bin and trying to fix them . . . evaluate it, what did you do wrong, and how can you fix it, and starting with small stuff like that will really help us kind of figure out how to problem solve in the future.

Work Ethic

Work ethic is an emergent category that underscored a characteristic needed in this line of work. Participant C verified this when saying, “The work ethic is the one that’s most important. We can teach people how to weld. We can’t change their attitude about work.” The idea of a work ethic is described as someone who persistently works and adapts to changes in order to keep working.

Regarding persistence, Participant C described it as

> showing up on time, finishing the task, staying on task. . . . They need to be steady. Keep doing it. Don’t get the phone out and start looking at that. It’s not what you’re paid for. If they can communicate that to a prospective employer, it would make it more attractive for an offer.

Participant H said, “If you’re not just gung-ho, sunup, sundown, seven days a week, not gonna make it in that industry.” Participant E noted the work ethic comment on the homepage and explained persistence with an example:

> We’re here at six o’clock in the morning and at three o’clock in the afternoon, and it’s been a hundred degrees all day, and you hate everybody. You still go because the job’s got to get done . . . you want to leave in any situation, and you don’t. You’re all in.

Work ethic also entails not just standing around when something goes wrong. Participant A differentiated this need by saying,

> We can’t do this, or what do we do now, versus the individual worker finding something else to be productive on. Yes, bring it up if it’s an issue but let’s still keep, keep moving forward. Don’t, don't put a stop sign in front of it, in front of the project.

Lastly, working hard and staying late were mentioned on the ePortfolio’s homepage, which prompted some comments. Participant B noted,

> I’m a hard worker who does not have any issues working late. So, I’m a hard worker, he says. He’s saying he can work late. In the industry, this is high demand . . . this guy advises that he does not have a problem working late. That’s another thing.

Participant D pointed to this problem in the industry when he said, “That one says, ‘I work late to get the job done.’ I can’t tell you how many guys are like, ‘It’s five o’clock. See you later.’”

SUMMARY

The study aimed to determine employers’ perceptions of ePortfolios as a tool for students to convey their competencies. The results indicate ePortfolios are a good tool for hiring managers. A priori categories were created due to the questions posed to ascertain the participants’ perceptions. These categories include students’ overall competency, teamwork and problem-solving skills, ePortfolio layout, and the breadth and depth of information. Many emergent categories populated from the discussions include pictures, writing style, communication, asking questions, life experiences, training needs, and work ethic. The next chapter will include a discussion of the results along with the study’s limitations and delimitations.

CHAPTER FIVE: DISCUSSION

INTRODUCTION

The purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. This chapter will focus on the conclusions drawn from the study's results, which indicate that ePortfolios are excellent tools for understanding the person applying for the job. The conclusions are divided into three major sections: (1) organizational fit, (2) life experiences, and (3) brevity of content. Afterward, recommendations for the application of the results and recommendations for further research will be provided.

Many hiring managers believe graduates are underprepared and are not competent with most transferable skills (NACE, 2021). Two common competencies needed in the workplace are teamwork and problem-solving skills. One way to convey one's competencies is through ePortfolios. Therefore, this study sought employers' perceptions of welding graduates' teamwork and problem-solving competencies on an ePortfolio. In addition to a homepage, the ePortfolio contained a page for each competency (see Appendix B). The top of each page included a description of how the transferable skill connected to welding. The ePortfolio contained welding and non-welding examples along with key takeaways, and transferability to a welding job was discussed for each competency.

Ten welding hiring managers from the Austin, Texas, area were interviewed virtually or face-to-face. Eight participants worked in the construction industry, and two were in other

industries that included welding. A total of seven men and three women participated in the research, with some participants working only in administration and others serving dual roles as welder and manager.

The research results indicated that a majority of the participants concluded that ePortfolios are good tools for assessing potential employees. The need to obtain participants' perspectives about different aspects of the ePortfolios resulted in a priori categories. These categories include teamwork, problem-solving, student competencies, ePortfolio layout, breadth and depth of information, and the ePortfolio homepage. An analysis of the interviews highlighted emergent categories that included pictures, writing style, communication, asking questions, life experiences, and work ethic.

GENERAL CONCLUSIONS

Determination of Organizational Fit

Hiring someone who is a good fit with the organization positively affects that person's job satisfaction while reducing turnover potential (Kristof-Brown et al., 2005). Many respondents discussed ePortfolios as providing a more complete picture of the person despite being a novice in welding. In fact, Participant B commented on not expecting students to have much welding experience. Participants drew upon information on the homepage and teamwork and problem-solving skills related to welding and non-welding class projects. The student can use the homepage, which is typically examined first, to begin revealing welding and other experiences that showcase their personality.

Adding more webpages to the ePortfolio can reveal other hard and transferable skills. The hiring managers interviewed wanted to see more of and read about the person's ability to weld. This information helps them understand what the person can and cannot do, along with

subsequent training needed to help the new hire move beyond a journeyman level. One way to provide this proof is through pictures of projects applicants completed in and outside of school. Many interviewers wanted to see what the person had accomplished with welding and stated that more pictures would be helpful. Also, participants responded positively to reading about welding experiences outside of the classroom. This information can provide more insight into their ability to work on a project from start to finish.

Additional ePortfolio pages provide information concerning the person's transferable skills that highlight the person's fit with the organization. Information concerning the person's welding and non-welding projects and other activities provide proof of having some degree of competency with the transferable skill being discussed. Concisely stated examples provide insight into the person's strengths and personality and how these strengths and personality characteristics might mesh with other team members when completing simple or complex projects.

Participants commented upon the non-welding courses and how this information provided an idea of the person's well-roundedness as it relates to teamwork and problem-solving competencies. To clarify with an example, Participant J commented on having non-welding information by saying, "I like it because you don't want — you want to know that they're thinking about these things with everything they do in life, not just when it comes to welding." Participant I made a connection between non-welding and welding on the job:

> You don't want to just see specific welding. You want to see how they problem solve outside of that as well, because that's going to, no matter what, that's going to help you problem solve better in the specific workplace knowing you can do it in any kind of situation.

The notion of being well-rounded and having different experiences to convey one's competencies appear to coincide with being competent. The National Postsecondary Education

Cooperative (NPEC) (2002) defined competency as "the result of integrative learning experiences in which skills, abilities, and knowledge interact to form bundles that have currency in relation to the task for which they are assembled" (p. 7). Integrative learning experiences connect ideas and experiences from curriculum and co-curricular encounters that are transferable to other complex circumstances (American Association of Colleges and Universities, n.d.-d). ePortflios containing varied examples from welding and non-welding courses and other experiences suggest integrated learning occurred that leads to an overall competency.

Being well-rounded entails many other considerations, such as communication skills, an ability to bring people together, and thinking ahead. Different participants commented on these needs and how they saw these skills conveyed through an ePortfolio. Also, participants emphasized the way life experiences affect one's ability to engage in teamwork and problem-solving. Therefore, ePortfolios should contain examples that convey different ways a person has demonstrated various competencies within and outside of college. The information provided can highlight how the person integrated experiences and knowledge in a way that suggests they have different competencies and are a well-rounded person who can contribute to someone's organization.

Lastly, the section devoted to transferable skills might embed other characteristics. Many participants noted the need for students to be punctual and have a strong work ethic, as these characteristics define quality workers, especially in this line of work. Mentioning these and other characteristics shows how they fit and allows the student to incorporate multiple needs in one page instead of having multiple pages for each skill, which would create redundancy and time for reviewing the ePortfolio.

Life Experiences

The second conclusion that provides credence to the claims made about one's hard skills and transferable skills is life experiences. Participants working in the construction industry commented on the fact that there is more to the job than just welding, thus the need to understand the person's personality and life experiences to determine their transferable skills. When discussing new hires' ability to engage in teamwork and problem-solving, many participants commented that their skills vary because many of these skills were formed from life experiences. Therefore, discussing various examples from inside and outside the education arena can show how one has life experiences relating to the transferable skills being discussed.

The homepage can be a good place to highlight some life experiences associated with welding or that connect to other needed skills. In fact, a few participants said they would call the person while reading information on the homepage. The homepage is composed of multiple sections, such as an "About" section, an "Experience" section, and an "Activities" section. Viewers can read about previous welding experiences outside of the classroom to showcase hard skills immediately. The non-educational experiences point to that person's aptitudes and personality. For example, playing sports and hiking suggest the person can handle the rigors of the job, like the need to handle equipment in extreme weather. As for personality, information about involvement in a civic organization and helping with the organization's charity work (seen in the problem-solving page) connected with a few participants as they noted that the person cares about other people, which is one aspect of teamwork.

Lastly, life experiences that occur outside of the classroom need to be recorded and connected to the ePortfolio. Some of these experiences may occur through the college's student center or other clubs. Discussing one's involvement with different activities can highlight personality characteristics and provide insight into different projects and activities that might

contain transferable skills. That said, life experiences outside of college can play a prominent role in showcasing oneself to a potential employer. These experiences may relate to welding or other events. As noted in the results, outdoor activities convey one's ability to persist in the heat, which is directly related to welding in the construction industry. Students should be encouraged to record these experiences on ePortfolios.

Hiring managers considered the transferable skills most important to the position when assessing a candidate's overall competency. This research study revealed that participants' definitions aligned with the different organizations' definitions of teamwork and problem solving. Some of the keywords and phrases in teamwork included "build relationships," "diverse viewpoints," "work cooperatively," and "achieve goals" (AAC&U, n.d.-d; Career Competency Model, n.d.-a; NACE, n.d.; THECB, 2015). Most of the participants' definitions contained similar keywords and phrases, such as "your ability to work with coworkers to reach a common goal," "Teamwork is all about effective collaboration," and

> The ability to work with people, even if you don't like them . . . the ability to notice people's strengths and kind of get out of the way of those strengths. And you know, the ability to kind of just move the project along, really focus on the main objective.

Likewise, many organizational definitions for problem solving exist (AAC&U, n.d.-c; Competency Model Clearinghouse, n.d.-b; NSSB, 2000; O*NET, n.d.-a). The definitions tended to focus on analyzing problems and evaluating potential solutions to address the problem. The substance of participants' definitions varied. Participant J's definition was "Looking at a situation and trying to think of as many solutions as you can to get it done that will actually work," and that closely aligned with other organizations' definitions. However, other definitions varied. One person focused on analyzing the problem to determine who "owned" the problem. Other participants focused more on obtaining the goal when saying, ". . . figuring out the questions you need to ask and how to find the solution to a problem" and "being able to

progress the project in the direction it needs to go without hiccups or easily going over hurdles . . . so being able to focus on the objective of the project." The differences reside in emphasizing the problem or the solution. ePortfolio examples that describe the problem and the solution would coincide with organizational definitions and address one of the two areas of problem solving defined by participants.

Brevity of Content

The need for brevity creates a challenge in describing multiple competencies. Many participants discussed this challenge when examining an ePortfolio that highlighted only two competencies and a homepage. ePortfolio users need to determine the competencies in highest demand for a particular job, how they are realized within that job, and the way the examples on their ePortfolio connect to address those competencies. For example, welding hiring managers in the construction industry appreciated the problem-solving skills webpage more than the welding hiring managers from other industries, in that the latter industries focus more on welders who can read blueprints and weld. These differences suggest some limitations exist with the Department of Labor's description of skills needed in the welding industry, since the bundled competencies might differ from one type of welding job to another.

The need for brevity while simultaneously proving one's competencies and well-roundness can be challenging. A majority of participants noted that the information provided was almost too much, especially when considering how many applications they needed to review. ePortfolio users need to take advantage of the latitude they have with designing their ePortfolios. The ePortfolio used in this study (see Appendix B) conveyed teamwork and problem-solving competencies by describing a situation and how the situation was resolved. Next, the information bullet-pointed key takeaways, followed by transferable skills to the workplace. The layout and

information attempted to provide a systematic approach to connecting experiences to competencies and the competencies to the workforce. However, other designs, examples, and writing styles may influence the hiring managers' perceptions. Thus, other studies are needed to examine layouts that contain information brevity and a conveyance of competencies associated with workforce needs.

Given the fact students built ePortfolios around their college and non-college experiences, one can see how each ePortfolio will differ and how these differences will provide a different perception of the person's skills, competencies, and personality. These different pieces of information can help managers assess the person's fit with the organization's culture. However, ePortfolio users need to match the competencies in their examples with the competencies needed for a specific job and clearly describe this information using a format that points to these competencies and their connection to the job.

RECOMMENDATIONS

ACTIONABLE RECOMMENDATIONS

Holland (2015) describes the key assumptions of systems thinking as consisting of interrelated parts that comprise a system that can overlap with other systems. This system receives inputs that go through the system and exit as outputs. Holland applied systems thinking to workforce development for unemployed job seekers. Similarly, ePortfolios can be implemented successfully at a higher education institution using systems thinking.

In order to accomplish this feat, someone needs to examine various stakeholders, personnel roles, and resources within the institution (i.e., parts of the system). Multiple outputs exist for the college, one of which is workforce needs. Likewise, multiple outputs exist for using ePortfolios, and conveying competencies to potential employers is one of them. Therefore, the

institution and students need to know the competencies most sought after for the job they are seeking. Institutions can use advisory boards, alumni, surveys, and focus groups to determine which competencies are needed and how these competencies are applied in specific fields. As stated previously, results suggested that problem-solving skills are more for welders in the construction industry than in the manufacturing industry. A college website can house these competencies for students to access.

The system is composed of multiple parts within the college. The parts may be divided into roles and resources, though the two may overlap. The roles are divided into staff and faculty. Various staff can work to various degrees to help students utilize ePortfolios as a hiring tool. First, staff members responsible for developing orientation programs can inform students of the benefits ePortfolios offer and the college's expectations for student ePortfolio usage.

Next, advisors can work with students throughout their time at a college. ePortfolios allow advisors to converse with students about their learning and can help them track their learning in a way that assists students with recording their learning on an ePortfolio. Students can connect various competencies to a list of learning experiences that can be explained concisely on an ePortfolio, depending on the job. Also, advisors can help students persist with recording experiences that can be beneficial to showcasing their competencies.

Tutors and librarians are two other staff positions that can play a role in helping students understand how learning occurs and how to research information related to projects used to prove one's competency with a transferable skill. As mentioned earlier, these projects provide proof of having transferable skills and give insight into the person's overall "fit" with an organization. Furthermore, librarians can assist students in acquiring materials related to their specific job to improve their understanding of key concepts, such as project management.

The career service center staff members provide valuable insight into ePortfolio development and assessment of the end product prior to beginning the job search. Staff can provide pedagogy on ePortfolio development that can improve students' interviewing skills (Ring et al., 2017). These staff members can work with students to determine skills needed for a specific job and connect their learning and life experiences with these needed skills. They can assess the quality of a student's ePortfolio before the student shares a link to the ePortfolio in an email or a resume.

Faculty members are essential to helping students obtain the experiences needed for reflection and discussion on an ePortfolio. Faculty design the curriculum for their respective courses. Therefore, students are dependent upon the faculty to provide projects and assignments that they, in turn, can discuss on their ePortfolios. Many faculty have projects in place that require minimal modifications in order to align the work with ePortfolio development. In some cases, reflection questions can be added to serve as prompts that help the student connect the work to transferable skills.

In some cases, faculty and staff will need training and development to better assist students with ePortfolio development. Trainers will need to explain the multiple purposes for ePortfolio usage and then help faculty and staff connect the purposes to their respective positions. In doing so, colleges can integrate ePortfolios across their institution. Continual and targeted training can improve ePortfolio quality for students wanting to produce a quality product.

Respective to faculty, trainers can assist with curriculum development that focuses on using different types of learning, such as experiential and integrated, for projects and assignments. Students exposed to various types of projects and assignments are urged to use,

develop, and report various transferable skills, e.g., problem solving, teamwork, critical thinking, and verbal communication. The challenge resides with providing assignments that prompt students to use the transferable skills needed for specific jobs. This challenge is especially true in a general education class that enrolls students from different majors that need different skill sets. For example, a class consisting of only written assignments can develop transferable skills more suitable for journalism students than for welding students, as these assignments further develop written communication skills.

It should be noted that students should develop a variety of competencies. Colleges are responsible for assessing and reporting students' general education competencies. Also, study participants noted the need for a well-rounded person, and career changes may require different skill sets. The challenge is determining how to design curricula that improve all transferable skills yet target the skills students most need for their chosen line of work.

One way to address targeted skill development is through badging. Student life and workforce clubs have the flexibility to design various activities that highlight certain skills. Badges can be a way to identify the development of various skill sets through extracurricular activities and subsequently recorded on an ePortfolio. For example, a welding club or field day can focus on certain welding positions that instructors do not have the time to teach and assess in class. In cooperation with their advisory board, faculty would develop an assessment for these skills and provide a badge to students passing the assessment. Likewise, Student Life can provide activities that prompt students to demonstrate different transferable skills. After competently completing specific skills throughout one or two semesters, they can provide a badge that can be uploaded onto the ePortfolio.

Research Recommendations

Additional research is needed on hiring managers' perceptions of student competencies in ePortfolios. This study required participants to examine one ePortfolio that contained a homepage and two transferable skills pages. Each transferable skill page briefly described the connection between welding and the transferable skill, followed by welding and non-welding projects, key takeaways, and the project's connection to welding.

One area of research can focus on the ePortfolio design. A future study can seek hiring managers' perceptions of an ePortfolio with a different design. For example, instead of having pages organized by transferable skills, the ePortfolio pages might be separated by welding and non-welding pages, with transferable skills being highlighted or bolded within the examples on each page. This approach would allow the hiring manager to select the most important page and read the examples under that page, which might be more reflective of how they would examine an ePortfolio.

A second research recommendation is for hiring managers to examine two or more ePortfolios simultaneously. This study contained only one ePortfolio, and many hiring managers were unfamiliar with ePortfolios. Therefore, they did not have a mental model of a good ePortfolio design. Having hiring managers examine ePortfolios with different designs will help elucidate the most effective way to convey one's hard and transferable skills to an employer.

A third example would be to examine the length of time spent reading an ePortfolio. Many participants said the amount of information was "just right," and any additional information would be too much for them to read. However, the ePortfolio did not contain a page focusing primarily on welding experiences, though it did contain one welding example for each transferable skill. Having a page describing the types of welding positions, materials, etc., learned during the program would require more time for the hiring manager to read. There

appears to be a dilemma between needing to see one's welding skills and seeing the whole person to determine if the person is a good fit. Results from this type of study would help practitioners understand the amount of information needed for welding and non-welding experiences.

A fourth study could focus on uploading pictures and videos to prove one's welding or other workforce-related skills. Many participants mentioned that pictures of welding examples would help them assess the person's ability to work at their place of employment. Research is needed on the type of pictures and videos best suited for an ePortfolio. In other words, would pictures showing the progression of a welding project provide more insight than a final product? Would a video of the student describing what they did or needed to do to complete a welding project convey a strong understanding of welding? Lastly, would a video or written explanation of a bad weld, why it occurred, and how to fix it create a positive perception of the student's understanding of welding? These are just a few research questions revolving around pictures and videos that are needed to help students convey their competencies.

Other studies can examine the content of the information provided. This study focused only on two transferable skills. Additional research using other transferable skills can help determine which ones are more effective in conveying a sense of workforce readiness to the employer. Also, additional research is needed to determine what transferable skills are in high demand for some industries. As discussed in the results, hiring managers in the oil and gas industry view the need for welders to possess problem-solving skills differently than those in the construction industry. Determining the degree of need for various transferable skills will help students refine their ePortfolios for different hiring managers.

Similar to some questions concerning pictures, researchers could explore the type and amount of information used to explain their experiences. When describing experiences, one needs to provide a context for the experience or assignment, actions taken, the outcome, lessons learned, and skills developed. Studying the types of information provided and the amount of information provided for each type can help practitioners generate instructions for developing and accessing ePortfolios.

A second type of study focusing on content can explore the activities and experiences mentioned in the ePortfolio. While participants commented positively on having non-welding examples, research is needed to determine what types of activities are more effective in conveying one's transferable skills. High-impact practices (HIPs) are viewed as an effective way to improve student learning (Watson et al., 2016). Research on adding HIPs experiences can help researchers and practitioners know whether some experiential learning activities are more effective than others when conveying them through an ePortfolio to a hiring manager.

Another approach to examining content is to focus on the curriculum for different workforce programs. Typically, advisory boards assist programs with addressing curricular needs. However, to the researcher's knowledge, no studies were conducted on the type of educational experiences and learning students should convey on an ePortfolio that is directed to hiring managers. Research in this area can inform faculty and advisory boards on whether the information learned in class is correctly and adequately explained to potential employers on an ePortfolio. Findings can inform ePortfolio practitioners and faculty of ways students can communicate their learning that is specific to their degree program to hiring managers.

Also, research is needed to ascertain the balance between program-specific and non-program-specific examples. One area of concern was striking a balance between depth and

breadth. Hiring managers would like to know about job-specific skills. At the same time, they appreciate the non-program-specific information that provides a more well-rounded view of the candidate. Examining ePortfolios that contain different ratios of program-specific and non-program-specific examples can help ePortfolio practitioners train students on the content that should be placed on an ePortfolio.

Lastly, life experiences help develop one's personality, skills, and outlook on life. Given hiring managers' appreciation for seeing the whole person, research regarding the type and amount of non-education-based experiences is needed to determine the extent to which this information should be placed in an ePortfolio. Results will help practitioners understand how the ePortfolio differs from a resume and how to connect the experiences to hard and transferable skills.

In addition to the ePortfolio layout, information type, and depth of information, research on students and hiring managers is needed. Students will need to build ePortfolios to share with potential employers, and these ePortfolios differ from ePortfolios used for self-reflection and assessment purposes. Therefore, students will need to understand the purpose and process for designing an employer-oriented ePortfolio and know the type of information to place in the ePortfolio. Additional research on when students learn about gathering information and the process for building an ePortfolio for an employer is needed to inform college leaders and practitioners about implementing this type of ePortfolio.

Additional research on hiring managers can occur to better understand their expectations. This research project focused primarily on welding hiring managers in the construction industry. People can interview hiring managers in other locations and industries to determine the degree of

generalizability. Also, research results can determine if differences in the type of examples provided and the type of transferable skills mentioned change from one region to another.

SUMMARY

The purpose of this exploratory case study was to ascertain employers' perceptions of an ePortfolio as a tool to assess potential workers' transferable skills. The research focused on teamwork and problem-solving skills using welding and non-welding examples. Overall, hiring managers believe ePortfolios are good tools students can use to get a job. They concluded that the various types of educational experiences discussed on the ePortfolio and their connection to transferable skills reveal some competency with those skills and allow the hiring manager to see the whole person. However, the hiring managers interviewed believe life experiences play a vital role in being competent with these transferable skills. To that end, ePortfolios allow students to discuss educational and non-educational experiences related to needed skills. A major concern was discussing one's skills in a way that provided enough information to prove possession of that skill but did not overwhelm the reader with too much information when examining the entire ePortfolio. Additional research concerning the type and amount of information is needed to determine how best to convey one's skills to a hiring manager.

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APPENDIX A: EPORTFOLIO

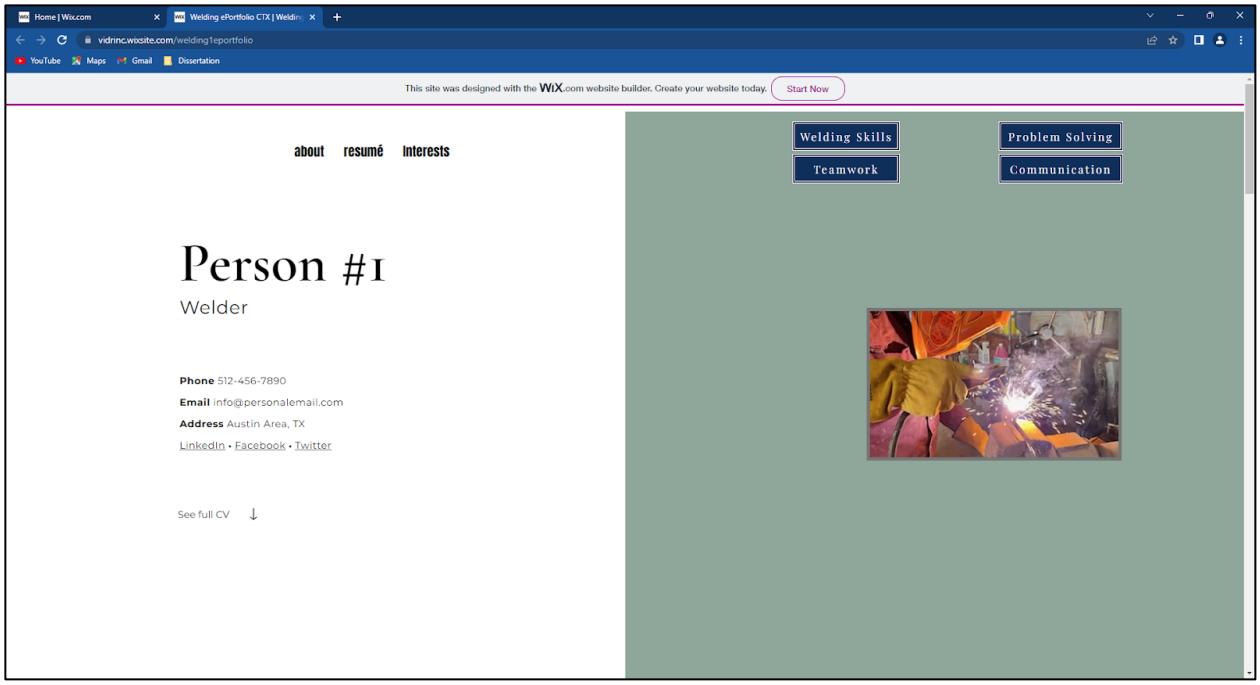


Figure A1: The ePortfolio has a homepage with basic contact information and links to skills deemed relevant to a particular job.

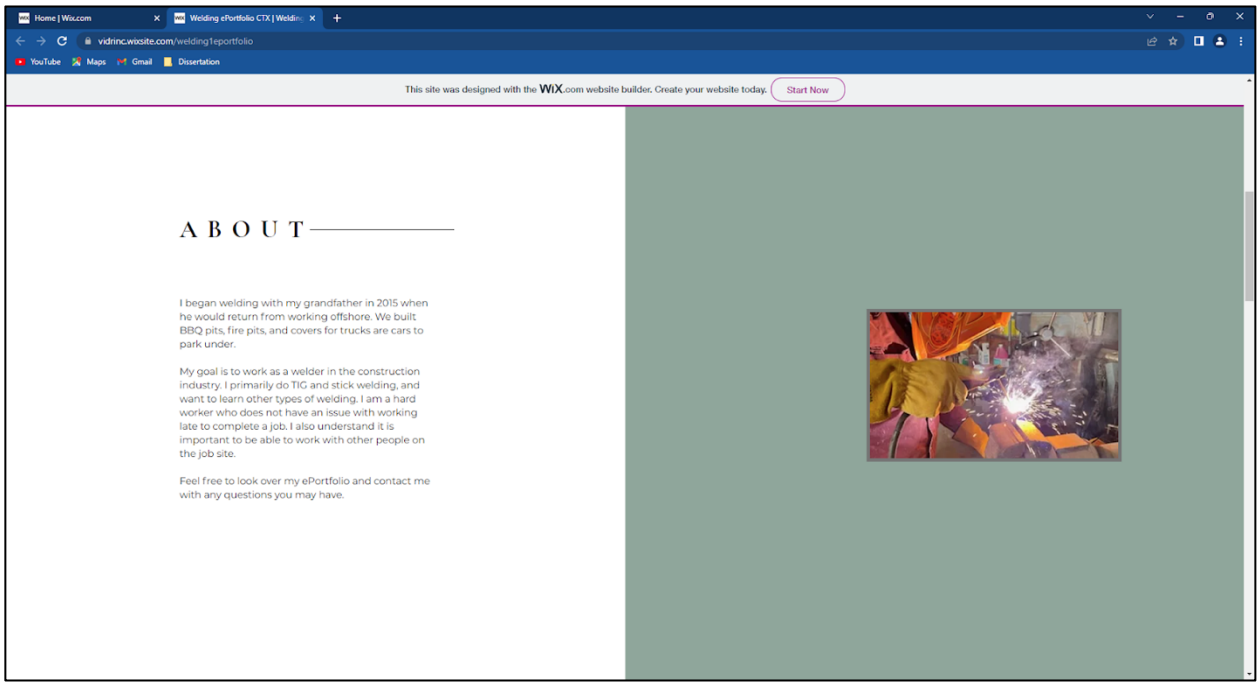


Figure A2: This section contains hypothetical information about the individual.

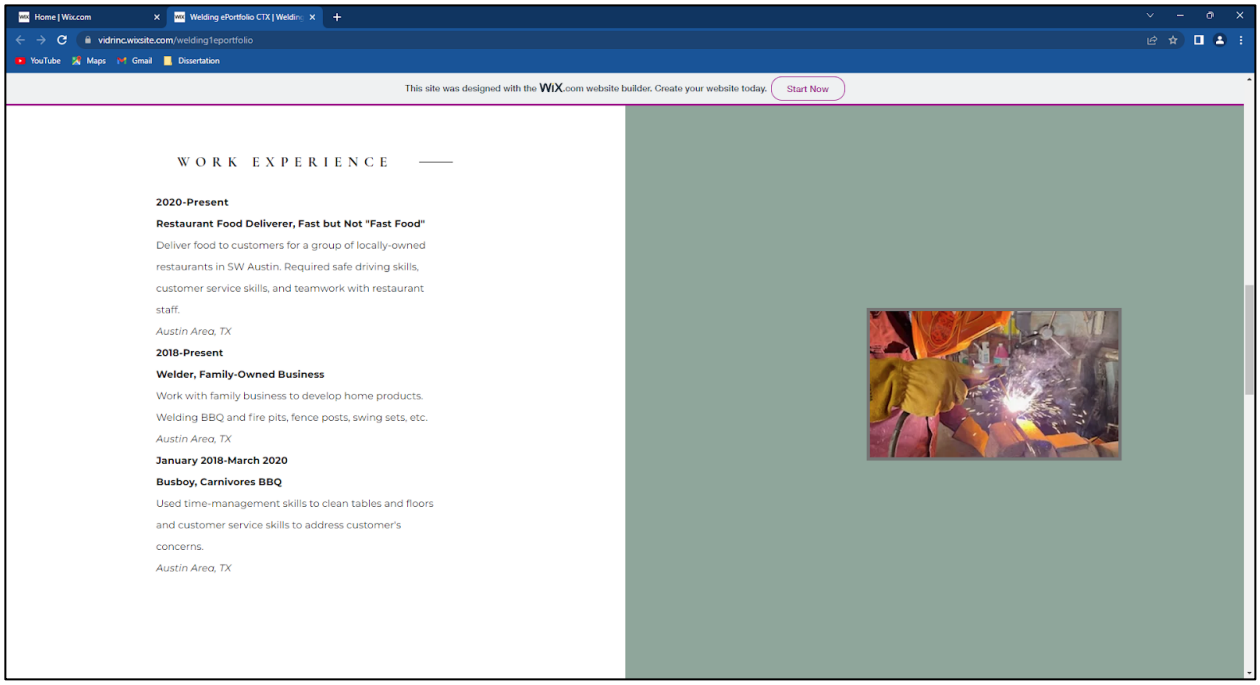


Figure A3: This part of the homepage contains hypothetical work experience.

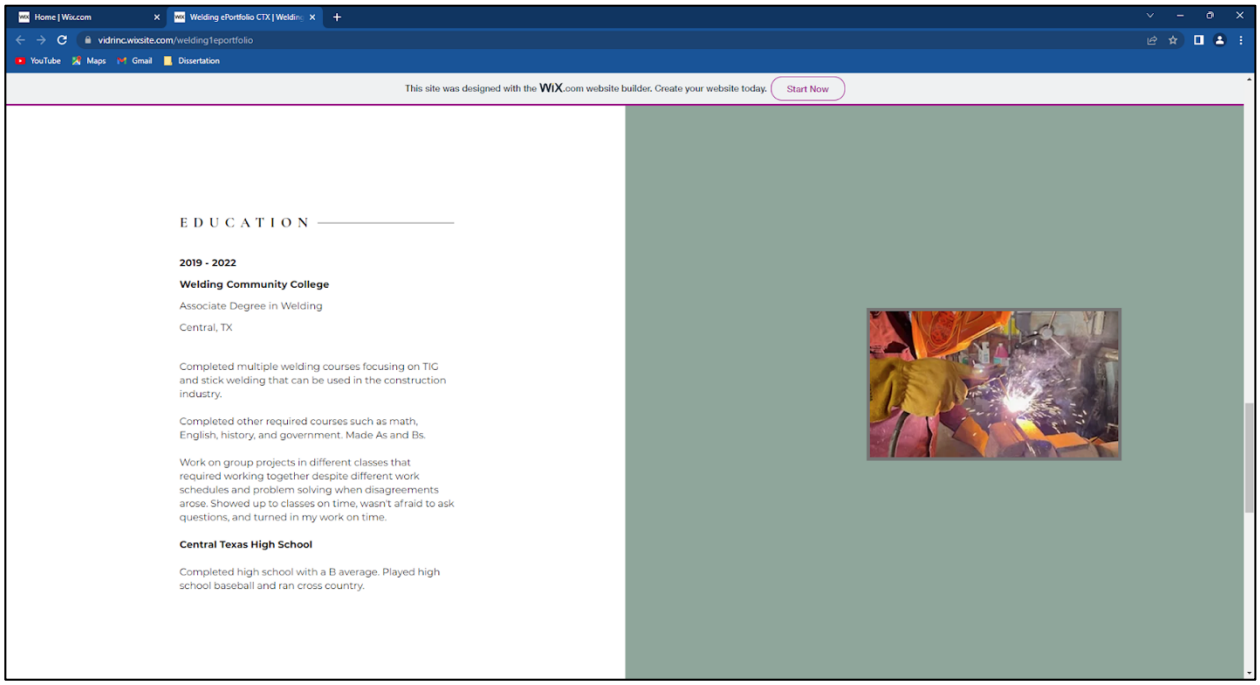


Figure A4: The homepage has education experience focusing on job-specific information.

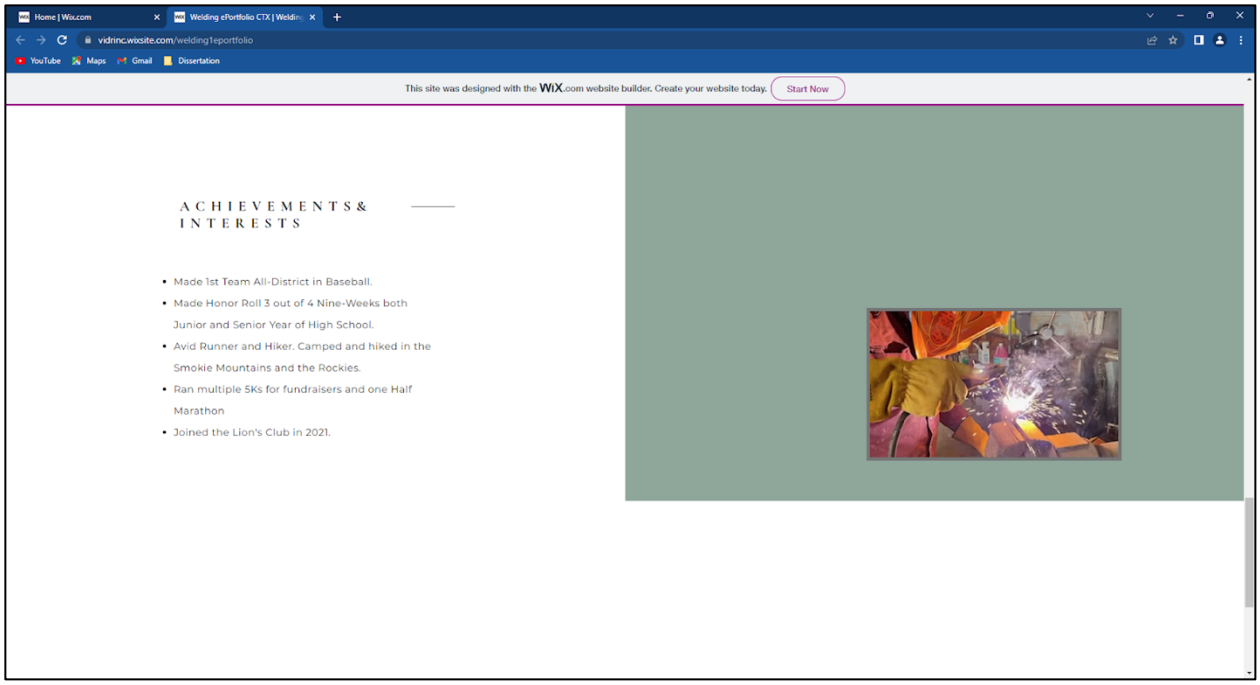


Figure A5: The last section of the homepage highlights interests outside of school and work.

APPENDIX B: TEAMWORK AND PROBLEM-SOLVING COMPETENCIES

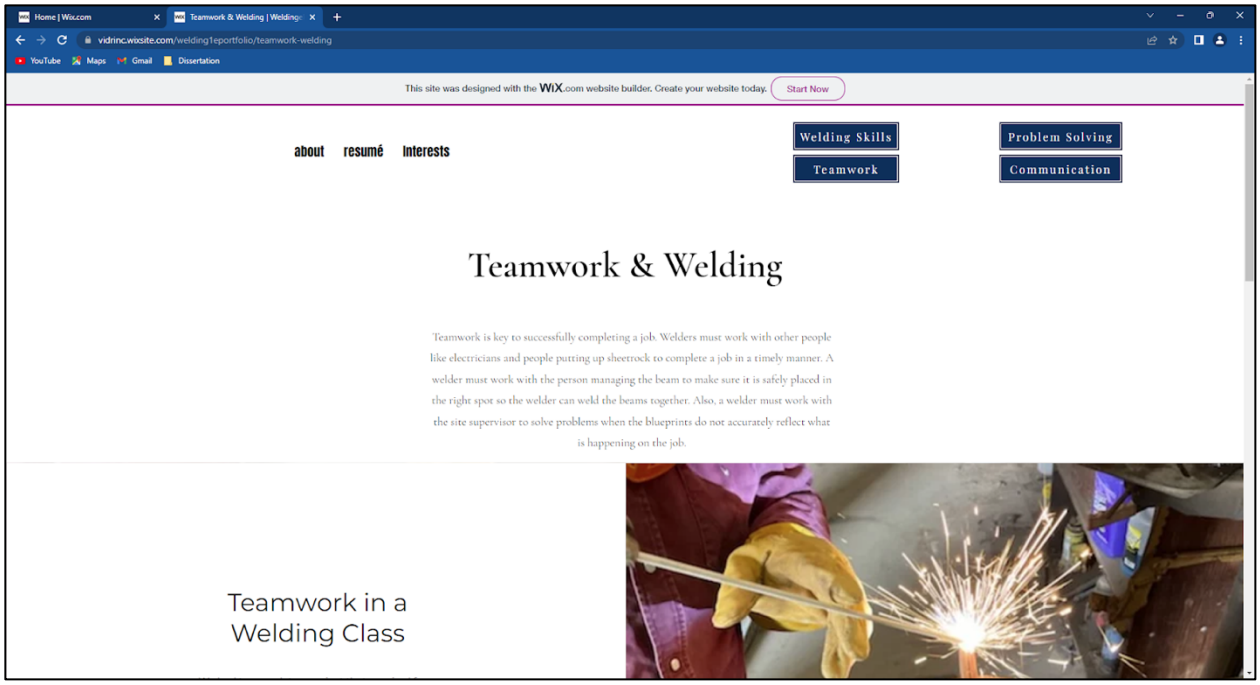


Figure B1: This section briefly describes the relationship between teamwork and welding.

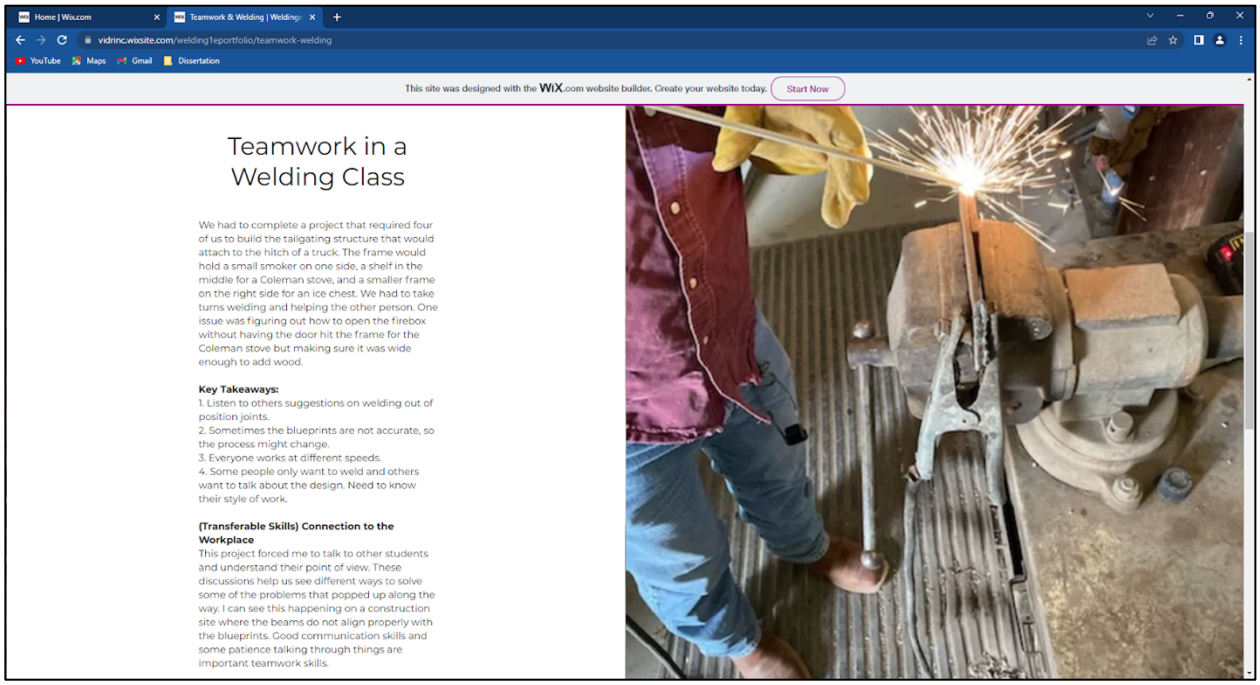


Figure B2: The section below “Teamwork and Welding” highlights a hypothetical project, key takeaways, and the way these skills connect to the workplace.

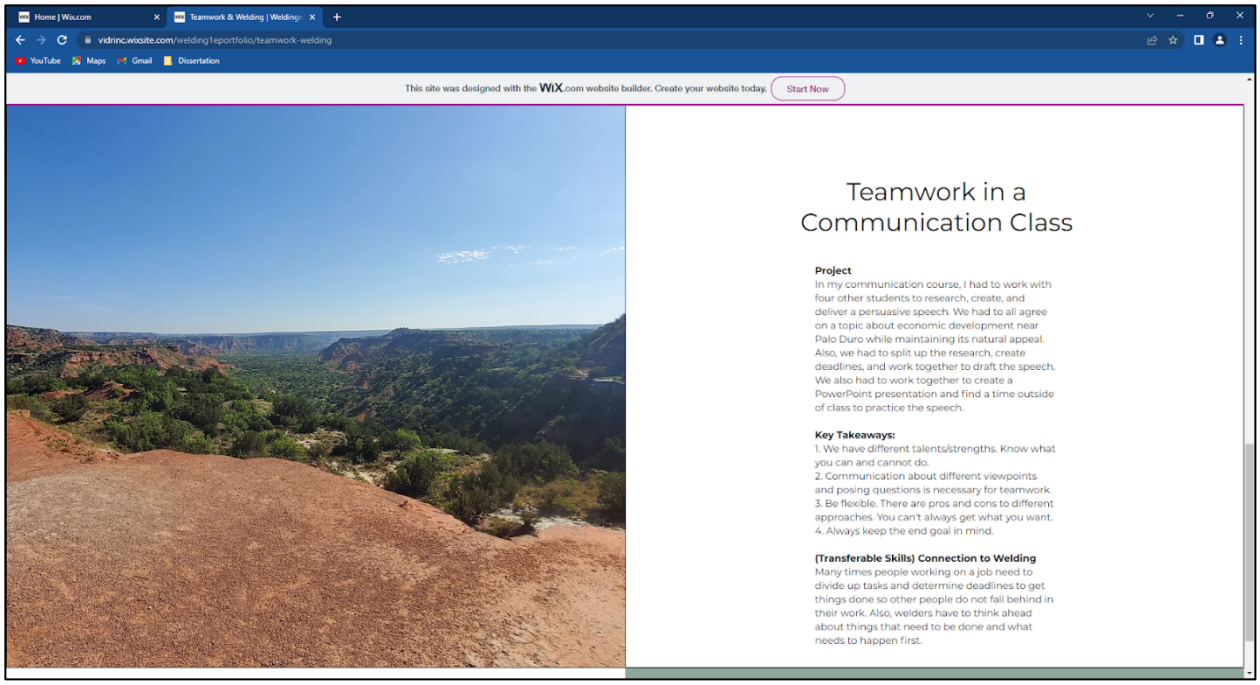


Figure B3: This section focuses on a project in a non-welding course along with key takeaways and a connection to the workplace.

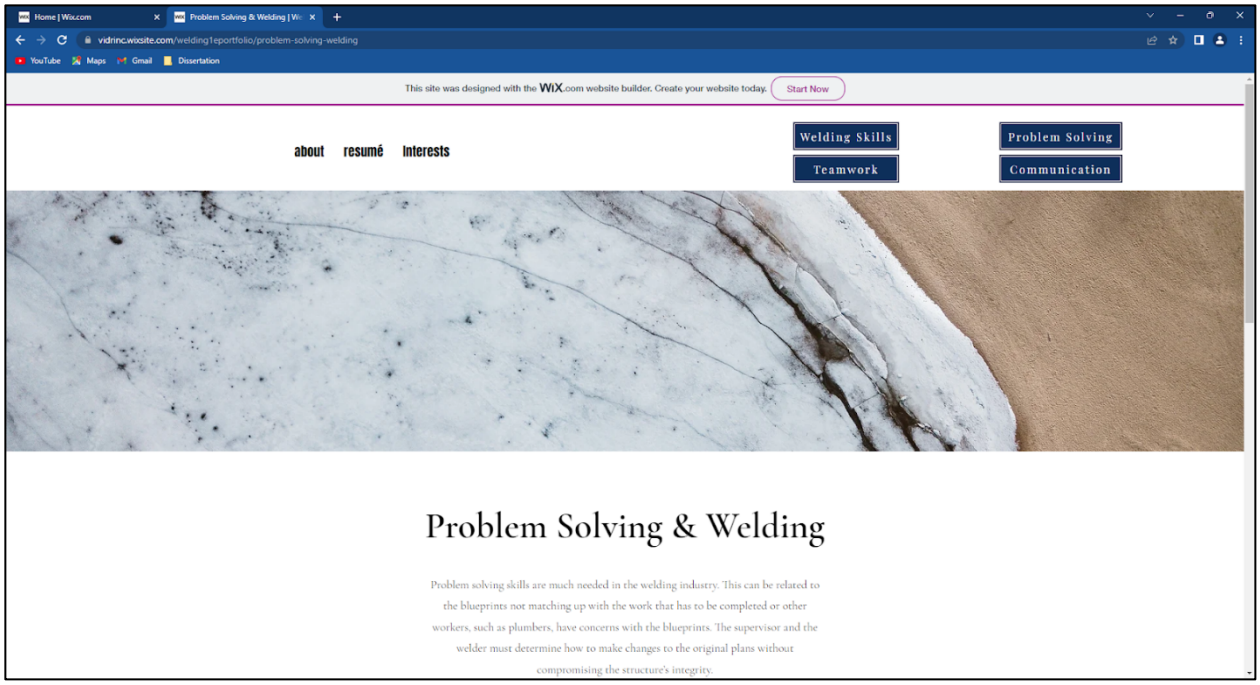


Figure B4: This section contains a brief description of how problem solving is related to welding.

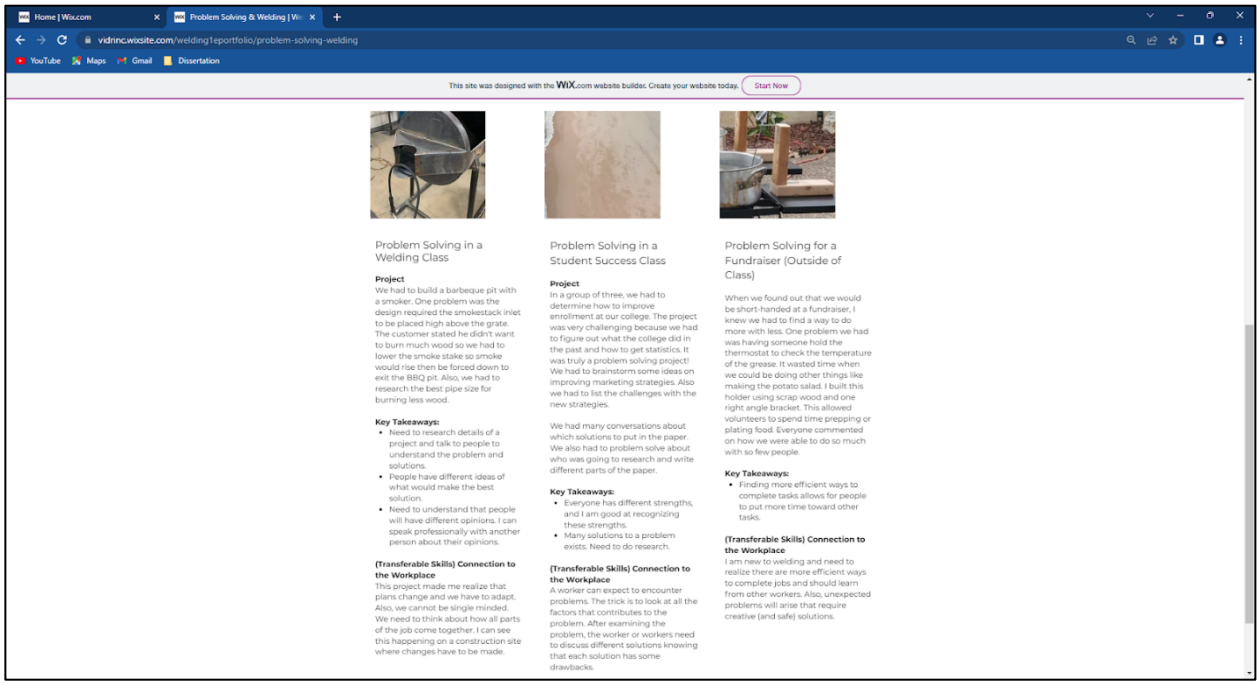
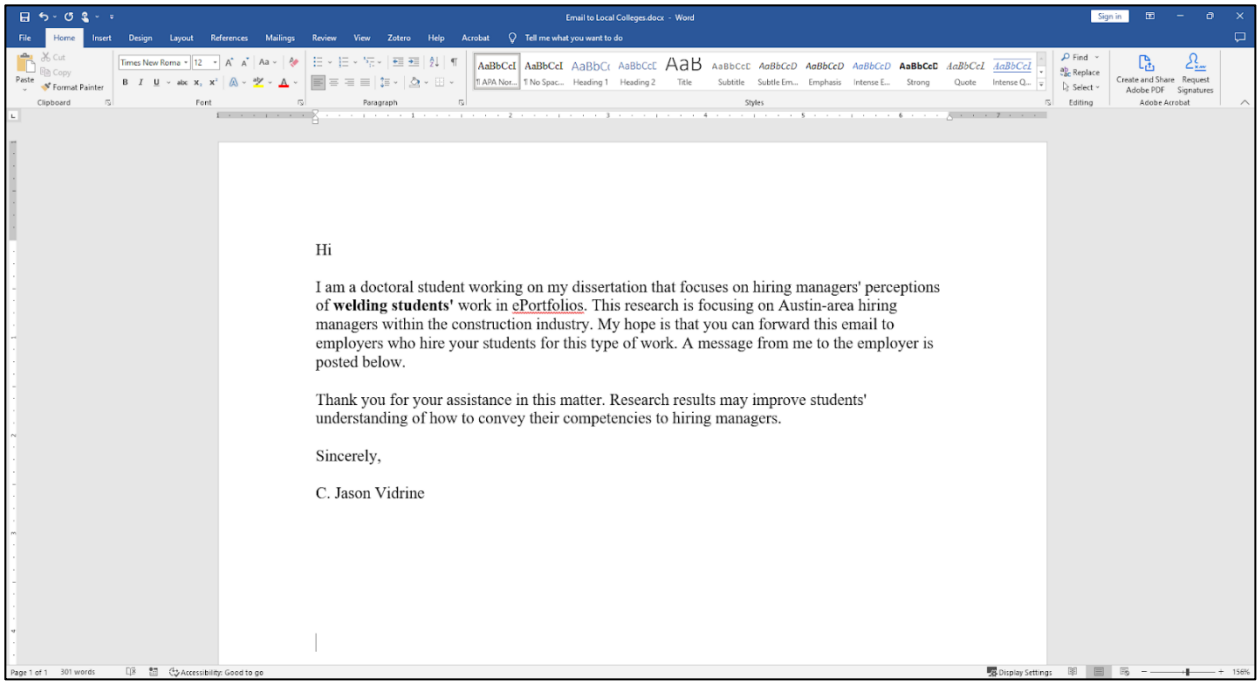
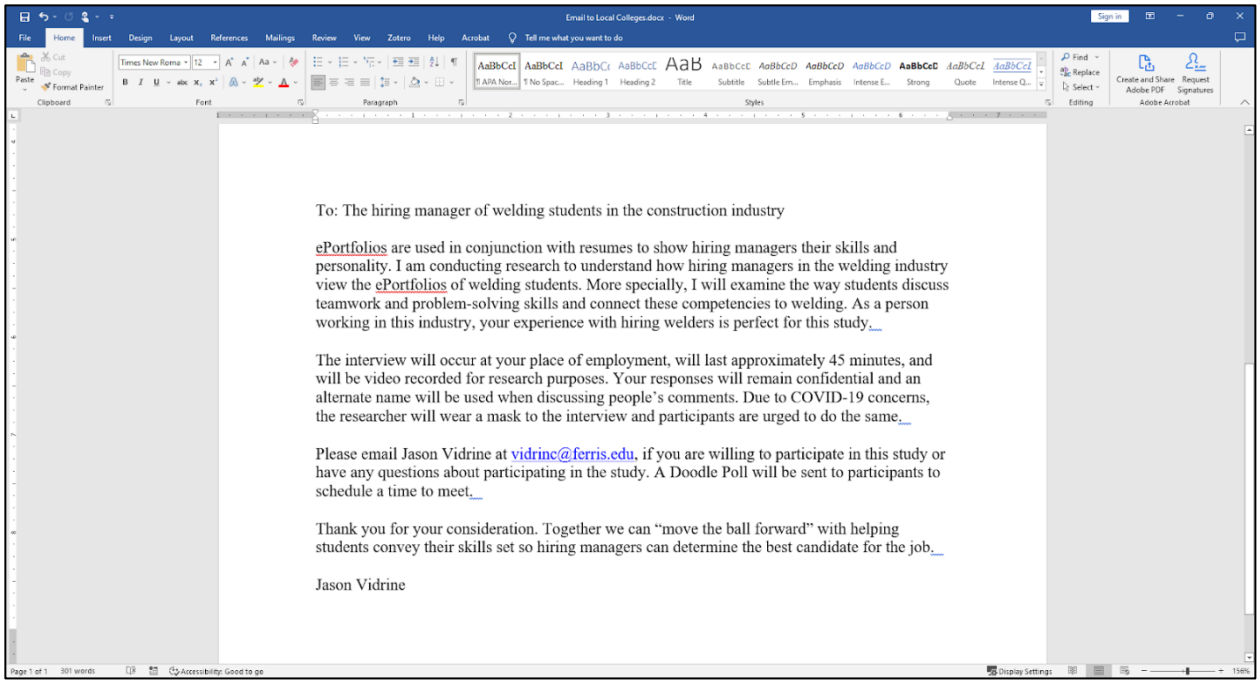


Figure B5: This webpage highlights projects, key takeaways, and transferable skills.

APPENDIX C: INTERVIEW-SEEKING EMAIL TO COLLEGES


Email to Local Colleges.docx - Word
Hi
I am a doctoral student working on my dissertation that focuses on hiring managers' perceptions of **welding students'** work in ePortfolios. This research is focusing on Austin-area hiring managers within the construction industry. My hope is that you can forward this email to employers who hire your students for this type of work. A message from me to the employer is posted below.
Thank you for your assistance in this matter. Research results may improve students' understanding of how to convey their competencies to hiring managers.
Sincerely,
C. Jason Vidrine

APPENDIX D: EMAIL SENT TO EMPLOYERS



To: The hiring manager of welding students in the construction industry

ePortfolios are used in conjunction with resumes to show hiring managers their skills and personality. I am conducting research to understand how hiring managers in the welding industry view the ePortfolios of welding students. More specially, I will examine the way students discuss teamwork and problem-solving skills and connect these competencies to welding. As a person working in this industry, your experience with hiring welders is perfect for this study.

The interview will occur at your place of employment, will last approximately 45 minutes, and will be video recorded for research purposes. Your responses will remain confidential and an alternate name will be used when discussing people's comments. Due to COVID-19 concerns, the researcher will wear a mask to the interview and participants are urged to do the same.

Please email Jason Vidrine at vidrinc@ferris.edu, if you are willing to participate in this study or have any questions about participating in the study. A Doodle Poll will be sent to participants to schedule a time to meet.

Thank you for your consideration. Together we can "move the ball forward" with helping students convey their skills set so hiring managers can determine the best candidate for the job.

Jason Vidrine

APPENDIX E: MEMBER CHECK EMAIL

Subject Line: ePortfolio Comments Review

Dear _____,

Thank you again for meeting with me to discuss my dissertation research concerning employers' perceptions of welding students' ePortfolios. I have completed my interviews and would like to share the information from your interview that relates to the study's results, which are broken down into multiple categories. You may provide additional information or clarification regarding each topic by replying to this email. A link to the ePortfolio can be found here to help you recall the information discussed.

The research results will note the interviewees' overall perception with quotes added to clarify the perception for each category. The interviewees will not be identified in the research. A summation of the final results will be emailed to you once the dissertation is completed.

Please let me know if you have any questions and have a great day!

C. Jason Vidrine

APPENDIX F: DATA ANALYSIS FRAMEWORK

INTERVIEWEE	Interviewee #1A	Interviewee #2B	Interviewee #3C	Interviewee #4 D	Interviewee #5E	Interviewee #6F	Interviewee #7G	Interviewee #8H	Interviewee #9I	Interviewee #10J
ePortfolio Overall										
ePortfolio Teamwork										
ePortfolio Problem Solving										
ePortfolio Welding Course										
ePortfolio Non-Welding Course										
ePortfolio Breadth vs Depth										
ePortfolio Layout										
ePortfolio Pictures										
ePortfolio Writing Style										
ePortfolio Advancement										
Training Needs										
Welding Course Focus										
Ask Questions										
Life Experience										
Punctuality										
Work Ethic										
Teamwork Definition										
Teamwork Competency										
Problem Solving Definition										
Problem-Solving Competency										
Starting Position Expectation										
Social Media										
ePortfolio: About										
ePortfolio: Experience										
ePortfolio: Education										
ePortfolio:Activities/Interest										
Non-welding course										
Communication										
Overall competence out of college										

Figure F: This image reflects the spreadsheet used to codify the results. The rows and columns seen above were transposed so the image would fit on the document.

APPENDIX G: IRB APPROVAL LETTER

FERRIS STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
1010 Campus Drive FLITE 410 Big Rapids, MI 49307
www.ferris.edu/irb

Date: March 2, 2022

To: Susan DeCamillis, EdD and Christopher Vidrine
From: David R. White, Ph.D, IRB Chair
Re: IRB Application *IRB-FY21-22-65 A Case Study Examining Hiring Managers' Perceptions of Student Competencies in ePortfolios*

The Ferris State University Institutional Review Board (IRB) has reviewed and approved your request for revisions to the study, *A Case Study Examining Hiring Managers' Perceptions of Student Competencies in ePortfolios(IRB-FY21-22-65)*. Exempt - Limited IRB of this revision follows the status check-in date of your initial application approval. **As such, you may collect data according to the procedures outlined in your application until December 20, 2022.**

Your project will continue to be subject to the research protocols as mandated by Title 45 Code of Federal Regulations, Part 46 (45 CFR 46) for using human subjects in research. It is your obligation to inform the IRB of any changes in your research protocol that would substantially alter the methods and procedures reviewed and approved by the IRB in your application. Thank you for your compliance with these guidelines and best wishes for a successful research endeavor. Please let us know if the IRB can be of any future assistance.

Regards,

David R. White, Ph.D, IRB Chair
Ferris State University Institutional Review Board