STUDENT INTERNSHIP EXPERIENCES AND LEARNING OPPORTUNITIES: A MIXED METHODS STUDY

BY

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DISSERTATION

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ABSTRACT

In 2000, Coco (2000) reported that an estimated 75% of undergraduate students had some internship experience when they graduated, and the figure is likely higher today. With the vast majority of students participating in some form of internship, the academy needs to understand what students are experiencing and learning as a result. Companies also benefit from a better understanding of what students experience and learn through internships. This study employed mixed methods to explore student experiences in internships, including a survey with both closed- and open-ended questions and semi-structured interviews. The data indicated that internship experiences share a number of characteristics on the surface, but deeper investigation revealed subtle differences that impacted learning outcomes. Inherent student characteristics such as gender, domestic status, and income level can also impact aspects of the internship experience. Five main findings resulted from the study. In general, the workplace represents a conducive learning environment for students to participate in and learn from work tasks. Social interaction played a critical role in learning outcomes, and work environments where students felt comfortable seeking assistance from their supervisor and coworkers resulted in increased learning opportunities. The learning environment at startup companies provides a different set of learning opportunities compared to more traditional established companies; however, this was not the case with the learning environment at all established companies as some shared several characteristics with startups. Students who interned at startups worked on larger projects as opposed to being assigned a series of discrete tasks, which was more common at established companies. Finally, even internship experiences within the same company are unique and depend to some extent on the student, the supervisor, and the team of coworkers. This study

contributed to the scholarly literature on internships by providing insight about the types and characteristics of tasks that student perform in internships and the skills and knowledge they gain as a result.

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CHAPTER 1

INTRODUCTION & PROBLEM STATEMENT

Since the Great Recession in the early twenty-first century United States, unemployment and underemployment rates for recent college graduates have increased (Abel, Dietz, & Su, 2014). At the same time, tuition continues to rise, emphasizing the importance of securing a good job after graduation. Experiential learning programs, including internships, co-operative education, and apprenticeships, provide students with opportunities to gain valuable experience that makes them more attractive candidates to employers for internships or full-time positions after graduation (Thompson, 2014). According to Frenette (2013), 50% of American undergraduate students graduated with internship experience in 2008, up from 17% in 1992. Coco (2000) reported an estimate of 75% of undergraduate students have some internship experience when they graduate; in 1980 the figure was one in 36.

Whereas employers value the work experience students gain through experiential learning programs, faculty debate whether time spent in these programs provides academic value (Blake, 1983; Branton, Van Gyn, Cutt, Loken, Ney, & Ricks, 1990; Heinemann, Enright, Johnson, Murtaugh, Reed, Robinson, & Wilson, 1988; Wilson, 1973a; Wilson, 1973b). Along similar lines, whether an institution offers credit for experiential learning programs and how much credit is offered differs by institution. Many faculty question what students learn in experiential learning programs because they do not have control over the learning environment and they do not understand what students spend their time doing or what they learn as a result (Branton, Van Gyn, Cutt, Loken, Ney, & Ricks, 1990; Heinemann, Enright, Johnson, Murtaugh, Reed, Robinson, & Wilson, 1988).

At the same time, employers tend to seek candidates with at least some relevant experience, preferably with a company or organization with which they are familiar. Thompson (2014) cited a survey from the Chronicle of Higher Education that showed employers ranked internships, jobs, and volunteering significantly higher than GPA, courses, or college reputation. In fact, many established companies look for students who have interned or worked for another established company. Therefore, students who work for less recognized companies, particularly small or mid-sized employers, may not benefit as fully from their internship experience. In many cases, students are unable or unwilling to communicate with employers regarding the relevant skills they gained, either because they are uncomfortable talking about their skills and they feel they are inappropriately "boasting" or because they are not able to convey how the skills they developed would relate to or prepare them for the specific job for which they are applying (White, 2013).

This study explores what students experience and learn in internships. In addition, it investigates how learning outcomes may vary at different types of companies or by inherent student characteristics such as gender, domestic status, income level, and other characteristics. In the remainder of this chapter, I provide some basic definitions to clarify how I use certain terms throughout the study. I review why it is important to consider company type when studying internships. Next, I discuss faculty perceptions of experiential learning and provide a brief overview of what the existing literature covers and identify deficiencies. Finally, I share the purpose and significance of the study and the research questions that are addressed.

Definitions

Co-operative education, internships, and apprenticeships represent forms of experiential learning that enable students to physically enter the workplace to practice in their field and then

subsequently bring that knowledge back to the classroom. Heinemann, Wilson, Heller, and Craft (1982) define co-operative education as "the integration of classroom theory with practical work experience under which students have specific periods of attendance… and specific periods of employment" (p. 2). The first co-operative education programs (or co-ops) alternated working in an industry environment with attending classes in a traditional classroom in five to ten week intervals. Today, many co-operative education programs alternate semesters as opposed to weeks, but the idea is similar – that students alternate academic study and practical experience to observe and experience the concepts they learn from faculty. For example, at the University of Illinois at Urbana-Champaign, students who accept co-ops agree to spend one year working for a company, though they typically do not work consecutive terms. For example, they may participate in a co-op term during the summer and following fall, then return to coursework and later work another semester for the company. Depending on the co-op, subsequent terms may involve more responsibility and/or provide experience in different units or areas of the company.

Internships are similar to co-ops, but typically consist of a specific and limited time period rather than continued alternation between work and school. However, students often work on similar types of projects or tasks in both internships and co-ops, though shorter-term internships may not involve increases in responsibility like co-ops often do. Apprenticeships represent a form of postsecondary education in which students work for an employer while simultaneously taking relevant coursework at an educational institution. Apprenticeships are common in Australia and in many European countries, particularly in Germany, which is recognized for its "dual system" of vocational education. Most of these countries regulate apprenticeships at the federal government level. In the United States, the Department of Labor administers a Registered Apprenticeship (RA) program but plays a much less prominent role

than its counterparts in European countries as the U.S. system is more decentralized. Gonzalez (2011) estimates that approximately 500,000 U.S. students participate in Registered Apprenticeships each year, primarily in conjunction with community colleges, and another 500,000 to one million students work in non-supervised programs.

For all forms of experiential learning, one goal is for students to apply what they learn in the classroom to the work environment prior to graduation and the start of their career, and vice versa. Some students participate in more than one internship over the course of their college career, sometimes for the same company, and sometimes for different companies; co-ops are by definition with the same company. Many students that return from an experiential learning session at a company report that their experience in the workplace helped them to better understand the concepts they learned in class because they can see the implementation and results of the theories they learn (Ambrose & Poklop, 2015). In addition, interns and co-ops (co-ops also refers to students who participate in a co-operative education program) benefit from experiencing a certain field or industry to determine if they would want to work in that area after graduation.

Student Interest in Startup Companies or Entrepreneurship

Students have interned at startup companies for some time, given the incidence of entrepreneurship in the United States, but this number has increased over the past two decades starting with the dot.com era in the late 1990s. Part of the reason for the recent explosion in growth is that there are few barriers to entry, including little to no cost, to start a digital company (The Economist, 2014). Other factors have also contributed to the increase; with the recent economic recession in the United States and throughout the world, high unemployment has encouraged some to start their own business in lieu of seeking another employment opportunity.

In addition, funding for startups has become easier to access through venture capital firms and angel investors, further encouraging potential entrepreneurs to try starting their own business (The Economist, 2014). This increase raises questions about whether students who intern at startups have different experiences than those who intern at more established companies.

There is no "official" definition of a startup, but Robehmed (2013), a Forbes staff writer, defines a startup by when it ceases to be a startup: "acquisition by a larger company, more than one office, revenues greater than $20 million, more than 80 people, over five people on the board, and founders who have personally sold shares… the key attribute of a startup is its ability to grow" (n.p.) or scale quickly. Naturally, with the variation between industries, this definition may not always apply, but it provides a framework to determine whether to consider a company a startup. According to the U.S. Small Business Administration (n.d.), the word startup means more than a company that has just started; "the term startup is also associated with a business that is typically technology oriented and has high growth potential" (n.p.). Both of these definitions require some subjective judgment in order to classify a company as a startup, which presents a challenge. In this dissertation, I define startups primarily by the number of employees but incorporate Robehmed's criteria to the extent possible (not all information she references may be available for all startups included in the study), while considering the industry in which the company operates and its growth potential, if available. Also, the term entrepreneurs, as operators of businesses, is used synonymously with startup leaders throughout the dissertation.

According to the Kauffman Foundation's 2011 Young Invincibles Policy Brief, 54% of youth surveyed expressed interest in starting their own business if they had not already done so. Mashable reports that 34% of startup founders are between the ages of 20 and 29 (Walden, 2014). And because most startups operate on shoestring budgets, at least at the beginning when

funding may not be readily available, students become very attractive options for low-cost (or no cost) labor. This, coupled with the increased interest in entrepreneurship from many young people, results in more students participating in internships and other forms of experiential learning at startup companies.

Perceptions of Experiential Learning

As more and more students participate in experiential learning programs such as internships, it becomes more important for the academy – and potential employers – to understand what students are learning through these experiences. As mentioned earlier, many faculty members express discomfort in awarding academic credit for experiential learning because it is uncontrolled (compared to the classroom) and rarely involves clear learning objectives or pedagogy to ensure that appropriate learning occurs (Wilson, 1973). At the same time, an *Inside Higher Ed* survey of Chief Academic Officers in early 2016 indicated that 79% of respondents favored awarding credit to students for demonstrating competency (Jaschik & Lederman, 2016).

Employers would also benefit from a better understanding of what students learn through internships and co-ops and how it may differ by company or industry. Many established firms seek candidates with experience, ideally at other established firms (Barr & McNeilly, 2002; Thompson, 2014). This could be for many reasons; first, it can serve as a "screening" or signaling process that if another established company hired the student, then he or she is likely competent. However, few studies have been conducted to explore whether students who participate in internships perform better once they enter the workplace than their peers who did not. In fact, one study demonstrated that prior work experience was not a predictor of effective socialization into an organization, but more studies need to be conducted to better understand the

relationship between prior work experience and postgraduate work performance (Anakwe & Greenhaus, 2000). In addition, employers may not understand the types of tasks that students participate in at different types of companies or what skills they develop as a result.

Understanding what students experience during experiential learning contributes to the scholarly literature in several areas. First, it enhances the academy's understanding of what types of tasks students perform during internships. In addition, it explores how experiences differ by industry or company and/or other types of factors that impact the experience, including inherent student characteristics such as gender, domestic status, income level, and others. Finally, this study investigates what and how students learn as a result of their experiences at internships. These contributions may influence how faculty perceive and value experiential learning as part of a comprehensive higher education curriculum.

Based on interviews from an unpublished research project (Zehr, 2012), I developed several hypotheses about how internships and co-ops might vary in different company types or industries, focusing on how startups are different than other types of companies. I suspect that students who intern at startups take on significant responsibility compared to those who work at more established companies. In some cases, students functioned as entire departments for the startup for which they worked. In addition, founders emphasized the importance of the role that interns play in their companies; in one case, a founder said that he had an "army of interns" who were "running the company." He also mentioned one exceptional intern working on user interface who added significant value to the company and subsequently supervised two additional interns; that intern described an environment where he had considerable responsibility and learned more in one year at the company than through all of his coursework. This indicates to me that students who intern at startups are likely developing unique and strong skill sets that

help them to understand how to apply their technical skills and knowledge in a non-academic setting. In addition, they may also learn about how to effectively run a business and develop a number of soft skills which employers value highly. In fact, eight out of the top ten skills that employers seek in college graduates are non-technical skills, including "the ability to work well in teams" (#1), "the ability to write and speak well" (#3), "the ability to think clearly about complex problems" (#4), and "an understanding of the global context in which work is now done" (#6) (Association of American Colleges and Universities 2007).

Experiential Learning in the Academic Literature

Theories of learning developed to explain the connection between internships and co-ops and enhanced learning seem to agree that practice and engagement improve students' understanding of the more scientific and abstract concepts they learn in the classroom. By participating in experiential learning programs, students often gain insight as to what it means to practice in their field, thus impacting their career choice. For many students, an internship or co-op confirms their desire to pursue a career in a specific field or industry, and for others it results in self learning and hopefully steers them toward a career path that provides a better fit for their personality and goals. While all new graduates face a significant transition from college to the workplace, learning theories predict that those who participate in internships and co-ops will be better prepared to enter the workplace than those who do not (see for example Bandura, 1991; Kolb, Boyatzis, & Mainmelis, 2000; Craig & Sable, 2011).

A literature review revealed six main topics related to experiential learning. First, research studies document benefits or advantages to students, institutions, and/or employers who participate in experiential learning (Amant, 2003; Bennett, Eagle, Mousley, & Ali-Choudhury, 2008; English & Koeppen, 1993; Green, Graybeal, & Madison, 2011; Gault, Leach, & Duey,

2010; Wilson, 1981; Bonwell & Eison, 1991). Several studies focus on the benefits to students, such as improved academic performance, self-confidence, interpersonal relationships, and self-efficacy as well as higher retention rates compared to peers who did not participate in experiential learning programs (Blair & Millea, 2004; Blair, Millea, & Hammer, 2004; Myring, Bloom, & Shortridge, 2005; Avenoso & Totoro, 1994; Heller & Heinemann, 1987; Carrell & Rowe, 1993; Smith-Eggeman & Scott, 1994; Mueller, 1992; Fletcher, 1990). Second, some research focuses on issues and challenges related to internships and co-ops, such as logistical issues or situations where employers take advantage of students or expect too much from them (Heller & Heinemann, 1987; Abelman, 1986). Unpaid internships may require students to enroll in courses that require tuition, thus restricting access to some students who cannot afford to work without pay (Chatzky & McGrath, 2011; Lipka, 2008b; Lipka, 2010; Perlin, 2011; Yagoda, 2008). Third, several authors discuss the lack of respect from some faculty members for experiential learning because they do not see it as academic (Blake, 1983; Branton et al., 1990; Heinemann et al., 1988; Heinemann & De Falco, 1990; Wilson, 1973a; Wilson, 1973b). Further, faculty are typically not incentivized to participate or support experiential learning (English & Lewison, 1979). Fourth, and closely tied to faculty perceptions, is assessment of experiential learning, including both evaluating programs and whether they result in positive outcomes (Ricks, Van Gyn, Branton, Cut, Loken, & Ney, 1990; Wilson, 1980; Wilson, 1989). Fifth, another significant area of research involves grading of and awarding credit to student participants (Brewer, 1992; Ciofalo, 1989; Wilson, 1978). Some authors discussed pedagogies that incorporated experiential learning into an academic curriculum (Alm, 1996; Cowdin, 1978; Garrison, 1981; Sweitzer & King, 2008; Tooley, 1997). Finally, many articles provide guidelines related to how desired outcomes can be achieved (Eyler, 1993; Tooley, 1997; Van

Gyn, 1994). Many authors discussed the unstructured nature of problems outside the classroom which may be better addressed through experiential learning programs than traditional classroom instruction (Jonasson, Strobel, & Lee, 2006; Wilson, 1970; Wilson, Stull, & Vinsonhaler, 1996).

Deficiencies in the Literature

This brief literature review provided insight into the history and evolution of co-operative education and internship programs as well as the viewpoints of proponents and critics. Many studies focused on the impacts of experiential learning on student outcomes, such as subsequent GPA and interpersonal skill development. However, the review also revealed that there is limited research available related to what students actually do or learn through experiential learning programs. None of the studies looked at the types of tasks students work on during experiential learning sessions or the level of responsibility they have in their roles. Further, while some authors discussed the challenges of unpaid internships, no studies actually assessed whether unpaid internships created access issues for students from lower socioeconomic backgrounds. The literature did not address experiential learning programs at different types or sizes of firms, such as larger, established companies versus nonprofit organizations versus small to mid-size or startup companies, and it did not consider how student characteristics may influence what students experience. Additionally, few studies explored the work environment or conditions that students find at internships (Knemeyer & Murphy, 2001; Neef & Arata, 2007).

Another issue that surfaced relates to the types of studies that have been conducted on experiential learning programs. Most studies focused on quantitative methods to assess student performance in a number of areas and specifically comparing outcomes of those who participated in experiential learning to those who did not. But few studies delved into the student experience to really understand how they spent their time, what they learned as a result, whether

they were able to relate academic concepts to their experiences in the workplace, what impacted their learning, etc.

Significance of the Study

More and more employers are emphasizing the need for students to have some work experience to be competitive in the market for a full-time job, and many companies have increased their intern conversion rates, which measures the number of full-time positions they fill with college graduates who previously interned at the company (White, 2013). And, as mentioned earlier, as tuition increases, the ability to secure a good job after graduation has become more important to students and to their parents; the emphasis on return on investment in college tuition continues to grow in importance. As a result, more and more students will participate in experiential learning programs to enhance their marketability and relevant experience. This means that higher education institutions will need to address experiential learning and its role in the curriculum. Faculty and higher education leadership need to understand what students learn as a result of experiential learning programs; they will likely be challenged to assess the academic value of what is learned as experiential learning becomes a more critical aspect of the curriculum. This is especially true given the recent attention from the government on gainful employment of graduates and accurate reporting of placement statistics as well as several recent reports focusing on salary statistics for higher education graduates. In addition, some institutions are now awarding credit for life experiences, prior learning, and/or demonstration of competencies; similarly, these new developments are likely to become more common rather than less, increasing the importance of understanding what students learn through experiential learning programs. Further, this study contributes to the literature through exploration of the types of tasks that students perform during experiential learning, how

experiences differ in various work environments, and what factors impact student learning as a result. These are important questions in the quest to assess the value of experiential learning and to foster support from faculty.

Purpose Statement

This study addresses the need to better understand what types of responsibilities and tasks students take on in experiential learning programs – specifically business and engineering students at four-year institutions who participate in summer internships – at startups and established organizations and how their experience impacts what or how they learn. The focus on business and engineering students is due to the fact that these disciplines were among the first to employ experiential learning (Woolridge, 1966) and also because these two areas tend to have the greatest number of students interning in entrepreneurship (Zehr, 2012). An explanatory sequential mixed methods design was used, in which quantitative data collected in an initial phase was used to inform the development of a qualitative phase (Creswell, 2014). In this case, the results of a quantitative survey were used to develop questions for in-depth interviews with a subset of the sample that participated in the survey. The survey collected quantitative data to understand the types of responsibilities and tasks that students take on in internships at startups compared to established companies. Next, interviews with students were conducted to collect rich data about the types of experiences students had at startups versus established companies. Interviews focused on a number of psychosocial factors, such as the variability of tasks, the level of responsibility, interactions with coworkers and supervisors, etc. The reason for incorporating both quantitative and qualitative data was to understand what types of tasks and responsibilities students take on, as well as the frequency, at startups versus established firms, and to understand what and how students learn through these experiences.

Research Questions

I hypothesize that students who intern at startups take on different types of responsibilities and tasks than their counterparts at established firms. (An established firm will be defined as a company that does not meet the definition of a startup. This will be discussed further in the Methodology chapter.) I also anticipate that startups provide students with more responsibility when compared to established firms. Specifically, I seek to answer the following research questions (RQs):

- RQ1: What do students experience during internships?
    - RQ1a: What types of tasks and responsibilities are they given? How do they spend their time on these tasks and responsibilities?
    - RQ1b: In what ways and to what extent do students who intern at startups spend time on different types of tasks than those who intern at established companies, if at all?
    - RQ1c: In what ways and to what extent do inherent student characteristics such as gender, domestic status, income level, and other characteristics impact the internship experience, if at all?
- RQ2: What types of skills or knowledge do students who intern at startups learn or develop compared to those who intern at established companies?
    - RQ2a: How do learning opportunities at startups differ compared to those at established companies, if at all?
    - RQ2b: How do social interactions in the workplace differ at startups compared to established companies, if at all?
    - RQ2c: In what ways and to what extent does the level of direction that interns receive at startups differ from established companies, if at all?

Organization of the Dissertation

This chapter defined the problem and where gaps in the literature exist at a high level. Next, in Chapter 2, I provide a comprehensive literature review to present an overview of the research to date on experiential learning programs, including internships, co-operative education, and apprenticeships. Then I describe the methods that I used to better understand what students experience and learn through internships, and how those experiences compare at startups versus established companies in Chapter 3. Chapter 4 outlines the results of the quantitative and qualitative data, and finally, Chapter 5 discusses the results and provides implications for the academy and for companies, as well as provides some suggestions for further research.

CHAPTER 2

LITERATURE REVIEW

The following literature review is extensive and includes a number of topics, so it is divided into parts. While the review includes a number of studies outside of engineering, several of the studies focus on engineering because co-operative education is more common in technical fields than in nontechnical fields (such as liberal arts or business). Part I provides a brief historical review of experiential learning for context for the study, with a focus on engineering; Part II reviews apprenticeships outside and within the United States; Part III discusses literature concerning various aspects of internships and co-operative education; Part IV covers theories of learning; Part V examines work-based learning and vocational workforce preparation; and Part VI discusses entrepreneurship topics relevant to college students. Some of the studies are older, particularly related to co-operative education, because there was significant growth in co-operative education in the 1970s due to government funding that lasted for approximately ten years. During this time, much research was done on co-operative education. A map of the literature review is included in Appendix A, which provides a brief overview of the topics included in each part of the literature review and may assist in conveying the entire picture of the review. It begins with the historical context of experiential learning in engineering, which started with apprenticeships, and then discusses apprenticeships in other countries as well as the current state of apprenticeships in the US. Next, it explores topics in internships and cooperative education, which evolved as training moved from practice to the classroom. A section on theories of learning describes various theories related to experiential education and then moves into work-based learning. Finally, a section on entrepreneurship provides some context related

to the recent interest in startups and relates to the element in the study of considering company type and student experiences.

Part I: Historical Context of Experiential Learning in the Engineering Field

While the historical context is not necessarily directly related to the research questions, it does provide some background on the origins of learning through practice. In addition, it demonstrates that training for technical positions was originally conducted almost entirely in the workplace and involved very little classroom instruction. During the first half of the twentieth century, the emphasis moved to the classroom with some laboratory instruction, with relatively few exceptions (Seely, 1999). However, since the 1960s and 1970s, experiential learning again gained some ground and is now common throughout higher education.

Though a handful of institutions provided engineering training in the first half of the 19th century, engineering emerged as a recognized academic discipline as a result of the Morrill Act of 1862, by which the federal government granted land to states to sell in support of developing agricultural and mechanical training in land-grant institutions (Reynolds & Seely, 1993). Learning in a work environment is not a new concept in engineering education; in fact, before 1900, engineers learned their trades through a combination of classroom instruction and apprenticeship, or working directly with a more experienced engineer who taught them through practical hands-on training (Seely, 1999; Reynolds & Seely, 1993).

Near the beginning of the twentieth century, a significant shift occurred in which the emphasis transitioned from practical training to theory and design, but many programs retained some form of practical learning (Seely, 1999). This continued until the mid-1930s when a handful of influential European engineering professors migrated to the United States and joined prestigious universities, bringing with them the European influence on theory and science. As a

result, many leading engineering institutions adopted this approach and quickly integrated a science-based curriculum into their programs (Seely, 1999).

Around the same time, Professor Henry Schneider of the University of Cincinnati introduced the concept of co-operative education in 1906, which incorporated work into the curriculum. In this arrangement, students alternated time in the classroom and in a work environment in order to apply what they were learning as they studied (Heinemann, Wilson, Heller, & Craft, 1982). Co-operative education represented a hybrid between the apprenticeship form of education prior to 1900 and the evolving classroom-based curriculum. Several institutions followed, and by 1970 more than 65 institutions offered co-operative education programs, both within and outside the field of engineering (Heinemann et al., 1982). Co-operative education programs expanded rapidly in the 1970s as the government provided funding for existing and new programs (Heinemann et al., 1982). Today, both co-operative education and internships provide students with the opportunity to apply what they learn in the classroom, and many employers use these forms of experiential learning to recruit students and to retain them after graduation (Weinstein & Wilson, 1983). While internships are very common in a number of fields, the concept of co-operative education occurs more frequently in engineering and technical fields than in other areas or disciplines, most likely due to the earlier apprenticeship pedagogy.

Part II: Apprenticeships

As a major component of experiential learning in several countries in Europe and in Australia, apprenticeships represent a form of higher education that integrates workplace and classroom learning. The success of these types of programs elsewhere may provide insight into how experiential learning could be incorporated into the curriculum in other forms, such as

internships and co-ops. As mentioned in the section on historical context, apprenticeships represented the standard traditional form of training for engineers prior to the twentieth century (Seely, 1999). Literature in this section was selected to demonstrate the outcomes and challenges of apprenticeship models in other countries as well as the current trends. While apprenticeships are much less developed or pervasive in the United States, literature on the current state of apprenticeships is also included. This section is included because engineering training started as an apprenticeship model and this approach incorporates a different philosophy compared to a constructivist-based internship model. Apprenticeship is based on working closely with an expert that demonstrates how to perform the work to a novice, while constructivist based approaches tend to provide less direct instruction or guidance. However, it is also an example of integrating academic learning and practice.

Apprenticeships in countries outside the United States

Germany introduced the concept of apprenticeships, which subsequently spread to other countries in Europe, including Great Britain and France. Many scholars have looked at the structure of these apprenticeship systems and how they impact students and employers. Several studies focused on quality, costs, and why employers participate. Australia also incorporates apprenticeships into vocational training. Australian scholars have reviewed the outcomes of shorter-term apprenticeships and pre-apprenticeships. More recently, the focus in Germany and Great Britain has evolved toward encouraging apprentices to go on to higher education and to earn a degree. The following section provides an overview of the academic research on apprenticeships. Later sections highlight what the United States can learn from the research conclusions.

Germany. Apprenticeships originated in Germany where they were introduced as a "dual system" in which students split time between vocational learning in the classroom and engaging in practice in an industrial environment (Hamilton, 1987). Approximately 50-70% of German youth enter into apprenticeships after completing secondary schooling (Hamilton, 1987; Steedman, 1993). Apprentices typically earn about one third to one half the wages of unskilled laborers but the job prospects after completing an apprenticeship are typically very good (Harhoff & Kane, 1997; Steedman, 1993). In Germany, students are tracked at grade four to six to determine their future schooling and career path (Hamilton, 1987). Tracking is primarily based on academic performance in primary grades but career aspirations may be taken into account as well. Postsecondary options include university for the highest academic performers and vocational school or apprenticeship for those remaining.

The apprenticeship system in Germany is further divided into "high quality" and "low quality" opportunities (Euwals & Winkelmann, 2004). Higher quality apprenticeships require more training, a longer duration (many are longer than three years versus some that are two to three years or less), and pay higher wages than those at smaller companies. In many cases, apprenticeships at larger firms tend to be more desirable and of higher quality as these companies offer better facilities and the ability to invest more in the training of students (Hamilton, 1987). Some students who complete higher quality apprenticeships may go on to additional higher education at some point.

Unfortunately, retention of apprentices at German firms tends to be relatively low. While approximately 70% of apprentices accept a full-time offer with the company that they work for during school, as many as two thirds of them transition to another company within five years (Euwals & Winkelmann, 2004). The cost of training an apprentice is offset partially by paying

lower wages compared to the wage rate of unskilled workers, but most firms find that the overall investment results in a net cost. This raises the question as to why employers would continue to offer apprenticeships. However, despite the high turnover, firms benefit from lower recruiting costs and overall reduced training costs for new employees, as most students report that they used much of what they learned in school on the job and many of these skills are transferable (Steedman, 1993). Firms also appreciate the opportunity to evaluate apprentices before hiring them to ensure that their skills and interests match those needed by the firm. In addition, the most talented students who do not attend universities participate in the apprenticeship system, so firms that offer apprenticeships can choose from the most talented workers (Steedman, 1993). Though not directly related, only the best firms qualify to train apprentices; therefore, another reason that German firms participate in the apprenticeship system is that they are viewed by the public as a high quality firm (Hamilton, 1987).

United Kingdom. Apprenticeships are common in the United Kingdom as well; however, they are typically perceived as less rigorous by the public than apprenticeships in Germany (Bowers-Brown & Berry, 2005). Richard (2012) agrees that apprenticeships must be perceived as a respected and quality alternative to university.

> … we must ensure that apprenticeships are well regarded… [i]t is inappropriate for it to be viewed as a lower-status alternative to a purely academic path through university to adulthood… [b]ut we cannot expect apprenticeships to be well regarded if we do not make it clear what they stand for… [w]e must set a few clear standards (Richard, 2012, p. 5-6).

The United Kingdom administers the Modern Apprenticeship program and found that in 2002 only 40% of work-based learning (WBL) providers offered adequate opportunities (Maynard & Smith, 2004). While the number of adequate programs increased to 60% in 2003, a more recent article provided comments from a number of business leaders and many still called for an improvement in quality (Fuller & Unwin, 2012). Business thought leaders agreed that employers

must understand how to administer and implement a quality apprenticeship, that rigor is essential, that apprenticeships must be true jobs or roles that contribute to the organization, and that improvements in assessment are critical to the future of the program (Fuller & Unwin, 2012).

France. Since the Middle Ages, apprenticeships have been part of vocational training in France, although they were abolished for a period during the French Revolution until the nineteenth century (Hahn, 2012). They took on increased importance during the economic crisis of the 1970s, but unfortunately, "… this gave apprenticeship the image of a second hand educational system for low-level students who were not able to succeed in school" (Hahn, 2012, p. 77). However, the French managed to improve the image of apprenticeships by rapidly developing a structured education system, enabling learners to prepare for a professional degree (Hahn, 2012). Hahn (2012) used a writing device to ask first-year master's students in business to identify problems in their apprenticeships and work together to discuss solutions. He found that "… the apprentices were driven to build generic problems from their business experience and to try to link them to academic knowledge" (p. 83). He concluded that pedagogy can be used to help apprentices link their professional experience with academic knowledge from the classroom.

Apprenticeship completion in Australia. Scholars in Australia have focused on apprenticeship completion rates to determine what factors influence whether students persist. Bowman, Stanwick, and Blythe (2005) found that students who participated in shorter-term apprenticeships lasting two years or less were less likely to complete. They reviewed 35 studies conducted between 1990 and 2003; overall, the studies demonstrated that completion rates for shorter-term apprenticeships were approximately 50% compared to 75% for longer-term

programs. Based on their analysis, they identified four factors that impact the quality of apprenticeship outcomes:

- characteristics of apprentices, as apprentices who accept shorter-term programs tend to come from backgrounds where they had less rigorous academic preparation and limited to no work experience;
- actions of stakeholders, including elements such as how much support the apprentice's mentor(s) and coworkers provide;
- training issues and how well integrated the training is with classroom teaching; and
- contextual factors, such as the labor market structure, government incentives or support, legislative policies, etc. (Bowman et al., 2005).

Bowman et al. (2005) recommend that both employers and students undergo some type of orientation or training process to prepare them for an apprenticeship and that company hosts create a learning culture that enables and encourages apprentices to develop their skills and knowledge.

Karmel & Roberts (2012) analyzed data from the Australian population census and the National Apprentice and Trainee Collection. They found that employers who host less than 25 apprentices tend to see lower completion rates, with some as low as 50% or less. Unfortunately, the vast majority of apprentice providers are smaller companies who cannot feasibly host 25 apprentices; in fact, the majority of companies in the apprenticeship system host one apprentice. Other factors that influence completion include student characteristics, such as how committed the student is, and employer factors, such as how supportive the apprenticeship environment is to the student. Areas with greater trade employment concentrations and government employers typically enjoyed higher completion rates as well (Karmel & Roberts, 2012).

Pre-apprenticeships may also increase completion rates under some circumstances (Karmel & Oliver, 2011). "A pre-apprenticeship program is a training pathway that prepares an individual for entry into an Australian apprenticeship. It consists of off-the-job training with a Registered Training Organization and may contain an element of work experience with an employer" (Karmel & Oliver, 2011, p. 7). Based on data from the National Centre for Vocational Education Research (NCVER) Apprentice and Trainee Destination survey, Karmel & Oliver (2011) found that pre-apprenticeships influenced completion rates differently based on the industry, which may depend on the relevance of the pre-apprenticeship to the job. Overall, about 28% of apprentices in the survey reported that they completed a pre-apprenticeship. The data from the survey indicated that construction and food trade pre-apprenticeships tended to increase completion rates but rates actually decreased for automotive and hairdressing occupations. The authors concluded that pre-apprenticeships that related to the work in the industry provided students with a better understanding of what to expect in an apprenticeship (Karmel & Oliver, 2011).

Cumulative double qualifications and degree-level apprenticeships. Traditionally, apprentices who completed their program went on to a lifetime career in their field, often starting with their apprenticeship employer if the fit was good. However, in the last decade or so, both Germany and Great Britain have seen an evolution resulting in increased importance of academic success and attainment even for those who completed apprenticeships. Students who qualify for apprenticeships typically earn modest or good grades, but they face a lifetime of lower earnings compared to those with a degree from a university. "Formal education completed in youth maintains or gives rise to the social positions later reached in adulthood. Young people extend their time in the education sector in order to achieve the highest possible school-leaving

certificate for labour market entry or in due course to accumulate vocational qualifications" (Behrens, Pilz, & Greuling, 2008, p. 94). A growing number of students who qualify for the higher education entrance exam go on to earn "cumulative double qualifications" by completing an apprenticeship in the dual system and later attending university. Unfortunately for the lower performers, many employers prefer to hire apprentices who qualify for the exam, which limits the apprenticeship opportunities and later career opportunities for those who perform poorly academically (Behrens et al., 2008). Behrens et al. (2008) used a mixed methods approach to interview students who opted to participate in the dual system. They found that the students who went through the dual system before attending university tended to be more risk averse compared to those who enrolled at university directly, though completion of an apprenticeship did not guarantee success or better performance at university. These students often chose to study in a similar field to their apprenticeship, so their practical experience proved to be helpful. The interviews also revealed that parents exhibit significant influence on students' occupational aspirations and choices related to higher education (Behrens et al., 2008). Based on their findings, the authors suggested that prevocational career guidance be improved for both students and parents and that vocational schools and universities work more closely together to better serve students' needs.

Bowers-Brown and Berry (2005) conducted interviews with students currently participating in or who had completed apprenticeships at four institutions and came to similar conclusions. This research study provided some insight into the progress of the Building Pathways Project that began in 2000 in Great Britain; the project aimed to help students in apprenticeships understand their options in higher education after completing their programs. The researchers found that many of the students did not realize they could still choose to attend

university after their apprenticeship. Student responses varied; while some felt their knowledge of higher education opportunities was vague, others expressed concerns about higher education such as the cost of attending university or their ability to be successful there. Similar to the study in Germany, the researchers concluded that students need better information about their options after completing apprenticeships (Bowers-Brown & Berry, 2005). This will continue to be a priority in Great Britain as the government made a statement in 2006 that apprenticeships should prepare students for higher education as well as for the specified occupation (Shaw & McAndrew, 2008).

In addition to the increased emphasis on cumulative double qualifications, Great Britain recently announced an innovative new degree-level apprenticeship in space engineering (BBC News, 2014). The program intends to increase the supply of scientists and engineers in the space industry. It results from a partnership among Loughborough College, the University of Leicester, the National Space Academy, and the space industry. The two educational institutions and the National Space Academy provide academic instruction and companies in the space industry host apprentices. SEMTA (Science Engineering and Manufacturing Technologies Alliance) will validate the degree (Loughborough College, n.d.). Consistent with cumulative double qualifications, this degree-level apprenticeship program demonstrates the emphasis on the integration of the apprenticeship model and more traditional higher education, and could lead to more innovation within vocational training programs.

Summary. Apprenticeships provide a significant portion of the populations in many European countries and Australia with practical skills for a career in skilled trades. However, apprenticeships are still perceived as vocational training as opposed to higher education or university. Most vocational education providers and universities remain segregated, and while

apprenticeships are respected in these countries, they are still viewed as inferior to higher education and students who complete apprenticeships typically earn lower salaries throughout their career.

Apprenticeships in the United States

"In the United States, a formal system of 'registered apprenticeships' was created in 1937 by the National Apprenticeships Act and is overseen by the U.S. Department of Labor and the individual states" (Olinsky & Ayres, 2013, p. 1). Estimates of the number of apprenticeships currently offered in the U.S. range from around 350,000 (Olinsky & Ayres, 2013) to 500,000, though experts suspect that an additional 500,000 to one million companies offer apprenticeships through unsupervised programs not registered with the government (Gonzalez, 2011). Compared to European countries, the Department of Labor plays a much more administrative role rather than managing the program since the system is more decentralized (Gonzalez, 2011). The government provides limited funding with an annual budget of approximately $28 million (Gonzalez, 2011). Administration of apprenticeship programs frequently occurs through community colleges due to their affiliation with vocational education and the skilled trades.

Outcomes. In an average apprenticeship, a student completes 2,000 hours of work on the job and 133 hours of classroom training over the course of approximately four years (Olinsky & Ayres, 2013). Completion rates for apprenticeships in the U.S. typically hover around 70% compared to a 36% completion rate for a community college program (Gonzalez, 2011). Young people who complete apprenticeships earn average annual salaries of $45,000 with some earning as much as $65,000 (Oates & Ladd, 2009). Scholars estimate the increase in lifetime earnings for those who complete apprenticeships to be around $200,000 compared to $90,000 for those who complete a program at a community college (Gonzalez, 2011).

In addition to increased earnings, apprenticeships may also improve learning outcomes. Swail and Kampits (2004) reviewed data from a *Higher Education – Students Speak II* survey of more than 1,600 freshmen at eight four-year institutions in Spring 2002. They found that 69% of the students completed at least one work-based learning activity, ranging from a job shadow to an internship or apprenticeship to community service or other activities, and 31% engaged in two or more of these activities. "… 71% of respondents indicated that they learn better through hands-on projects and real-world application than through classroom or textbook instruction" (Swail & Kampits, 2004, p. 17). Unfortunately, despite the fact that a similar percentage expressed interest in participating in work-based learning activities during college, only 49% of them knew of opportunities offered by their institution (Swail & Kampits, 2004). The data also suggested that students who participated in work-based learning activities during high school reported slightly higher GPAs (3.08 compared to 2.99 for those who did not participate in work-based learning activities) and were more likely to persist. Retention rates at the institutions involved in the study ranged from 71% to 97% with an average of 82%, but students who completed work-based learning activities persisted at rates of 86% for one activity, 88% for two activities, and almost 92% for three or more activities (Swail & Kampits, 2004).

The St. Louis Bayless School District also observed improved academic performance from students who participated in apprenticeships. Students who completed an apprenticeship earned better grades and had better attendance than their classmates who did not participate. Before entering the apprentice program, the participating students' average grade point average was 1.7 at the end of their sophomore year. By their senior year, the average grade point average increased to 3.13 (Downs, 2014).

Challenges and barriers. Despite the benefits to students and employers, apprenticeships face a number of obstacles in the United States. Overall, both companies and students lack awareness of apprenticeship programs and their benefits, and many perceive them as limited to unionized positions or construction and manual labor trades. While traditionally focused on male-dominated fields, apprenticeships are now available in the fields of health care, advanced technology, and many technological areas, opening a number of opportunities that may appeal to a wider range of students (Olinsky & Ayres, 2013). A 2010 Manpower survey revealed another contributor to the problem: the perception of the skilled trades as a less desirable career path compared to other choices that require a college degree (Stoner, Bird, & Gaal, 2011). Similarly, a Harvard Graduate School of Education report (2011) agrees that "[f]or all its potential, CTE [career and technical education] is often demeaned and disparaged, especially among the nation's elites" (p. 28). The misconceptions and lack of awareness of apprenticeships result in low participation by both employers and students; in fact, apprenticeships in the U.S. have declined by 36% since 1998 (Kochan, Finegold, & Osterman, 2012).

Cost represents a significant issue for many companies as U.S. businesses have cut training budgets and are unwilling to invest the funds needed to host apprentices without a guarantee that the apprentice will join the company after completing the program (Downs, 2014). Further, many employers assume the costs to be more than they actually are. In other countries, such as Germany, the government subsidizes the apprenticeship system to incentivize companies to participate, which is unlikely in the United States given the current budget of $28 million (Gonzalez, 2011).

In addition, the U.S. does not have an apprenticeship credential system in place, so there is no standard set of skills that apprentices gain. Businesses and technical or community colleges typically do not work closely together on curriculum development or logistical factors to facilitate balancing work and classes, which further exacerbates the problem (Olinsky & Ayres, 2013). A Harvard Graduate School of Education report (2011) agrees, stating that "[c]ommunity college programs… need to be more closely connected to regional labor market demands, as well as to state and local workforce development systems" (p. 28). However, developing these relationships takes significant time and effort. "Vocational education is a complex training system as it requires collaboration between school and business…" (Hahn, 2012, p. 76). Hahn (2012) discusses the three dimensions of apprenticeship: institutional (balancing organization of training between school and firm), personal (constructing identity both personally and professionally), and pedagogical (facilitating a link between academic learning and practice experience in the workplace). Successfully incorporating each of these dimensions requires extensive interaction between faculty and the employer, which may or may not be feasible due to limited resources.

State leadership and promotion of apprenticeships. Despite the difficulties, some states have demonstrated leadership in promoting and supporting apprenticeships within their states. South Carolina, home to a number of German companies, emerged as a clear leader by implementing the Apprenticeship Carolina program in 2007 (Labi, 2012). The state legislature allocated $1 million to the South Carolina Technical College system to develop apprenticeship programs with local companies. It also funded grants of $1,000 per year for up to four years for each apprentice a company hired. The South Carolina Workforce Investment Board supplemented the state grants with $1 million to increase participation. The program has been

very successful, increasing apprenticeships in the state from 777 students in 90 apprenticeships in 2007 to 2,549 apprentices in 269 apprenticeships in 2010 (Gonzalez, 2011).

Other states have also implemented incentives to companies and students to participate in apprenticeships. Florida waives college fees for apprentices and Arkansas offers tax credits of up to $2,000 to students who work in apprenticeships. Connecticut assists employers by paying 50% of apprentice wages up to $4,800 (Gonzalez, 2011). Incentive programs such as these assist in promoting and educating about apprenticeship programs.

Summary: Apprenticeships. As demonstrated by the literature, apprenticeships have proven to be successful in several countries in Europe and in Australia. Integrating academic and work experiences may provide opportunities to improve students' ability to transfer what their knowledge and skills to the workplace.

Part III: Literature Related to Internships and Co-operative Education

Quite a bit of literature exists related to experiential learning, particularly co-operative education, but few studies involve qualitative methods to understand student experiences and the literature does not address the types of tasks or responsibilities that students assume through experiential learning. While many of the following studies may not directly link to the research questions, it is important to understand what research exists as well as the findings of studies conducted to date. Few studies focus on the tasks and responsibilities students are given through experiential learning; however, these studies do provide some context as to the outcomes of experiential learning, as well as faculty perceptions, which relate to the significance of the study. Studies were selected for inclusion based on an extensive review of the research available. Key themes were identified to summarize the work that has been done to date and to highlight the gaps that exist, including how students spend their time during experiential learning assignments.

Some studies do discuss the outcomes of experiential learning experiences, but they do not explore how the learning occurred.

The literature review revealed six main topics related to internships and co-operative education. First, research studies document benefits or advantages to students, institutions, and/or employers who participate in types of experiential learning. Second, some research focuses on issues and challenges related to internships and co-ops. Third, several authors discuss the lack of respect from many faculty members for experiential learning. Fourth, and closely tied to this topic is assessment of experiential learning, including both evaluating programs and whether they result in positive outcomes. Fifth, another significant area of research involves grading of and awarding credit to student participants. Finally, many articles provide guidelines related to how desired outcomes can be achieved. This portion of the literature review demonstrated that there is limited research focused on the student experience in internships and co-ops or the types of tasks or responsibilities in which students participate, which is the intent of this project. A more detailed review of the available literature on internships and co-ops follows organized by the key themes identified.

Advantages of internships and co-ops

Several studies documented the benefits of internships and co-ops to all parties involved, including students, employers, and institutions (Amant, 2003; Bennett, Eagle, Mousley, & Ali-Choudhury, 2008; English & Koeppen, 1993; Frenette, 2013). To maximize the effectiveness and related benefits of internship and co-op programs, Amant (2003) recommends bringing all three parties together prior to the work experience to ensure participants agree on learning goals and desired outcomes.

The majority of existing research focused on the numerous benefits to students. Several studies have found that students involved in experiential learning programs tend to perform better academically than those who do not participate and frequently secure higher salaries after graduation (Blair & Millea, 2004; Blair, Millea, & Hammer, 2004; Myring, Bloom, & Shortridge, 2005). Each of these studies used statistical analysis or quantitative survey analysis and involved samples from a single institution, with two of the three focused on the same institution. Myring et al. (2005) concluded the improvement in academic performance may be due to an increase in student motivation after observing what they learn in class applied in a work setting. Program retention also increased as a result of participation in work programs in some studies, particularly for students from working-class families, which tend to be the most difficult students to retain (Avenoso & Totoro, 1994; Heller & Heinemann, 1987). Heller and Heinemenn (1987) included seven two-year and four-year institutions in their study, but the study by Avenoso and Totoro involved students from four entering classes at a single institution.

Other benefits include positive effects on interpersonal and relationship development skills, self-confidence, and autonomy (Carrell & Rowe, 1993; Smith-Eggeman & Scott, 1994; Mueller, 1992). These three studies surveyed students; two of the three used existing instruments to measure the variable of interest, and each was based on a single institution. Fletcher (1990) reached a similar conclusion based on an extensive literature review; he found that students who participated in co-ops enhanced their self-esteem, which provided a number of additional related benefits. American students who took part in political internships with the Canadian government learned about different governmental practices, but also reduced their political ethnocentrism through the exposure to different governmental processes and ideals (Graves, 1980). While conducted outside engineering, this study implies that students develop

an understanding of the environment in which they participate, and indicates that engineering students could benefit by learning about the workplace through experiential learning programs. Graves analyzed student journals, which makes this study interesting due to its more qualitative nature compared to the survey methods of other studies. Service learning, another form of experiential learning that tends to demonstrate similar characteristics to internships and co-ops, helps students to understand connections between the classroom and the field or work environment when the area is relevant to coursework (Rehling, 2000). Brooks, Cornelius, Greenfield, and Joseph (1995) found that students who participated in internships demonstrated higher levels of self-concept crystallization, though they also found that internship experience did not affect decidedness, career self-efficacy, or vocational commitment. However, their study involved 165 seniors from a wide variety of majors at a single university who completed a Career Development Survey, and the sample was made up of students who visited the career services office, so the results may not be generalizable to all students even at the institution in the study. A study by Taylor (1988) partly supported the hypothesis that internships bring about greater vocational self-concept crystallization. Pratt and Pratt (2010) reported results from a National Commission for Co-operative Education study published in 2005 which found that work-integrated learning results in positive attitudes toward education and increases in career awareness, self-confidence, and likelihood to demonstrate good citizenship.

As a result of gaining work experience during college, students develop a better understanding of what employers seek in candidates and the types of characteristics they value (Green, Graybeal, & Madison, 2011). Gault, Leach, & Duey (2010) found that students with internship experience enhanced their job marketability even if they only performed at an average level. In another study, Gault, Redington, and Schlager (2000) looked at cohorts of students who

participated in internships compared to those who did not and found that the undergraduates with internship experience enjoyed significant career advantages, including a shorter time before receiving a job offer, higher compensation, and greater job satisfaction. Each of these three studies used survey methodology and was based on a single institution. Taylor (1988) used a quasi-experimental study including 32 interns and 35 matched students who did not have internships to demonstrate support that internship experience resulted in better employment opportunities after graduation. Knouse, Tanner, and Harris (1999) also found that students who participated in experiential learning were more likely to be employed at graduation compared to those who did not.

As demonstrated by surveys of professional engineers in Canada, work experience programs provide students with social capital and prepared them to take full advantage of mentorship opportunities, which was particularly true for women in male-dominated fields (Ingram, Bruning, & Mikawoz, 2009). Because many women either avoid in the first place or drop out of science, technology, engineering, and math (STEM) and other male-dominated fields, social capital represents an important benefit for women and minorities. Students with some work experience prior to graduation also find the transition to full-time employment easier, better understand the work environment, reflect constructively on issues or problems they encounter in the work environment, and demonstrate more commitment and adaptability (Bennett et al., 2008; English & Koeppen, 1993). The English & Koeppen (1993) study used statistical analysis, but the study by Bennett, et al. (2008) incorporated surveys of British firms. A separate longitudinal study by Kohn and Schooler (1978) employed maximum-likelihood confirmatory factor analysis and structural equation causal analysis to assess the relationship between substantive complexity of work (the degree that work requires cognitive ability and

judgment) and intellectual flexibility. They identified a reciprocal relationship between the two types of flexibility and found that intellectual flexibility strongly influences one's future career path.

One non-quantitative study that provided an interesting contrast to the quantitative research on the topic of internship benefits was conducted by Frenette (2013). She participated in an internship at two companies in the music industry and used her internship for observation and also interviewed 57 individuals over three years. She found that interns benefited from improved academic performance, soft skills, and competitiveness in their later job search. She also found that interns clarified their perception of their future career, learned about the music industry, and made relevant connections that may be of use in the future.

Wilson (1981) points out that internships and co-ops combine traditional academic learning with experiential learning, thus bringing together students, employers, and institutions. Experiential learning provides students with opportunities that the classroom cannot offer, enhancing their educational experience and teaching things that prove difficult to teach through a traditional academic experience (Westerberg & Wickersham, 2011). For example, students in an internship program in Washington, DC reported that the experience helped them to understand how political opinions are formed and why people often disagree on complex issues (Alex-Assensoh & Ryan, 2008). In another study, students from a four-year university joined with community college students in a team internship program through which they learned about engineering and technician roles, an outcome that can be difficult to accomplish in a classroom (Croissant, Ogden, & Ogden, 2000). Employers also perceive that students develop skills through experiential learning that they do not gain through the classroom. 40% of respondents to a Fortune 500 survey reported that the leadership and teamwork experience that students gained

through experiential learning could not be taught as effectively in the classroom (Cook, Parker, & Pettijohn, 2004).

In addition to the benefits students accrue from participation in work experience programs, multiple surveys indicate that students overwhelmingly report positive experiences. For example, 88% of Drexel graduates who participated in co-op experiences would do so again (Bonwell & Eison, 1991) and business students in another sample responded with more positive comments about their experiences than negative ones (Rothman, 2003).

Two survey studies found that employers and institutions benefit from experiential learning programs as well. Companies develop more realistic expectations of what employees are capable of, they can identify and "try out" interns when they are students to determine whether they want to hire them full-time, they can supplement their full-time workforce during busier times with temporary internship positions, and they can use work experience programs to evaluate training and supervisory programs (Bennett et al., 2008; English & Koeppen, 1993). Frenette (2013) used observation and qualitative interviews to reach similar findings; she found that employers use internships to leverage inexpensive labor and allow other employees to focus on other tasks, to provide a pipeline and training ground for potential future employees, and also to provide insight into what future workers value and to bring in new ideas. Higher education benefits from work experience programs by developing and enhancing relationships with industry, increasing their credibility with industry, reinforcing what is learned in the classroom, and using interactions with industry to inform curriculum (Bennett et al., 2008; English & Koeppen, 1993).

Multiple research studies indicate that students enjoy a number of benefits through participation in experiential learning programs, ranging from improvements in academic

performance to interpersonal relationships to retention. At the same time, employers and institutions also benefit from enhanced relationships and ultimately new graduates who are better prepared for the workplace. Taken together, these studies suggest that all parties realize benefits from participation in experiential learning; however, the research to date focuses on quantitative measures and does not delve into how experiential learning improves various aspects of student outcomes.

Concerns related to internships and co-ops

While internships and co-ops offer a number of benefits, some issues must be addressed to ensure that students, institutions, and employers each realize maximum benefit. One concern is that most research is based on student self-reports and does not control for external factors such as GPA or career goals (Taylor, 1988). Some studies have not been able to identify any significant differences in academic performance between students who participated in internships and those who did not (Knechel & Snowball, 1987). This may be perceived negatively in that some may feel that if internships and co-ops are supposed to enhance learning, academic performance should improve, though this particular study included only one institution. Also, some co-op students from a study of seven two-year and four-year institutions reported conflicts between academic and co-op requirements, making it difficult to remain on track in their academic program (Heller & Heinemann, 1987). In some cases, students also reported more dissatisfaction with their job over time, which could potentially be due in part to dealing with conflicting requirements.

Abelman (1986) voiced concerns that some employers had unrealistic expectations of students (particularly at nonprofits where resources are often limited), expecting them to work long hours and/or take on menial or administrative tasks that do not enhance their learning.

Based in the communications industry, this study found that employers sometimes do not respect interns, believing that those just entering the industry need to "pay their dues". Frenette (2013) found that interns in the music industry typically take on low status roles and are presumed relatively incapable so employees assume that it will take longer to teach an intern to perform a task than to do it themselves. While these studies did not include engineering or business students, it is possible that these students might also encounter some individuals in the workplace who treat them poorly and assign them menial or less desirable tasks. Successful experiential learning experiences depend on employers providing well prepared intern supervisors who have the necessary time to devote to providing a student with a positive and educational experience; in many cases, supervisors may benefit from training to ensure they grasp the differences in supervising full-time employees versus interns. In a survey of supervisors of library interns, subjects reported that the amount of time required to orient and supervise an intern was often prohibitive and may impact whether or not they took on future interns (Holst, 2001).

Unpaid internships represent another significant issue. Overall, nearly half of internships are unpaid positions, and many employers require students to enroll in a course during the internship, meaning students have to pay tuition even if the position is not paid (Chatzky & McGrath, 2011; Lipka, 2008b; Lipka, 2010; Perlin, 2011; Yagoda, 2008). Though many may assume that unpaid internships would be more common with nonprofit organizations, unpaid internships are roughly equally distributed between for-profit and nonprofit entities (Schwartz, 2013). Unpaid internships impact students from lower socio-economic backgrounds to a higher degree as they may not be able to afford to pay tuition to work in a position that is unpaid, thus increasing the divide between students from higher and lower economic backgrounds (Yagoda, 2008). While some institutions offer grants or stipends to improve access for students from

families with fewer resources, this practice does not promote equity in access for all students (Lipka, 2008b; Yagoda, 2008). Lipka (2008a) reported on the University of Dreams, a program that places students in internships, most of them unpaid, for a fee of $9,500; while the program offers continuing education credits, it is not accredited and most institutions do not accept them. In fact, institutions differ on policies related to credit for internship courses, with more elite institutions being more protective of awarding credit (Perlin, 2011). (Credit for internships will be discussed at length shortly.) Further, unpaid internships often consist of more clerical duties that provide fewer opportunities for relevant skill development (Chatzky & McGrath, 2011). This may be due to legal constraints that prohibit firms providing unpaid internships from benefiting as a result of the work students perform. Another concerning issue is that interns may not be eligible for any benefits, and sexual harassment and other employment policies may not apply to them, particularly in an unpaid internship (Schwartz, 2013). A 1997 survey of co-operative education coordinators at Canadian universities found that only 55% felt that students should be able to take volunteer (unpaid) co-op assignments (King, Pearson, & Young, 1997). Unfortunately, internships have become so important to students who are seeking employment after graduation that many are forced to accept any opportunity they can find, whether or not it is paid, as some employers use internship and co-op programs as their primary source for full-time employees (Weinstein & Wilson, 1983).

Freedman and Adam (1996) studied students in a technical writing course with those who interned in a governmental agency and found that when students transition from college to the workplace, they have to learn new skills and learn how to learn these new skills. Through observation and textual analysis of classroom or internship writing, the researchers found that despite the fact that the university course attempted to mimic the professional workplace, the

course still focused on the learners. The students attended sessions where they were taught what they needed to know prior to completing the assignment while those in the workplace had to learn as they went and based on the situation. Also, the students in the internships did not take advantage of opportunities to learn through attending meetings or from the comments they received from their supervisors to improve their writing.

While many agree that internships and co-ops provide numerous benefits, several issues remain to be resolved. The inconsistency in student experiences makes it difficult to evaluate what learning students gain from these experiences. Unpaid internships continue to present challenges in that many students are required to pay tuition in order to work, creating issues with access. Because internship experience can affect a student's marketability for future employment after graduation, access represents an important issue. Further, unpaid internships have recently become a "hot" issue again as some employers have been accused of taking advantage of uncompensated student labor.

Faculty perceptions of experiential learning

Several scholars argue that academic faculty are frequently unsupportive of experiential learning because they feel it does not represent legitimate academic learning (Blake, 1983; Branton et al., 1990; Heinemann et al., 1988; O'Neill, 2010; Wilson, 1973a; Wilson, 1973b). Faculty support represents a critical factor in gaining acceptance and respect for internships and co-ops as legitimate academic experiences, but several articles discussed potential barriers. Many internship and co-op programs are based on methodology that is not clearly articulated or underdeveloped and/or are not linked to relevant learning theories (Branton et al., 1990; Heinemann et al., 1988). In addition, most internship and co-op programs take place off-campus where faculty have little to no control over the learning environment, and they typically have

limited time to spend on interacting with employers to ensure that students achieve learning outcomes (Wilson, 1973b). Further, some faculty have voiced concern over a "slippery slope" in which accepting experiential learning as academic might lead to other non-traditional types of learning (i.e., life experiences) as legitimate academic learning (Wilson, 1973b).

Another barrier to faculty support is that encouraging student participation in experiential learning programs does not benefit faculty (English & Lewison, 1979). Faculty on the tenure track find themselves with very limited time available beyond what is required to meet the requirements to secure tenure. Supporting internships and co-ops is difficult to document as service for tenure and is perceived as "weak" on a resume or CV as tenured faculty members typically do not respect this type of service (English & Lewison, 1979). On the other hand, tenured faculty have few incentives to dedicate time to experiential learning programs that are not required and typically spend the majority of their available time on research (at research-intensive universities). As a result, faculty realize few benefits to participating in experiential learning, despite the fact that it takes significant time.

As noted previously, many academic faculty do not consider experiential learning as legitimate academic learning. Advocates of internships and co-operative education have offered suggestions about how faculty respect for such programs could be gained or improved. Heinemann & De Falco (1990) believed that co-operative educators need to spend more time establishing goals, developing learning theories to support experiential learning, and evaluating programs. In another article, Heinemann (1983) mentioned a need for pedagogy as not all internship and co-op experiences merit credit. Somerick (2001) agreed, stating that internships should be subject to appropriate standards and accountability to monitor students' progress throughout the experience and to ensure academic learning is taking place. Another

recommendation suggested that co-op administrators be required to have similar educational credentials to faculty as well as an understanding of the curriculum planning process (Wilson, Stull, & Vinsonhaler, 1996).

Faculty have expressed concerns related to co-operative education and internships since the early 1900s when the concept was introduced. A potential reason for this may be that administrators of experiential learning programs have traditionally been administrators rather than faculty members, meaning that faculty have not had administrative control of the programs. Regardless of the cause, co-ops and internships have not been widely accepted as having legitimate academic value or viewed to be as rigorous as classroom study.

Evaluation in experiential learning

Educational institutions initially evaluated co-operative education programs primarily based on whether or not students completed their assignments and employers continued to participate; since that time, many have incorporated published instruments, but they seldom measure exactly what the evaluator is seeking. Some adapt published evaluation instruments developed previously in other research studies or create their own, but overall, the sophistication of evaluation has evolved significantly over time (Wilson, 1989). Wilson (1980) advocated for evaluating co-operative education programs against agreed upon criteria. Most programs use internal criteria specific to the employer or institution, but there is a need for external criteria in the field (Wilson, 1980). Ricks, Van Gyn, Branton, Cut, Loken, & Ney (1990) conducted a meta-analysis of a number of studies and found that institutions vary widely in how they evaluate co-operative education programs, including objective, qualitative, and holistic approaches, and they also recommend evaluating the process. In one article, Brewer & Winston (2001) reported

that library internship administrators looked at placement, applicant pool qualities, work performance of interns, etc. when evaluating the program.

Awarding credit for internship and co-op experiences

Another important aspect of experiential learning programs is assessing student learning outcomes and awarding appropriate credit for work experience. Wilson (1978) reported on the results of a survey of institutions with co-operative education programs, finding that more institutions were awarding non-additive credit for work experience that counts toward a degree. Non-additive credit is defined as credit that counts toward graduation requirements. In contrast, other institutions award credit for experiential learning, but add the number of credit hours earned as a result of experiential learning to the total hours required for graduation, meaning there is a net gain of zero hours toward graduation requirements. In the survey, non-additive credit awarded for experiential learning ranged from zero to nine hours with an average of three. Jackson & Brewer (1992) conducted a more recent survey of more than 300 co-operative education institutions and found that 65% of public institutions and just over 80% of private institutions awarded credit. Institutions do receive some benefits from awarding credit in the form of tuition revenue, which can be applied to the costs of administering experiential learning programs (Wilson, 1973b).

In many institutions, credit is awarded for academic work rather than for "pure" work experience. Cowdin (1978) discussed a journalism internship program in which students worked directly with faculty members to complete additional work for credit. At one time, Marquette University offered a course for students with internships in the semester following the internship which required rigorous coursework to earn credit (Garrison, 1981). Sweitzer and King (2008) advocated for awarding credit to students who achieve specified learning outcomes as assessed

by faculty. Tooley (1997) suggested incorporating learning contracts for students as a basis for awarding credit; he also found that many institutions required students to participate in some sort of coursework for credit, including seminars, readings, presentations, etc. Another potential basis for credit could be academic journals, as suggested by Alm (1996), who used journals in a business course for students with internships.

Wolf (2008) argued that academic credit was only appropriate for students completing professional majors in which practical training is an element of the program. Ciofalo (1989) also advocated for awarding credit for academic work as opposed to experience; he noted that many faculty are concerned about transferring the responsibility of evaluating students to individuals external to the institution.

Today, institutions vary widely on whether they offer academic credit for internship and co-op experiences, and also how much is provided. For the most part, most institutions still require students to complete some academic work to receive credit, and credit is more commonly awarded for academic work than solely for the work experience.

Criteria affecting the outcomes of internship and co-op programs

Scholars suggest a variety of opportunities to create successful internship and co-op programs. Van Gyn (1994) suggested linking academic and work experiences both theoretically and practically through the curriculum; an example included incorporating increasing complexity in problem solving through the course of the experience. Eyler (1993) demonstrated concern that students fail to apply what they learn in the classroom to practical situations; Eyler's study found that students who participated in guided analysis and reflection were better able to see the connections between the academic concepts and the workplace. As mentioned earlier, Tooley (1997) advocated for incorporating a learning contract into experiential learning programs to

ensure students know the goals and objectives of the experience. Institutions may also benefit from partnering with employers to ensure they develop a structured program, to provide work that is meaningful to the student, and to provide ongoing feedback and supervision (Credit at work, 2008). Jaarsma, Muijtjens, Dolmans, Schuurmans, Van Beukelen, and Scherpbier (2009) ran a multiple regression on a survey of 80 students who participated in research internships and found that the work climate and the quality of the supervisor represented two important factors that impacted student learning and ultimate satisfaction with their experience. While research internships may differ from internships in professional environments, the findings should still be considered by those providing professional internships to students.

Experiential learning programs provide value to students because they can offer opportunities to engage in ways that typically do not work well in a classroom environment. Wilson (1970) considered co-operative education as non-scholastic work that changes student behavior in three areas: vocational development, personal development, and social responsibility. Further, Jonasson, Strobel, and Lee (2006) found that the problems encountered in the workplace typically are much less structured than those in the classroom. The researchers suggested incorporating complex problems into coursework and to incorporate problem-based learning in the classroom (Jonasson et al., 2006). Along similar lines, Wilson, Stull, and Vinsonhaler (1996) found that the skills and abilities that employers seek in candidates have changed over time and currently they value interpersonal skills such as communication, attitude, etc. highly, which are not often taught in the classroom but can be gained through work experience programs.

Another debate surrounds the workplace outcomes of experiential learning programs. Fletcher (1988) reported on a study of one institution that demonstrated students with higher GPAs did not necessarily perform better than their counterparts with lower GPAs based on

student job performance evaluations. On the other hand, Martin and Ncube (1995) used an observation method to find that students with higher GPAs were better able to transfer what they learned in the classroom or training to the work environment; they also found that "how to" courses may not help students to perform better. Another study used surveys to compare the attributes that students from one institution thought were valuable to employers with those that employers reported as valuable; in many cases, student perceptions were relatively accurate, but they tended to overestimate the value of a high GPA and language skills (Norwood & Henneberry, 2006). Unfortunately, because the results from different studies sometimes contradict each other, faculty concerns about what and how much students learn in experiential learning programs may be further exacerbated.

According to Weinstein & Wilson (1983), many employers use experiential learning programs primarily for recruitment and retention, making it important that students have access to these types of programs. In addition, the Institute for the Future at the University of Phoenix Research Institute (2011) interacted with job market experts during a workshop to discuss the types of skills needed to be successful in the workforce of the future. One recommendation to educational institutions at all levels was to include "experiential learning that gives prominence to soft skills – such as the ability to collaborate, work in groups, read social cues, and respond adaptively" (p. 13). These findings support the claim that higher education institutions need to consider providing experiential learning opportunities to all students.

Part IV: Theories of Learning

There are hundreds of theories of learning, and many researchers have developed different theories to explain how internship and co-op experiences contribute to learning. Scholars agree that experiential learning programs tend to be more successful when they are

based on a theory of learning for many reasons. Two of the most important are that faculty tend to be more receptive to experiential learning programs when they are based on relevant theories of learning, and that in most cases applying a theory of learning results in a better structured experience for students with clear goals and objectives (Branton, Van Gyn, Cutt, Loken, Ney, & Ricks, 1990). Overall, these theories support the concept that internships and co-ops provide students with opportunities to practice and apply what they learn in a real world environment. This literature was included because it relates to the research question about what students learn through experiential learning. While there are a number of theories of learning, this review includes theories that are related to learning through experience or practice versus in the traditional classroom environment.

Constructivist theories of learning

Several prominent educational theorists, including John Dewey, George Herbert Mead, Jean Piaget, and Lev Vygotsky, proposed that education involves experience, meaning, language, and thinking (Craig & Sable, 2011). Their ideas formed the basis for the constructivist theory of learning, which holds that humans derive knowledge from interactions with their environment, experiences, and ideas. Driver, Asoko, Leach, Mortimer, and Scott (1994) claim that the primary belief of constructivists is that "knowledge is not transmitted directly from one knower to another, but is actively built up by the learner" (p. 5). Some constructivists argue that learning occurs through isolated individualism and individual thinking, while others believe that learning is the result of social and environmental interaction in conjunction with individual cognitive processes (Sutinen, 2008).

Experiential learning represents one example of education through experience. Many students that return from an experiential learning session at a company report that their

experience in the workplace helped them to better understand the concepts they learned in class because they can see the implementation and results of the theories they learn. In addition, interns and co-ops benefit from experiencing a certain field or industry to determine if they would want to work in that area after graduation.

Experiential learning aligns well with most versions of constructivist theory. Dewey and Mead developed the concept of transactional constructivism, which claims that knowledge is constructed as a result of interaction with an environment. They argued that individuals interacted with their environment and with others in the environment so they aligned more closely with social constructivists than with individual constructivists. They agreed on a general framework for education in which an individual experiences a problem, interprets the problem, forms hypotheses about it, identifies one or more potential solutions, and then experiments with the solutions to solve the problem (Sutinen, 2008). Internships, co-operative education, and apprenticeships all provide students with an opportunity to experience a real world environment where they discover problems and attempt to solve them. This enables them to apply the concepts they learn in the classroom to interpret the problems they encounter, to use their academic knowledge to formulate hypotheses and solutions, and to experiment to find out what does or does not work. Also throughout the experience, they work with others in the organization to complete their tasks and observe how others behave in the workplace environment.

Factors affecting student learning in college

Astin (1999) argues that greater student involvement is integral to learning, where involvement is the amount of energy a student devotes to academic experiences. Involvement may be influenced by several factors, including living on campus, participating in an honors

program, student-faculty interaction, athletic involvement, or participation in student government. Experiential learning programs provide opportunities for students to apply what they learn; based on involvement theory, these programs may encourage students to actively engage in the learning process. Kuh (1995) considered both involvement theory and college impact theory, the latter focusing on the interactions that students experience with institutions. Based on interviews with 149 seniors at twelve institutions, he used these theories to assess which out-of-class activities contributed most to student learning and personal development and found that leadership and work experiences contributed to practical competence. This follows the concept of involvement theory that students who spend more time involved in work activities develop related skill sets in practical areas.

Bandura's (1991) theory of learning links self-efficacy (the belief that one is capable of a task) to cognitive development. He believed that an individual's perceived ability exerts more influence on behavior than inherent intellectual ability. This may also apply to experiential learning programs in that they offer students opportunities to practice their skills as a student when they are learning and are not expected to be proficient. Reviewing a number of studies focusing on co-operative education and self-esteem, Fletcher (1990) claimed that work experiences enhance self-esteem through the construct of self-efficacy achieved through enactive mastery (or doing the task through the co-op experience). In addition, studies agreed that co-ops influence other dimensions of self-esteem; co-op participants tend to see themselves as accepted and valued by others in the workplace, feel empowered by impacting the workplace, and grasp the level of control they have in the workplace (Fletcher, 1990).

Some researchers relate co-operative education to Gagne's learning theory, consisting of internal conditions (the learner's perspective and cognitive processes), external conditions (the

location, activities, and processes), and learning outcomes (skill development) (Branton, Van Gyn, Cutt, Loken, Ney, & Ricks, 1990; Ricks, Van Gyn, Branton, Cut, Loken, & Ney, 1990). Branton et al (1990) claim that co-op experiences require multidimensional learning, encompassing a cognitive component of generating knowledge that is enhanced by the incorporation of a non-classroom environment and an enhanced set of learning outcome possibilities. The fact that the cognitive component is essential contrasts with the perception held by many faculty members that experiential learning is not intellectual.

Heinemann and De Falco (1990) relate co-operative education to Dewey's theory of education that emphasizes a relationship between actual experience and education. In another article, Heinemann, De Falco, & Smelkinson (1992) reference Dewey's instrumentalism framework in which Dewey argued that careers represent an integral part of American society, so they should not be isolated from education. Dewey advocated for integrating vocational studies or experiences into the curriculum to avoid reinforcing the dualism of ideas and education. As a result, the authors recommend that co-operative education administrators encourage students to engage in reflective learning and higher order cognitive skills through experiential learning programs and activities (Heinemann et al., 1992). Saltmarsh (1992) also argued for an instrumental approach to relating theory and practice in education and in the work environment; in this way, students gain an understanding of the intellectual and social meaning of vocation.

Kolb's theory of experiential learning draws on the work of Dewey and others and characterizes experience as central to the learning process (Kolb, Boyatzis, & Mainemelis, 2000). Kolb's theory is distinct from cognitive and behavior learning theories in that it includes a holistic model of the learning process (Kolb et al., 2000). His team identified different learning styles based on preferences for action or thinking.

Choosing a career path

Some learning theories focus more on how an individual chooses a career path or trajectory. In Holland's theory of career choice, he predicted that person-environment congruence leads to satisfaction and retention. Correlational studies demonstrated that students who report congruence with their career aspirations also tend to experience greater job satisfaction, higher stability of career choice, greater academic performance, and greater persistence (Spokane, 1985). Experiential learning programs provide opportunities for students to explore potential career paths and to identify which aspects of an industry or field are congruent with their interests and goals. Puskunigis (2006) used Holland's theory in a quantitative study and found that students with different vocational personality types exhibited differences in values and self-esteem. On the other hand, Arnold (2004) reviewed research that found the link between congruence and job satisfaction or performance was weak. He argued that Holland's theory provided a good framework but would be strengthened by giving more consideration to personality and values and by more accurately measuring environmental factors as well as the construct of congruence.

Ginzberg claimed that career choice was the result of a developmental process that lasts in excess of ten years and permanently changes an individual, ultimately requiring compromise in interests, values, capabilities, and opportunities (Super, 1953). Super (1953) reviewed Ginzberg's theory and agreed that the career choice was a developmental process, but felt it would be strengthened if it allowed for individual differences, life stages, career patterns, etc. A longitudinal study by Wille and De Fruyt (2014) explored the relationship between personality and occupational characteristics. They found a reciprocal linkage in that personality shapes

occupational choices, but is also impacted by work experiences. This could potentially provide some explanation as to why work can play an important role in identity.

Environmental effects on learning

Some researchers argue that the norms and culture at organizations affect development-oriented learning (Karlsson, 2010). Adjusting to the culture often requires students to self-reflect as well as develop a tolerance for different perspectives and ideas. Karlsson (2010) interviewed supervisors at the Institute of Health Sciences at Kristianstad University and found that many of them were unable to or avoided articulating the knowledge and abilities required for the work. Karlsson's findings suggest that internship and co-op programs may require faculty involvement to ensure that learning outcomes are realized, as supervisors may not be prepared to identify or communicate the knowledge and skills needed to perform well in a position.

Hsu, van Eijck, and Roth (2010) conducted a study of high school students who participated in a science internship based on a cultural-historical activity theory framework. While the subjects were high school students, they would therefore also be prospective college students, so it may be helpful to consider the results since many co-operative education programs involve students in their first or second year of college. The researchers found that the students tended to focus on actions and individuals or small groups as opposed to larger communities; while they did not perceive the bigger picture, they did gain a better understanding of the workplace practices and culture (Hsu et al., 2010). Additional research may be needed to determine at what point a typical student develops an ability to look beyond his or her specific tasks to the organization and what he or she is contributing, or what might encourage a student to reflect on this.

Matthew, Taylor, and Ellis (2012) conducted a phenomenographic analysis of qualitative interviews and quantitative statistics of 22 veterinary students' experiences in clinic-based learning and veterinary professional practice. They found that academic performance in the final year was linked to the quality of experience in clinic-based learning and that conceptions of veterinary professional practice were related to concepts of clinic-based learning. Students exhibited different behaviors during veterinary professional practice, demonstrating multi-structural or relational understandings and formulaic or reflective approaches. The researchers found that relational understandings and reflective approaches typically occurred together, and these students appeared to gain the most from the experience and were more likely to engage in deep versus surface learning (Matthew et al., 2012). The study suggests that encouraging students to practice reflective thinking skills prior to experiential learning sessions may result in greater gains.

Learning in organizations

Billett (2002a) offers a framework for how people learn at work that emphasizes coparticipation and engagement. The level of engagement of an individual depends both on the workplace and how conducive it is to participation (which Billett terms "affordances") as well as the individual's motivation to participate. The term coparticipation implies that both parties must actively support participation – the workforce must provide opportunities to participate and the individual must take advantage of them. Three primary factors contribute to how individuals learn at work: taking part in everyday work activities, direct and deliberate guidance from others in the workplace (i.e. a supervisor or other coworkers), and indirect guidance from various other people in the workplace and/or the workplace environment itself (Billett, 2001, p. 64).

Unfortunately, when left to chance, the workplace environment may enable and reinforce undesirable activities, such as inappropriate or dangerous practices (Billett, 2002a). To address this concern, Billett (2001, 2002a, 2002b) advocates for a workplace pedagogy that encourages and reinforces appropriate and effective vocational practices. He discusses three levels of guided learning in the workplace: everyday participation which includes access to direct and indirect guidance, guided learning for work through activities such as coaching or mentoring, and guided learning for transfer or developing transferable knowledge or skills (Billett, 2001). The effectiveness of these levels of guidance depends on how accessible they are in the workplace, the number and quality of opportunities to participate in guided learning in the workplace, and whether and how individuals decide to participate in these opportunities (Billett, 2002a).

However, individuals in the workplace may not enjoy equal access to opportunities for guided learning. Some opportunities for development may depend on the individual's competence or performance in the workplace, but many other factors can also impact the opportunities available. Social factors can significantly influence an individual's opportunities for learning in the workplace, including affiliations or relationships with others in the workplace, how acceptable the individual is to coworkers, how willing others are to provide guidance, etc. (Billett, 2002a). Some individuals may face political challenges that act as barriers to learning effectively in the workplace. Further, individuals who do not demonstrate a willingness to contribute to the workplace or to the work group or team may find that others are unwilling to provide them with the guidance they need to be successful. Other important workplace factors include access to other workers, time available to practice or learn, an ability to participate in training, discussion groups, or other forms of knowledge sharing, encouragement from others, etc. (Billett, 2002b).

Similarly, an individual's motivation also affects his or her ability to learn vocational practices in the workplace. A number of factors determine motivation level, including self-motivation, interest in career advancement, self-assessment of performance, etc. (Billett, 2002b). Motivational factors can change over time based on the many factors that affect an individual's experiences both within and outside the workplace. This is consistent with Astin's and Kuh's theories about student involvement being integral to learning.

In addition to Billett's framework for learning in the workplace, other authors have studied workplace learning and linked the process to that of socialization into the workplace. Gherardi, Nicholini, and Odella (1998) claim that the learning process in the workplace requires both cognitive and social activity. They agree with Lave and Wenger (1991) and the argument that learning is not isolated from other workplace activities but occurs through everyday practices and that learning is not solely an individual activity but occurs through interacting with other people. When an individual enters a workplace, they encounter a "community of practice" (p. 278) which is represented by the members and how things are done within in the group. New employees must integrate into the group through "legitimate peripheral participation" (p. 279), or the process that they go through as they learn group practices and gain membership into the group (Gherardi et al., 1998). Gherardi et al. call "the pattern of learning opportunities available to newcomers in their encounter with a specific community inside a specific organization" (p. 280) a "situated curriculum" (p. 280). They compare the situated curriculum to a learning curriculum based on organization-specific practices and work activities. The situated curriculum also shares similar characteristics with Billet's affordances.

Illeris (2003) discusses three dimensions of learning; he agrees with Gherardi et al. that there are cognitive and social aspects of learning, but he also includes an emotional or

psychodynamic factor that influences an individual's feelings and motivation. Illeris (2003) identifies four mental schemes: cumulative or mechanical learning (learning a new concept); assimilative or additive learning (linking a new concept to existing concepts or knowledge); accommodative or transcendent learning (modifying an existing concept if the new concept does not fit with existing knowledge); and transformative or expansive learning (simultaneous restructuring of all three dimensions of learning). One of Illeris's main concerns is that teaching does not necessarily result in learning. In most situations, failure to learn results from either defense mechanisms that resist a new concept that does not fit with current knowledge or from resistance due to inability to understand or accept barriers (Illeris, 2003).

Integrating organizational learning and constructivist theories

Organizational learning theory and constructivism share a number of common themes. Both consider everyday activities as integral to learning, and both include a role for direct and indirect guidance from others, emphasizing the role of social interaction in learning. Billett (2002a) recognized the risk of learning poor practices by observing others, reiterating the important role of direct guidance through techniques like coaching and mentoring. Like constructivism, organizational learning theory recognizes both cognitive and social dimensions of learning, though some organizational learning theorists also account for a third dimension: emotional. Illeris's (2003) four mental schemes align well with the idea of developing a conceptual framework. He identified assimilation, or linking a new concept to an existing concept or knowledge, and accommodation, or modifying an existing concept to account for a new concept. In addition, he also discussed cumulative learning, which occurs when no related concept exists, and the new concept is accepted as is. Finally, he introduced the idea of

transformative learning, which impacts all three dimensions of learning (cognitive, social, and emotional).

Kerka (1997) claims that constructivism can guide structuring a learning environment to improve transfer of knowledge in a work-based setting. She reiterated the main tenets of constructivism, including that humans seek to make sense of their experiences and the environment by integrating new information into previous experiences or knowledge and/or by revisiting existing knowledge to account for new ideas that may conflict. Kerka distinguished between two types of knowledge, that which is procedural or how to do something (including skills or techniques) and that which is propositional (such as facts). But she felt that these two forms of knowledge did not result in learning without actually doing something. Further, knowledge is more likely to be solidified into an individual's conceptual framework if it is useful in the context of the situation. Here, Kerka referred to the idea of situated learning, a concept originally developed by Lave and Wenger (1991). Experiential learning provides an excellent example of situated learning in which students undertake actual work activities in a workplace under the guidance of more experienced coworkers such as a supervisor (although not limited to supervisors). Kerka (1997) also emphasized the importance of interactions with others in the learning process, which is consistent with social constructivism. Liu, Xu, and Weitz (2011) demonstrated through a study with a survey prior to and at the conclusion of internships that emotional sharing (open and honest communication) between students and supervisors had a positive relationship with learning and mentoring, while emotional masking (hiding emotional cures) was negatively related to learning.

Students tend to engage in deeper learning through experiential learning, resulting in longer-term and more accessible knowledge (Ambrose & Poklop, 2015). Experiential learning

facilitates practice and feedback, enabling students to construct their own knowledge and providing some guidance at the same time. Further, learning in the workplace promotes transfer, as Kerka (1997) claims, and can allow for self-directed learning when needed.

However, while situated learning and constructivism share some principles, there are some significant distinctions as well that may impact students' experiences in experiential learning. Hay and Barab (2009) compared and contrasted two summer camps for middle or high school students: Future Camp 97 (or FC), which was based on a constructivist approach, and Scientists Apprentice Camp 97 (SAC), which used a situated cognitivist approach. They videotaped student team sessions to analyze the interactions between the students in each camp. In FC, students worked in teams to create virtual worlds and the team that was the focus of the study created a model of the solar system. In SAC, students worked in teams in a laboratory environment with scientists to participate in treatment preparation, data collection, and data analysis. The two camps shared several similarities: first, both included students working in teams on projects in a larger classroom, forming two communities (the team and the class); second, both camps were driven by the learners; third, both camps included roles for teachers and students, though SAC also incorporated scientists as "experts"; and finally, both provided students with an opportunity to present at the conclusion of the camp.

At the same time, there were also a number of distinctions between the camps. In FC, students were assigned mentors that could provide assistance in addition to the teachers, but the students directed the activities. They iterated as they created the models, and their activities demonstrated emergent thinking and prototyping, and they sometimes backtracked or found themselves on the wrong path. The teachers played a very peripheral role and did not give direct guidance unless asked by students. At the end of the camp, the students' final products varied

significantly in quality, were typically not to scale, and some projects were incomplete. However, the students demonstrated significant gains in learning and used creativity in their work.

SAC used an apprenticeship model in which the students worked with scientists, who participated as experts. Students replicated the practices they learned from the scientists in order to prepare specimens and to collect and analyze data. Teachers in SAC played a more active role in planning activities and providing direction to ensure that they maximized the time they had with the scientists, which was limited to about two hours of each day. While SAC students improved their understanding of the scientific method, they did not demonstrate an ability to apply it even after the camp concluded. Students in SAC learned by doing but mostly by mimicking the scientists and accepting what they were told rather than exploring creatively.

The researchers anticipated that SAC students would not feel ownership over the projects like FC students since they did not direct activities, but were surprised to find how engaged SAC students were despite the prescribed structure of the camp and the activities. The projects in SAC tended to be more consistently successful since the activities were more structured, but the students still spoke to each other excitedly about their work. The study discusses both strengths and weaknesses of each approach, but tends to favor the constructivist approach; however, while the camp activities represented a form of experiential learning, this study may or may not apply to an internship or co-operative education environment in which a student is working more independently. Typically, students are assigned tasks in internships, so that might resemble SAC more, but they may be working on their own or with others and directing activities, more like FC.

Nguyen (2006) discussed social constructivism in the context of becoming an expert and distinguished between a novice expert and an experienced expert. He claimed that constructing "expertness" was the result of a holistic process in which an individual begins to identify as an expert and becomes more confident in his or her expertise. In Nguyen's view, developing expertness encompasses more than just mastering knowledge, but involves taking on the identity of an expert and behaving as would be expected of an expert in social situations.

In order to better understand how new professionals learn to behave as experts, Nguyen (2006) analyzed data from 74 patient consultations by three inexperienced pharmacists. The article focuses on one of the individuals (which he calls "Jim") and his interactions with patients over the course of his first few weeks in an internship environment. Initially, Jim appeared uncomfortable in his role as expert and it seemed that he was not assertive when contradicting what patients claimed doctors told them, and did not demonstrate confidence. However, over time, Jim felt more comfortable in his role and could interact more casually with patients; he also appeared to feel more confident in sharing his expertise even if it did not align with the orders of the doctor. Nguyen found that Jim started to develop relationships through his interactions whereas he initially focused on sharing his expertise and remained aloof with patients. While Nguyen focused more on Jim's interpersonal skills, his ability to practice in a real world setting helped him to make sense of his role and of what it meant to be an expert. Nguyen's description of the process of becoming an expert provides another example of constructing knowledge through behavior, and serves as a good example of how internships represent opportunities for students to practice and develop from a novice to an experienced expert; this process would be difficult to achieve in a classroom environment, particularly in a similar timeframe.

Pedagogy of experiential learning

Unfortunately, it remains difficult to assess what students learn from experiential learning. While most agree experiential learning provides students with opportunities to apply what they have learned in the classroom and to practice it in the real world, there is often a disconnect between the formal curriculum and the experiential co-curriculum (Ambrose & Poklop, 2015). The Association of American Colleges and Universities (2015) recently conducted an employer survey and found that respondents indicated that college graduates are unprepared to achieve learning outcomes. In addition, just under 90% of the respondents said they would like to see students complete at least one significant project that requires students to apply their learning, with experiential learning as the most common suggestion.

Ambrose and Poklop (2015) designed a phenomenological study to learn more about what students learn through co-operative education. They interviewed 104 college seniors using a stratified purposeful sample, asking them to share stories about their co-op experience (rather than asking them specific questions). Based on students' stories, they concluded that co-op experiences demonstrated to students the value and relevance of what they learned in the classroom and also supplemented the curriculum by enabling students to develop as self-directed learners. Specifically, student responses suggested that they applied their classroom knowledge to gain a deeper understanding of the concepts, they gained new knowledge in addition to what they learned in the classroom, and they developed an ability to reflect on their learning. On the other hand, they also found that students were less successful in integrating and articulating what they learned through the co-op in the classroom. They believed that they gained new knowledge, but were not able to effectively or fully describe it. Because the study focused on a relatively small number of students at one institution, the results may or may not be applicable to other

programs. In addition, Northeastern University (the institution where the study was conducted) is an institution that highly and vocally values experiential learning, and that may not be the case at other institutions, particularly research universities where the emphasis tends to be on publishing and advancement in the field.

Eischen (2009) conducted multi-case qualitative interviews involving students who had interned using the method of narrative knowing, or examining narratives of experiences. She found that what students learned through internships differed from what they learned in the classroom, and while they could often identify connections, it was challenging for students to articulate the connections given that the work and classroom environments were so different. Based on her study, Eischen identified a number of barriers to constructivist learning in experiential learning which may limit what students learn as a result. First, many workplaces do not allow students "freedom to roam" as they must focus on assigned tasks, which may or may not promote learning or directly relate to the classroom. In addition, the workplace may or may not provide an affirmative environment that encourages students to ask questions or provides the type of guidance needed to construct knowledge. Student experiences demonstrated that in some cases they did not have access to opportunities to spend time in more than one area or they did not receive adequate attention from a supervisor or experienced coworkers. A small number of students also reported that they felt discomfort in the work environment due to their gender or race, making them feel unaccepted or isolated from others, which resulted in limited learning opportunities. Eischen's method would likely produce rich data from the stories that students told, but this type of qualitative data gathering can sometimes be difficult to generalize, particularly given that her study focused on twenty students or alumni at a single institution and in a specific field (in this case, information technology).

However, several researchers have studied how instructors can create conducive learning environments and how pedagogy can improve learning outcomes of experiential learning programs. Cakir (2008) discussed three influential constructivist theorists: Piaget, Ausubel, and Vygotsky. Piaget believed that individuals go through stages of cognitive development in which their ability to interpret new experiences and fit them into existing mental schemas or modify schemas to fit new information develops. Ausubel claimed that prior knowledge and cognitive schemata influenced learning. Vygotsky's "zone of proximal development" determined the individual's ability to learn and felt language was a critical factor in learning. A fourth constructivist, Von Glasersfeld, built on the ideas of these theorists and discussed the importance of social interaction in constructing knowledge; he argued that we negotiate meanings in co-operation with others. Because each individual constructs his or her own knowledge, we each bring our own biases.

For the most part, the value of out-of-class learning experiences has been presumed. Thiry, Laursen, and Hunter (2011) explored the outcomes of out-of-class learning experiences by interviewing 62 students graduating with science, technology, engineering, or math (STEM) degrees in four liberal arts colleges. They identified four key characteristics of high quality out-of-class experiences: adequate mentoring, supervision, and/or guidance by more knowledgeable professionals or peers; engagement in authentic tasks that made a contribution to the appropriate community of practice; sense of ownership over a realistic and meaningful project; and an opportunity to think creatively and to work independently.

In order to encourage students to make connections between the classroom and the real world, Cakir (2008) identified two sources of knowledge: formal instruction (i.e. the classroom) and environmental interaction (i.e. the workplace in the case of experiential learning). Students

will be more likely to construct knowledge when they understand it and find it accessible, when it is plausible to them, and when it is useful to them. Hands on activities, including experiential learning, facilitate building conceptual frameworks through assimilation or accommodation. Cakir also identified disequilibrium as a potential response to encountering new concepts, which results in surprise at an unanticipated outcome.

A study by Knouse and Fontenot (2008) concluded that requiring students to write in a journal to reflect on their experiences may enhance their learning outcomes. Smith, Clegg, Lawrence, and Todd (2007) conducted a case study involving in-depth interviews with staff and students who were part of a career development program and found that students' reactions to reflection differed significantly. Their study incorporated both reflection-in-action (during the experience) and reflection-on-action (thinking generally and broadly about experiences). Some students enjoyed the reflection activities while others struggled, and students' ability to link what they experienced in their internship to what they learned in the classroom also varied.

Craig and Sable (2011) wrote about a constructivist-based learning framework to foster moral development in recreation students through an internship experience. Because constructivists believe that students construct knowledge themselves, the internship program provided opportunities for moral development that were not present in a classroom. The instructors used the Integrated Learning Framework (ILF) to guide pedagogy. The framework is based on four constructivist principles: that meaning is constructed, that it is important for educators to understand how students make meaning, that learning is a product of interaction with the environment, and that knowledge is constructed through the processes of assimilation and accommodation in conjunction with affective discourse. The framework design is based on seven principles (Craig & Sable, 2011, p. 4-6):

- contextualized learning and development
- complex new experiences
- guided inquiry, which includes self-assessment and reflection
- balance between experience and inquiry
- support and challenge to encourage accommodation
- continuity
- reflective coaching

Primary goals of the framework included facilitating students' better understanding of themselves and development of reflective judgment. While this study focused on recreation students and moral development, it suggests that the principles of constructivism can be employed to develop non-technical as well as technical skills.

One critical factor in developing effective internship experiences for students is linking what happens in the workplace with what is being taught in the classroom. This requires an effective partnership between the instructor and the employer (David & Snyder, 2009). David and Snyder (2009) found that secondary students who participated in work-based learning (similar to an apprenticeship or co-operative education) demonstrated greater commitment to their coursework after their work experience and they were able to identify connections between the work and classroom environments. Similarly, Misko (2001) studied vocational education and training (VET) programs and structured workplace learning (SWL) in Australia. These programs include both on- and off-the-job training based on learning outcomes agreed on between employers and instructors. Further, off-the-job instructors were selected for their qualifications and related experience; this enables them to more effectively link classroom instruction with what happens on the job. As a result, they can facilitate students' construction

of knowledge regarding what they experience in both the workplace and the classroom. In another example, Harcharik (1993) wrote about a course at California State Polytechnic Institute in Pomona in which students received credit for work. The pedagogy included regular meetings between each student and the course coordinator, development of learning objectives, group sessions with groups of students to share their experiences, meetings between the employer and the coordinator, and logs written by the students to foster and encourage self-evaluation and reflection. Students unable to attend class were assigned other work, including spending time with another student on the job or interviewing another student and then writing a reflective paper on their observations and reflections as a result of the experience. The course was developed based on the theoretical work of Piaget with the intent of providing students with opportunities to experience the workplace and construct meaning from it with some guidance from the course instructor. While these three articles do not specifically mention constructivism, they follow the principle of enabling students to experience what they are studying and construct knowledge fro

m it, with some assistance by a trained educator, though students typically drive the learning. To better prime students for learning in internships, Narayanan, Olk, and Fukami (2010) encouraged institutions to encourage faculty and advisors to prepare students for internship experiences through functional knowledge.

Kerka (1997) wrote about the relationship between experiential learning, constructivism, situated learning, and cognitive apprenticeship. She discussed the challenges that students often face in the workplace when they encounter problems that are ill-defined and complicated compared to those they see in the classroom. Participation in activities in the workplace encourages students to employ higher-order thinking, both procedurally (how) and

propositionally (what or facts) and encourages construction of knowledge from experience. Kerka suggested modeling as a potential pedagogical method to assist students in learning to deal with ambiguous and complex problems.

Based on the constructivist perspective, Kerka (1997) identified several strengths and weaknesses of the workplace as a learning environment. Experiential learning can positively impact knowledge construction through authentic and goal-oriented activities, access to guidance (both direct, such as from a supervisor or experienced coworker, or indirect, such as in observing others), consistent daily involvement in problem solving, and intrinsic reinforcement (p. 3-4). However, she also identified some challenges, including the fact that students may observe inappropriate behaviors and construct knowledge as a result, there can be a lack of challenging authentic activities (students may be assigned to more menial tasks and not have an opportunity to participate in more developmental activities), and supervisors and coworkers often have limited time to spend with students because they also have to complete their own work (p. 4). One other limitation that Kerka does not mention is that many companies do not train individuals who supervise interns; this can also affect the student's experience and opportunities to engage in developmental activities, as not all supervisors are prepared to serve as effective mentors or coaches (Zehr, 2012).

Summary: Theories of learning

Overall, the theories of learning developed to explain the connection between internships and co-ops and enhanced learning seem to agree that practice and engagement improves students' understanding of the scientific, and often abstract, concepts they learn in the classroom. By participating in experiential learning programs, students often gain insight as to what it means to practice in their field of engineering, thus impacting their career choice. For many students,

an internship or co-op confirms their desire to pursue a career in a specific field or industry, and for others it results in self learning and hopefully steers them toward a career path that provides a better fit for their personality and goals. While all new graduates face a significant transition from college to the workplace, learning theories predict that those who participate in internships and co-ops will be better prepared to enter the workplace than those who do not. In addition, students who participate in experiential learning are introduced to learning in the workplace through the practice of interacting with others and applying academic concepts to a real world, thus enhancing the learning that occurs in the theoretical classroom environment.

Part V: Work-based Learning and Vocational Preparation

Though this study focuses on four-year higher education institutions, work-based learning programs in community colleges and technical schools both within and outside the United States also provide insights into effectively preparing students for the workplace and practices that link classroom learning with learning that occurs in the workplace. Literature in this section was selected to demonstrate practices that have been used to link classroom and workplace-based learning, though some strategies met with greater success than others.

Work-based learning (WBL) is another form of experiential learning more commonly associated with vocational education or training. According to Burke, Marks-Maran, Ooms, Webb, and Co-oper (2009), "Brennan and Little (1996) described WBL as learning for work, at work and through work, and that can be formal or informal and is gained through the experience of undertaking work tasks" (p. 17). Dewey, Piaget, and Vygotsky provided the foundations for WBL through their constructivist framework; Dewey and Piaget both felt strongly that learning required an experiential component, while Vygotsky focused on social constructivism, claiming that the cognitive aspect of learning cannot be separated from the activity. Vygotsky's work led

to Lave and Wenger's (1991) communities of practice and situated learning theory, which was described in the previous section (Burke et al., 2009). Chisholm, Harris, Northwood, and Johrendt (2009) discussed the experiential learning theories developed by Raelin, Dewey, and Itin. Specifically, they discussed Raelin's (2000) single, double, and triple loop learning. Raelin believed that classroom learning tended to focus on single loop learning, which requires little thought or reflection, but WBL encourages more double and triple loop learning which require continuous and in-depth reflection and analysis. While many institutions in the United Kingdom incorporate WBL into their curricula, Chisholm et al. (2009) observed that each institution tends to develop its own approach, and argued that developing a common approach to WBL would provide substantial benefit.

Brodie and Irving (2007) concurred with Vygotsky's views. They studied WBL at a higher education institution in the United Kingdom that offered WBL for more than twenty years. They found that the institution followed three core principles to provide effective WBL. First, they focused on raising student awareness of what learning is and effective means of learning. Second, they encouraged students to engage in critical reflection to identify what they learned. Finally, students consider their capabilities and what they still need to learn. The institution developed a WBL pedagogy that involved working with the student to develop a learning plan in concert with the employer to ensure that objectives were met (Brodie & Irving, 2007).

Burke et al. (2009) studied vocational programs at another United Kingdom institution. Based on quantitative surveys of 152 students and 11 course directors as well as qualitative interviews and focus groups of 114 students and 6 course directors, they found that student perceptions of WLB varied significantly, likely due to the fact that each experience was

different. In some cases, students felt their work was very relevant to their career goals, while other students expressed a desire to have more time or to work at different sites. The researchers also found that both students and directors tended to think of WBL as "placements" and focused on the work aspect rather than the learning piece of the experience. As a result, Burke et al. (2009) recommended that institutions ensure that the WBL pedagogy is transparent to all parties involved.

According to Nixon, Smith, Stafford, and Camm (2006), "research suggests that over 70% of learning comes from experiences, either planned or unplanned, thus emphasizing the need to 'learn from real work'" (p. 18). Based on a research study that involved several case studies of WBL programs, they found that effective practices included developing a process-driven (as opposed to content-driven) curriculum, ensuring the curriculum is student-centered, and agreeing on outcomes at the outset through a contract between the student, the institution, and the employer. Unfortunately, the report provides little context about how the case studies were conducted. Hughes and Moore (1999) also spent significant time observing pedagogical strategies in a study that involved observations and interviews of fourteen school-to-work sites over three years. They identified a number of strategies used to support student learning: providing an opportunity for the student to observe the task before it is assigned, coaching the student while he or she performs the task, training the student while he/she is performing the task, providing feedback after the student has completed the task, encouraging students to figure out how to perform a task working together, and assigning the task with no instruction.

Another study that involved observation of thirty work sites over three years, Moore (1981) found examples of the traditional classroom initiation-reply-evaluation (IRE) pedagogy in the work sites but in an experiential sense where a supervisor or more seasoned employee

worked with students by outlining a task, the student undertook the task, and then the employee observed and provided feedback. Moore was actually surprised to find that the work sites in this case were more like classroom environments than he expected. He observed few distinct pedagogical strategies, but attributed the lack of pedagogy to situational factors, as employees had to get their work done and deal with problems or issues that surfaced. Moore (1981) did note two dimensions of tasks: logical-technical features, which required physical or cognitive skills, and pragmatic features, or how central the task was to the organization, its status, etc.

Evaluating WBL often presents challenges. Kim (2011) conducted an evaluation of a WBL program at a community college. Kim interviewed four students, two full-time staff members, and four supervisors of students in the program. The sampling method used to select the students involved staff members who could identify two students who exhibited positive attitudes toward the program and were successful, and two who exhibited negative attitudes and were not as successful. Kim found that overall, all of those interviewed tended to agree that the program was meeting its objectives. Due to the limited number of interviews, it is possible that not all program participants would agree with his conclusions. However, two areas were identified for further improvement. First, students felt that it would be helpful to gain experience in more than one workplace, although employers disagreed, and that they would benefit from some coursework prior to the work experience. Second, students felt that enhanced student services would also improve the program. They reported that some students struggled with finances because pay was relatively low and that it would be helpful if faculty visited the sites more often to improve student-employer matching.

One potential opportunity to enhance WBL could be to convene groups of learners who are taking part in the program. Siebert, Mills, and Tuff (2009) conducted a qualitative study that

involved interviews and a focus group with sixteen students and seven graduates who participated in a work based learning group at a Scottish university. They found that students learned from their work group as well as through their workplace, as they were able to transfer the learning from one community of practice (in the workplace) to another (the group). The students learned from the experiences of others. Siebert et al. (2009) did identify some drawbacks to the group format; because students did not progress at the same rate, they sometimes felt that they were not doing well compared to their peers.

Finally, some groups encourage higher education institutions to collaborate more closely with businesses to increase WBL opportunities and to improve student experiences in WBL. The Illinois Board of Higher Education (1991) published a report from a committee formed around 1990 calling for higher education institutions to work with employers to ensure that students graduate with the ability to apply the skills they learn. In 2007, the Association of Career and Technical Education (ACTE) came to similar conclusions, claiming that higher education institutions needed to work harder to teach students skills with labor market value, so it appears more needs to be done. ACTE (2007) also pushed for higher education to consider competencies as a basis for credentials rather than class time.

Part VI: Entrepreneurship in the United States and Youth Interest

Entrepreneurship represents a long standing American value. Over the past couple of decades, particularly with the dot.com startup boom in the late 1990s and the recession that started in 2008, entrepreneurship has grown in popularity as a viable career path, with many students expressing interest in starting their own business or joining a smaller business. In fact, over 99% of American businesses are considered small businesses and account for half of the US workforce and almost half of wages (Shinnar, Pruett, & Toney, 2009). As a result, more students

seek internship opportunities at small companies, including startups. There is little extant research as the incidence of students interning at startups remains understudied, but some research has been conducted on youth and entrepreneurship, which is covered in the paragraphs that follow. This research relates to the increased number of startups and small businesses and the growing interest from students to participate in experiential learning opportunities at startups or smaller businesses.

According to the Kauffman Index of Entrepreneurial Activity (2013), entrepreneurial activity declined over the previous year and settled at a level just 0.3% above pre-recessionary levels (prior to 2008). In addition, the largest decrease in activity was among the youngest age group, ages 20-34 (Kauffman Foundation, 2013).

The Kauffman Foundation's Young Entrepreneurs Factsheet (2010) states that 40% of those ages 8-24 would like to start their own business at some point. Primary reasons for this include earning money, building something for the future, being one's own boss, using skills and abilities, etc. (Kauffman, 2010a) Those who did start a business or know a business owner tend to be more likely to report that they feel their education provided the knowledge they needed to do so (Kauffman, 2010a). This may be due to the fact that unemployment rates for underrepresented demographics are significantly higher than the average population and therefore the opportunity to start a business and contribute to growth may be more important to underrepresented groups (Kauffman, 2010a).

In 2011, the Kauffman Foundation Young Invincibles Policy Brief reported that 54% of young people were interested in starting their own business. The figures were slightly higher for young Latinos and African Americans. However, 90% claim they would wait as a result of the poor economic conditions (Kauffman, 2011).

While 40-54% of young people claim they are interested in starting a business, less than one third agree that entrepreneurship is more desirable than other career opportunities (Kauffman Foundation YouthPulse, 2010b). The survey found that faith in people, government, and businesses have all declined since 2007; most young people see individuals as most likely to improve their community, but those interested in entrepreneurship report that they see businesses as improving communities (Kauffman, 2010b). The report also claims that high school and college represent ideal opportunities to promote entrepreneurship among young people (Kauffman, 2010b).

In a related trend, universities represent significant generators of technology commercialization, which is closely related to entrepreneurism and can result in new business formation. Successful technology transfer depends on participation of graduate and post-doctoral students and alignment of objectives for the institution, the technology transfer office handling the case, and the students involved. Universities will benefit by encouraging students to pursue startup opportunities and technology commercialization as a potential career path (Kauffman Foundation, 2012).

Entrepreneurship training in higher education

In 2001, the United States Business Administration found that more than 60% of college students plan to become an entrepreneur at some point in their career (Shinnar et al., 2009). Many assume that students interested in entrepreneurship are more likely to be male or in a business curriculum. However, Shinnar, Pruett, and Toney (2009) surveyed more than 300 students at a comprehensive four-year university and found interest in entrepreneurship among nonbusiness students and no significant gender differences. They also found that students felt they were more entrepreneurial than faculty perceived them to be.

The number of higher education institutions offering entrepreneurship programs has also increased in recent years. In 1970, 16 colleges and universities offered entrepreneurship courses; that number increased to 400 by 1995 (Standish-Kuon & Price, 2002). According to the Association of University Technology Managers, 364 companies focused on technology were developed at universities in 1998 (Barker, 2000). Community colleges have also played a role in the entrepreneurship movement; in fact, the National Association of Community College Entrepreneurship has attracted 300 members since its inception in 2002 (Bradley, 2013). The Lorain County Community College in Ohio and three other community colleges have partnered with the Ewing Marion Kauffman Foundation to create the Innovation Fund America, which provides support such as funding and other resources for technology-based startup companies (Bradley, 2013).

Bilen, Kisenwether, Rzasa, and Wise (2005) reviewed Pennsylvania State University's Engineering Entrepreneurship Minor, which represents a collaboration between the engineering and business schools. The program offers courses, competitions, events, and other activities to provide students with opportunities to test their ideas, collaborate, and engage with local entrepreneurs. They employed a mixed methods study with online surveys and focus groups to analyze the outcomes of the program. Based on the data gathered from students, they found that students' motivation, self-efficacy, problem solving, and teamwork skills improved, but many students were unable to explain what they learned. The researchers identified that students often felt uncomfortable with unstructured assignments. This is somewhat concerning given that the entrepreneurial environment tends to be very ambiguous and unstructured. The study provides good information for the specific institution, but it has not been conducted at other institutions

and may not be generalizable. At the same time, the findings align with many of the other studies in the literature.

Pratt and Pratt (2010) claimed that developing students' entrepreneurial skills helps them to see patterns and anomalies and to perceive these anomalies as potential opportunities make an impact; specifically, they pointed out the ability to identify problems, to ask good questions, and to come up with potential alternatives as skills that students practice through entrepreneurial courses and programs. A case study analysis by Standish-Kuon and Price (2002) identified four key elements to successful entrepreneurship programs or curricula: a champion in the entrepreneurship center, high quality courses, student and alumni champions, and engaging entrepreneurs in the program.

Conceptual Framework

As mentioned earlier in the literature review, several authors have discussed how individuals learn in organizations and vocational settings, including Billett (2001, 2002a, 2002b), Gherardi, Nicolini, and Odella (1998), and Illeris (2003). Billett (2001, 2002a, 2002b) identified a number of factors that contribute to learning in vocational environments. Individuals learn from engaging in everyday work tasks as well as through direct and indirect guidance from others (supervisors, peers, etc.); this aligns with the constructivist principle of constructing knowledge through experience. Direct guidance can occur through mechanisms such as coaching or modeling on the job while indirect guidance may result from observance and recognizing workplace norms. The guidance aspect of organizational learning links to social constructivism, which claims that learning occurs through interactions with others. In some cases, coworkers may offer opportunities for guided learning through transfer, enabling an individual to extend his or her skillset to include transferable skills (Billett, 2001). What an

individual learns in the workplace is significantly impacted by his or her level of engagement in the workplace – or their level of doing or participating in various activities (Billett, 2001), which depend on his/her interests, motivation, and values (Billett, 2002a; Billett, 2002b). However, at the same time, each individual experiences a different set of "affordances", or opportunities for learning (Billett, 2002a; Billett, 2002b). Affordances can invite or inhibit individuals from accessing opportunities to learn; they shape the context of the work environment and the ability for students to access the types of learning opportunities available to them. Examples may include how acceptable the individual is to his/her coworkers, how qualified coworkers perceive the individual to be, or the willingness of more experienced coworkers to offer or provide assistance to the individual. Engagement in work activities and different levels or types of guidance from coworkers are all interdependent and result in a set of opportunities to construct knowledge in the vocational setting. In this framework, an individual may learn bad habits through the same mechanisms of learning good or appropriate habits (Billett, 2002a). The level of feedback may influence what knowledge is constructed as positive behaviors can be encouraged and inappropriate behaviors can be discouraged. This is similar to a classroom environment, with the exception that theoretically, each student should have equal learning opportunities in the classroom and the teacher is trained to teach students (versus supervisors who may or may not have experience in developing others).

Gherardi, Nicolini, and Odella (1998) describe learning in the workplace as both cognitive and social. They define learning as a relational process and a creative achievement that requires personal investment and active participation; this again relates closely to the principles of constructivism in that knowledge is constructed through doing. The workplace offers a "community of practice" that establishes what is acceptable in the specific setting, which is

defined by the community members and the shared norms or values that they demonstrate through how they do and interpret things and activities. Students can become a part of the community of practice through their active participation in the workplace, much like they are members of a community of practice in a classroom. "Legitimate peripheral participation" occurs as a newcomer learns the practices of the community and becomes more integrated and involved in the workplace, ultimately defining his or her membership in the community. Gherardi, Nicolini, and Odella (1998) discuss a "situated curriculum" which exhibits similarities to Billett's (2002a, 2002b) affordances. A situated curriculum encompasses the set of learning opportunities available to a newcomer and defines the process for becoming a member, though it is often tacit in nature rather than clearly defined. The researchers define three levels of analysis of workplace learning: individual (how a newcomer develops an understanding of the workplace and his/her responsibilities within it), relational (interpersonal engagement and relationships), and organizational (the task environment that defines the field of learning opportunities) (Gherardi, Nicolini, & Odella, 1998).

Illeris (2003) agrees that learning occurs through both social and individual processes. He focuses on the interaction between an individual and his/her environment as well as the internal learning process of encountering new concepts and comparing them to previously learned ideas. A new concept will result in either reinforcing a previously learned concept or modifying an existing concept to accommodate new knowledge; this aligns particularly well with the theoretical concepts of constructivism. Illeris (2003) identifies three dimensions of learning which closely match the levels of analysis defined by Gherardi, Nicolini, and Odella (1998): a cognitive dimension consisting of knowledge and skills that determine how an individual will deal with challenges, an emotional dimension defined by feelings and motivations, and a social

dimension that relies on participation, communication, co-operation, etc. Learning results in a set of mental patterns based on the situation (consistent with those of constructivist theorists):

- Cumulative or mechanical learning of new concepts that are not part of anything else;
- Assimilative learning by integrating a new concept into an existing concept or pattern;
- Accommodative or transcendent learning by transforming an existing concept to accommodate a new concept that does not fit the existing pattern; and
- Transformative or expansive learning through simultaneous restructuring of cognitive, emotional, and social dimensions in a crisis-like situation (Illeris, 2003).

Illeris (2003) attributes non-learning to situations where a new concept does not match with existing concepts (which he terms defense mechanisms) or if an individual experiences obstacles in the workplace (which he terms resistance).

All of these authors (Billett, 2001; Billett, 2002a; Billett, 2002b; Gherardi, Nicolini, & Odella, 1998; Illeris, 2003) agree on a number of elements in their frameworks. Individuals learn through carrying out their daily work responsibilities as well as through others, whether that guidance is direct or indirect. Individuals experience different opportunities for learning in their work environment, which depends on their level of engagement, their cognitive and psychological ability to process and internalize what they are doing, and their relationships with others in the workplace, including their supervisor and their coworkers. How much an individual learns depends on his/her ability to integrate into the workplace and to engage in accepted practices. Knowledge construction occurs through action (completing tasks), interacting with others (receiving guidance and/or feedback), and connecting workplace learning with classroom concepts through assimilation or accommodation – or perhaps through mechanical learning if it

is an entirely new concept or transformational learning if it requires complete reconstruction of all aspects of learning.

Based on these frameworks, I anticipated that some aspects of any internship experience will share a few commonalities. Students learn based on their cognitive ability to process the work tasks they perform and how their responsibilities contribute to or impact the organization, their engagement in the workplace, and their relationships with others; they construct knowledge based on their experience, activities, and interactions in the workplace. Based on previous research I have conducted on experiential learning (Zehr, 2013; Zehr, 2014), intern supervisors significantly shape what the student encounters and learns. I anticipate this will be true in any internship environment.

However, startups differ from established companies in a number of ways, particularly related to the context of the work environment. They typically have fewer structured policies and processes and more limited resources (including staff and funding) compared to established companies. I anticipated that what students experience in a startup would likely more closely resemble a constructivist environment such as the Future Camp in the Hay and Barab (2009) study, where they receive very limited instruction, because startup founders often do not have a clear vision of solutions to problems or next steps for the organization. In contrast, I expected to find that established companies more closely resemble the Scientists Apprentice Camp where students complete tasks that are typically defined for them through an established process and modeled for them so they can mimic what more experienced coworkers or "experts" do. I recognize that each internship experience will be unique, even among startups or among established companies, but I think that in general students are likely to have less structure or direction at startups. With this in mind, I aimed to better understand the types of tasks that

interns spend time performing in startups compared to established companies, as well as the level of guidance or instruction they receive when tasks are assigned. Because startups depend more heavily on intern labor in comparison to established companies (Zehr, 2012), students may be expected to take more initiative to figure out how to complete their work or solve problems without guidance. I was also interested in the relationships that students develop at their internships and if they differ in a startup versus established company environment, as students may have more opportunities to participate actively in discussions on how to solve problems and/or decisions with coworkers since many of the problems startups encounter are new and unprecedented and interns are more likely to play an integral role in the organization's development. Startup interns may also spend more time engaging in Illeris's (2003) transformative learning due to the quick pace and unexplored territory that characterizes the environment of many startups. Startups located in incubator or accelerator environments where there are a number of startups clustered in a specific space (such as 1871 in Chicago) may enjoy access to even more opportunities for social interaction and subsequent knowledge construction through interaction with other entrepreneurs, even if they are focused on different fields or industries.

Please see Appendix B for a diagram of the conceptual framework. The diagram shows that a student who accepts an internship enters a community of practice. The workplace context, through affordances or a situated curriculum, provides opportunities for learning through performing work tasks, direct guidance provided by others, and indirect guidance. These opportunities lead to learning, which is characterized by three dimensions and three levels of analysis. Knowledge is constructed individually through cognitive processes, socially through interactions with others, and emotionally through engagement and motivation. Learning can be

analyzed individually (cognitive), relationally (social), or organizationally (context, opportunities to learn, motivation, etc.). This results in one of four mental patterns: cumulative, assimilative, accommodative, or transformational. Throughout the experience, the student becomes a member of the organization through legitimate peripheral participation.

Table 1 in Appendix C demonstrates how I envisioned that the work context leads to learning at established companies compared to startups. The table takes elements of the conceptual framework diagram and outlines my hypotheses about the similarities and differences between student internship experiences at startups compared to established companies. The first section of the table focuses on the work context, which is made up of three elements: daily work, direct guidance, and indirect guidance. It then outlines the characteristics of learning dimensions at both startups and established companies. Finally, it links these elements to learning outcomes.

Students who intern at established companies would likely encounter more structure and established processes and their work may or may not directly impact important organizational decisions. There is an established chain of command, and they likely have access to resources (i.e. coworkers with experience in the areas or projects on which they are working) that they can go to if they have questions. Observation is likely limited to the unit where they work and there would probably be limited reason or opportunity to interact with an external network. The work context could potentially impact the learning dimensions, particularly the social dimension. As a result, students who intern at established companies would likely develop technical skills and interpersonal or professional skills. They may or may not practice applying or implementing their technical skills and it is less likely they would be scoping out or defining problems.

Students who intern at startups would encounter less structure and would be less likely to have a resource who could answer questions about their work since the founders may have

limited to no more relevant experience than the intern. I would anticipate that interns at startups may have more opportunities to participate in strategic discussions or decision making based on their work. While startup founders would have an interest in mentoring interns, they may or may not be able to provide direct guidance if they do not have expertise in the area where the student is working. Also, for startups located in incubator or accelerator facilities with a number of other startups, there may be a more extensive external network that could be a resource for both professional networking and ideas or assistance with questions. Due to the differences between the environments of established companies and startups, I would anticipate that startup interns may be more likely to develop additional skills and knowledge related to problem definition and scoping along with many of the other skills that students who intern at established companies gain. In the study, I investigated these factors through a mixed methods design (which will be explained in detail in the next chapter) and drew conclusions about the similarities and differences between startups and established company internship experiences. I gathered information about the work environment context through the survey; there were a number of questions about the work that interns perform daily, the context of the work environment, and their interactions with others in the work environment. The interviews provided an opportunity to talk more explicitly about students' experiences and their perceptions of their tasks and the work environment. Several interview questions also considered the social relationships and interactions in which students take part in the workplace and how those affect their learning opportunities and eventual outcomes.

I was also interested in how experiences might differ by major, gender, race, international vs. domestic, etc., and planned to test for differences in these areas as well. Based on the framework, social interactions and relationships would significantly influence students'

experiences and I expected that some inherent characteristics such as gender, domestic status, income level, and other characteristics could determine how easily students form relationships with others in the workplace. In the discussion about affordances (which I equate with learning opportunities), several factors may impact whether the student becomes fully accepted or integrated into the community of practice. For example, a female in a male-dominated engineering environment may be subject to different preconceived notions from the team than a male student would, and may have access to fewer opportunities to interact informally with male coworkers. I developed a set of hypotheses about inherent characteristics and how they might impact the internship experience.

First, I hypothesized that because female students tend to have lower self-efficacy than males (Bandura, 1991) and exhibit lower confidence in their abilities (Chin & Tekiela, 2016), they may seek more input from their supervisor or coworkers or be less confident in the workplace. International students may feel less comfortable interacting with others and therefore participate in fewer social interactions in the workplace, thus impacting learning opportunities. Business students spend more time working on group projects throughout their coursework so they may be more comfortable participating in social interactions than engineering students. Similarly, I also hypothesized that students with previous internship experience would likely feel more comfortable with social interaction. On the other hand, students interning for the first time may be less confident of their skills and knowledge and how to approach others. I considered Pell grant status as a proxy for income and thought that students who received this form of financial aid might have encountered some stress due to financial pressures which could limit their internship choices or that they may have access to fewer opportunities if some opportunities are unpaid. This is especially true in situations where students have to pay tuition during a term

in which they intern. Finally, because women tend to behave more collaboratively than their male counterparts (Baer, 2013), I expected that students who reported to females might report being more involved in decisions. Inherent characteristics such as these could significantly affect the student experience so I planned to test for differences in the data between a variety of different groups of students.

CHAPTER 3

METHODOLOGY

This study employed mixed methods to learn more about the experiences of students who participate in internships. Mixed methods inquiry involves both qualitative and quantitative methods, as both types of methods have strengths and weaknesses. Using both types of methods in the same inquiry helps to mitigate the weaknesses of each. According to Greene (2007), "a mixed methods way of thinking rests on assumptions that there are multiple legitimate approaches to social inquiry and that any given approach to social inquiry is inevitably partial" (p. 20). Therefore, incorporating both types of methods results in a better understanding of a phenomenon through exploring related variables but also incorporating rich data about lived experiences. But the true potential of the methodology involves more than just using both qualitative and quantitative methods. The value of mixed methods is the opportunity to integrate different types of data at some point and/or throughout the study, providing a richer and more complete picture of what is happening.

Greene (2007) provides a brief history of the emergence of mixed methods. In the first half of the twentieth century, researchers learned quantitative methods to study phenomena. As other frameworks for inquiry developed, researchers began to adhere to a specific methodology and disagreements surfaced. The War on Poverty in the United States in the mid-1960s instigated a number of programs to improve social welfare, and these programs needed to be evaluated. At the time, the default method for studying or evaluating government programs involved classic experiments with a control and an experimental group. But a number of issues surfaced that made using experiments to assess the impact and quality of these programs

challenging. First, ethical issues arose in assigning subjects to a control group and denying them the opportunity to realize the benefits of government programs. Second, there was a need to modify programs over time, resulting in suboptimal conditions for experiments. Further, many researchers believed that experiments did not take into account the processes used in the programs or the experiences of the people who participated, leaving out critical data to evaluate the impact of the programs. These issues grew into a significant philosophical debate about the value of different paradigms or stances involved in research methods and how researchers view the world. Some researchers heavily rooted in either the qualitative or quantitative philosophies felt that the characteristics of the two prohibited mixing them because the inherent belief systems were too different, or incommensurable. However, others felt that mixing methods would enhance the understanding gained by leveraging the strengths of each and minimizing the weaknesses. Mixed methods gained popularity with the emergence of triangulation in the field of sociology in the late 1970s. Over the next couple of decades, support for mixed methods increased and today it has become widely accepted practice in some fields. However, not all studies that claim to use mixed methods are conducted as effectively as others, and some still feel that the qualitative and quantitative philosophies are too fundamentally opposed to allow them to be mixed. While in most cases, a truce was reached, some debate still remains (Greene, 2007).

In this study, I aimed to better understand the student internship experience as well as any differences in student experiences at startups compared to that of established companies or due to inherent student characteristics. Qualitative methods helped me to learn more about students' lived experiences during internships. However, I also wanted to develop a sense for how consistent student experiences are, which lends itself to quantitative data. I selected a mixed

methods approach because it draws on the strengths of both qualitative and quantitative methods and mitigates the limitations of each (Creswell, 2014). Using both methods provided me with a deeper, more comprehensive understanding of how responsibilities and tasks assigned to student interns differ by organization (if at all) as well as an opportunity to talk in depth with students who have participated in an internship at a startup or established company.

Research Design

This study used an exploratory sequential mixed methods design in which quantitative data was collected and analyzed in order to assess respondents on a set of variables related to internship experiences and to identify a pool of participants for a qualitative phase (Creswell, 2014). Two mixed methods purposes were employed through this research design: complementarity and development. Complementarity uses multiple methods to understand different facets of a single complex phenomenon with the intention of enhancing or broadening the interpretations from the study (Greene, 2007). With the development purpose, one method provides results that are used to inform the subsequent method (Greene, 2007). In this study, the initial phase included a survey that was administered to business and engineering students who interned at companies during Summer 2015. The survey included questions about the job responsibilities and tasks that students are asked to perform in internships. Other questions inquired about the work environment, such as how much guidance coworkers and/or supervisors provide to the intern and the climate of the workplace, and how these factors impact the experience the student has and what he or she learns as a result. This information was used to identify a pool of students to invite to participate in semi-structured in-person interviews. I planned to identify ten to twelve students who interned at a startup and the same number of students who interned at an established company by purposefully selecting them from those who

indicated they were willing to participate in the interview phase. I chose ten to twelve because in my experience conducting ten or more interviews of a certain group typically reaches a point of saturation where you learn minimally more with additional interviews. However, I planned to reassess whether the number of interviews was sufficient once I reached twenty or more (Baker & Edwards, 2012). Analysis of the survey data was used in the selection of interviewees, with the intent of maximizing information richness, though some efforts were made to include diversity in the interview sample (representation of both genders, socioeconomic status, race, etc.). The interview protocol included a core set of questions, and some additional or clarifying questions were sometimes incorporated based on the results of the survey. While the survey focused on job tasks and the workplace environment, the interviews aimed to gain a deeper understanding of student experiences related to how they interact with others in the workplace, the knowledge and skills they employ or develop in their role, and the level of guidance they receive in completing their assigned responsibilities. In addition, the rich data collected from the interviews supplemented the data from the survey so that I could explore general differences between startup and established company environments and social relationships, which in turn impact learning. Please see Appendix D for a copy of the approval letter from the University of Illinois Institutional Review Board.

The constructs that I planned to measure with the two methods include:

- Job tasks and characteristics: characteristics of the tasks students are assigned, the variety of tasks, how much control the student has over his or her work, etc., to address the first set of research questions (RQ1, RQ1a, RQ1b)
- Social interaction: how much of the student's work involves or relies on working with others and how interactions with others may affect learning opportunities (training opportunities,

interest in the student's development, etc.) to address the second set of research questions (RQ2, RQ2b)

- Level of guidance: how much the student learns how to do their work from demonstrations by others and mimicking what they do versus figuring things out on their own to address the second set of research questions (RQ2, RQ2a, RQ2c)
- Skills and knowledge: how much the student is able to understand or recognize connections between their work and what they learn in school, and the extent to which what they learn helps them to complete their assigned tasks to address the second set of research questions (RQ2)
- Organizational culture: the characteristics of the work environment, such as how much people work together, help each other, encourage discussion or ideas, etc. to address the second set of research questions (RQ2, RQ2a, RQ2b, RQ2c)

Please see Tables 2 and 3 in Appendix C for tables that link each survey and interview question to these constructs. In Table 2, I list each survey question, the construct that it measured, the research question it addressed, the source of the question if it was from an existing instrument, and the construct it measured in the source instrument, if applicable. Table 3 is similar in concept but includes fewer columns because none of the questions came from an existing source. In this table, I list each interview question, the construct it measured, and the research question it addressed.

Data Collection

Sample

The sample for this study included business and engineering students enrolled in four-year higher education institutions who participated in an internship during Summer 2015.

Because a number of startups that work with universities seek technical talent (computer science, engineering, or science students) and business skills, the sample focused on students in STEM (science, technology, engineering, and mathematics) and business majors (Lowrey, 2009). As mentioned in the research questions, the sample included students who interned at startups and established companies (startups and established companies are determined mostly by size, but to the extent possible were also based on the criteria listed in the introduction, including ability to grow, the number of employees, the number of board members, and annual revenues). As many students as possible were recruited to participate in the survey, and twenty-one students were selected from the survey respondents to participate in student interviews.

Sample recruitment

In the first phase of the study, students interning at startups were recruited through two sources: the University of Illinois Research Park/EnterpriseWorks, which provides startup incubator services in Champaign, IL, and three firms that provides recruiting services specifically for startups: 1871 in Chicago, IL; the Illinois Technology Association in Chicago, IL; and Think B1g, which recruits nationally. Many of the startups that these companies work with are digitally focused startups.

Students interning at established companies were recruited through career services offices at public/state universities in several cities. Cities were selected based on identification as a startup-friendly city, defined as cities with high community engagement and better access to relevant resources for small businesses (Henry, 2015; Post, 2014). These cities included: San Diego, CA; Denver, CO; Austin, TX; Seattle, WA; Portland, OR; San Francisco, CA; Dallas, TX; Boston, MA; New York City, NY; and Chicago, IL. Eighteen universities representing these ten cities were contacted with a request to send out the survey, and six agreed to

participate, or approximately 33%. Fincham (2008) suggested that researchers aim for a minimum 60% response rate. While participation is different from response rate, 33% participation is very low based on this criteria and unfortunately leaves 67% of the institutions unrepresented in the survey. I was disappointed with this participation rate because it was low, but also because several areas with startup activity were not represented in the survey, which could impact the results. In addition, the universities that participated in the study only represented four of these cities: Chicago, IL; Denver, CO; Austin, TX; and San Francisco, CA. However, despite attempts to convince career services representatives to reconsider, no additional schools agreed to participate. The most common reason cited for not participating was concern over sending too many communications to students, particularly communications that include surveys, and some institutions did not have a method to identify students who had interned during Summer 2015 and did not want to send the survey to all students. For those who did agree to participate, a recruitment letter was provided to recruiting entities that could be sent to students via e-mail with a link to the survey. The message explained the project and clearly indicated that participation was voluntary and could be discontinued at any time. Students were asked to provide informed consent before participating in the survey. Please see Appendix E for a copy of the recruitment message and Appendix F for a copy of the informed consent documentation.

Students were encouraged to participate in the survey through an incentive. Students who chose to do so were entered into a drawing for one of two $100 gift certificates to Amazon.com. The drawing took place in December 2015 once the survey data collection phase was completed and certificates were sent to two students via e-mail.

The sample for the student interviews was drawn from the respondents to the survey. Students were selected based on quantitative and qualitative data from the survey (more detailed information follows in the Data Analysis section). Three students who interned at startups were invited to participate in an interview, which represented the total number of students who interned at a startup and volunteered to participate in an interview. In addition, twenty-five students who interned at established companies were invited and eighteen of them accepted, for a total of twenty-one students representing established companies. Students who interned at startups were slightly overrepresented in the interview sample based on the survey sample (three of twenty-one interview subjects, or approximately 14% vs. fifteen of 131 survey subjects, or approximately 11.5%; please refer to Table 4 in Appendix C for a table that compares descriptive statistics for the students in the survey and interviews). Similar to the survey procedures, students were asked to provide informed consent prior to participating in the interviews; they also received access to an explanation of the research study and were informed that participation was voluntary and could be discontinued at any time with no penalty. Students who participated in an interview received a $10 gift certificate to Amazon.com sent via e-mail after the interview was complete.

Student internship survey

Students who qualified for the study (those who interned at a startup or established company during Summer 2015) were invited to complete an online survey which includes questions about their work tasks and responsibilities as well as the work environment. Tabanelli, Depolo, Cooke, Sarchielli, Bongiflioli, Mattioli, and Violante (2008) identified and reviewed 33 instruments used to assess psychosocial factors in the workplace. After reviewing several instruments identified in the article, the General Nordic Questionnaire and the Job

Characteristics Inventory provided the best fit to gather data to address the research questions. Twenty-three questions for the survey were drawn from the General Nordic Questionnaire, an instrument developed in 2000 for the Nordic Council of Ministers for the purpose of measuring psychosocial factors in the workplace. Measures in the survey include job demands and control, social interaction, organizational culture, work group, and several others (Lindstrom, Elo, Skogstad, Dallner, Gamberale, Hottinen, Knardahl, & Orhede, 2000). These questions explore the characteristics of work tasks and the work environment, and the intent is to use these questions to compare how the work tasks and environment are similar or different at startups compared to established companies. Eight questions were drawn from the Job Characteristics Inventory, which measures skill variety, autonomy, feedback, coworker interactions, etc. (Taanelli et al., 2008; Sims, Szilagyi, & Keller, 1976). This instrument was developed to assess the characteristics of work tasks and can also help to understand how work tasks are similar or different at different types of companies. Both of these instruments will assist in answering the first set of research questions about the types of tasks that students are assigned in internships

While an existing instrument provides less flexibility in specifically addressing the research questions, its reliability and validity have been tested extensively and it provides for a uniform experience for all respondents (Lindstrom et al., 2000). In order to specifically address the research questions in the study, additional questions were added, including some qualitative or open-ended response questions. The survey included a total of 71 questions, including 24 questions about general student and internship characteristics, 37 questions with closed-ended responses that the respondent rates on a 5-point Likert scale, 4 questions with closed-ended multiple choice responses, 4 open-ended questions, and 2 questions asking about the respondent's willingness to participate in an interview related to the study. The survey was

distributed in mid-August 2015, after students had completed most or all of their summer internships. The survey deadline was the end of September, to provide adequate time for students to respond but also to allow time to analyze the survey data for the qualitative phase. The deadline was originally early September, but was moved back because some institutions started the fall term later than others and the later deadline allowed contacts at these institutions to send additional reminders to students about the survey. Please see Appendix G for a copy of the survey instrument and Appendix F for a copy of the informed consent documentation.

The questions from the General Nordic Questionnaire and the Job Characteristics Inventory were tested for validity and reliability. The General Nordic Questionnaire was tested with employees representing several industries in four Nordic countries: Denmark, Finland, Norway, and Sweden; the survey was validated through a two-stage process in which the first data set was used to study the factor structure and develop the scales and the second was used to test the construct and predictive validity (Lindstrom et al., 2000). The Job Characteristics Inventory was tested with two populations, one at a medical center and one in a manufacturing facility (Sims et al., 1976). The researchers found that the instrument had "validity and reliability characteristics acceptable for research on the relationship between job characteristics and employee attitudes and behavior" (Sims et al., 1976, p. 210).

The populations involved in the testing of the two instruments included full-time employees who likely had more experience than the interns who participated in this study. Therefore, all survey questions were tested for reliability, validity, and clarity with the target audience through a pilot of the survey with eight STEM and business college students at the University of Illinois to ensure that the meaning of the questions was clear and to estimate how long the survey would typically take students to complete. The pilot took place at the end of the

spring semester in mid-May 2015 to ensure that any changes could be made before the survey was administered during the Summer 2015 term. The pilot informed further development of the survey based on the feedback from students who participated in the pilot. Minor changes to questions, including wording and order, were made and the revisions were shared and an amendment was filed with the University of Illinois Institutional Review Board (IRB). The IRB provided approval for the pilot survey along with approval for the overall study, as well as approval for the minor changes made in early May 2015. Please refer to Appendix D for copies of the original approval letter as well as two e-mails documenting approval of minor changes after the pilot and prior to the start of interviews.

The questions in the survey focused on several areas that were intended to provide information about the context of the work environment. The survey included questions about the types of work tasks and projects in which the student engaged, about how the student interacted with others in the workplace, about the types of guidance or support he or she received from others, about the student's comfort level with his or her work tasks, and about the general workplace environment. The tasks that the student engaged in, along with social interactions and other aspects of the work environment, would impact what he or she learned. As a result of their work tasks and relationships with others, students could construct new knowledge, connect what they experience at work to what they have learned in the classroom which could reinforce or change how they understand technical concepts, acquire new technical or professional skills, or gain an understanding of how their technical knowledge is implemented in an organization. The responses to the survey questions helped to understand the environmental context and affordances available to the student. I anticipated I would find differences in the types of learning opportunities available to students at startups compared to established companies as a

result of the types of tasks on which they work, the workplace environment, how much they worked with their supervisor or coworkers, and the level of direction they received on the tasks they were assigned.

Student interviews

Twenty-eight students were identified from the online survey to receive invitations to participate in a semi-structured individual interview, and twenty-one of the students volunteered to do so. The process for identifying students based on survey data is outlined in the Data Analysis section that follows. All survey respondents were asked if they would be willing to participate in an interview. Three students who interned at startups during Summer 2015 and indicated a willingness to participate in interviews; each of these students were invited to participate. Twenty-five students who interned at established companies were also invited, and eighteen agreed to participate. Interviews took place in person, if feasible, or over the phone or via Skype during the Fall 2015 semester, after students returned to their respective campuses after completing their internships over the summer. All interviews were recorded, as each interviewee provided permission prior to the interview. Interviews consisted of fourteen core questions for all students (some had multiple parts), and additional questions were sometimes asked based on analysis of the survey data. The interviews measured the same five constructs that the survey addresses, but due to the nature of qualitative interviews, they elicited deeper and richer information by exploring student experiences. Please see Appendix H for a copy of the initial interview protocol.

The interview questions helped me to more deeply understand the student experience at internships at different types of companies. I asked students to talk about their experiences to find out what the work environment was like and to try to learn more about what and how they

learned during their internship. To the extent possible, I tried to understand which dimensions of learning and mental patterns in which they engaged. Again, I anticipated that I would find that students at startups learned through a more constructivist-based approach by which they figured things out themselves compared to students at established companies where processes and outcomes are more defined and students may be given more direction (please refer back to Table 1 in Appendix C which lists the hypotheses I discussed in the conceptual framework). I thought students at startups might engage in more of a mentor type of relationship with their supervisor and that they might have access to an external network of expertise, especially if the startup was located in an incubator style facility with other organizations and relevant resources. I also hypothesized that they might spend more time defining and scoping problems than those in established organizations. In order to explore how students learned to perform the tasks assigned to them, I asked them about any training that they received and whether or who showed them how to perform their tasks. In some cases, students volunteered descriptions of how they identified a problem and then took initiative to address it. I sometimes probed to understand if someone showed them how to do a task or if they were asked to complete a larger project and figured out how to break the project down independently. I also talked with them extensively about what they did if they ran into obstacles or needed help to complete a task. Table 3 in Appendix C shows the interview questions and how they relate to the defined constructs. Once I had completed 21 interviews, I felt comfortable that I had reached a saturation point and additional interviews would add limited insight.

Data Analysis

Student internship survey

Once the survey data was collected, the initial use of the data was to select interview participants. I ran t-tests on survey questions to assess whether there are significant differences between responses from interns at startups and interns from established companies that I might want to explore. I also ran t-tests on the factors or constructs, again comparing interns at startups and established companies. Unfortunately, I did not find many differences between the means of the two groups on survey questions I had identified as related to my hypotheses, so that was not helpful in selecting participants. The sample was purposeful, and was not necessarily representative of the population of students taking the survey. I wanted to make sure that certain groups were represented; for example, women are often underrepresented in engineering fields, so I specifically included female engineering students in the sample. I also included some students who received Pell grants as a proxy to explore how economic status might affect internship experiences. In some instances, I selected interview subjects based on the company for which they interned to explore different industries and work environments (such as manufacturing vs. an office). I read the open-ended responses to identify students who might represent different types of cases. For example, one student who worked at an established company mentioned that it was very entrepreneurial, so I invited that subject to interview and he participated. Then I used the interviews to explore the differences between various companies, industries, student characteristics, and student experiences. The strategy I used was analogous to Yin's multiple case study method, in which I explored a number of cases, including cases that were typical or representative as well as cases that appeared to be rare or unique (Yin, 2009). Please refer to Table 4 in Appendix C for more information on the representativeness of the

interview sample compared to the survey sample. Overall, the interview sample is relatively representative of the survey sample. The largest discrepancy is that females are underrepresented in the interview sample.

In addition to the initial analysis to select interview subjects, I also performed a factor analysis to identify underlying relationships among the data in the survey. Factor analysis can assist in uncovering complex relationships between variables that may not otherwise be found. I conducted item reliability analysis to understand how much each item contributed to the total score variance for the factor. The results of these analyses helped to determine which items I would consider in the factors. Based on the analysis, I did not remove any of the items from the factors.

I ran descriptive statistics (mean, standard deviation, etc.) for each construct as well as two-tailed t-tests for each construct comparing the means of each construct for interns at startups to interns at established companies. The t-tests compared the means between different groups of subjects to understand whether there are significant differences. A basic correlational analysis identified whether there were bivariate relationships among variables or factors; this is important to understand about the data because high correlations between variables can impact the results of some statistical tests, such as regressions. I also ran several ordinary least squares (OLS) regressions to examine relationships among variables. In these regressions, I tested whether an independent variable and certain controls can be combined to predict a dependent variable. Results for these tests are discussed in Chapter 4.

Student interviews

Interview recordings were transcribed and entered into the qualitative analysis software Atlas.ti. First, I used *a priori* coding in which an initial list of codes was generated from the

interview protocol and each transcribed interview was coded using the *a priori* codes. To generate the codes, I selected salient factors from the interview questions that I wanted to explore further. These codes would later be used to compare comments from subjects so that I could identify similarities and differences in students' experiences. The *a priori* codes are listed with descriptions in Table 5 in Appendix C.

Next, queries were run to group segments of interview data by *a priori* codes (queries were named after the *a priori* code), and a second round of coding took place. In the second round, open coding was employed to preserve detail and language. These more detailed codes were analyzed and mapped to identify key themes and patterns in the data. I used the Demographics query to create the table with descriptive statistics of the interview sample. I used the Company query to identify the industries and companies that were included in the interviews. I identified nine queries that I felt most directly addressed my research questions and focused more time on those areas to determine if there were differences between different company types: Culture, Connect work and school, Impact, Role, Increase responsibility, Skills developed, Social interactions, Tasks, Training.

Integrated data analysis

The quantitative and qualitative data were initially analyzed separately, but subsequently integrating the data analysis adds richness to the study results. In this case, the conclusions from the statistical analysis were compared to the findings from the interviews to identify consistencies or discrepancies. In cases where the data were consistent, the conclusions from that data were strengthened. In cases where the data diverge, I further reviewed both sets of data to identify potential causes for the inconsistencies. I sought out patterns in the data by reviewing survey data for interview participants. I was also interested in comparing what students claimed

to have learned as a result of their internship and several factors, such as their responses related to social interactions and level of direction. I looked at the task characteristics compared to social interactions and level of direction.

Limitations

Potential sources of bias

Because this study involves two groups of students, it was critical to look at the composition of both groups to identify potential sources of bias. For example, it is possible that students who choose to work at startups have specific characteristics that tend to differ from those who choose to intern at established firms. There may also be differences between engineering and business students. Both women and minorities are significantly underrepresented in engineering, and white males are also overrepresented (though not to the same degree) in business, which may introduce bias into the results. I considered these potential differences when I was analyzing the data.

Another potential source of bias could stem from the students selected to participate in the interview sample. Because the sample was not selected randomly, and I purposefully sought out some unique or different cases, the interview sample is not necessarily representative of the group, which could influence the results. A few of the interview subjects were selected based on their specific responses to open-ended questions, which may mean that students who mentioned keywords that related to my study could be overrepresented in the sample.

In addition, I bring personal biases to this study. In my previous role at the University of Illinois, I was the Director of Engineering Career Services in the College of Engineering. In that role, I spoke with a number of students who interned at a variety of companies and I also conducted a previous research study where I interviewed student interns and founders of startup

companies. My conclusions were that students who interview at startups tend to take on more responsibility and more significantly impact the organization for which they work. This previous study could potentially bias how I conduct this study and/or how I interpret findings. Though I will try to minimize my personal bias, it will be impossible to completely eliminate it.

Study and researcher limitations

Other limitations to consider include the weaknesses of the research design. The conclusions from this study are based on a survey of and interviews with a limited number of students. The interview data are based on a small sample of students from two disciplines and may or may not be generalizable to students in similar roles. Internships vary widely among different companies and even within the same company, and the students who participate in interviews may not have had representative experiences at the companies where they interned. Much of the internship process and experience depends on the intern's supervisor and/or the other employees with whom the intern works closely. Preparation of supervisors can significantly influence the experience, as can the personalities of those who work with and/or supervise interns. Training for internship supervision varies widely from none to extensive training programs provided by outside vendors who specialize in such training (Zehr, 2012).

In addition, students will self-select to participate in the survey and even further in volunteering for the interviews. It is possible that students who do not have a good experience or who feel they did not perform well in their internship would be less likely to volunteer to participate. Further, the students who are recruited through career services offices may potentially be more interested in career development than students who do not receive an invitation because they were not registered with the career services office.

Finally, because I work at a higher education institution, it is possible that students would respond to the survey or interview questions with answer they think are “right” versus with what they really feel or experienced. For example, if a student did not have a good relationship with his or her internship supervisor, the student may not want to admit that in the survey or interview.

CHAPTER 4

RESULTS

The survey was administered in August and September 2015. Six universities agreed to distribute the survey through the career services office: University of Illinois, University of Michigan, Purdue University, Stanford University, Colorado State University, and University of Texas at Austin. University of Illinois, Stanford University, Colorado State University, and University of Texas at Austin were included because they were located near cities identified as top cities for startups. Purdue University and University of Michigan were included as well because Indiana has recently made efforts to attract startups to the state, and University of Michigan established Innovate Blue, which hosts 15 entrepreneurship programs and centers and works with more than 30 student organizations focused on entrepreneurship (About Innovate Blue, n.d.). Four organizations that recruit, support, or work with startups also agreed to distribute the survey: Think B1g, 1871, University of Illinois Research Park, and the Illinois Technology Association.

One hundred seventy-one students responded to the survey, resulting in 131 usable responses; the vast majority of the forty subjects that were eliminated were not undergraduate students. A couple of subjects were eliminated because they did not respond to critical questions, such as the company they interned for or their major or their institution, meaning they could not be grouped appropriately and I could not be sure they were undergraduate students who fit the criteria to participate in the study (business and STEM undergraduate college students at four-year universities who interned during Summer 2015). It is impossible to

determine the actual response rate to the survey, though it was definitely extremely low compared to the population to whom the recruitment message was sent. The survey could have been sent to as many as 23,000 students at the six universities who agreed to send the invitation, though not all of them had internships and would not be eligible to participate, and even the universities in many cases were unable to determine how many of their students participated in summer internships during 2015. The startup recruiting firms potentially sent the message to up to 5,000 students, though several mentioned their open rates fell in the 25-35% range so that would reduce the pool; also, as with the universities, not all the students who would receive the communication would have an internship making them eligible to participate. The survey recruitment message was sent to approximately 1,000 companies who were encouraged to send it to any interns they employed, though some may not have sent it on and/or may not have employed or known interns at the time of the survey. Please note that the recruiting message in some cases was incorporated into a larger message or newsletter so the student could have overlooked it even if they did receive and open the message in which it was contained.

Of the 131 usable responses received, 116 of the students interned at a company that was considered established and fifteen interned at a company that I categorized as a startup. These 15 students represented 13 startup companies, meaning there were only three who interned at the same company; the startup companies were located in five states, but note that nine of them were based in Illinois. To the extent possible, I used Robehmed's definition of a startup, but given most of the companies were not publicly traded, there was limited information available. The primary criteria for categorizing a company was the number of employees, but I also looked at the websites of the organizations to determine to the best of my ability if the organization was capable of growth and responding quickly to the relevant "market" or customers. I reviewed

each company that students listed as having 100 or fewer employees to determine the type of company, when it was established, and whether it would be capable of fast growth. For example, a company with fewer than 100 employees that was technological in nature and had been established within the last ten years would likely be able to grow quickly, so I considered it a startup. As a result, categorization of companies depended at least partially on my subjective judgment. Of the usable responses, 28 students were invited to participate in interviews and 21 agreed to do so. Interviews were conducted during September 2015 either in person or via a phone call. Interview subjects represented five universities: University of Illinois, University of Michigan, Purdue University, Colorado State University, and University of Chicago. No students from Stanford University volunteered to participate in an interview, which means that those students are not represented in the qualitative data analysis. All interviews were recorded and followed the protocol included in Appendix H.

Survey Results: Closed-ended Questions

Descriptives

Descriptive statistics for the full survey sample appear in Table 6 in Appendix C, which provide a better understanding of the survey sample. Based on Table 6, most students interned at established companies (116 at established companies vs. 15 at startups), most interned between three and six months, and about half had not interned before. The majority of students did not receive credit, and more than half did not pay tuition to work. Just over 10% received a Pell grant, but slightly more than 30% had taken out student loans. The average GPA was 3.49. About 42% were female, and approximately 86% were domestic students. Less than 30% had a female supervisor. Ninety-eight (75%) students studied in an engineering program, 25 (19%)

studied business, and seven (6%) were enrolled in a STEM program outside of business or engineering (i.e. mathematics).

Descriptive statistics for the entire sample, including the number of responses, the minimum and maximum response, the mean, and the standard deviation, for each Likert question in the survey, for the five constructs, and for the multiple choice questions at the end of the survey appear in Table 7 in Appendix C; statistics include the number of responses, the minimum and maximum values, the mean, and the standard deviation. Note that 121 students responded to all the questions, but 10 students did not answer one or two questions, for a total of 13 missing responses overall. The factor scores were calculated by averaging the value of the responses of each Likert question included in the construct. Values were calculated based on the following scale:

- Almost always: value of 5
- Often: value of 4
- Sometimes: value of 3
- Infrequently: value of 2
- Never: value of 1

Based on the data in Table 7, several job characteristics had a mean of 4 or more, meaning that in general students experienced these conditions or characteristics often or frequently. I selected 4 as a meaningful cutoff in that the average was often or greater whereas a value of 3 indicated the students only experienced the condition sometimes. I felt that restricting the responses to often or almost always was similar to many surveys that measure agreement to questions and use agree to strongly agree, since the value of 3 on a scale of 1 to 5 is often

considered a more neutral or average value. I looked at the median values as well, but several questions had medians of 4 but means lower than 4; therefore, using the means resulted in a more discerning measure to help me to truly understand what students experienced either often or frequently compared to the median scores. As a result, the overall findings may be somewhat underestimated since responses of sometimes are not included. The job characteristics or conditions to which students responded that they experienced frequently to almost always include:

- Left on own to do own work
- Opportunity for independent thought and action
- Get support or help from coworkers if needed
- Get support or help from immediate supervisor if needed
- Work achievements appreciated by immediate supervisor
- Immediate supervisor encourages speaking up if different opinions
- Immediate supervisor helps to develop skills
- Work climate is encouraging and supportive
- Work climate relaxed and comfortable
- Workers take initiative in unit
- Recognition for a job well done
- Management interested in health and wellbeing of employees
- Sense of team in unit
- Part of team in unit
- Current skills and knowledge useful
- Job requires acquisition of new skills or knowledge

- Coworkers help to develop skills or knowledge
- Opportunity to talk informally with coworkers while at work

These responses paint a picture of a workplace where students acquire new skills and knowledge, and are trusted to do their own work but have access to resources if they need help. Overall, students felt that management cared about employees and they were welcomed as part of the team in their unit. They were recognized for doing good work and encouraged to voice their opinions. The type of work environment described by the averages would likely be conductive to learning as described in Billett's (2001, 2002a, 2002b) framework, which includes learning through tasks and learning through others. Students had the opportunity to work on their own and learn from doing tasks as well as through receiving guidance from and observing others.

In general, most responses to the survey questions were highly positive. Velez and Giner (2015) reviewed 57 studies on the impact of business internships; they found that "most of these studies show positive evaluations of the internships experience, although they also identify areas in which improvement is still needed" (p. 126). This is consistent with my experience as a career services professional at a four-year research university. I found that the majority of students reported positive experiences after returning from internships, so the overall positive level of the responses did not surprise me.

I also reviewed the responses with means less than 4 to understand what students reported on average less than often. Questions with lower means followed two main themes. First, many of the tasks related to working on projects or jobs from start to finish and influencing how their work was done or decisions made as a result of their work. This is not surprising given many of the students had not interned before and were inexperienced. The second main theme related to

connecting work and school, including applying concepts learned in class to tasks performed as part of the job. This is troubling given that the intent of experiential learning is to apply what is learned to a real world environment. It is possible that connections exist but students do not make them without guidance, but either way, the fact that students are not seeing connections could contribute to why faculty do not feel that experiential learning is academic or of academic value, as I found in the literature review.

The survey asked students about their engagement in certain activities. Responses in this case were 0 or 1 (based on whether they checked the box), and students were asked to check all that apply. Several students reported more than one of the following related to their tasks. At least 50% of students engaged in:

- Tasks assigned by a supervisor*
- Tasks assigned by coworkers
- Tasks that require making decisions
- Tasks that require technical skills learned in school
- Tasks that require nontechnical skills*
- Tasks identified by the intern on his/her own
- Tasks that require collaboration with others internal to the organization*

The tasks listed above marked with an asterisk were reported by more than 80% of students, meaning they were fairly common experiences. The only choice that fewer than 50% of the students reported was engaging in tasks that required collaboration with others external to the organization. Most students received tasks from their supervisor; almost 90% of students responded as such. In addition, 57% of students received tasks from coworkers, which is likely a

team member, the lead of a project, or a mentor. Given the percentages, there is quite a bit of overlap in which some students received tasks from both their supervisor and coworkers. Students did participate in tasks where they made their own decisions, though many of the Likert questions about influence in the work environment related to tasks or decisions received a mean score of less than 4 or often. However, it is good that at least some of the students are engaging in tasks that require making decisions. More students responded that they used nontechnical skills (such as communication or initiative) in their work compared to technical skills. Initially, I was surprised that only about two thirds of the students reported working on tasks that require technical skills. However, given that about half the students were interning for the first time, they are likely doing work that is less technical compared to those who had interned previously. Another explanation is that students who had not completed as much coursework as others were less likely to report using technical skills in their work, or that they did not have a deep enough understanding of technical concepts to see how the work tasks they performed related to their coursework or the theories they learned during class. In addition, many students reported that they were involved in project management, which they may view as nontechnical; students may not consider the work they are doing technical even if it does require some technical skill. I was also surprised that more than 73% of students reported identifying tasks on their own. However, if students are assigned a higher level project compared to a discrete task, they would need to identify steps on their own. Almost 75% of students reported working on tasks that required internal collaboration, which is consistent with the fact that they often received assistance from a supervisor or coworker; also, students are less likely to work with external parties such as clients or vendors, unless required for the project they are working on.

The startup/established company variable was a dummy variable with a value of 0 if the company was established and a value of 1 if the company was a startup. Statistics for each Likert question appear in Table 8 in Appendix C, which provides descriptive statistics for the two groups separately: students who interned at startups (value of 0) compared to students who interned at established companies (value of 1). In this table, the descriptive statistics of the two groups can be compared. When looking through the results side by side in Table 8, I noticed that for the most part the means were relatively similar. The largest differences between the means of the group were still less than 0.5, which was less than one standard deviation from the mean. This was also true when looking through the descriptive statistics for the other groupings of students. For the most part, the means tended to be relatively similar and any differences were small in magnitude. Later statistical tests determined whether the means and variances of different groups of students differed significantly.

Factor analysis

Factor analysis is a statistical method for data reduction that identifies underlying relationships between variables (Annotated factor analysis output: Factor analysis, n.d.). A factor analysis identified ten factors that explained almost 69% of the variance of the results. Please see Table 9a in Appendix C for the results of the initial factor analysis. Table 10 in Appendix C shows which questions were assigned to each of the factors identified. Because only five questions were assigned to Factors 6, 7, 8, and 9, and no questions were assigned to Factors 3 or 10, I decided to run a factor analysis limiting the results to five factors. Table 9b in Appendix C provides the results for the five-factor analysis and Table 11 shows which questions were assigned to the five factors. In this model, 52% of the variance was explained by the factors.

In both models, five themes were similar. Job tasks/characteristics, help/encouragement from others, and connections between work and school constituted one factor; this was the most comprehensive factor that included the majority of the questions. Other factors common to both models included: Competitiveness and working with others, Working independently, Assignments without adequate resources, Team relationships. In the model with ten factors, three additional themes emerged: Relaxed work climate, Rigid work climate and lack of influence, and Interaction outside of work. However, in both models, after the first factor, most factors only had one or two questions assigned to them. The one exception was the second factor in the five-factor model, which included five questions.

This analysis suggests that the variance of responses differed for the identified factors. Students tended to respond relatively consistently to the questions about job tasks/characteristics, help/encouragement from others, and connections between work and school. But they responded differently to questions about competitiveness and working with others, about team relationships, and about working independently. The factors in both models did not match the constructs that I identified in the Methodology section (Chapter 3), in which I grouped questions together that I used to measure different aspects of the job. I had identified five constructs that I felt would influence the student's experience: job tasks and characteristics, social interaction, level of guidance, skills and knowledge, and organizational culture. These constructs were distributed among the factors in each model, meaning that the underlying patterns in the responses for the five constructs were not necessarily consistent. In the five-factor model, students tended to respond consistently to questions about job tasks and characteristics, help and encouragement from others, and connections between work and school (these include elements from each of the five constructs). The second factor of common variance related to team relationships and rigid

work climate (these include elements of the social interaction and organizational climate constructs). Responses to questions about competitiveness and dealing with others had similar variance as well (these include elements of the social interaction and organizational climate constructs as well). The question about receiving assignments without adequate resources did not vary with any other questions (this is part of the job tasks and characteristics construct) and the question about working independently also did not vary with any other questions (this is also part of the job tasks and characteristics construct). The factor analysis implies that responses to the questions in the constructs that I created did not always follow the same patterns and there may be other underlying relationships between elements of the students' experiences.

While I felt it was important to note that the constructs did not match the identified factors, the results of both tests suggested that the factors were not successfully identified. Raubenheimer (2004) claimed that factors are more likely to replicate when there are many items per factor, and that generally a minimum of three items per factor is necessary to successfully identify all the factors. The initial factor analysis only identified one factor that had at least three items and the second analysis only identified two. Therefore, the factor analysis did not effectively identify all the factors, which may contribute to why it did not match the constructs I had identified. At the same time, it was helpful to go through the process and to review the questions that were consistently isolated.

Item reliability analysis

An item reliability analysis measures the internal consistency of a dataset. In this case, the analysis demonstrated that the data has high internal consistency with a Chronbach's alpha of .935 based on 121 cases (121 questions received responses from each subject). Chronbach's

alpha measures scale reliability, and is “a function of the number of test items and the average inter-correlation among the items” (UCLA: Statistical Consulting Group, n.d.). The analysis included 37 survey questions and the five constructs for a total of 42 items. George and Mallery (2003) claim that a Chronbach’s alpha greater than .9 is considered excellent. However, a high Chronbach’s alpha does not imply that the measure is unidimensional (UCLA: Statistical Consulting Group, n.d.). The initial factor analysis demonstrated that there were ten factors, indicating that the measure was not unidimensional in this case. By considering both the item reliability analysis and the factor analysis, I concluded that the data were consistent but not focused on only one measure. Please see Table 12 in Appendix C for the results of the item reliability analysis.

Correlation analysis

Correlation analysis measures relationships between variables. The correlation matrix demonstrated that some of the variables are correlated at the .05 significance level. Many of the correlations coefficients were less than .250, with some closer to .5. There were no demographics that are highly correlated overall, and few of the questions were highly correlated. The largest significant correlations were the constructs, which should be correlated to the questions that made up the constructs. For each of the constructs, the correlations between the questions that make up the construct and the construct are consistently greater than .5 and significant in almost all cases. Correlation between variables is a factor in interpreting the results of some tests on the data; however, the limited correlations between variables in this case do not present concerns in interpreting tests with the data set. Please see Table 13 in Appendix C for the results of the correlation analysis for the demographic variables.

T-tests

Independent sample t-tests are used to determine whether the means of two groups are different. For this part of the analysis, the data were separated into groups to determine whether the means of the selected groups were different by running a series of 2-tailed t-tests. In all t-tests, I used a 2-tailed test as opposed to a 1-tailed test because the 2-tailed test is more rigorous, meaning variables are less likely to be significant and any significant differences would be even more convincing that there is in fact a difference between the two groups. Because there were not a lot of significant variables, I will discuss any differences with *p*-values less than a borderline threshold of .10. I also considered the standard threshold *p*-value of .05 and the highly significant threshold *p*-value of .01. In each case, I specify the *p*-value and/or indicate that it is less than .001.

Interns at startups compared to established companies. The first grouping was based on students who interned at startups compared to students who interned at established companies. In this grouping, the number of students that interned at startups was very small compared to the number of students who interned at established companies (15 compared to 116, respectively). However, de Winter (2013) conducted a study which suggested that "there are no objections to using a t-test with extremely small sample sizes, as long as the effect size is large" (p. 7). T-tests showed that three of the Likert questions had different means. Students at startups were more likely to be encouraged by their supervisor to participate in important decisions (4.40 vs. 3.93, p=.081), their coworkers were more likely to take initiative (4.40 vs. 3.97, p=.052), and dealing with other people was more likely to be part of their job (4.27 vs. 3.77, p=.077). T-tests on the multiple choice questions near the end of the survey indicated that six items did result in different means for the two groups: participation in tasks assigned by coworkers (57% for

established companies vs. 33% for startups, p=.096) and in tasks that required nontechnical skills (93% for startups vs. 78% for established companies, p=.065); availability of their supervisor as a resource (100% for startups vs. 88% for established companies, p<.001) and access to company training (65% for established companies vs. 40% for startups, p=.092); and whether the intern interacted with clients (53% of startup interns reported interacting with clients compared to 17% of established interns, p=.019) and whether the intern interacted with other departments (55% of established interns reported interacting with other departments compared to 13% of startup interns, p<.001).

Because startups by nature have very limited resources, interns at these companies would often play a more active role or take on more responsibility than their peers at established companies, and thus be involved in decisions more often; this is consistent with my original hypothesis that startup interns would be involved in decisions. Further, all startup employees would more likely take initiative because they may have a greater opportunity to make an impact on the organization. It is interesting that startup interns reported more often that working with others was part of their job while interns at established companies were more likely to participate in tasks that were assigned to them by a coworkers, but that may be because intern supervisors at established companies are less likely to have enough time to interact with interns regularly or that the students received assignments from a mentor or project lead at the company. This is also consistent with the fact that startup interns were more likely to cite their supervisor as a resource, while interns at established companies more often had access to company training and are less likely to rely on their supervisor. Startup interns could interact with clients more often because there are fewer employees in the organization and everyone interacts with clients; the fact that they do is consistent with my hypothesis that they would develop a more extensive external

network. Naturally, startups are unlikely to have more than one department unless they are a larger startup, so students who intern at established companies would interact with people from other departments more often. No other questions returned significantly different means for the two groups. I had hypothesized that the questions making up the level of direction construct would elicit different responses, but that was not the case based on the results. Table 14 in Appendix C provides the results of the t-test. Because the startup group was very small, I also ran a Mann-Whitney test on the data, and this returned similar results (please see the test results in Table 15 in Appendix C). These results provided a robustness check that the t-test results were accurate.

Male students compared to female students. Next, I separated the groups by gender and looked at differences between males and females. This test found that women were more likely to say that they received help from a supervisor when needed (4.58 vs. 4.26, p=.043). Males were more likely to receive tasks from a coworker (63% for males and 42% for females, p=.016), were more likely to identify tasks on their own (66% for males and 47% for females, p=.036), and were more likely to participate in tasks that required internal collaboration (87% vs. 75%, p=.086). The vast majority of both males and females (86% and 93%, respectively) received tasks from their supervisor, and these means were not significantly different.

Given that women were more likely to receive help from their supervisor, they may work more closely with their supervisor and therefore be less likely to work as closely with coworkers. Further, males were more likely to receive tasks from coworkers in addition to their supervisor, which is consistent with the fact that they spent more time on tasks that required internal collaboration. Males were more likely to identify tasks on their own; with engineering being a male-dominated field, women are less likely to feel confident or comfortable identifying their

own tasks. These results aligned with my hypotheses about males and females. Table 16 in Appendix C provides the t-test results.

Domestic students compared to international students. Domestic and international students may also have different experiences in internships. The international group was relatively small (19 international students compared to 112 domestic students). Two Likert scale questions were significant, and there were five significant differences between the groups in the multiple choice section. Domestic students were more likely to be involved in work that required complex decisions (3.46 vs. 3.00, p=.023), but international students reported more often that their supervisor encouraged them to speak up when they had different opinions (4.42 vs. 4.09, p=.080). Domestic students were more likely to report that they received tasks with the following characteristics:

- Tasks that require non-technical skills (84% vs. 58%, p=.044)
- Tasks identified on their own (63% vs. 32%, p=.015)
- Tasks requiring collaboration with others internal to the organization (87% vs. 53%, p=.011)

In addition, domestic students were more likely to interact with other departments (54% vs. 26%, p=.020), which is consistent with tasks that require internal collaboration in the list above. International students more often used public resources when they did not know how to perform a task (89% vs. 74%, p=.075).

There could be a number of reasons for these differences. Given that Asia is the largest source of international students studying in the US (Institute of International Education, 2015), many international students tend to feel less comfortable with tasks that involve non-technical skills such as communication or demonstrating initiative, which would also be consistent with

feeling less comfortable identifying tasks on their own and with turning to public resources when they needed assistance (Wang, Sun, & Liu, 2010). International students from less individualistic cultures are less likely to feel comfortable sharing their opinions, especially when they differ from that of their supervisor; therefore, supervisors would be more likely to encourage them to speak up than they would a domestic student. Based on my experience in career services, international students have fewer choices in internships and some receive fewer offers compared to their domestic peers, as some companies are not willing to hire international students if the company does not provide sponsorship for full-time candidates. Companies may be more likely to select international students for positions that require more independent work and are more structured, or that do not require working closely with others. As a result, domestic students would have different experiences than international students and be more likely to develop their interpersonal skills and practice taking initiative, which would enhance their marketability in the full-time job market. This may be a contributing factor to why fewer domestic companies are willing to hire international students, in addition to the fact that sponsoring an international employee subjects the company to additional costs. These differences align with my expectation that international students may participate in fewer social interactions in the workplace. Table 17 in Appendix C provides the t-test results.

Business students compared to engineering/STEM students. This study focused on undergraduate students in business and engineering or other STEM fields. Next, I looked at business students compared to engineering and other STEM students (I combined the engineering and STEM majors other than engineering in these tests, as the other STEM group was very small and shares many characteristics with engineering students). These tests showed that business students were more likely to experience the following:

- Receive support or help from their supervisor (4.64 vs. 4.34, p=.065)
- Take on responsibilities that require acquisition of new knowledge or skills (4.40 vs. 4.10, p=.079)
- Receive feedback about how well they are doing on the job (4.04 vs. 3.59, p=.017)
- Extent job depends on working with others (4.36 vs. 3.82, p=.009)
- Extent to which working with others is part of their job (4.54 vs. 3.66, p<.001)
- Have an opportunity to interact with coworkers outside of work (3.56 vs. 3.08, p=.075)
- Social interaction factor (4.20 vs. 3.75, p=.001)
- Receive tasks assigned by supervisor (100% vs. 86%, p=.001)
- Receive tasks that require collaboration with external partners (48% vs. 26%, p=.060)
- Ask supervisor for assistance (88% vs. 66%, p=.009)
- Interact with clients (48% vs. 15%, p=.005)
- Interact with their supervisor (100% vs. 87%, p<.001)

The t-tests suggest that business students tend to receive more feedback about how they are doing on the job. The extent that their job depends on working with others and that working with others is part of their job align with the fact that the social interaction factor is also greater for business students than for engineering/STEM students; feeling a part of the team and interacting with coworkers outside of work would also play into this. If their jobs emphasize working with others more often than engineering and other STEM students, they would by nature receive more feedback on their work. Business students also seem to work more closely with their supervisors, in that they are more likely to receive tasks from them, to ask them for assistance, and to see them as an available resource. This may also be a factor of working more closely with or interacting more often with others. Business students are more likely to work

with clients, but that could also be due to the nature of the types of companies for which business students work compared to engineering students. In Billett's (2001, 2002a, 2002b) framework, direct and indirect guidance represent key factors that impact learning opportunities available to employees, or students in this case. By interacting more often with others, business students would have access to more learning opportunities and may develop closer bonds with others that could evolve into coaching or mentoring relationships, thus expanding their professional network and social capital. Though all students have the opportunity to gain from an internship experience, the results suggest that business students could benefit more from the experience compared to engineering or other STEM students. These results align with what I expected to find given that business students spend more time working on group projects throughout their coursework. The t-test results appear in Table 18 in Appendix C.

Students in their first internship experience compared to those who interned previously. Students who have interned before could also have different types of experiences compared to those who interned for the first time. When comparing these two groups, students who had interned before were more likely to report the following:

- Influence decisions that are important for their work (3.80 for previous interns vs. 3.43 for those who interned for the first time, p=.023)
- Can get help and support from coworkers (4.88 vs. 4.67, p=.059)
- Can get help and support from immediate supervisor (4.58 vs. 4.21, p=.022)
- Work climate is encouraging and supportive (4.52 vs. 4.23, p=.031)
- Receive feedback about how well they are doing on the job (3.82 vs. 3.55, p=.076)
- Tasks assigned by coworkers (65% vs. 44%, p=.017)
- Tasks that require technical skills (74% vs. 59%, p=.075)

- Try to figure things out on their own when they are not sure how to perform a task (95% vs. 85%, p=.044)
- Consider coworkers as an available resource in the workplace (100% vs. 95%, p=.083)
- Interaction with coworkers (98% vs. 92%, p=.099)
- Interaction with other interns (82% vs. 58%, p=.003)

Students who had interned before would have more influence in making decisions important to their work since they would have more experience and be able to contribute to a greater degree. They also report that they are able to get help or support from their coworkers and immediate supervisor; they would feel more comfortable working with other professionals since they have done so in the past. This is also consistent with a higher mean for an encouraging and supportive work environment, but again, students who have interned before would feel more comfortable navigating a professional environment than a student who is experiencing a workplace for the first time. Students with internship experience also are more likely to receive feedback, which is consistent with the fact that they receive support from others more often. In addition, they use technical skills they learned in school and are more comfortable trying to figure things out on their own, which are consistent with having more experience. Finally, students who interned before also reported working with other interns more often; perhaps they work in a role where they are providing some direction or assistance to other interns if they are returning to the same workplace, or they may feel more comfortable reaching out to other interns. Again, this aligns with my hypothesis that students who had previous internship experience would be more confident and comfortable navigating a professional environment. Results from the t-test appear in Table 19 in Appendix C.

Pell grant recipients compared to non-Pell grant recipients. The number of Pell grant recipients in the study represented approximately 10% of the survey population, so I ran t-tests to see if these students described their experiences differently. Pell grant status acted as a proxy for income level since only those below a specified income level are eligible to receive a Pell grant. Students receiving Pell grants were more likely to receive tasks from their supervisor (100% vs. 87%, $p<.001$) and to interact with their supervisor (100% vs. 88%, $p<.001$), but they were less likely to interact with clients (23% for students not receiving Pell grants vs. 7% for those who did, $p=.063$). Pell recipients were more likely to consider their coworkers as a resource if they were not sure how to perform a task (100% vs. 97%, $p=.083$) and were less likely to have access to company training (66% for non-Pell recipients vs. 29%, $p=.013$).

The tests demonstrated that students who received Pell grants spent more time with their supervisor, and they also felt comfortable seeking assistance from coworkers. It is interesting to note that although the majority of the students receiving Pell grants were engineering or STEM majors, they still reported more social interaction than non-Pell recipients, which seems contradictory to the results in the t-tests on major. These students may tend to gravitate toward positions in which they have access to their supervisor and their coworkers. Of the 15 Pell recipients, only three majored in business, and the earlier test on major indicated that business students spent more time interacting with clients. It is interesting that they reported having access to company training less frequently; I checked and all but two of the Pell recipients worked at large companies I am familiar with that would provide access to company resources. The fact that they have access to their supervisor and coworkers may mean that they do not seek company resources out and therefore are unaware of them. Overall, I felt it was telling that there

were very few differences between these groups and was surprised that Pell recipients did not feel limited in their choices or experiences. Test results appear in Table 20 in Appendix C.

One other aspect that I was interested in related to Pell recipients was whether these students paid tuition while they were interning and whether they received academic credit for the summer term while they interned. Only one of the Pell recipients in the survey reported that he or she would pay tuition during the summer, and this was for a course related to the internship for which he/she would receive credit. One other Pell recipient mentioned that he/she would receive credit, but this student was not paying tuition. Otherwise, students were not paying tuition or receiving credit, which seemed to be relatively common among the entire survey sample. I was somewhat surprised that I did not identify any differences for these students, but it is important to note that most of these students reported they worked at paid internships and choice limitations would be more of a factor for unpaid opportunities.

Interns who reported to a male supervisor compared to those who reported to a female supervisor. I also compared groups of interns that reported to a male supervisor compared to those who reported to a female supervisor, as I hypothesized that this could potentially impact the students' experiences. Students reporting to a male supervisor rated their work as more challenging (4.05 vs. 3.79, p=.060). Those reporting to a female supervisor more often felt that their work achievements were appreciated (4.46 vs. 4.37, p=.044), that they received feedback on how they were doing as they worked (3.87 vs. 3.60, p=.080), that their job depended on their ability to work with others (4.13 vs. 3.84, p=.080), and that dealing with others was part of their job (4.32 vs. 3.62, p<.001). The social interaction construct was also higher for students with a female supervisor (3.98 vs. 3.78, p=.094). Students reporting to male supervisors were more likely to receive tasks from coworkers (60% vs. 41%, p=.052), but those

reporting to female supervisors were more likely to engage in tasks that require decisions (79% vs. 64%, p=.066) and were more likely to interact with clients (33% vs. 16%, p=.052) and with their supervisor (97% vs. 86%, p=.011).

These results suggest that female supervisors tend to spend more time with interns that report to them compared to men who may ask coworkers to work with the intern, and female supervisors encouraged interns to work with others and to engage in the workplace. While female supervisors did not push students as much or provide them with the same level of challenging assignments, they did demonstrate appreciation for the work that students performed and provided them with feedback to inform their future tasks. While the experiences may be different, both interns who report to male and female supervisors would both develop skills and knowledge; those who reported to men would learn through more challenging tasks while those who reported to women would learn from others in the workplace through direct and indirect guidance. This implies that students who report to female supervisors may further develop their nontechnical skills while those who report to male supervisors would be more likely to develop their technical skills. I had predicted that female supervisors may be more collaborative, and the results support that hypothesis. Please see Table 21 in Appendix C for the t-test results.

Summary. The t-tests provided significant insight about the internship experiences of different groups of students. For the most part, there were relatively limited differences between the various groups, and particularly between male and female students and between Pell recipients compared to those who did not receive Pell grants. Students who worked at startups were more likely to participate in decisions and to observe initiative in the workplace. They also worked directly with their supervisor more often than those at established companies and developed their nontechnical skills. International students were less likely to work closely with

others or perform tasks that required nontechnical skills, and as a result they sought greater assistance from public resources. While they still benefited from learning independently, they missed learning opportunities through social interaction and direct guidance. Students majoring in business also demonstrated greater access to others because they were much more likely to work closely with their supervisor and coworkers. Social interaction played a much larger role in their work, which will benefit them in the form of a larger professional network and access to more social capital. Though all students have the opportunity to gain from an internship experience, those who participate in more than one internship enjoy greater benefits because they are more likely to work closely with others and to influence the workplace after their initial experience. Despite these differences, the data indicate that student internship experiences demonstrate considerably more similarities than differences.

One-way ANOVA

Similar to t-tests, ANOVA analyses determine whether the means of two or more groups are different. The results of ANOVA analyses on each of these groups were mainly consistent with the t-tests, so I will only report different results in this section; otherwise, the results were relatively consistent with the previous section. While t-test and ANOVA analyses both compare the means of two or more groups, I performed these tests as well to serve as a check for robustness and to confirm the findings of the t-tests. The ANOVA analysis results matched that of the t-tests with respect to whether a student interned at a startup or established company, to gender, to previous vs. first internship experience, and to female vs. a male supervisor. Please see Tables 22, 23, 24, and 25 for the test results. For the remaining three groups, the results generally agreed with the t-tests but identified a couple of additional distinctions. The discrepancies result from the fact that a one-way ANOVA assumes that variances between the

groups are equal, while in the t-tests I used the *p*-value associated with equal variances not assumed.

The results for domestic and international students were fairly consistent, with one notable exception when equal variances were assumed. The ANOVA analysis suggested that international students were more likely to find the workplace climate competitive (3.00 vs. 2.55, p=.057). Based on the other results of the ANOVA for these two groups and the prior t-test, international students may see the workplace as more competitive since they are less likely to collaborate internally or to work with other departments. Also, please note that all but one of the international students were engineering majors; their perception of the workplace may be influenced by the competitive nature of engineering programs. The distribution of males and females in the international population was relatively equal, so gender was likely not a factor. Please see Table 26 for the results of the test.

Regarding major, the ANOVA analysis included three groups: business students, engineering students, and STEM students other than engineering. The results were consistent with the t-tests except that the ANOVA analysis did identify working with other interns as different between the groups. In this test, 80% of business students and 70% of engineering students worked with other interns while only 25% of non-engineering STEM majors did so (p=.012). Also, it identified that non-engineering STEM students found their current skills and knowledge more useful than their peers (4.63 for non-engineering STEM students vs. 3.91 for engineering students and 4.16 for business students, p=.082). However, the group of non-engineering STEM majors was very small, which raises questions about the reliability of the test. Table 27 in Appendix C provides the test results.

In the ANOVA analysis, Pell grant recipients were more likely receive assignments that they felt they did not have adequate resources to complete (3.14 vs. 2.51, *p*=.050) and to characterize the work climate was rigid and rule-based (3.07 vs. 2.50, *p*=028). Perhaps this could be because the Pell recipient subjects all worked at larger companies, which by necessity would have more rules than a smaller company. The fact that they felt they did not have adequate resources for some of their tasks is consistent with the fact that they reported having access to company training less often. Again, the Pell group was small so these results may be less reliable. Test results appear in Table 28 in Appendix C.

Regression analysis

Regressions measure the strength of the relationship between a dependent variable and an independent variable and can also include one or more controls. Several regressions were run on the data to test relationships between variables. First, I looked at the effect of company type (startup vs. established company) on level of direction construct. Recall that the level of direction construct was calculated by averaging the responses to questions 35 through 38. I hypothesized that the type of company would impact the level of direction an intern received, and that students who interned at established companies may receive more direction because processes would likely be more established and there could be specific training programs in place.

$$y\ (Level\ of\ direction) = \alpha + \beta_i Startup_i + \varepsilon_i$$

The regression returned an R^2 of .006 and the coefficient was not significant, indicating that the type of company does not predict the student's experience related to the level of direction that he or she received (test results appear in Table 29a in Appendix C). Because the regression indicated that there was not a significant relationship between the company type and the level of

direction construct, I added several controls, including: whether the student was interning for the first time (First_Internship), whether the student was domestic or international (Domestic), gender (Female), gender of the supervisor (Female_Supr), the extent to which the work climate was encouraging and supportive (Q46), the extent to which the student connected what he/she learned in school to the workplace (Q56), the extent to which the student applied what he/she learned in the classroom to work (Q57), whether the students tried to figure things out on his/her own if he/she did not know how to perform a task (Q67), and the student's major (Major_B_E).

$$y\ (Level\ of\ direction) = \alpha + \beta_i Startup_i + \beta_i First\_internship_i + \beta_i Domestic_i + \beta_i Female_i + \beta_i Female\_Supr_i + \beta_i Q46_i + \beta_i Q56_i + \beta_i Q57_i + \beta_i Q67_i + \beta_i Major\_B\_E_i + \varepsilon_i$$

In this model, the encouraging and supportive work climate variable was significant (p<.001, R^2=.324) with a β of .358, meaning that as the student rates the work climate as more encouraging and supportive by one unit on the response scale, he/she rates the questions that make up the level of direction construct approximately 36% higher. This makes sense because if the climate is encouraging and supportive, then students would feel comfortable asking for help and would likely have more opportunities to participate in decisions and influence more of their work. I was a bit surprised that none of the other variables were significant. I thought perhaps that students interning for the first time might find they received more direction, but that was not the case. Also, the type of company (startup vs. established) still did not impact the level of direction even in the more robust model. However, an encouraging climate emerged as a factor that predicted level of direction. Table 29b provides the test results for this regression.

Next, I looked at the effect of gender on social interaction in the workplace construct (made up of questions 58 through 63), controlling for domestic vs. international status, whether the student was a Pell grant recipient, and the gender of the student's supervisor. In this case, I suspected that a student's gender may impact how much he or she interacted with others in the workplace, as the t-tests indicated that women were more likely to receive help or support from their supervisor while men received more tasks from coworkers and participated in tasks that required internal collaboration. I also knew from the t-tests that international students spent less time working with others and were more likely to rely on public resources for assistance. Pell recipients also worked more closely with their supervisors, and the t-tests and ANOVA analyses indicated that women tended to encourage interns to work more with others.

$$y\,(Social\ interaction) = \alpha + \beta_i Gender_i + \beta_i Domestic_i + \beta_i Pell_i + \beta_i Supervisor\ gender_i + \varepsilon_i$$

However, the regression returned an R^2 of .021 and again none of the coefficients were significant, so the construct was not predicted by this group of variables (Table 30 in Appendix C).

Third, I tested for the effect of gender on the organizational culture construct (made up of questions 39 through 53) while controlling for the gender of the supervisor. In this case, I thought students' perception of organizational culture could be impacted by their gender and/or the gender of their supervisor. This could be even more likely in an engineering environment where women would likely work in a male-dominated workplace.

$$y\,(Organizational\ culture) = \alpha + \beta_i Gender_i + \beta_i Supervisor\ gender_i + \varepsilon_i$$

The R^2 was .010 and the regression the coefficients were not significant; organizational culture could not effectively predict a student's gender or his or her supervisor's gender (Table 31a in

Appendix C). Based on these results, I added additional variables. In the next regression, I used the Organizational culture construct as the dependent variable and Established/Startup as the independent variable to determine whether the company type predicted the Organizational culture construct and added a number of controls: whether this was the student's first internship (First_Internship), whether the student was domestic or international (Domestic), gender of the supervisor (Female_Supr), the extent to which the student's job depended on working with others (Q59), the extent to which working with others was part of the student's job (Q60), the extent the student talked informally with coworkers while at work (Q62), the extent to which the student interacted with coworkers outside of work (Q63), and the student's major (Major_B_E).

$$y\ (Organizational\ culture) = \alpha + \beta_i Startup_i + \beta_i First\_Internship_i + \beta_i Domestic_i + \beta_i Female\_Supr_i + \beta_i Q59_i + \beta_i Q60_i + \beta_i Q62_i + \beta_i Q63_i + \beta_i Major\_B\_E_i + \varepsilon_i$$

The Organizational culture construct includes several questions about the climate in the workplace. Based on the t-tests, I suspected whether the internship was the student's first and his or her status as domestic or international would predict their views of the culture. The gender of the student's supervisor might also influence the culture, since female supervisors tended to show more appreciation for students' work. Business students worked more closely with others in the workplace; similarly, survey questions 59, 60, 62, and 63 focused on how much the student interacted with others in the workplace through his or her tasks as well as informally. I included these because many of the questions that made up the Organizational culture construct inquired about others helping to develop the student's skills or whether there was a sense of team in the workplace. This regression returned an R^2 of .296; three of the variables were significant: the extent that the student's job depended on working with others (Q59; β=.272; p=.024), the

extent the student talked informally with others at work (Q62; β=.150; p=.099), and the extent the student interacted with coworkers outside of work (Q63; β=.189; p=.034). This indicates that students who responded higher to the questions about organizational culture also responded higher to these questions, with the extent that the student's job depended on working with others having a more significant impact than the other two variables. However, the remaining variables did not predict Organizational culture in this model. Table 31b in Appendix C provides the full test results.

Fourth, I wanted to know if gender and the other factors impacted the skills and knowledge construct (made up of questions 54 through 57), so I ran a regression with the skills and knowledge construct as the dependent variable and job tasks and characteristics construct as the independent variable, controlling for the level of direction construct, the organizational culture construct, the social interaction construct, and gender. I anticipated that the types of tasks a students was assigned, as well as the organizational culture, the level of direction, and the level of social interaction may impact the skills and knowledge the student required as a result of the internship. I also wanted to know if the skills and knowledge acquired might be impacted by the gender of the student, given that women sometimes have lower self-efficacy based on Bandura's (1991) theory as discussed in the literature review.

$$y\ (Skills\ \&\ knowledge) = \alpha + \beta_i Job\ characteristics_i + \beta_i Organizational\ culture_i + \beta_i Level\ of\ direction_i + \beta_i Social\ interaction_i + \beta_i Gender_i + \varepsilon_i$$

This regression returned an R^2 of .466, explaining 46.6% of the variance; the job characteristics construct, the level of direction construct, and the organizational culture construct were significant. The β for job characteristics was .350 (p<.001), meaning that as the students rated

the questions that make up the skills and knowledge construct higher (connecting work and school, applying what they learned in school to the workplace, etc.), they also rated the questions related to job characteristics higher by 35% (work requires complex decisions, ability to influence aspects of the job, work is challenging). Similarly, the β for level of direction was .166 (p=.078), so as responses to skills knowledge increased, responses to questions about the level of direction increased by almost 17%. The β for the organizational culture factor was .233 (p=.033), indicating that higher value responses to questions that make up the skills and knowledge construct resulted in higher responses to the questions about organizational climate by 23%. Therefore, as students feel that their work is challenging and they have some influence in the workplace, as they are able to direct their own work and actions, and as they feel the organizational culture is encouraging and comfortable, they report that they see connections between school and work. The regression results appear in Table 32 in Appendix C.

Finally, I looked at the effects of several variables on job characteristics. I wanted to know if company type influenced the Job tasks and characteristics construct, so I used Established/Startup as the independent variable since I thought company type would influence the nature of the tasks students received. I also included nine controls: encouraging and supportive work environment (Q46), relaxed environment (Q47), sense of team in the workplace (Q52), extent to which students felt part of the team (Q53), extent the student's job depended on working with others (Q59), extent that dealing with others was part of the student's job (Q60), the extent to which the student was able to talk informally with coworkers at work (Q62), the extent to which the student interacted with coworkers outside of work (Q63), and the student's major (Major_B_E; this is a dummy variable that compares students majoring in business against students majoring in engineering or other STEM). As students interacted with others both as part

of their work and informally or outside of work, they may develop relationships that could impact the types of tasks they received. This would also be true in an encouraging and supportive work environment and a relaxed work environment might encourage more informal exchanges between students and others.

$$y\ (Job\ tasks\ \&\ characteristics) = \alpha + \beta_i Startup_i + \beta_i Q46_i + \beta_i Q47_i + \beta_i Q52_i + \beta_i Q53_i + \beta_i Q59_i + \beta_i Q60_i + \beta_i Q62_i + \beta_i Q63_i + \beta_i Major\_B\_E_i + \varepsilon_i$$

The regression returned an R^2 of .314 and four variables were significant: encouraging and supportive work climate (Q46; β=.279; p=.006), extent student felt part of the team (Q53; β=.280; p=.026), extent student interacted with coworkers outside of work (Q63; β=.147; p=.098), and the student's major (β=.158; p=.058). Therefore, as students rated the work climate as more encouraging and supportive and they felt part of the team, they tended to respond with higher values to the questions about whether they had influence over their work or their work contributed to decisions. To a somewhat lesser extent, interacting with coworkers outside of work also positively impacted job tasks and characteristics. Also, engineering and STEM students tended to rate the job tasks and characteristics questions higher than business students by a similar degree to interacting with coworkers outside of work. The test results appear in Table 33a in Appendix C.

I tried another combination of variables with some slight variations. In this regression, I dropped Established/Startup and used encouraging and supportive work climate as the independent variable. I dropped relaxed work climate and added gender of supervisor.

$$y\,(Job\ tasks\ \&\ characteristics) = \alpha + \beta_i Q46_i + \beta_i Q52_i + \beta_i Q53_i + \beta_i Q59_i + \beta_i Q60_i + \beta_i Q62_i + \beta_i Q63_i + \beta_i Female\_Supr_i + \beta_i Major\_B\_E_i + \varepsilon_i$$

In this regression, the R^2 was .323 and the same four variables were significant with similar magnitude and direction. The results indicated that the gender of the student's supervisor did not significantly change the outcome of the regression. The full results appear in Table 33b in Appendix C.

I also ran some regressions on demographic data and specific survey questions to explore whether student characteristics predicted aspects of their experiences in the workplace. In each regression, I used a specific question as the dependent variable and seven demographic variables (gender, domestic/international, established/startup, major, GPA, Pell recipient, and first internship) as controls.

$$y\,(Question\ \#) = \alpha + \beta_i Gender_i + \beta_i Domestic_i + \beta_i Startup_i + \beta_i Major_i + \beta_i GPA_i + \beta_i Pell\_recipient_i + \beta_i First\_internship_i + \varepsilon_i$$

For question #40, receiving help from a supervisor when needed, the first internship and gender variables were significant with an R^2 of .117. The β for first internship was -.207 (p=.020), meaning that students who interned for the first time were about 21% less likely to report feeling that they could get help or support from their supervisor when needed, which is consistent with the earlier t-tests; for females, the β was .209 (p=.017) indicating that women were about 21% more likely to feel they could get help or support, again consistent with the t-tests (Table 34 in Appendix C). Students interning for the first time were about 19% less likely to say that the

work climate was encouraging and supportive (#46), with a β of -.193 (R^2=.057 and p=.035), also consistent with prior results (Table 35 in Appendix C). Question #49 asked about whether employees take initiative in the workplace. Those who interned at a startup were more likely to respond with a higher value (β of .186, R^2=.070, p=.045) by almost 19%, consistent with my expectations and with the prior t-tests. Again, students who interned for the first time were more likely to respond that this was not the case in their organization (β of -.178, R^2=.070, p=.050). Test results appear in Table 36 in Appendix C. In question #59, students were asked about the extent that their job depends on working with others. Business students were more likely to agree to this, which is consistent with the results of the previous t-tests and ANOVA analysis. The β in this case was -.267, which indicates that engineering students (categorized as 2) were almost 27% less likely than business students (categorized as 1) to report this as often (R^2=.058, p=.014). Other STEM students (categorized as 3) were even less likely to report this (Table 37 in Appendix C). Finally, question #60 asked about the extent that dealing with others was part of the intern's job. In this case, business students were much more likely to respond with a higher value to this question, with a β of -.368, meaning engineering students were almost 37% less likely to rate this as highly (R^2=.143, p<.001). Test results for this question appear in Table 38 in Appendix C. This series of regressions confirmed several of the findings of the earlier t-tests and provided a robustness check.

Summary of quantitative results from the survey

A broad review of the quantitative results depicts a scene in which there are few differences in experiences of students in internships. Initially, I anticipated finding that students who interned at startups would have very different experiences than those who interned at established companies. In fact, the data show very few distinctions between the two company

types, and further exploration revealed limited differences between other groupings of students as well. The lack of differences between male and female students as well as Pell recipients and non-recipients (used as a proxy for income level) was especially notable. Faculty should note that survey responses suggested that students perceive the work environment as a conducive learning environment where they have access to learning opportunities through performing tasks and direct and indirect guidance from others. At the same time, the results also indicate that some students may gain different skills sets through their experiences. For example, business students and students who receive Pell grants tend to work more closely with their supervisor, which may significantly impact their experience in aspects that were not captured by the survey. Students with female supervisors may learn more through direct or indirect guidance from working with others while those with male supervisors may gain more on the technical side through challenging assignments. One troubling finding was that students do not necessarily see connections between the work environment and what they learn in the classroom, which was also relatively consistent among the various groupings of students. At a high level, the results from the various tests on the data were relatively consistent, providing support for the conclusions drawn from them. The quantitative results focused on several aspects of the work environment, but did not convey what the students actually did during their internships. The survey included open-ended questions to elicit this information, and the interviews also contributed a deeper understanding of the lived experiences of the students.

Survey Results: Open-ended Questions

Four open-ended survey questions invited subjects to write in a response based on their experience. The first question asked the subject to briefly describe the tasks and responsibilities assigned during the internship, and the next question asked which of these tasks the subject spent

significant time performing (defined as more than 30% of time during the week). Next, the subject was asked to discuss the skills that he or she gained as a result of the experience, if any. Finally, subjects were asked if there was anything they had not been asked that they thought would be helpful to the researchers. These open-ended questions captured unique information from the students that the Likert and multiple choice questions could not elicit.

Intern tasks and responsibilities

The question about tasks and responsibilities elicited a variety of responses, which were coded using the qualitative software Atlas.ti. Responses did not have to be an exact match to be coded similarly; I used my experience from career services to categorize responses that were not exact matches but I felt were similar enough to code in the same category. Based on Hsieh and Shannon's (2005) three approaches to qualitative content analysis, I followed the conventional content analysis approach. That is, I first read through all the responses to identify an initial list of codes. Then I went through the data in detail to categorize responses within the initial list and added some codes because some responses were unique or did not match the more frequently occurring categories. Students reported 54 different types of tasks, with 27 of the responses occurring only once. Eight responses occurred more than 5% of the time (at least seven students reported this task or responsibility). This seemed a reasonable amount to report as a relatively representative list of tasks for the group. These include the following:

- Product development
- Testing
- Assigned tasks
- Project management

- Research
- Design
- Software development
- Data analysis

Please see Table 39 in Appendix C for the number of occurrences and frequencies. Most students reported that they spent significant time (more than 30% of their time) during the week on the majority of the tasks they reported, and I found no notable differences between the responses to the two questions.

While three of the tasks that students who interned at established companies and startups were similar, startup interns did not report five of the tasks that were reported by more than 5% of subjects in the survey sample: product development, testing, assigned tasks, design, or data analysis. While the number of students who interned at startups was small, it was still telling in that no students reported these activities, particularly data analysis, given it was the most commonly reported task.

Skills developed

When asked about the skills that students developed as a result of their internship, 30 skills were described. Fifteen of these were mentioned only once or twice. At least 5% of students (seven or more) reported the following ten skills:

- Problem solving skills
- Confidence
- Research skills

- General interpersonal skills
- Interacting professionally
- Knowledge of industry
- Software skills
- Communication
- Data analysis
- Technical skills related to area of study

More of these responses were similar between the two groups, but students who interned with startups did not report three skills: research skills, general interpersonal skills, and data analysis. Again, the students from startups did not list data analysis as a skill they learned, consistent with not listing it as a task in the earlier question. Please see Table 40 in Appendix C for the number of occurrences and frequencies for the responses to what skills the students developed.

Open-ended comments

The last open-ended question asked students to share any information they thought may be helpful to the researchers. Six of the students in the study offered that they previously interned for the same company; some had interned for the same company for multiple semesters. Fourteen students mentioned in their response to this question that they benefited significantly from learning how to interact in a professional or work setting. Given that there was no prompt about interacting professionally, it is significant that 10.7% of the students volunteered it. This indicates that it is likely others would have also responded positively if this was a question asked in the quantitative part of the survey. A few other responses occurred only once and tended to vary significantly, but the majority of students did not offer additional comments or stated that

the survey was comprehensive. Due to the open nature of the question, I would argue that students would likely respond about a salient aspect of their experience, which may differ quite a bit from student to student. As noted earlier, some of these open responses resulted in selecting the respondent for an interview invitation.

Summary of qualitative results from the survey

The open-ended survey questions provided insight about differences between the tasks that students who interned at startups performed compared to those who interned at established companies. Students reported 54 different types of tasks and half of these tasks were reported by only one student; therefore, internship tasks vary greatly though eight tasks appeared in at least 5% of responses. The most commonly reported task that interns performed was data analysis, yet no students at startups mentioned data analysis as a task or skill that they developed. Startup interns also did not mention that they performed assigned tasks. Turning to skills developed, 30 skills were mentioned with only half of them appearing once or twice. Ten skills were mentioned at least 5% of the time with problem solving being the most common response. Finally, in the open-ended comments, more than 10% of students mentioned that they appreciated the opportunity to experience a professional work setting and gained significantly from their internship. The data from the survey (both quantitative and qualitative) contributed to the selection of interview participants, which provided a deeper level of detail and an opportunity to further explore the data gathered in the survey.

Interview results

Twenty-one students agreed to participate in interviews. Fifteen of the students (71%) majored in engineering, and six (29%) majored in business. Seven females (33%) participated,

and just over half of the subjects (52%) reported that this was their first internship experience. Eighteen of the students interned at an established company, though nine of those students worked in what I termed a "hybrid" internship where they experienced characteristics of both established companies and startups. (I describe hybrid companies shortly.) Three students interned at companies that fit my earlier definition of a startup. Fifteen of the students (71%) were seniors, and three students (14%) were international. Virtually all the students received compensation and none earned credit for the internship experience on its own. The descriptive statistics for the interview sample were relatively similar to those of the survey population. Due to the fact that the number of students who participated in the survey interned at startups was much smaller than the number who interned at established companies, the students who interned at startups are slightly overrepresented in the interview sample compared to the survey population. Please see Table 4 in Appendix C for a table that compares the survey sample to the interview sample.

Interview participants were selected for a variety of reasons in order to explore as many different cases as possible. As mentioned in the Data Analysis section of Chapter 3, I used purposeful sampling in a manner based on Yin's (2009) multiple case study method, focusing on both representative and unique cases. With this approach, I hoped to learn about a variety of experiences and identify common themes among different cases, including those that represented unique experiences.

Every survey respondent who interned at a startup and volunteered to interview was selected since the number was extremely small; this accounted for three of the interview participants. Students who interned at established companies in an office located in a university research park were selected because the offices were segregated from the company and the

experience might be different than students who interned at a more traditional facility for this type of company; four subjects fell into this category. Three students were Pell grant recipients, which was used as a proxy for income level and could impact their experience. Because international and domestic students tend to have different experiences, three international students were included in the interview subject pool. Different industries may also provide different experiences, so several subjects were selected based on the type of company for which they interned. For example, I reviewed the companies that were included in the list of interviews and noticed that manufacturing environments were not represented, so I selected students from two companies that primarily manufacture products based on my knowledge from working in career services. I also noticed that there were no investment banking firms, so I selected a student who worked at one. Students were invited to provide additional information they thought might be helpful in the survey, and some of these comments were relevant so those subjects were included. For example, one student who worked at an established company mentioned that the environment was very entrepreneurial. Another student said that other interns at the company were not diverse and some of the interns were not very welcoming, though that was not the case with the full-time employees in the company. A third student commented that he did not feel that his work impacted the company, while a fourth student reported the opposite, stating that she felt many people would use the results of her project. A couple of students had interned for the same company previously and were included. While the interview sample included some unique cases, I felt that overall it was relatively representative of the demographics of the survey population and included a variety of types of companies so that it included most potential cases. Table 41 in Appendix C provides a table with demographic information about the interview subjects.

I ran an independent samples t-test to compare the responses of the students in the sample who only took the survey to those who participated in interviews as well. The results of the test are in Table 42 in Appendix C. The mean of the group that participated in interviews was greater than the survey only sample in the following areas:

- GPA (3.62 vs. 3.46, p=.018)
- Ability to choose between alternative methods to complete work (4.33 vs. 3.91, p=.036)
- Receive help and support from coworkers (5.00 vs. 4.73, p<.001)
- Receive help and support from supervisor (4.71 vs. 4.34, p=.030)
- Supervisor helps student to develop his/her skills (4.48 vs. 4.01, p=.027)
- Work climate is encouraging and supportive (4.57 vs. 4.34, p=.091)
- Receive feedback while working (3.95 vs. 3.63, p=.063)
- Coworkers help student to develop knowledge and skills (4.48 vs. 4.13, p=.056)
- Tasks assigned by supervisor (100% vs. 86%, p<.001)
- Ask supervisor for help if he/she does not know how to perform task (86% vs. 67%, p=.049)

These aspects of the work environment seem to center around a theme of encouragement and support from others in the workplace. It is also notable that the average GPA of the interview sample was higher than the survey only sample. These factors could be due to selection bias since students volunteered to interview rather than being randomly selected.

"Hybrid" companies

Earlier in this section, I referred to "hybrid" companies and provided a brief introduction, but I wanted to offer more context in this section. Initially, I set out to look at the experiences of interns at startups compared to established companies. While I suspected that each internship

experience would be different, I found early on during the interviews that some students at established companies tended to respond to questions more similarly to the students who interned at startups than they did to those who interned at other established companies. Going forward, I decided to test this with a few of the interviews to identify a pattern, so I selected students who worked for established companies but offered comments in the open-ended questions that suggested their experience might have been a bit different. For example, one student who worked at an established company that has been around for more than 100 years and employs more than 70,000 people worldwide mentioned in one of the open-ended questions that he felt the company was very entrepreneurial. I also sought out respondents to the survey who had worked for offices that were separated from the main company, such as an office located in a university research park. When I asked students to describe the culture of the company where they worked, I paid attention to the words they used; in some cases, students specifically stated that the environment felt like a startup. In other instances, I interviewed students who interned at established companies but had previous internship experiences at a startup, so I was able to ask them about any similarities and contrasts between the two internships. Based on the discussions during the interviews, I was able to classify some companies as hybrid companies – these were companies that did not fit Robehmed's definition of a startup, but exhibited several characteristics of a startup, such as the culture. Another characteristic that tended to surface during discussions about hybrid companies was an emphasis on innovation and/or continued improvement. Students described more flexible environments, where they were assigned projects or could proactively initiate a project themselves, or where high level executives wanted to know what millennials thought. When I spoke with these students, their responses tended to be much more similar to those who interned at startups than to those who interned at established

companies. Admittedly, the sample size was small, but they tended to speak similarly about the culture in the workplace and what they were able to do and learn as a result.

Unfortunately, there was no way to determine which companies that were included in the survey were established versus hybrid companies. The only method for making that distinction in the interviews was through asking probing questions and analyzing the language used during the interviews.

Interview themes

Analysis of the interview data revealed several recurring themes. First, interns spent more than half of their time working independently, with the most common range between 60% and 80% of their time. Second, most interns reported that their supervisor, mentor, and/or coworkers made them feel comfortable asking questions and willingly offered assistance. Related to this theme, intern interactions with coworkers outside of work varied from limited/none to spending time with other interns to spending time with full-time employees outside of work. Third, interns who believed that their work significantly impacted the company tended to report positive experiences. Fourth, students talked about work environments that ranged from "keeping interns busy" to providing interns with ownership of projects and/or allowing them to proactively direct some of their work. Fifth, some students who worked for established companies described a work environment that was more aligned with the characteristics of a startup. Finally, three areas emerged where the experiences of students who interned at startups or hybrids differed from those who interned at established companies: culture, impact, and increasing responsibility. Note that the first three of these themes were

consistent with the conclusions from the quantitative analysis of the survey; this will be discussed in more detail in the integrated analysis section.

Theme 1: Working independently. One aspect of the tasks and responsibilities assigned to students includes how often they work on their own or with others. Students reported working independently more than 50% of the time, with some working on their own as much as 80-90% of the time. This was typically true regardless of the type of company (startup, hybrid, or established).

> I would say about 80% of the time I was just working on my project, working at my computer doing it. And the other 20% of the time we were all kind of working more of a group study. (Subject 3, established)
>
> I'd say I probably spent about three quarters of my time working independently. I, my project was a solo project, but I had to get input from the rest of the lab and the people on the business side of things. So the project involved gathering input from others but then working independently. (Subject 18, hybrid)
>
> I would say I worked by myself probably 65% of the time… but quite a bit of time then I was working with other people… and that could be with other interns or maybe clients or companies. (Subject 12, startup)
>
> When I was the communications intern, I was working alone 90% of the time, because the only time that I was collaborating was with the manager who was overseeing me. I didn't have someone assisting me. I was just solo on that one. In [location], there was another girl who did the same work as me, but it was all independent… And then this semester, my project is by myself… so I would say it's like 70/30, 70 on my own, 30 with him. (Subject 6, hybrid)

In Billett's framework, organizational learning occurs through performing work tasks, direct guidance, and indirect guidance. When students work independently, they are able to learn from performing tasks on their own. However, given that some students worked independently as much as 75% to 90% of their time, this could be a concern for faculty who feel that experiential learning is not legitimate academic learning, as discussed in the literature review (Blake, 1983;

Branton et al., 1990; Heinemann et al., 1988; O'Neill, 2010; Wilson, 1973a; Wilson, 1973b). At the same time, it is interesting to note that if students are expected to spend one to two hours outside of class studying for every hour they are in class, that means that they are expected to work independently 50% to approximately 70% of the time, which is in alignment with what many students reported in their internships.

Theme 2: Supervisors and coworkers willing to help. All students indicated that they could ask for help from a supervisor or mentor if needed, and some felt comfortable asking their coworkers. Though some specifically mentioned that their coworkers went out of their way to help, others said that they tried not to bother others unless absolutely necessary.

> I would try to figure it out… on my own for a little bit, because I feel like I learn best that way. And I also kind of get a better understanding of what I'm trying to learn instead of just asking someone. If it, you know, I would not spend too much time, but you know, a reasonable amount of time trying to figure it out on my own. But if I still can't do it, then I would go to, I was reporting to two project managers, and I would go to either one of them to ask for help. And you know, I don't recall any situation where they wouldn't help me out… (Subject 7, hybrid)

> So it kind of depended on what it was. If… it's like a general thing I didn't know how to do, I would generally look it up online first rather than bother one of my leaders… But if it was something specific to the company, like how I should address the client, or how should I go about dealing with a difficult candidate, then I would usually ask my trainer. My direct supervisor sat directly to my left, so it was very easy to just turn to the side and ask them a quick question. (Subject 8, startup)

Most students indicated they would try to find an answer or solution on their own before asking someone else, which helps them to learn through performing their tasks.

While many students talked about informal interactions with coworkers, some students did not work closely with their supervisor or coworkers. A couple of students shared that they

had to schedule time with a manager or supervisor when they needed assistance, or that they worked separately from the team.

> Since I'm working remotely from the team, sometimes I am kind of forced to figure things out a little bit more. It's like, you know, because then you have to schedule time with my boss, and I can't just go and see when he's busy and when he's not. I can't, I have to schedule time with him. (Subject 15, established)

This could potentially limit the affordances or learning opportunities available to them through direct and indirect guidance. While students would be able to request direct guidance even if working remotely, they would have limited opportunities for indirect guidance through observation and informal interactions. They would also have fewer opportunities to develop relationships with coworkers. This could contribute to concerns from faculty if students work remotely, limiting their interactions with others.

One student specifically talked about the work environment as a good place to learn.

> I did find it to be a comfortable environment to learn, in terms of working with the full time employees. I think they were all very helpful. They were very welcoming. They were always willing to take the time out of their day to help me. (Subject 4, established)

A comfortable work environment is an example of an affordance that enables learning. Another student described a typical situation when dealing with a problem as an interactive discussion which may take significant time to resolve.

> And as soon as a problem came up, there'd be a lot of one-on-one talking, sometimes for hours. So it's mostly, like you're given a task, and you try to do it the best you can. Whenever you have questions, you go to whoever gave you the task. And [if] you ever have comments, of course, talk to the person you're working with. (Subject 9, established)

This interaction also provides an example of an opportunity to learn by observing (indirect guidance) and participating in the ensuing discussion to resolve the problem.

Learning opportunities may also be influenced by students' interactions with coworkers unrelated to the job. This could range from a personal conversation during work hours, such as asking about a coworker's past experiences or the intern sharing some ideas about his or her future career plans, to spending time with others outside of the workplace. Several students developed relationships with at least one other coworker outside of work. One intern spoke about a coworker other than his assigned mentor who took a special interest in him.

> Like he wasn't officially assigned to me at all. He just wanted to befriend me. And he ended up like spending a lot of time off work with me, and just showing me around in [work location]. You know, like take me to like good restaurants and stuff. (Subject 1, established)

Several interns talked about activities outside of work that interns were invited to join and/or that specifically targeted the interns, though organized activities tended to be more common among established companies with larger intern pools.

> We had a softball league that the company invited the interns to join… And so we would usually head out to a bar beforehand and kind of get together and just hang out… The company hosted a luncheon that they provided the food for the employees. And we had a chance to hear from one of the departments… and then it was kind of a social luncheon that followed that. (Subject 11, hybrid)

> This summer I spent a lot of time with the interns… And occasionally our, my boss, the team lead, we'd just go have a drink or get some food after work just to socialize. And we had a lot of like team gatherings. My supervisor, he had the team over to his house one night of the week, and we just had food and played bags and just hung out. Just to kind of get more of like a team bonding experience, I guess… (Subject 15, established)

> I spent a lot of time with other interns outside of work. We went out or hung out a lot. We were a close knit group since we lived together. (Subject 21, hybrid)

Interacting with others in the workplace through legitimate peripheral interaction ideally leads to becoming a member of the community of practice; this provides access to more learning opportunities or affordances. Informal interactions are also a part of the socialization process and foster a sense of belonging to the team. However, in some cases, interns who were under 21 years of age were unable to join some of the activities after work if they took place at a bar.

> So it was a very young crowd at this company… most of the people working there were between I'd say 23 and 28 or 29. So, pretty young. Their big thing was going out to the bars after work. And they invited me a couple of times, but I'm not 21. (Subject 8, startup)

Exclusion from some work activities and experiences may hinder a student's full acceptance into the community of practice. One intern mentioned that he did not spend time with his team outside of work, indicating that he did not have the same level of relationship that some of his fellow interns had with their teams.

> I personally did not. And other interns did. But, I never, never quite had that relationship with my team members. (Subject 3, established)

Finally, another intern talked about feeling that she was not welcomed by some of the other interns at the company.

> In terms of like, again, working, sometimes my experience with some of the interns that didn't, I didn't think it was that welcoming. But I guess for me it matters more that the full-time employees were, because they were the ones that were actually working there. (Subject 4, established)

While the other interns did not necessarily represent the company, an experience like this may still influence the student's ability to feel that he or she is a full member of the team or community of practice. Spending time with other interns can provide opportunities to learn about and from the experiences of others.

Theme 3: Impact on the company. When asked about the impact that their work had on the company, most interns felt that they were able to contribute. Some believed that their work directly impacted the company's bottom line or their coworkers, while others felt that their contributions allowed their coworkers to spend time on other, higher value activities.

> I definitely think I got a chance to really make an impact on the company, to also contribute to the rest of the team. Just because the work that was assigned to me each day, the shadowing or doing it by myself, did contribute to what the goals of the whole team actually were, so I was treated like a regular employee. But the only difference is, a lot of the times when I would complete a project, it would just get submitted for review by a supervisor before actually going in the process. (Subject 13, established)

> Like I was doing the same work as the girl that got hired on full time… I have so much practical skills, so much practical application of what I learned. (Subject 8, startup)

These students performed tasks that other full-time employees also performed, so they felt that they were productive members of their teams.

In some cases, students initiated projects with the specific objective to improve the work environment for their coworkers. For example, one student noticed that his coworkers did not embrace technology, but he had ideas that might make their jobs easier.

> I developed a lot of Excel tools, just kind of good will, I guess. And I think those are going to help. Kind of get them more into technology. Because previously, they had, people there had no idea like what technology is capable of. And a lot of people were older. So I showed them… like what's kind of possible with Excel tools… And now I hope they see that potential and see technology more as a solution rather than just an annoyance. (Subject 2, hybrid)

Another student shared a similar example where she created a system to better report financial data.

> … So I walked in and I was like, okay, you guys need to do this with their data. Like they had no way of showing the company how they were doing, you know, sales wise, and all the statistics they'd collected, they hadn't done anything with it. So they gave me all their financial data for the past, like six year or so… And they let me make all these different graphs and all these different presentations. (Subject 8, startup)

Students who feel that they can contribute in a unique way to the team may be more motivated to do so, impacting their willingness to engage in the workplace and learn through tasks and through others.

In contrast, a couple of students expressed disappointment in the level of impact of the work they did over the summer.

> I don't feel like I contributed a ton. I think there's more of like, I'm getting them to know me, and then try to figure out if I'm, if I fit in with their company somewhere and like be a full-time employee with them… I mean the work I did, it was something pretty much any engineer could do. I don't know. I don't feel like I was breaking any new ground, I guess. (Subject 17, established)

> So I wasn't particularly happy with the project that I was given. I don't think it made a meaningful difference in the company. So I did my best to do a good job with the project, and my boss recognized that. But I didn't feel that it was, I feel that I was given the project because it was something upper level management decided it was a priority, but lower level employees didn't think it was important. (Subject 18, hybrid)

One concern about internships is that companies will assign students "grunt" work rather than meaningful projects (Abelman, 1986; Frenette, 2013). In these examples, it seems that interns were performing tasks that were less related to the work others were doing or tasks that they felt were not impactful. At least in some cases, it was technical work, as demonstrated by the first of the two quotes above that the student was doing work "any engineer could do" but didn't feel it was exciting or new or particularly meaningful to the team or project. The tone of these responses reflected negative emotions compared to the excitement and positive responses of

those who felt they had contributed meaningfully. Some students specifically addressed the differences between large, more established companies compared to startups or smaller companies based on experiences and discussions with other students, indicating that students who intern at established companies may not have opportunities to experiment within their roles or make creative contributions.

> And you know, a lot of times I think in a larger company like that, that's, you know, I don't think a lot of interns are even expected to break new ground or anything like that. (Subject 17, established)

> … I talked to a lot of my friends coming back from internships. And the people I've talked to who worked for small startups like me have had such a better experience than those who've worked for giant companies. Like I had a friend who came because from working at [company]. She said she liked the work, but she didn't feel like anybody knew her name. She was sitting in a corner doing grunt work for most of it. And I have friends coming from little startups… [and they] are the interns that actually get to do work. (Subject 8, startup)

Theme 4: Keeping interns busy vs. providing ownership and necessary resources. In some cases, companies do not do an adequate job of preparing their employees to deal with interns. A couple of students talked about experiences where they felt that the people they worked with were not sure what tasks to assign to them. They described their role as working on small tasks, so that the team could keep them busy. This first student had two previous internships with two different companies before the internship he just completed during the summer.

> So at [company], I was on the like web, the website team, like website performance. And at [different company] I was also in like kind of their R&D type office doing like kind of computer systems work. But yeah, so the differences there was, both roles there I was just kind of integrated into a team of full timers, and I was the only intern. And I kind of felt that I was kind of like, oh, well we have this intern. Let's find something for him to do. And so you kind of just get, like, oh here's just some little project you can work on. And it

> didn't feel very meaningful. It felt, you know, a bit contrived, just to like have something for me to work on. I didn't feel like I had as much of an impact… Like it moved slower than like when I was in this internship, where I had a whole team of, you know, peers that I can talk to and brainstorm with. (Subject 10, hybrid)

Another student interned at multiple locations with the same company over time. Her experiences differed significantly based on the location. In the example below, the first location was the location where she interned over the summer and was an established office of the company. The second location she refers to is a smaller location in a university research park where the company employs a large number of interns.

> The [first location] internship was a lot different because the people who I was working for weren't trained to work for, work with interns. And they didn't necessarily even know that we were going to be on their team until about like a week before… Where like at the [second location], they choose to have interns. So like they make the project themselves and they're like, "I want an intern to work on this." Like in [first location], I was thrown on a team, and they were like, "what do we give these people?" You know, so it was a total opposite position, where it was like, we don't have enough work for you. Like at, with these project, since it's project based instead of task based, where like in [first location] it was more like, here's this, do this. Here's this, do that… and at the [second location], it was always like, you can be doing more. It's your project. (Subject 6, hybrid)

These examples demonstrate instances where teams did not know what to expect from an intern and did not have specific work planned out that was appropriate for an intern. As mentioned in earlier responses, many students were treated as full-time employees and were assigned similar tasks to an entry level employee. Therefore, they can learn through performing tasks, direct guidance, and indirect guidance (Billett, 2001, 2002a, 2002b). But when interns are not seen as full team members and are given lower level assignments, the student may not feel that their work is as meaningful. In addition, interns who are given discrete tasks may not see the bigger picture or recognize how their work fits in to the team's goals and outcomes.

Training represents another aspect of how well companies prepare students for the work they will do. One student from an established company talked about some challenges she faced in the initial few weeks of her internship.

> I would say in the first half, there were a couple of times, like running the pilot machines, setting up the conditions matrix, that was kind of scary for me because I didn't know how to set it up. And whatever examples they gave me were more of, oh, just look at another. Like they weren't actually specific. They were just saying, oh, look at a previous plan. So I didn't really have a great example for that when I was trying to set up my test plan for running my project on the pilot machine. (Subject 4, established company)

Another student talked about the lack of training which prohibited her from completing her work efficiently.

> I think [company] did not do the best job at teaching us like the way [to do things properly]. I think it would have been better if they had more training beforehand… There'd be times I'd be assigned something… And then I'd realize that there are so many, didn't know how to use the [company] like computer system and stuff along those lines. (Subject 3, stablished)

Again, these examples show that students want to contribute, but they need resources and opportunities that are necessary to perform their work. Without proper guidance or training, students will not gain as much from the tasks they perform or the limited guidance that they receive. In addition, their experience can be hindered by lack of familiarity with common systems or software if they do not receive related training or coaching.

Theme 5: Established companies that mimic startup environments. Several students who interned at established companies worked in "standalone" areas or offices that were segregated from the rest of the company. Examples include a university research park or a non-traditional setting for their role (i.e., one student was a computer science major and provided IT support in a distribution center compared to working with the company's IT department).

> … The innovation lab in the Chicago office that I'm working out of now, it's still kind of separated a bit for the rest of the company. (Subject 10, hybrid)
>
> I think compared to, [office location] is like a very different firm from the actual company atmosphere. Because when I went to like orientation and occasionally I went to [another location] on some of my trips… (Subject 20, hybrid)

In many instances, companies purposely segregated offices or teams in order to foster a different type of culture.

> Yeah, this was very, very startup-y like environment. That's kind of what they're trying to do, as well as make that type of environment. You know, hiring students and having us little office in [internship location] where we're kind of by ourselves. (Subject 10, hybrid)

However, some comments from students indicated that in a few cases, the established company valued innovation and was trying to incorporate aspects of a startup environment at the corporate level.

> I mean, this is more of a [company] thing in general, but there are certain aspects of startup culture that they're trying to copy… you've got some aspects of there, like grants for a project that you can apply for, and it becomes more like a startup and things like that. But obviously 99% of what the company does is not very startup-like. (Subject 18, hybrid)
>
> So we had… quarterly hack days, where you could build something in like two days for the company, using company resources or maybe not. But you could build something. And they would actually have a competition at the end of that, and like the winners, they will work on them to make them scalable, because the idea is really good. (Subject 16, hybrid)
>
> We were constantly taking best practices from startups. You know, things like lean experience… They changed the environment to match a startup… They did a good job of creating a startup feel. Like there was a stocked kitchen and ping pong tables. (Subject 21, hybrid)

Students from companies that were attempting to create a more innovative and startup-like environment talked about their work with excitement. Interns were typically welcomed to take

part in innovative and startup-like practices such as working on personal projects or participating in competitions. These descriptions helped to provide a basis for defining a "hybrid" company. The students at these companies (as well as startups) appeared to be more likely to try new things or initiate their own projects.

Interns do not always feel comfortable sharing their opinions about how a company could improve, but one student at an established company talked extensively about how open his employer was to his ideas.

> At [company], they're encouraging the IT department, when they're bringing on the millennials, to share all their ideas. So I got to meet with the Vice President of IT. And the first thing he said to me is, "What kind of social media do you use? Do you have any ideas? What kind of technology do you think we can use in healthcare?" And it was really cool just knowing that he values what an intern thinks just to stay competitive. (Subject 2, hybrid)

The same student also talked about initiating projects of his own.

> And by taking my own projects, I would just walk around the warehouse and see, oh, this looks like a slow process. Let me look into this. And my manager would always tell me, how once I got this sparkle in my eye or something, just like, oh, this guy is ready to go on this project, and wouldn't stop me… And I had probably four or five projects total that were specifically given to me, and then four to five that I came up with on my own that was supported by them. (Subject 2, hybrid)

Interviews with students who interned at established companies did not reveal these types of experiences or openness to new ideas.

Theme 6: Three distinctions between established companies and startups/hybrid companies. The second main research question in this study seeks to understand whether there are differences between the skills and knowledge that students learn through internships at startups compared to those at established companies. Specifically, the subquestions focus on

three aspects of learning: learning opportunities (access to resources, training, etc.), social interactions, and level of direction. Several interview questions addressed these areas: role, tasks and responsibilities, training, increase in responsibility over the course of the internship, connections between work and school coursework, social interactions, organizational culture, skills developed, and impact on the company.

No obvious differences between the experiences of students who interned at startups compared to those who interned at established or hybrid companies appeared in six of these areas (other than the distinction between projects versus tasks that was discussed earlier), which is consistent with the quantitative findings resulting from the survey that identified few distinctions. However, in three areas, some noteworthy differences emerged. First, while most students reported that their responsibility increased over time, three students at hybrids went further to talk about self-initiated projects they spent time on to improve the workplace. This was not captured in the survey and represents an important subtle distinction. Second, the cultures of startup and hybrid companies tend to differ from those of traditional established companies. The survey revealed very few differences in the questions about culture, so the interviews added additional insight. Finally, differences surfaced related to the impact that students felt they had on the organization. Again, the survey did not find differences here, so I was able to further explore this area.

Virtually all the students who participated in interviews felt that their responsibility increased over the course of the summer. However, three students who worked for hybrid companies talked about opportunities to initiate projects of their own. Two of them were mentioned previously; one student talked about identifying inefficiencies that he felt he could improve, and another saw an opportunity to better use the data that they collected on sales to

inform future decisions. Another student who worked at a hybrid company talked about owning projects and working on them from start to finish.

> … My supervisor really believed in giving his, the members on his team their own projects that they can work on. And so he continued to do that with me. And so he gave me a few projects that pretty much I took from researching the topic all the way up to synthesizing a product. (Subject 11, hybrid)

When students talked about the culture of the workplace, those who interned at startups or hybrids tended to describe a different picture than those who worked at established companies.

> There was no bureaucracy. Like I walked into the office and the CEO sat right next to me. Like everybody had open desks. There were no cubicles, there were no offices. Everybody was out on the open floor. (Subject 8, startup)

> It's a very relaxed culture, where we all want each other to grow and do well. There's a lot of autonomy given to all of the interns. And it allowed for a very collaborative work environment. (Subject 12, startup)

> [The culture was] probably collaborative… fun… friendly, outgoing. They made sure the interns had a good experience. In fact, the head of the internship program was kicked out after six so we had a lot of fun then. (Subject 21, hybrid)

These comments all demonstrate cultures where interns are treated as equals, have access to others in the company regardless of rank, and are encouraged to enjoy their experiences. Each of these aspects foster an environment that supports learning and experimentation.

One interesting contrast surfaced by comparing the experiences of a student who interned at an established company and another student's previous internship at an organization that met the definition of a startup.

> Competitive. It's pretty… fast paced… You need to make sure that your products are on schedule. So there are a lot of pressure…So it's really intensive… We're

> always understaffed… so there's no life. Only work and work… (Subject 1, established)
>
> The one thing I felt was that when I was with the people at [previous internship], where there is much more motivated, there is way less money… but they like, the people who work there would, you know, would really work their butts off… So I guess that, it's that kind of sense of believing in like what you're doing was very different. At [company where she interned this summer], people like [the company] and they enjoy the teams, but they were doing it because they felt it was a nice career decision. (Subject 3, established)

The second student talked further about his previous experience in a small organization with a startup-like atmosphere and about how his opinion was valued and he worked with the highest ranked person in the office, even though he was an intern. Also, as discussed earlier, another interesting commonality emerged as several students who interned at hybrid companies talked about the company purposefully mimicking a startup environment and the high value on innovation in the workplace.

Company type also seemed to influence the impact that students described about their efforts. Of the nine interns at established companies, three interns mentioned contributing to the team so that members can work on other things and two felt their work was impactful. However, the quote that follows provides a good example of how impact at established companies was couched in enabling others to spend time on higher impact activities compared to a direct impact on the company.

> … I had a positive impact… A lot of people were very busy, so they were trying to be able to pass off some project work to me, which in turn kept me busy. So I felt good about the impact on the department… (Subject 14, established)

Also, at the same time, two reported that they did not contribute anything unusual, and two felt that they had limited to no impact.

On the other hand, three interns worked for startups, and all three of them talked about learning quite a bit, significantly contributing, and actively engaging.

> … But I think that working for a startup is sometimes frightening to people… I know for me, I'm very much a planner, so I want to go in knowing exactly what I'm going to do. And I quickly learned that on any day, something can be thrown at me that I wasn't prepared to do. But I learned so much more from that experience… There's a steep learning curve in the three or four months I've been there, compared to probably the last year of academic school I've been through. (Subject 12, startup)

Another nine interns worked for hybrid companies; seven of these interns discussed projects that had significant impact while two did not feel that they contributed meaningfully.

> So I actually felt that I had a very good impact, because for the, what the project I was working on, I was actually the only engineer. So this project was shipped out, actually presented in a conference in New York as well… I think it was a very impactful thing. (Subject 16, hybrid)

While the interview data is somewhat limited, these differences seemed fairly consistent, where startup and hybrid interns spoke excitedly and specifically about how they impacted the company while those at established firms felt that they contributed by helping the team to focus on other activities.

Summary of qualitative results

The qualitative results probed deeper into students' lived experience during internships, filling in gaps left by the quantitative analysis. One of the most important findings was that approximately half of the established companies represented in the interviews were really more of a "hybrid" between an established and a startup company, which was not captured in the survey. In addition, six themes emerged that added insight to the quantitative data. First, students worked independently approximately 50-70% of the time performing work tasks,

illustrating learning through practice. Some talked about spending time figuring things out on their own. Second, social interaction played a critical factor in access to learning opportunities, and students felt that their supervisors and coworkers were willing to help and demonstrated interest in their development. Students learned through observation (indirect guidance) as well as on the job (direct guidance) such as through shadowing or training. Most interns felt that their work contributed to the company; some believed that they freed up their coworkers to work on other things while others felt that their work directly impacted the company. This aligns with the next theme in which interns at established companies were more likely to express that they felt their team tried to keep them busy while those at hybrids or established companies were more likely to talk about initiating their own projects or owning a larger scale project. Students who worked at hybrid companies mentioned a focus on innovation and a deliberate intention of mimicking a startup environment. And finally, students who interned at startups or hybrid companies used different language in discussing responsibility, culture, and impact. They talked about initiating projects of their own and managing projects, about flat hierarchies and relaxed cultures where they had access to coworkers at multiple levels, and about direct and significant impact they could clearly see compared to enabling their team members to work on other more important tasks. The qualitative results added significantly to the quantitative findings by uncovering subtle distinctions that the survey questions did not reveal, potentially because established companies and hybrid companies were lumped together. The following section and discussion section bring all the data together to address the research questions.

Integrated data analysis

One of the reasons that I selected a mixed method design for this study was to better understand different elements of student experiences at internships. The survey provided

information about aspects of the student experience and enabled me to engage more students, while the interviews provided more in-depth detail and an opportunity to ask about some of the things I learned in the survey. In this section, I will first explain a few general observations about the data overall, and then I will address each research question and subquestion, considering the survey data (both quantitative and qualitative data), the interview data, and finally the integrated data.

Before I share detailed thoughts about the data, I wanted to revisit the conceptual framework. Billett's (2001, 2002a, 2002b) framework states that individuals learn through performing work tasks and through direct and indirect guidance. He also emphasizes the importance of affordances, which I called learning opportunities in the research questions, and the level of engagement by the individual. These concepts are consistent with what I saw in the survey and interviews. Students reported that they learned about how a business works and that they improved or enhanced their technical skills by practicing in their field. In addition, they learned through interacting with others in the workplace. This could be direct, such as through coaching or demonstrating a process, or indirect, such as through shadowing or observation. In the interviews, students consistently made two comments that align well with Billett's framework (Billett, 2001, 2002a, 2002b). First, they said that coworkers were very welcoming and willing to help – and in the survey, they actually rated receiving assignments from and interacting with coworkers slightly higher than the same for their supervisor. Second, the students who were particularly engaged, such as initiating their own projects or being asked for their opinions, tended to specifically express that they learned significantly.

Hay and Barab (2009) compared two approaches to learning: the apprenticeship model, in which an experienced individual shows a less experienced individual how to perform a task,

observes the less experienced individual performing it, and provides feedback; and the constructivist model, in which a less experienced person receives less direct guidance and figures out how to perform the task on his or her own. Surprisingly few students reported attending formal training during their internships, even at established companies, but many of the interns at established companies did talk about shadowing or about a coworker showing them how to perform a task as well as available resources that they could consult even though they were not required. The description from students resembled that of an apprenticeship approach. Students from startups and hybrid companies also received on the job training. However, they were more likely to work on a project with little guidance or to initiate a project and less likely to encounter an established process to follow, linking to the constructivist end of the spectrum.

Integrated data analysis: General observations

Considering both the quantitative and qualitative results, there were five major findings as a result of this study. I will first review these five major findings and some related findings and then review the research questions and apply the conclusions to each question.

The first major finding was that the internship environments in the study generally represented conducive learning environments. In both the survey and interviews, students reported that they worked independently often and that their supervisor and/or coworkers were willing to help them when needed. This aligns with Billett's (2001, 2002a, 2002b) framework of learning through work tasks, direct guidance, and indirect guidance. Students were less likely to feel that they had influence over their work, which is to be expected since they have limited experience. They only sometimes saw connections between work and school on average, which may contribute to faculty concerns about academic learning through experiences. Students felt

that their experiences provided them with opportunities to learn to interact in a professional environment. The survey responses suggested that the workplace provided a positive learning environment, and the interviews were consistent with this finding.

Next, social interaction represented a significant element of the opportunity to learn in the workplace. Students received tasks from their supervisors and from their coworkers, and they were able to ask both supervisors and coworkers for help when needed. Therefore, their experience and the resulting outcomes depended significantly on the people with whom the student worked. It is interesting to note that while many students reported company training was available, the majority of students at all types of companies learned the most from on the job training as opposed to formal training. Students responded in the survey that they felt their supervisor and coworkers were willing to help and were interested in their development, and many of the interview participants specifically mentioned how welcomed they felt.

I originally planned to look at differences in student experiences at startup companies versus established companies. However, the interviews revealed that the distinction may not be clear cut and that some established companies actually offer work environments more similar to a startup than to a traditional established company, which I termed “hybrid” companies. Students who interned at startups or hybrid companies did not necessarily report the same work tasks or skills developed as students who interned with established companies. In the interviews, students who interned at hybrids and startups talked more often about identifying projects on their own and figuring things out independently. The interviews also suggested that some established companies purposely try to mimic a startup culture, particularly if innovation was valued at the company or the company had a remote or segregated office such as in a university research park.

This leads to the fourth major finding, which is that students who intern at startups or hybrids are assigned larger scale projects as opposed to discrete tasks, while students at established companies are more likely to work on assigned discrete tasks or smaller assignments. This could be one explanation for the fact that students who interned at startups did not talk about performing tasks like data analysis, though this was the most reported task overall with approximately 24% of students reporting it. Startup interns also did not report developing data analysis skills. However, it may be possible that they were engaging in data analysis, but viewed their work as an overall project and did not consider the discrete tasks that made up the project. The open-ended survey questions uncovered some differences in the types of tasks that students were assigned, or at least in their perceptions of what they were assigned. And the interview data further support the conclusion that there may be subtle differences. I will come back to this question in Chapter 5 once I review each of the research questions.

Finally, one of the most salient conclusions from the data aligns with my expectations: learning outcomes from internships vary widely. While on the surface, many aspects of the internship experience appear to be similar, as the survey indicated, the interviews clearly demonstrated that more subtle aspects of the experience are very different, even within the same company. Naturally, industries and companies vary widely, but the data indicated that even departments or teams may have distinct personalities. Other factors that may influence the experience include the manager (or mentor), which impacts the level of direct and indirect guidance the student receives, and the student – particularly his or her level of engagement. Managers may or may not have been trained to work with interns, have worked with an intern before, have adequate time to dedicate to developing a relationship with the intern, or have an interest in contributing to the intern's development. On the other hand, behavior, attitude, and

maturity of the student certainly play a role in the student's experience; a proactive student who is significantly engaged may have an entirely different experience than a student who simply does what he or she is told. And as Billett's framework suggests, all of these factors as well as other elements impact an intern's access to learning opportunities.

Overall, based on both the quantitative and qualitative analysis, student experiences in established, hybrid, and startup companies shared a number of characteristics, but some consistent differences emerged as well. The survey uncovered limited differences between students' experiences. Students who interned at startups were more likely to interact with clients while students at established companies were more likely to work with other departments. Startup interns were also more likely to participate in important decisions, to work with others as part of their job, and to observe workers in their organization taking initiative.

Aspects of experiences also differed based on a variety of inherent student characteristics. Males reported more often that they received tasks from coworkers or identified tasks on their own and females responded more often that they received help or support from their supervisor. However, overall, I was surprised at how minor the differences were between male and female interns' experiences, given that few differences were observed in the survey results. Domestic students were more likely than international students to engage in complex decisions and in tasks that required non-technical skills or that they identified on their own, and they interacted with individuals in other departments more often. Business students were more likely than engineering or STEM students to receive feedback on the job and to work with others, including their supervisor, their coworkers, and clients. Students who had not interned before felt they were less likely to influence decisions in the workplace, to get help from their supervisor or coworkers, or to work with other interns. These students perceived the workplace as less

supportive and encouraging than their counterparts who had interned previously. Finally, Pell recipients reported that they worked closely with their supervisor through task assignments and seeking assistance but did not have the same level of access to company training as their peers who did not receive Pell grants. Despite these distinctions, there were surprisingly few significant differences between each of these groups, and particularly between males and females and between students who received Pell grants compared to those who did not. It would be interesting to see if the results were different if hybrid companies were not masked in the survey.

However, at the same time, the interviews indicated that what students actually experienced on a daily basis – the tasks on which they worked, the relationships they established, and other aspects of the environment – tended to be unique by company, industry, business unit, or team. Students described startup environments as flexible and evolving while established companies tended to provide more infrastructure and process. Each environment offered a different set of learning opportunities though some students learned through trial and discovery while others tended to observe or shadow others.

By integrating the data, the survey and interviews provide a more vivid picture of the student internship experience. Students who interned at startups or hybrid companies tended to use the term innovation throughout their responses. They discussed projects and provided examples of taking initiative or being asked about their ideas by their coworkers or corporate leaders. They interacted with others, but the language they used often aligned with constructivist theory in that they owned projects and had flexibility in how they worked. When talking about their coworkers, they used words like dedication and passionate. The students who interned at established companies used more terms like systems and careers. Several of the students mentioned that they shadowed or observed others, or that others showed them how to perform

their tasks or provided them with examples. One student talked about not being expected to "break new ground" as an intern and another received specific work assignments each day. While students from all types of companies learned new skills and knowledge and felt welcome in the workplace, the integrated data revealed subtle differences in their experiences that potentially led to distinctions in their learning opportunities.

Now I will consider each of the original research questions and review the relevant data.

RQ1: What do students experience during internships?

The survey indicated that on average, students described the workplace as welcoming and an environment conducive to learning and developing skills. Students often worked independently but had access to others when seeking direct guidance or opportunities to observe others. Responses to the last open-ended question which provided students with an opportunity to share anything they felt was relevant varied widely with the majority of students choosing not to answer it; however, of those who did, it is interesting that fourteen of them talked about how much they gained from learning how to interact in a professional work environment.

Much of the interview data addressed this question and will be discussed through the other research questions. General insights are that most of the students reported that they had a positive experience and that they were able to enhance their skills and/or abilities. The benefits ranged from technical skills or knowledge to interpersonal skills to other gains. The few who did not report that they had an impact on the company still indicated that they felt the experience was worthwhile. Several students specifically mentioned that they were able to learn skills or knowledge that they had not learned through their coursework to date, potentially because they were able to practice their skills through performing real work tasks. It is important to note that

many business and engineering programs include some sort of design or capstone project for seniors; because most of the participants in this study were rising seniors or younger, they would not have experienced this yet. More than half of the students in the interviews talked about learning what it is like to work in a business and how to behave in a professional setting as goals for their internship, and virtually all of these students felt that they had met this goal.

In integrating the data, it appears that one of the most significant benefits to students in the study was learning to interact in a professional environment. Only one student in the survey indicated that the internship experience was negative in the open response question, and all of the interview subjects suggested their experiences were positive overall.

RQ1a: What types of tasks or responsibilities are students given? How do they spend their time on these tasks?

The Likert questions and the multiple choice questions in the survey provide a picture of the types of tasks that students are assigned. The Likert questions with a mean greater than or equal to 4 indicate that most students encountered that job characteristic often to almost always, indicating that these are good descriptors of intern tasks.

- Left on own to do own work
- Opportunity for independent thought and action
- Get support or help from coworkers if needed
- Get support or help from immediate supervisor if needed
- Work achievements appreciated by immediate supervisor
- Immediate supervisor encourages speaking up if different opinions
- Immediate supervisor helps to develop skills

- Work climate is encouraging and supportive
- Work climate relaxed and comfortable
- Workers take initiative in unit
- Recognition for a job well done
- Management interested in health and wellbeing of employees
- Sense of team in unit
- Part of team in unit
- Current skills and knowledge useful
- Job requires acquisition of new skills or knowledge
- Coworkers help to develop skills or knowledge
- Opportunity to talk informally with coworkers while at work

The responses describe a supportive work environment where students can work independently but ask for help when direct guidance was needed, where workers take initiative and are recognized for a job well done, and where the students feel part of their team. Such a description is consistent with a conducive learning environment that offers a number of learning opportunities, or affordances.

Questions with means less than 4 indicate that the characteristic occurs less than often, which I considered a meaningful cutoff since a response in the middle of a scale is often perceived as neutral. These include a number of questions that indicate interns are less likely to be working on a project from start to finish, working on tasks that require complex decisions, or influencing decisions or tasks in the workplace. These responses are not surprising given that interns have limited experience. Seeing connections with courses or using skills or knowledge

that students learned in school also received ratings less than 4. This could potentially affect the learning mechanisms that students use in conceptualizing what they learned within their existing cognitive framework. That is, if they did not see connections, they may form new concepts in their network, while if they were able to connect their work to the academic theories they learned, they may accommodate concepts versus creating new nodes.

The multiple choice questions at the end of the survey also help to illustrate what internship tasks entail. More than half the students reported engaging in the following activities:

- Tasks assigned by a supervisor*
- Tasks assigned by coworkers
- Tasks that require making decisions
- Tasks that require technical skills learned in school
- Tasks that require nontechnical skills*
- Tasks identified by the intern on his/her own
- Tasks that require collaboration with others internal to the organization*

The tasks above with an asterisk were reported by more than 80% of students. Fewer than 50% of the students responded that they engage in tasks that require collaboration with others external to the organization.

When students did not know how to perform a task, 90% responded that they tried to figure it out on their own, consistent with a constructivist approach. 87% would ask a coworker, and 70% would ask a supervisor. Just over 50% said that there were organizational resources that they could consult; this might include online training or videos, company manuals, etc. It is interesting that more students responded that they would ask coworkers for help rather than their

supervisor. This could be due to the fact that many students are assigned a mentor in the organization in addition to their supervisor.

Another important aspect of intern experience involves who the intern works with regularly, defined as at least once per week. 95% of students indicated that they interacted at least once a week with coworkers, and 89% with their supervisor. Just over 50% also interacted with people in other departments and 69% worked with other interns. Fewer than a quarter of students worked with clients or vendors. Again, more students reported interacting with coworkers than their supervisor, and it appears that most interns are unlikely to work with people outside of the organization. This is consistent with the t-tests on the data, which demonstrated that students who interned at startups were more likely to work with clients, but this group represented a small portion of the sample population. These patterns also suggest that social interactions truly are critical to learning outcomes.

The open-ended survey questions describe the types of tasks that students are assigned. The eight most common tasks were reported by 5% or more of the students. These include, from most reported to least: data analysis, software development, design, research, project management, assigned tasks, testing, and product development. Because more of the survey participants were engineering students, this may impact the types of tasks that were reported more often, such as software development, design, and testing.

The interview data indicate that students' responsibilities varied widely depending on the type of company and industry. However, I noticed a dichotomy in which some students talked about being assigned small tasks to complete while others referred to projects that they owned. Also of note is that some students shadowed others or were shown how to complete a task, then

they mimicked what they observed, following an apprenticeship approach. In contrast, others were assigned a project and figured out how to complete it by seeking out resources or people to fill gaps in their knowledge or skills, which aligns more closely with a constructivist approach. In some cases, students identified a problem or potential opportunity and then created a solution entirely on their own.

The interview data proved to be generally consistent with the survey data. Most students describe a work environment where they worked on their own more than 50% of the time and where their supervisor and coworkers were very welcoming and willing to help. Several interview subjects talked about being assigned a mentor in addition to a supervisor, which might help to explain why a greater percentage of students in the survey reported being assigned tasks by and interacting with coworkers versus their supervisor. A couple of students also mentioned that their supervisor was very busy, and some worked on a team and would ask the team lead who may not be their official supervisor.

RQ1b: In what ways and to what extent do students who intern at startups spend time on different types of tasks than those who intern at established companies, if at all?

As discussed earlier, t-tests on the closed-ended survey data indicated that there were few differences between responses from interns at startups compared to interns at established organizations, but startup interns were more likely to participate in decisions and see other workers take initiative. They were also more likely to work with external clients while students at established companies were more likely to work with other departments. Students at startups would be more likely to interact with external clients because they would be more involved in all aspects of the organization; in addition, there are few layers and fewer employees, so all

employees would be more likely to have contact with clients. Established organizations are much more likely to employ more people and be organized into units than a small business or startup, so it is not surprising that students at established companies are more likely to interact with another department.

Data from the open-ended question that specifically asks about tasks and responsibilities showed that students who interned at startups responded differently than those who worked at established companies. Of the eight most commonly reported tasks, no students who interned at startups mentioned five of the tasks: product development, testing, assigned tasks, design, and data analysis. Both groups did report three of the most common tasks, which were project management, research, and software development.

In the interviews, students talked about their role and the types of tasks they performed. Students at established companies mentioned product development, testing, assigned tasks, process improvement, and engineering drafting or modeling. Students who worked with hybrid companies talked about project management or project based work, coding and software development, and research. Two of the three students who worked in startups engaged in project based work and the third worked with external clients in certification evaluations. Putting this data together, the interviews also suggested that students who worked at established companies spent time on different tasks than the students who interned at startups or at hybrid companies.

Data from both the survey and the interviews consistently indicate that students who worked at established companies worked on different tasks than those who worked at established companies. Further, the tasks that the students who participated in interviews reported were

consistent with the types of tasks that students listed in the survey based on the type of company where they interned.

Given that data analysis was the most commonly reported task overall by a fairly significant margin, but students who worked at startups did not mention it in the survey or in the interviews, I explored the data further to find an explanation for the discrepancy. I noticed that many of the students from startups talked about project based work and they were more likely to think in terms of the project and less likely to think about the individual tasks as separate from the overall project. Consistent with this idea, several students from established companies mentioned assigned tasks whereas startup interns did not. I concluded that students who intern at established companies are more likely to be assigned each task and not necessarily see them as a project while a student who interns at a startup views the project as a whole and does not necessarily list all the embedded tasks.

RQ1c: In what ways and to what extent do inherent student characteristics such as gender, domestic status, income level, or other characteristics impact the student experience, if at all?

T-tests on several different groupings of students revealed that inherent characteristics had an impact on the student experience in some cases but very limited impact in others. Males and females reported surprisingly similar experiences, although males were more likely to identify tasks independently and work with coworkers while females worked more closely with their direct supervisor. Domestic students spent more time interacting with others in the workplace, which aligns with my initial hypothesis. Engineering and STEM students were much less likely to work with others than business students, which is also consistent with what I

expected to find. Students with previous internship experience were more likely to navigate the workplace successfully, which makes sense given they have done so in the past. Pell recipients also spent more time working directly with their supervisor than non-recipients. Finally, students who reported to a female supervisor spent more time working with others and participating in decisions. However, overall, few differences were statistically significant, indicating that at a high level, student experiences had much in common.

In the interviews, I did not specifically ask about these factors, but went through my notes again and noted very few comments that tied back to these inherent characteristics. One international student did mention that at times he felt a bit left out of the team if he did not understand a joke due to lack of cultural context. But he was quick to mention that he felt it was unintentional and did not happen often. One female subject who majored in engineering mentioned that she felt self-conscious about "bothering" her coworkers when she had a question, despite the fact that they made it clear they were willing to help. This was consistent with females feeling less confident and I would not expect to hear this statement from a male subject. A couple of the students interning for the first time mentioned that they were unable to join the team at informal gatherings after work if they took place in a bar because they were under 21 and could not legally enter. This is likely more common with students who had not interned previously since they are more likely to be younger than 21 compared to those with previous internship experience. In exploring the impact of income level, I specifically paid attention to responses from the subjects who indicated they received a Pell grant to identify any potential factors related to their economic status, but there were none. I took care not to ask any pointed questions that may bias their responses, but none of the three mentioned feeling any constraints in their choice of internship so it did not appear that credit or tuition represented an issue.

Otherwise, very few comments related to experiences that were impacted by inherent characteristics.

Looking at both sets of data, the few relevant comments from the interviews align with the findings from the survey and did not lead me to question the conclusions I drew based on the statistical tests.

RQ2: What types of skills or knowledge do students who intern at startups learn or develop compared to those who intern at established companies?

Three of the Likert survey questions relate to this question. First, Question 55 asks if the job requires the intern to learn new knowledge or skills; second, Question 56 asks about the extent that students see connections between what they have learned in class to what they are doing for their internship; and finally, Question 57 deals with how often they apply knowledge, concepts, or skills from class to the workplace. Students reported that in general they were required to develop new skills or knowledge slightly greater than often (4.16), but that they saw connections between classes and work between sometimes and often (3.40) and likewise for applying what they learn in class to work (3.37). There were not significant differences in the means between the two groups for any of the three questions. The fact that responses to questions 56 and 57 were less than often indicates that perhaps faculty are justified in their concern that students may not be enhancing their academic learning without appropriate or relevant guidance.

The open-ended question about skills also provides some insight to address this research question. As discussed in the previous chapter, 5% of more of the students reported ten skills that they developed: problem solving, confidence, research, interpersonal, professional

interaction/behavior, industry knowledge, software, communication, data analysis, and technical skills. No students from startups mentioned three of these ten skills: research, interpersonal, and data analysis. However, the remaining skills matched up between the two groups.

In the interviews, students generally did not list as many skills as in the survey, but six skills were mentioned at by at least five students (approximately 24% or more): interpersonal, communication, learned how a business works, coding (also considered technical), project management, and presentation skills. Students from startups listed skills consistent with these: interpersonal/soft skills, communication, how a business works, and self awareness. For the most part, these skills matched those of the students who interned at established companies, though self awareness was distinct to this group. The self awareness skill is linked to learning how to define and approach a problem versus being assigned discrete tasks.

Looking at both sets of data, the skills developed are relatively consistent between the survey and the interviews. Project management and presentation skills came up more often in the interviews than in the survey, but these are also consistent with the tasks that students were assigned. Throughout the survey, it appears that learning how a business works was important to students across the board, and the majority of students mentioned this as a skill they developed. It is also possible again that if students at startups see their work as project based, they may not isolate the specific skills that they developed and pay more attention to the project as a whole. This could explain why fewer of them mentioned technical skills in the interviews.

RQ2a: How do learning opportunities at startups differ compared to those at established companies, if at all?

Again, the survey data suggested that there were few significant differences between the means of the group of students who interned at startups compared to those who interned at established companies. Students who work with clients or other departments could experience different learning opportunities, but that is not clear in the data. Startup interns would have access to some learning opportunities through participating in decisions or observing others in an environment where initiative is encouraged. The open-ended questions do not really address this research question.

In the interviews, the picture that emerged portrayed startups and hybrid companies as more flexible than established companies. All three of the students who interned at startups depicted their work as actively engaging and reported that they learned significantly, developing both technical and non-technical skills. Interns at hybrid companies more consistently described their work as making a significant impact than those at established companies, though several interns from established companies felt that they contributed. Company culture represents another aspect that differs by company type. One of the startup interns and one of the hybrid interns mentioned that executives at the company were interested in their opinions specifically because they were millennials. Two students at startups and two students at hybrids initiated their own projects to improve the workplace and/or to make their coworkers' jobs easier. Three interns at hybrids mentioned that the company intentionally tried to create a startup-like environment to the extent possible, and four of them talked about innovation as a corporate value and strategic focus. These types of comments did not come up in interviews with students at traditional established companies.

A deliberate interest in intern opinions would create learning opportunities for students through sharing their ideas and developing a comfort level when interacting with others in superior positions. It would also facilitate their acceptance into the community of practice as they become more engaged and invested in the workplace and feel a sense of belonging to the team. In addition, a focus on innovation and creativity generates a culture where everyone is encouraged to think differently and to try new ideas; this helps students to learn that failing is acceptable when it can be used to iterate and to build on ideas to improve them. Students who initiate projects learn how to scope and manage a project from beginning to end, fostering an attitude that they have a responsibility to take action when they identify an issue and/or an opportunity to improve. Students who follow directions and perform specific tasks assigned to them do not develop the same sense of ownership and may not develop the same skill set. Again, these two ends of the scale align with the contrast between apprenticeship and constructivist approaches.

Because the survey data provided limited insight to address this question, the integrated data does not add significantly to the previous discussion. However, the open-ended questions did seem to indicate that startup interns tend to participate in more project based work and none of them reported assigned tasks as one of their responsibilities.

RQ2b: How do social interactions in the workplace differ at startups compared to established companies, if at all?

While the survey data suggested that there were few significant differences between the means of the group of students who interned at startups compared to those who interned at established companies, most of the areas where the means were different involved social

interactions. Students who worked at startups were more likely to interact with clients, and students who worked at established companies were more likely to work with other departments. Students who work for startups are more likely to be performing tasks that are similar to those that full-time employees would perform because there are fewer human resources compared to an established company. Also, startup interns saw their supervisor as a resource and worked closely with them while established company interns received assignments from coworkers and were more likely to work with people other than their supervisor. It is important to note that one of the most commonly mentioned goals and skills developed is learning how to behave in the workplace, indicating that social interactions are critical to the student's experience in the internship. The open-ended questions do not really address this research question, other than the fact that some of the skills developed relate to social interactions (interpersonal skills, professional behavior, presentation skills, etc.).

In the interviews, startup, hybrid, and established company interns talked about experiences where their coworkers were welcoming and anyone was willing to help when needed. Most interns said that they also spoke with others in the workplace about non-work topics, such as their personal life, their career goals, etc. Some students spent time with coworkers outside of work, including both other employees as well as other interns, further establishing their membership in the community of practice through legitimate peripheral participation in both related and unrelated work activities. Others either chose not to, or did not have an opportunity to do so due to the fact that non-work activities typically took place at a bar or happy hour and some of the interns were under 21 so they could not participate. This could potentially limit their learning opportunities and/or their ability to fully participate in the community of practice.

On the other hand, some difference did exist between the groups. Larger, more established companies were much more likely to hold company-sponsored events for all employees and/or for interns, probably because there are more employees and more funding is available for such activities. Interns at startups were still sometimes invited to after work activities, but these tended to be casual and not planned ahead of time and were probably at the expense of the employees versus the company. Also, students at startups and some students at hybrid companies have more access to higher levels of management. One hybrid intern mentioned that he had an opportunity to meet with top leaders of the company, and they had a number of questions for him and were very interested in his thoughts on several ideas. All three startup interns talked about the access they had to the leaders of the company since there were limited to no hierarchical layers. One student who worked at an established company talked about a previous experience at a small organization where he submitted his work and recommendations directly to the leader of the company. While all interns reported that they received on the job training, students at established companies were more likely to talk about shadowing as a method of training, where they observed other employees before doing the work themselves. Established companies also appear to provide other resources, such as online or in-person training, although a surprisingly significant percentage of established companies offered no formal training to interns. Also, established and hybrid companies more frequently required formal reviews at least once, and potentially more often, for interns. At startups, students tended to work more closely with others and were less likely to report formal reviews since they interacted with others on a regular basis. This may be facilitated by the fact that students from startups talked about being located near their supervisor or team because they may have had limited physical space in general.

Similar to the last research question, the integrated data analysis adds little to the discussion, though a number of students in the survey volunteered that they gained significantly from learning about how a business works and how to behave professionally. The t-tests suggested that students at startups are more likely to interact with clients and see their supervisor as a resource, which does involve a different type of social interaction. Startups demonstrate significant trust in an intern in allowing them to work with clients, which is further supported by the fact that in two cases, students initiated projects and were encouraged to pursue them. While these differences may not seem overly significant, they imply that startups, and in some cases hybrid companies, offer a distinct or unique culture, encouraging students to improve the workplace because he or she feels so much a part of and invested in the team.

RQ2c: In what ways and to what extent does the level of direction that interns receive at startups differ from established companies, if at all?

The survey data suggested that there were no significant differences between the means of the group of students who interned at startups compared to those who interned at established companies related to level of direction. The open-ended questions do not really address this research question.

The interviews did not offer any obvious differences in the level of direction that students experience at different types of companies. However, some of the comments from students do indicate some differences. Students at established companies were more likely to learn from shadowing someone or that someone showed them how to do something, consistent with an apprenticeship approach. In some cases, students received discrete tasks that they performed and submitted for approval and then received another assignment, which some students referred to as

"keeping them busy." On the other hand, students at startups or hybrids spoke more often about identifying a need and initiating projects of their own or being assigned a larger scale project, consistent with the constructivist approach. While they might interact regularly or frequently with others since they were more often located close to or integrated with other employees, they spent more time figuring things out on their own. This implies that students in startups or hybrids may have more opportunities to provide substantive input that is valued by the company.

Since the survey did not suggest any differences in this area and the open-ended questions did not address level of direction, the integrated analysis does not really confirm or refute any conclusions from the interviews.

CHAPTER 5

DISCUSSION

This study is one of the first to deeply explore student internship experiences, particularly through a mixed methods design. Initially, I planned to compare student experiences at startups and established companies, but the survey identified few differences between the two environments. In fact, on the surface, there are surprisingly few differences between various groupings of student experiences in internships. Responses to the open-ended questions showed that students participate in a wide variety of tasks, but the quantitative survey questions indicated that most characteristics of the job and work environment are relatively consistent among internships. However, interviews uncovered more subtle distinctions about student experiences in internships.

Analysis of the quantitative and qualitative data led to five significant findings about student experiences in internships. First, the workplace represented a conducive learning environment for students where they were able to participate in work tasks and learn from practice. Second, social interaction played a critical role in student learning outcomes, despite the fact that most students spent the majority of their time working independently. Welcoming supervisors and coworkers who were willing to help when needed contributed significantly to student learning, both through direct and indirect guidance. Third, while I originally planned to look at startups and established companies, I realized that size alone did not adequately categorize companies. A subset of established companies shared characteristics with startups; this was intentional in some cases where innovation represented a core value of the company, but

could be unintentional in cases where an office was isolated from the rest of the company (such as in a research park). Fourth, students who worked at startup or hybrid companies talked more about projects as opposed to discrete tasks, while students who interned at established companies more often received a series of smaller assignments. Finally, the learning outcomes resulting from each internship experience are unique, even within the same company, as many teams have distinct personalities and social interaction represents a key contributor to student learning.

The language that students used to describe the culture of the workplace and the tasks that they performed revealed different paths to learning outcomes. Based on the findings, students who interned at an established company were more likely to encounter an apprenticeship approach in which they are assigned a specific task, shadow or observe others doing the task, and then mimic what they saw to perform the task. In contrast, students who interned at startups or hybrid companies spent more time on larger projects where they have an overarching goal and break the project into pieces themselves to complete it. This second scenario aligns more closely with a constructivist approach to learning in which the student has access to help but primarily leads the project on their own, defining tasks or pieces of the project, and figuring out how to achieve the goal. In both cases, students learn through performing tasks and through direct and indirect guidance, but in the second scenario, the student plays a more active role, priming him or her to tackle future projects and/or to resolve future problems. As a result, learning outcomes differ and students develop a different skill set. Further, students who work primarily on projects may not perceive the various discrete tasks they performed throughout the project, but see the project holistically. This would account for why students who interned at startups did not report data analysis as a task or a skill developed.

Contributions to the Literature

Many past studies have demonstrated that students benefit from experiential learning in various ways, including improved academic performance, greater autonomy, increased confidence, improved interpersonal skills, higher salaries, etc. However, past studies have not explored why these benefits occur or what the student actually experiences during the internship. This study focuses on what students experience, including the tasks they perform, their work environment, and their interactions with others in the workplace. Many of the interview subjects talked about increased self-confidence, about applying concepts they learned to a real world environment, and that they anticipated that they could apply their experiences to their future coursework, which aligned with past literature.

Previous literature on this topic expressed concerns about internships such as unrealistic expectations of interns and mostly "grunt" work that is not meaningful. However, most of the students in this study, both in the survey and interviews, indicated that they felt they contributed to the organization and participated in meaningful work. Students reported tasks that related to their area of study and that required their current knowledge and skills, as well as development of new knowledge and skills.

Traditionally, faculty have viewed experiential learning as non-academic. Because many students in the study did not make connections between school and work, this is a valid concern, but students also clearly indicated that they learned significantly, and in some cases learned skills and knowledge that they did not encounter in school. There were examples of both apprenticeship approaches (shadowing and demonstrating) and constructivist approaches

(initiating their own projects, coming up with their own solutions) and both resulted in the acquisition of new skills or knowledge.

Limited research exists currently that provides insight into what students actually do during internships or how experiences differ at different types of companies. This study contributes to the literature by providing data on the types of tasks in which students engage during internships and the skills they learn as a result. In addition, this study examines how different work environment characteristics may foster different types of learning. Startup organizations and established companies that foster startup-like environments may enable students to experiment more and try new things. In fact, the identification of hybrid companies that more closely resemble startups than established companies represents an important contribution in and of itself. At the same time, both the survey and interviews suggest that students do learn in the workplace through a variety of activities as Billett (2001, 2002a, 2002b) discusses in his organizational learning framework, including performing work tasks, direct guidance, and indirect guidance. To my knowledge, past studies have not used Billett's framework in the context of experiential learning.

Implications

This study offers several implications for both the academy and for companies that employ interns. As more and more students seek internships in order to be competitive when they graduate and enter the workplace, the academy needs to better understand what students are experiencing during internships and how it relates to the classroom. In both the survey and the interviews, some students saw connections between what they learned in the classroom and their tasks at work, but others did not. In some cases, students may use concepts they learned through

their coursework and not even realize it. Perhaps faculty could help students to make connections between what they learn in the classroom and what they do at work, potentially facilitating a transition from cumulative or mechanical learning to assimilative or accommodative learning. Faculty members who have spent their careers in the academy and have not worked in businesses could potentially collaborate with career services staff to work with students to reflect on the tasks they performed and how the work could relate to theoretical concepts. Students noted in the survey and in interviews that they learned new skills or knowledge that they did not learn in their coursework. Again, this could be due to the fact that many students participate in a larger scale project during their senior year, which typically takes place after at least one and potentially more than one internship. However, perhaps faculty can leverage what students learn through internships in the classroom earlier on and/or prepare students as underclassmen as to what they should look for in a work setting. Some institutions provide a course before, during, or after an internship to facilitate student learning. Activities can include discussions (online or in person), reflections, and other exercises to foster connections between theory and the workplace.

This study focused on business and engineering students, which represent areas where internships have been part of the culture for several decades or more. However, internships have broadened extensively beyond the fields of business and engineering and students from virtually all disciplines are more likely to seek internships than in the past. Therefore, faculty and administrators from disciplines where internships are less prevalent can potentially look to the fields of business and engineering for guidance. At the same time, they may face different challenges. First, business and engineering internships are more likely to include compensation, but this is not necessarily the case in other disciplines (Yagoda, 2008). In addition, potential

employers in areas outside business and engineering may be less prepared to provide meaningful work and a positive experience for interns, and students would not know what to anticipate from an internship experience. Faculty and administrators could work closely with prospective employers in these areas to discuss learning objectives for students and the steps the organization has taken to prepare those who will supervise or work with interns.

Companies also need to understand what students experience through internships. Based on the data from this study, it appears that students who work on larger scale projects versus discrete tasks learn different skills, which may make them more valuable future employees. For example, students who work in environments that value flexibility and innovation may be better positioned to contribute significantly to the company. Many companies could benefit from better understanding the millennial generation since these individuals will encompass significant buying power in the near future, and students who are proactive and demonstrate initiative can potentially uncover and resolve significant opportunities or issues in the workplace. As companies compete for talent, recruiting from the intern pool can bring significant financial savings to companies, making it critical for companies to provide positive experiences for students. Time and again in this study, students who felt that their work was meaningful and impactful to the company reported more positive experiences and were more likely to accept a full-time offer from the company.

Finally, intern experiences depend heavily on the company and industry, but also on the team and supervisor to which they are assigned. Companies would benefit by providing adequate training to supervisors and other employees who will be working with students so that they can assign meaningful work to the student and foster skill and knowledge development through effective direct and indirect guidance. In fact, to the extent possible, it may be most

beneficial for all parties if companies and faculty collaborated to train intern supervisors, even if that involved faculty providing some written guidelines or suggestions, or providing information on apprenticeship versus constructivist approaches. A welcoming atmosphere also represented a critical factor in how the student described the experience after it concluded, enabling full acceptance into the community of practice, and in how much they learned as a result.

Further Research

This study provided insight as to what students experience at internships, including the types of tasks they perform and what they learn as a result. It also explored potential differences by company type (startup versus established company) and by a variety of demographic characteristics such as gender, income level, domestic versus international status, major, previous internship experience, and supervisor gender. Several questions arose that would be worth additional study as a result of this research.

First, how could a researcher conduct a survey that better captured the type of company for which the student worked? Based on the interviews, the distinction between established companies and startups may not be sufficient, as some established companies make an effort to mimic a startup environment with varying degrees of success. It would be interesting to conduct the survey again with a mechanism for better categorizing the company type to see if the results were impacted. This could be in the form of adding additional questions about whether the company values innovation and whether the office where the intern works is separated from the rest of the company. Also, would companies in specific industries be more likely to fall into the hybrid category, or is it more company specific? Would some companies fall into more than one category, depending on the division or team? My guess is that would likely be the case,

especially when dealing with teams that are isolated in some way from the company, such as in a university research park.

Next, is it true that students at startup or hybrid companies are more likely to be assigned projects versus tasks? This surfaced as a plausible explanation based on the data, but the evidence proved insufficient to confirm this conclusion. It would also be interesting to spend more time trying to understand whether students assigned projects versus tasks develop different skills, such as the ability to ask good questions, the ability to identify relevant resources, and the ability to successfully complete a project with less or limited guidance. I would also be interested in exploring whether students who worked on projects versus tasks performed better academically once they returned to the classroom, particularly in a senior design or capstone course that might be more directly related to their experience. Would they perceive the tasks in which they engaged and the skills that they developed differently if thinking in terms of a project versus a series of discrete tasks?

Another interesting question involves whether certain types of students are more attracted to the culture at a startup or hybrid. Several of the students who interned at startups or hybrids initiated their own projects. But was this because of the environment, or because the students tended to be more proactive in general, or perhaps a combination of both? Students who intern for a startup may inherently be more willing to take on risk, which may impact how they perform in an internship and their willingness to initiate a task or suggest a solution in the workplace.

In addition to these larger questions, I plan to publish one or more journal articles based on the data and analysis in this study. Prior to publishing, there are several aspects of the study I would review and potentially reconsider. First, I would want to review the factor analysis and

the constructs that I originally identified in the Methodology section. Relying on individual survey item responses is risky because the validity is questionable. By using constructs made up of groups of questions, the variability of responses would be somewhat reduced and the aggregate responses to constructs would likely represent a more accurate view of the situation. Data validity is critical in interpreting responses and drawing conclusions from the data. I would likely further investigate the results of the factor analysis by running a factor analysis on the one primary factor that emerged. I would also look at the results of the t-tests on the constructs as opposed to the individual items to see what types of differences I found there.

I would also explore the academic literature on some additional topics. First, literature on meaningfulness may be helpful as I consider how companies can provide meaningful experiences for students. Pathways literature may have some implications relevant to internships, as well as recent literature on on-campus employment. It would also be interesting to explore whether experiences differ based on underrepresented characteristics such as race or in some cases gender.

Concluding Thoughts

Student internship experiences share a number of similar characteristics across company type and student demographics. However, subtle differences in these experiences can result in different learning opportunities and outcomes. The important thing for students to take away from the study is that they should seek opportunities to learn from performing tasks and from direct and indirect guidance and then reflect on those experiences and how they relate to their courses to gain the most from their internship.

In my experience, companies often seek out students who have interned at recognized companies as a type of "screen" when selecting candidates. However, this study demonstrated that students who work at less recognized companies, including startups, may develop a unique skill set that would be valuable to any employer. In some cases, students identified opportunities in the workplace, such as using data to better understand why customers purchase the company's product or services, or introducing employees to how technology can be used effectively in the workplace to make jobs easier. In addition, the study demonstrated that students in startup or hybrid companies were more likely to be assigned projects versus discrete tasks, in which case they learned to break up the project into tasks on their own rather than be assigned smaller, discrete tasks by someone else. This type of skill benefits students both academically and professionally by pushing them to think about the steps involved to achieve the desired outcome, and also may improve their self efficacy, as demonstrated in Bandura's (1991) theory of learning. Perhaps faculty and the academy could leverage experiential learning to foster these skills in students. In addition, companies should keep this in mind as they consider students' previous professional experiences.

Going forward, experiential learning will likely become even more important for students in developing the skill set they need to begin and maintain a successful career and in enhancing their competitiveness in the future job marketplace. Further, competency based learning is growing in acceptance and a current issue in the area involves how to assess skill level without classroom measures or interaction. Faculty could leverage experiential learning to enhance classroom learning to connect theory and practice. Internships vary widely by industry, company, supervisor, and student, but also share many characteristics and each experience adds value if it can be harnessed and reflected upon. This study and future studies on experiential

learning continue to help the academy and employers to understand the factors that lead to the most benefit from these experiences for all involved parties. Moving forward, it will be critical to develop methods to accurately assess the academic value of what students learn through internships and co-operative education in order for it to be accepted as legitimate academic learning. Both quantitative and qualitative research contribute toward the goal to measure and understand learning outcomes and how they emerge.

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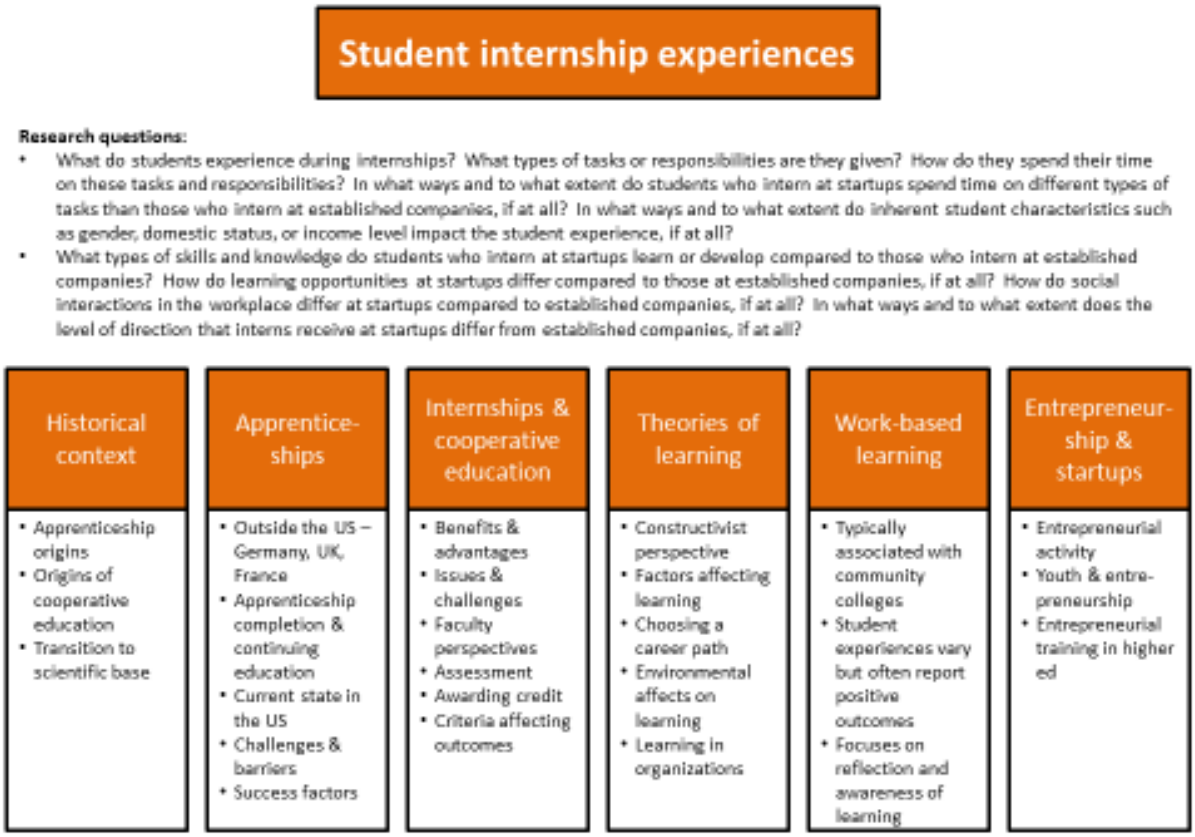
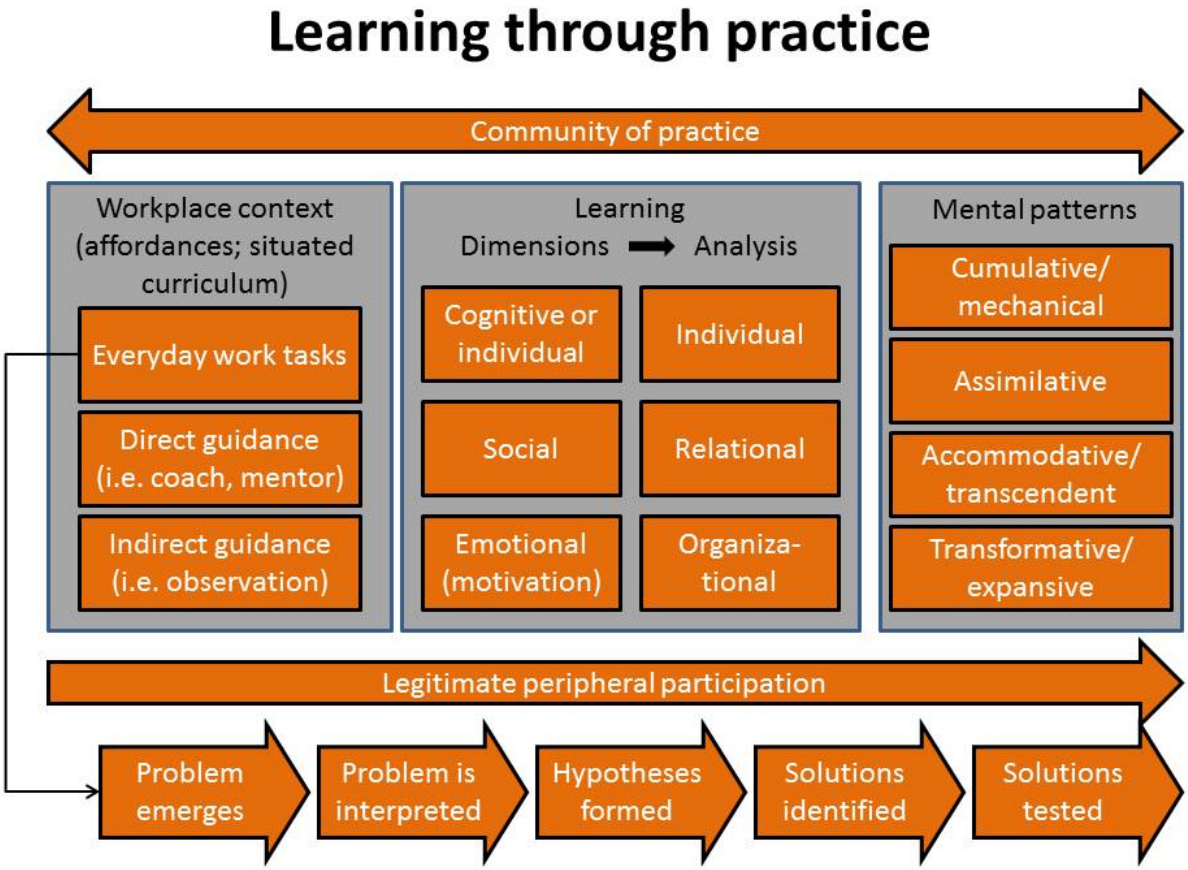
APPENDIX A: LITERATURE REVIEW MAP



APPENDIX B: CONCEPTUAL FRAMEWORK DIAGRAM



APPENDIX C: TABLES

Table 1: Hypotheses about learning at established companies compared to startups

Element	Established companies	Startups
	Workplace context	
Everyday work tasks	• More structured • Established processes • Well defined tasks • Variable impact	• Less structured/more ambiguity • Lack of precedent • Less defined tasks • Higher impact
Direct guidance	• Established chain of command • Supervisor or mentor • Established contact for questions • Peripheral participation in discussions/meetings	• Mentoring vs. supervision • No resident experts • Participation in strategic discussions or decisions
Indirect guidance	• Observation likely focused in unit • Limited external network	• Observation within & outside organization • Extensive external network (especially at incubator) • Opportunities to explore
	Learning dimensions	
Cognitive	• Process work tasks • Potentially connect to classroom learning	• Process work tasks • Potentially connect to classroom learning
Social	• Interact with supervisor, mentor, work team based on organizational norms • Direction from others • Ask questions of others when unsure of what to do	• Interact with team and potentially others outside organization • Less direction • Ask questions of others but they may not know answers either
Emotional	• Motivation depending on interest, interactions with others • May own project	• Motivation depending on interest, interactions with others • May own overall area
	Learning outcomes	
Technical skills	High	High
Professional/ interpersonal skills	Medium/High	Medium/High
Application/transfer of learning to new situation	Medium	Medium/High
Problem definition & scoping	Low	High
Figuring things out/ testing or experimenting	Medium	High
Implementation of technical knowledge	High	High

Table 2: Survey questions listed with assigned construct measured, research question addressed, source item number, and source construct

Please note that JCI stands for Job Characteristics Inventory and QPS represents General Nordic Questionnaire. These instruments are discussed in the Methodology section. Items with no source were developed by the researcher.

Item	No	Construct measured	Research question (RQ) addressed	Source & item number	Source construct
How often do you see projects or jobs through to completion?	27	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	JCI 4	Task identity
Does your work require complex decisions?	28	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	QPS 22	Job demands
Is your work challenging in a positive way?	29	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	QPS 27	Job demands
Are you given assignments without adequate resources to complete them?	30	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	QPS 42	Role expectations
Can you influence the amount of work assigned to you?	31	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	QPS 46	Control at work
Can you influence decisions that are important for your work?	32	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	QPS 53	Control at work
To what extent do you have an opportunity to do a number of different things?	33	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b	JCI 21	Variety
To what extent do you perceive that your tasks and responsibilities impact the organization?	34	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b		
How much are you left on your own to do your own work?	35	Level of direction	RQ 2c	JCI 3	Autonomy
To what extent do you have the opportunity for independent thought and action?	36	Level of direction	RQ 2c	JCI 28	Autonomy
Have clear, planned goals and objectives been defined for your job?	37	Level of direction	RQ 2c	QPS 38	Role expectations

Item	No	Construct measured	Research question (RQ) addressed	Source & item number	Source construct
If there are alternative methods for doing your work, can you choose which method to use?	38	Level of direction	RQ 2c	QPS 45	Control at work
If needed, can you get support and help with your work from your coworkers?	39	Organizational culture	RQ 2, RQ 2b	QPS 72	Social interaction
If needed, can you get support and help with your work from your immediate supervisor?	40	Organizational culture	RQ 2, RQ 2b	QPS 73	Social interaction
Are your work achievements appreciated by your immediate supervisor?	41	Organizational culture	RQ 2	QPS 78	Social interaction
Does your immediate supervisor encourage you to participate in important decisions?	42	Organizational culture	RQ 2, RQ 2b, RQ 2c	QPS 84	Leadership
Does your immediate superior encourage you to speak up when you have different opinions?	43	Organizational culture	RQ 2, RQ 2b, RQ 2c	QPS 85	Leadership
Does your immediate supervisor help you develop your skills?	44	Organizational culture	RQ 2, RQ 2b, RQ 2c	QPS 86	Leadership
To what extent is the climate at your work unit competitive?	45	Organizational culture	RQ 2, RQ 2b	QPS 92	Organizational culture
To what extent is the climate at your work unit encouraging and supportive?	46	Organizational culture	RQ 2, RQ 2b	QPS 93	Organizational culture
To what extent is the climate at your work unit relaxed and comfortable?	47	Organizational culture	RQ 2, RQ 2b	QPS 95	Organizational culture
To what extent is the climate at your work unit rigid and rule-based?	48	Organizational culture	RQ 2, RQ 2b	QPS 96	Organizational culture
Do workers take initiative at your workplace?	49	Organizational culture	RQ 2, RQ 2a	QPS 97	Organizational culture
Have you noticed any inequalities in how men and women are treated at your workplace?		Organizational culture	RQ 2, RQ 2b	QPS 100	Organizational culture
At your organization, are you recognized for a job well done?	50	Organizational culture	RQ 2, RQ 2c	QPS 102	Organizational culture

Item	No	Construct measured	Research question (RQ) addressed	Source & item number	Source construct
To what extent is the management of your organization interested in the health and well-being of the employees?	51	Organizational culture	RQ 2	QPS 104	Organizational culture
To what extent do you feel that there is a sense of a team in your workplace?	52	Organizational culture	RQ 2, RQ 2a, RQ 2b		
To what extent do you feel that you are part of a team in your workplace?	53	Organizational culture	RQ 2, RQ 2a, RQ 2b		
Are your current skills and knowledge useful in your work?	54	Skills and knowledge	RQ 2, RQ 2a	QPS 26	Job demands
Does your job require that you acquire new knowledge and new skills?	55	Skills and knowledge	RQ 2, RQ 2a	QPS 29	Job demands
To what extent do you see connections between what you have learned in school and the work you are doing?	56	Skills and knowledge	RQ 2, RQ 2a		
To what extent do you apply knowledge, skills, or concepts you learned in class to your work at your internship?	57	Skills and knowledge	RQ 2, RQ 2a		
To what extent do you find out how well you are doing on the job as you are working?	58	Social interaction	RQ 2, RQ 2b	JCI 5	Feedback
How much of your job depends upon your ability to work with others?	59	Social interaction	RQ 2, RQ 2b	JCI 7	Dealing with others
To what extent is dealing with other people part of your job?	60	Social interaction	RQ 2, RQ 2b	JCI 13	Dealing with others
Do your coworkers help you to develop your skills?	61	Social interaction	RQ 2, RQ 2a, RQ 2b		

Item	No	Construct measured	Research question (RQ) addressed	Source & item number	Source construct
To what extent do you have the opportunity to talk informally with other employees while at work?	62	Social interaction	RQ 2, RQ 2b	JCI 12	Friendship
To what extent do you have an opportunity to interact with your coworkers outside of regular work hours?	63	Social interaction	RQ 2, RQ 2b		
In which of the following types of tasks do you engage regularly at least on a weekly basis?	66	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b		
What do you do when you do not know how to perform a task or responsibility?	67	Level of direction	RQ 2, RQ 2a, RQ 2b		
What types of resources are available to you to learn in the workplace?	68	Level of direction	RQ 2, RQ 2a		
With whom do you work or interact frequently (at least twice per week)?	70	Social interaction	RQ 2, RQ 2b		
Briefly describe the tasks and responsibilities assigned to you on a regular basis.		Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b		
Of the tasks and responsibilities you mentioned in the previous questions, on which do you spend a significant amount of time (30% or more)?		Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b		
Briefly describe any knowledge or skills you have gained, developed, or enhanced as a result of this internship experience.		Skills and knowledge	RQ 2, RQ 2a		

Table 3: Questions from interview protocol listed with assigned construct measured and research question addressed

Question	Construct	Research question (RQ) addressed)
Please state your name, degree level and area, expected graduation date, and the name and location of the company for which you worked over the summer.	Demographics/ background	N/A
What were your initial expectations about the internship before you started? What goals did you want to accomplish as a result of this experience?	Demographics/ background	N/A
Why did you choose this particular internship? Did you specifically seek out this opportunity or did you find out about it unintentionally?	Demographics/ background	N/A
What was your role at the company? How did it fit into your unit/department? Into the larger organization? Did you receive compensation or credit for your internship?	Demographics/ background	RQ 1, RQ 1a, RQ 1b
Talk about how you spent your time during your internship. What tasks or responsibilities were assigned to you? How much time did you spend on each task or responsibility?	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b
How much direction were you given related to your tasks and responsibilities? Did someone show you how to do things or did you figure things out independently, or a combination of the two? Please share an example or two.	Level of direction	RQ 2, RQ 2a, RQ 2c
Did you feel prepared for the tasks you were assigned during your internship? Did you use skills or knowledge you learned through your courses at school? Did you use skills you did not learn in your courses? If so, please talk about that. Did you see a connection between what you were doing at your internship with what you learned in school? How?	Skills & knowledge	RQ 2, RQ 2a
Did you notice an increase in the tasks and responsibilities assigned to you during the duration of your role? If so, can you talk more about this?	Job tasks & characteristics	RQ 2, RQ 2a
What did you do if you did not know how to perform a task or responsibility? Tell me about a time when that happened.	Level of direction	RQ 2, RQ 2a, RQ 2b
What kind of questions did you ask during your internship? Did you learn from other people or from training or from other resources? What types of skills and knowledge did you learn? What types of training were available to you (i.e. orientation, classroom training, technology/online training, workshops, etc.)? Did this help you to better meet the goals and expectations of your internship?	Level of direction	RQ 2, RQ 2a, RQ 2b
What do you feel you can do better now that you completed your internship?	Skills & knowledge	RQ 2, RQ 2a
Talk about how you interacted with other people at your internship. Did you work closely with others? About how much of your time did you spend interacting with other people? Did your coworkers help you with your work? If so, how and in what ways?	Social interaction	RQ 2, RQ 2b

Question	Construct	Research question (RQ) addressed)
Describe the impact or contribution you felt you had on your unit. Describe the impact or contribution that you felt you had on the overall company. Did your work influence organizational decisions? Were you asked to provide input in meetings or in decisions? Tell me about an example.	Job tasks & characteristics	RQ 1, RQ 1a, RQ 1b, RQ 2
Overall, did you enjoy the experience? What did you like about it? What would you have changed?	Demographics/ background	N/A
At this point, have you been offered a full-time position as a result of this internship?	Demographics/ background	N/A
Is there anything I have not asked you that you think might be helpful or relevant?	N/A	N/A

Table 4: Comparative descriptive statistics for the survey vs. the interview sample

Descriptive	Survey Sample	Interview Sample
Interned at startup	11.5%	14.3%
First internship experience	50.4%	47.6%
Major	74.8% engineering 19.1% business 6.1% other	71.5% engineering 28.6% business
Female	41.2%	33.3%
Domestic	85.5%	85.7%
Pell recipient	10.7%	14.3%
GPA	Mean of 3.49	Mean of 3.63

Table 5: Table of *a priori* codes and descriptions for the first round of coding transcribed interview data; codes were generated from the interview protocol

Code name	Description
Demographics	Demographic information about student, including institution, major, year in school, etc.
Company	Company and location information
Initial expectations	Subject's expectations prior to starting internship (what he/she expected to experience, how he/she felt, etc.)
Goals	Subject's goals related to the internship, prior to starting
Internship choice	Why the subject chose the internship and/or whether he/she sought it out specifically
Role	Subject's overall role and objective of position
Increase responsibility	Subject's perception of whether his/her responsibilities increased over the course/duration of the internship
Tasks	Tasks that the subject performed; how subject spent his/her time while at work
Preparedness	How prepared the subject felt to be able to perform the tasks he/she was assigned
Connect work & school	Subject's perception of whether what he/she did during the internship related to concepts learned at school; subject's ability to see and describe connections between internship tasks and school
Help with tasks	What the subject did if he/she did not know/understand how to perform a task assigned to him/her
Social interactions	Interactions the subject had with others in the workplace, including his/her supervisor, coworkers, other interns, etc.
Training	Training available to the subject, including required training, optional training, in-person training, online training, other types of training, orientation, etc.
Culture	Subject's perception of the culture of the organization
Skills developed	Subject's perception of the skills he/she gained as a resut of the internship (technical, interpersonal, etc.)
Impact	Subject's perception of the impact his/her role and accomplishments during the internship had on the organization
Next steps	Results of subject's experience, such as whether or not he/she received an offer and accepted it, etc.

Table 6: Descriptive statistics for demographics of the survey sample population

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Startup	131	0	1	.1145	.31964
Duration Employed*	131	1	4	1.7557	.92895
First Internship	131	0	1	.5038	.50190
No Credit	131	0	1	.8702	.33734
No Tuition	131	0	1	.5878	.49412
Pell Recipient	131	0	1	.1069	.31013
Student Loans	131	0	1	.3130	.46549
GPA	129	2.60	4.03	3.4897	.33937
Female	131	0	1	.4198	.49543
Domestic	131	0	1	.8550	.35349
Female Supervisor	131	0	1	.2977	.45901
Major**	131	1	3	1.8702	.48670
Valid N (listwise)	129				

*Duration employed values: 1 – less than 3 months; 2 – 3 months to less than 6 months; 3 – 6 months to less than 1 year; 4 – 1 year or more

**Major values: 1 – Business; 2 – Engineering, 3 – Other STEM (non-Engineering)

Table 7: Descriptive statistics for Likert questions, constructs, and multiple choice questions for the study sample population; Q refers to the question number in the survey with a brief variable abbreviation; C refers to the five constructs discussed in Chapter 3 with an abbreviation of the construct name and the question numbers included; please reference Appendix G for the full text of the survey questions

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q27_Comp_Proj	131	1	5	3.8168	1.07990
Q28_Complex_Dec	129	1	5	3.3953	.93890
Q29_Chall_Work	130	2	5	3.9769	.79207
Q30_Adeq_Res	131	1	5	2.5802	1.13649
Q31_Influ_Amt	131	1	5	3.7939	.90058
Q32_Influ_Dec	130	1	5	3.6154	.92665
Q33_Do_Diff	131	1	5	3.8855	.99724
Q34_Impact_Org	131	2	5	3.7481	.84438
Q35_Work_On_Own	131	1	5	4.1756	.82724
Q36_Indp_Tht_Act	130	1	5	4.0846	.82626
Q37_Clear_Obj	131	1	5	3.7786	.95507
Q38_Choose_Meth	131	1	5	3.9771	.89842
Q39_Help_Cowrk	131	1	5	4.7710	.63929
Q40_Help_Supr	131	1	5	4.3969	.93380
Q41_Achiev_App	130	1	5	4.4538	.75853
Q42_Supr_Enc_Dec	130	1	5	3.9846	1.06374
Q43_Supr_Enc_Spk	131	1	5	4.1374	.93450
Q44_Supr_Dev_Sklls	131	1	5	4.0840	1.00029
Q45_Clim_Comp	131	1	5	2.6183	.94834
Q46_Clim_Enc_Supp	131	1	5	4.3740	.78775
Q47_Clim_Relax	130	2	5	4.1692	.76896
Q48_Clim_Rigid	131	1	5	2.5573	.92952
Q49_Work_Init	131	2	5	4.0229	.81774
Q50_Recog_Gd_Job	131	2	5	4.1298	.80763
Q51_Mgmt_Hlth_Wbng	131	2	5	4.2214	.83473
Q52_Sense_Team	131	1	5	4.1985	.86309
Q53_Part_Of_Team	129	1	5	4.0310	.95146
Q54_Curr_Skls_Use	131	2	5	4.0000	.96077
Q55_Req_New_Skls	131	2	5	4.1603	.84868
Q56_Cnct_Wrk_Sch	130	1	5	3.4000	.92006
Q57_Apply_Cls_Wrk	131	1	5	3.3664	.93813
Q58_Fdbk_On_Job	131	2	5	3.6794	.87061

Q59_Wrk_W_Others	131	1	5	3.9237	.94151
Q60_Wrk_W_Job	130	1	5	3.8231	1.08881
Q61_Cowrk_Dev_Skl	131	1	5	4.1832	.98294
Q62_Talk_Inform	130	2	5	4.23	.763
Q63_Intrct_Out_Wrk	131	1	5	3.1756	1.20563
C1_27_34_Job_Tsk_Char	131	2	5	3.6028	.54331
C2_35_38_Level_Dir	131	2	5	4.0025	.58798
C3_39_53_Org_Cult	131	3	5	4.0102	.48664
C4_54_57_Skl_Know	131	2	5	3.7341	.70810
C5_58_63_Soc_Int	131	2	5	3.8364	.66065
Q66_Task_Assgn_Supr	131	0	1	.8855	.31964
Q66_Task_Assgn_Cowrk	131	0	1	.5420	.50015
Q66_Task_Req_Dec	131	0	1	.6870	.46549
Q66_Task_Req_Tech_Sk	131	0	1	.6641	.47411
Q66_Task_Req_Nont_Sk	131	0	1	.8015	.40038
Q66_Task_Id_Own	131	0	1	.5802	.49543
Q66_Task_Req_Collab_Int	131	0	1	.8168	.38832
Q66_Task_Req_Collab_Ext	131	0	1	.3053	.46232
Q67_Ask_Cowrk_Asst	131	0	1	.8702	.33734
Q67_Ask_Supr_Asst	131	0	1	.7023	.45901
Q67_Figure_Out_Own	131	0	1	.9008	.30013
Q67_Org_Resource	131	0	1	.5802	.49543
Q67_Public_Resource	131	0	1	.7634	.42665
Q68_Coworkers	131	0	1	.9771	.15016
Q68_Supr	131	0	1	.8931	.31013
Q68_Comp_Materials	131	0	1	.7710	.42181
Q68_Comp_Train	131	0	1	.6183	.48766
Q70_Int_Client	131	0	1	.2137	.41152
Q70_Int_Cowrk	131	0	1	.9542	.20986
Q70_Int_Supr	131	0	1	.8931	.31013
Q70_Int_Vendor	131	0	1	.1832	.38832
Q70_Int_Oth_Dept	131	0	1	.5038	.50190
Q70_Int_Oth_Intrn	131	0	1	.6947	.46232
Valid N (listwise)	121				

Table 8: Descriptive statistics for the demographic/background questions, Likert questions, constructs, and multiple choice questions for the sample study population splitting the data between students who interned at established companies and who interned at startups

Descriptive Statistics

	Established company					Startup				
	N	Min	Max	Mean	Std. Deviation	N	Min	Max	Mean	Std. Deviation
Duration_Employed	116	1.00	4.00	1.7328	.92650	15	1.00	4.00	1.9333	.96115
First_Internship	116	0.00	1.00	.4741	.50150	15	0.00	1.00	.7333	.45774
No_Credit	116	0.00	1.00	.8707	.33700	15	0.00	1.00	.8667	.35187
No_Tuition	116	0.00	1.00	.5862	.49465	15	0.00	1.00	.6000	.50709
Pell_Receipient	116	0.00	1.00	.1207	.32718	15	0.00	0.00	0.0000	0.00000
Stud_Loan	116	0.00	1.00	.3190	.46810	15	0.00	1.00	.2667	.45774
GPA	114	2.60	4.03	3.4794	.34602	15	3.06	4.00	3.5682	.28135
Female	116	0.00	1.00	.4052	.49306	15	0.00	1.00	.5333	.51640
Domestic	116	0.00	1.00	.8621	.34632	15	0.00	1.00	.8000	.41404
Female_Supr	116	0.00	1.00	.2931	.45716	15	0.00	1.00	.3333	.48795
Q27_Comp_Proj	116	1.00	5.00	3.7845	1.10969	15	3.00	5.00	4.0667	.79881
Q28_Complex_Dec	115	1.00	5.00	3.4000	.95330	14	2.00	5.00	3.3571	.84190
Q29_Chall_Work	115	2.00	5.00	3.9478	.79299	15	3.00	5.00	4.2000	.77460
Q30_Adeq_Res	116	1.00	5.00	2.5776	1.15081	15	1.00	5.00	2.6000	1.05560
Q31_Influ_Amt	116	1.00	5.00	3.7672	.90753	15	2.00	5.00	4.0000	.84515
Q32_Influ_Dec	115	1.00	5.00	3.6174	.93267	15	2.00	5.00	3.6000	.91026
Q33_Do_Diff	116	1.00	5.00	3.8707	1.00026	15	2.00	5.00	4.0000	1.00000
Q34_Impact_Org	116	2.00	5.00	3.7500	.85338	15	3.00	5.00	3.7333	.79881
Q35_Work_On_Own	116	1.00	5.00	4.1724	.80516	15	2.00	5.00	4.2000	1.01419
Q36_Indp_Tht_Act	115	1.00	5.00	4.0609	.81957	15	2.00	5.00	4.2667	.88372
Q37_Clear_Obj	116	1.00	5.00	3.7500	.95894	15	2.00	5.00	4.0000	.92582
Q38_Choose_Meth	116	1.00	5.00	3.9655	.92248	15	3.00	5.00	4.0667	.70373
Q39_Help_Cowrk	116	1.00	5.00	4.7845	.64344	15	3.00	5.00	4.6667	.61721
Q40_Help_Supr	116	1.00	5.00	4.4224	.93391	15	2.00	5.00	4.2000	.94112

Q41_Achiev_App	116	1.00	5.00	4.4655	.76250	14	3.00	5.00	4.3571	.74495
Q42_Supr_Enc_Dec	115	1.00	5.00	3.9304	1.07378	15	2.00	5.00	4.4000	.91026
Q43_Supr_Enc_Spk	116	1.00	5.00	4.1121	.94888	15	3.00	5.00	4.3333	.81650
Q44_Supr_Dev_Sklls	116	1.00	5.00	4.0690	1.01916	15	3.00	5.00	4.2000	.86189
Q45_Clim_Comp	116	1.00	5.00	2.5776	.88613	15	1.00	5.00	2.9333	1.33452
Q46_Clim_Enc_Supp	116	1.00	5.00	4.3534	.80492	15	3.00	5.00	4.5333	.63994
Q47_Clim_Relax	115	2.00	5.00	4.1478	.78632	15	3.00	5.00	4.3333	.61721
Q48_Clim_Rigid	116	1.00	5.00	2.5862	.91432	15	1.00	4.00	2.3333	1.04654
Q49_Work_Init	116	2.00	5.00	3.9741	.81786	15	3.00	5.00	4.4000	.73679
Q50_Recog_Gd_Job	116	2.00	5.00	4.1379	.79012	15	2.00	5.00	4.0667	.96115
Q51_Mgmt_Hlth_Wbng	116	2.00	5.00	4.2155	.83203	15	3.00	5.00	4.2667	.88372
Q52_Sense_Team	116	1.00	5.00	4.1638	.87421	15	3.00	5.00	4.4667	.74322
Q53_Part_Of_Team	114	1.00	5.00	4.0175	.95919	15	2.00	5.00	4.1333	.91548
Q54_Curr_Skls_Use	116	2.00	5.00	3.9828	.97787	15	3.00	5.00	4.1333	.83381
Q55_Req_New_Skls	116	2.00	5.00	4.1638	.84384	15	2.00	5.00	4.1333	.91548
Q56_Cnct_Wrk_Sch	115	1.00	5.00	3.3913	.91475	15	2.00	5.00	3.4667	.99043
Q57_Apply_Cls_Wrk	116	1.00	5.00	3.3534	.93487	15	2.00	5.00	3.4667	.99043
Q58_Fdbk_On_Job	116	2.00	5.00	3.6724	.87254	15	2.00	5.00	3.7333	.88372
Q59_Wrk_W_Others	116	1.00	5.00	3.9310	.93923	15	2.00	5.00	3.8667	.99043
Q60_Wrk_W_Job	115	1.00	5.00	3.7652	1.09489	15	2.00	5.00	4.2667	.96115
Q61_Cowrk_Dev_Skl	116	1.00	5.00	4.1983	.98881	15	3.00	5.00	4.0667	.96115
Q62_Talk_Inform	115	2	5	4.23	.738	15	2	5	4.27	.961
Q63_Intrct_Out_Wrk	116	1.00	5.00	3.1379	1.23638	15	2.00	5.00	3.4667	.91548
C1_27_34_Job_Tsk_Char	116	2.25	4.88	3.5901	.55251	15	3.00	4.75	3.7012	.47080
C2_35_38_Level_Dir	116	2.00	5.00	3.9856	.58734	15	2.75	5.00	4.1333	.59662
C3_39_53_Org_Cult	116	2.67	4.87	3.9975	.48638	15	3.13	4.93	4.1079	.49421

C4_54_57_Skl_Know	116	1.50	5.00	3.7256	.71298	15	2.75	5.00	3.8000	.68920
C5_58_63_Soc_Int	116	2.33	5.00	3.8224	.65242	15	2.67	5.00	3.9444	.73639
Q66_Task_Assgn_Supr	116	0.00	1.00	.8879	.31682	15	0.00	1.00	.8667	.35187
Q66_Task_Assgn_Cowrk	116	0.00	1.00	.5690	.49737	15	0.00	1.00	.3333	.48795
Q66_Task_Req_Dec	116	0.00	1.00	.6724	.47137	15	0.00	1.00	.8000	.41404
Q66_Task_Req_Tech_Sk	116	0.00	1.00	.6638	.47446	15	0.00	1.00	.6667	.48795
Q66_Task_Req_Nont_Sk	116	0.00	1.00	.7845	.41296	15	0.00	1.00	.9333	.25820
Q66_Task_Id_Own	116	0.00	1.00	.5603	.49850	15	0.00	1.00	.7333	.45774
Q66_Task_Req_Collab_Int	116	0.00	1.00	.8276	.37938	15	0.00	1.00	.7333	.45774
Q66_Task_Req_Collab_Ext	116	0.00	1.00	.2845	.45313	15	0.00	1.00	.4667	.51640
Q67_Ask_Cowrk_Asst	116	0.00	1.00	.8879	.31682	15	0.00	1.00	.7333	.45774
Q67_Ask_Supr_Asst	116	0.00	1.00	.6983	.46100	15	0.00	1.00	.7333	.45774
Q67_Figure_Out_Own	116	0.00	1.00	.9052	.29425	15	0.00	1.00	.8667	.35187
Q67_Org_Resource	116	0.00	1.00	.6034	.49130	15	0.00	1.00	.4000	.50709
Q67_Public_Resource	116	0.00	1.00	.7586	.42978	15	0.00	1.00	.8000	.41404
Q68_Coworkers	116	0.00	1.00	.9828	.13073	15	0.00	1.00	.9333	.25820
Q68_Supr	116	0.00	1.00	.8793	.32718	15	1.00	1.00	1.0000	0.00000
Q68_Comp_Materials	116	0.00	1.00	.7845	.41296	15	0.00	1.00	.6667	.48795
Q68_Comp_Train	116	0.00	1.00	.6466	.48011	15	0.00	1.00	.4000	.50709
Q70_Int_Client	116	0.00	1.00	.1724	.37938	15	0.00	1.00	.5333	.51640
Q70_Int_Cowrk	116	0.00	1.00	.9569	.20397	15	0.00	1.00	.9333	.25820
Q70_Int_Supr	116	0.00	1.00	.8879	.31682	15	0.00	1.00	.9333	.25820
Q70_Int_Vendor	116	0.00	1.00	.1897	.39373	15	0.00	1.00	.1333	.35187
Q70_Int_Oth_Dept	116	0.00	1.00	.5517	.49947	15	0.00	1.00	.1333	.35187
Q70_Int_Oth_Intrn	116	0.00	1.00	.7069	.45716	15	0.00	1.00	.6000	.50709
Major	116	1.00	3.00	1.8362	.43627	15	1.00	3.00	2.1333	.74322
Valid N (listwise)	105					14				

Table 9a: Results from initial factor analysis, which identified 10 factors

Communalities (variance explained by 10 factors)

	Initial	Extraction
Q27_Comp_Proj	1.000	.672
Q28_Complex_Dec	1.000	.681
Q29_Chall_Work	1.000	.668
Q30_Adeq_Res	1.000	.750
Q31_Influ_Amt	1.000	.694
Q32_Influ_Dec	1.000	.655
Q33_Do_Diff	1.000	.650
Q34_Impact_Org	1.000	.589
Q35_Work_On_Own	1.000	.606
Q36_Indp_Tht_Act	1.000	.790
Q37_Clear_Obj	1.000	.584
Q38_Choose_Meth	1.000	.621
Q39_Help_Cowrk	1.000	.741
Q40_Help_Supr	1.000	.665
Q41_Achiev_App	1.000	.769
Q42_Supr_Enc_Dec	1.000	.777
Q43_Supr_Enc_Spk	1.000	.759
Q44_Supr_Dev_Sklls	1.000	.744
Q45_Clim_Comp	1.000	.655
Q46_Clim_Enc_Supp	1.000	.703
Q47_Clim_Relax	1.000	.671
Q48_Clim_Rigid	1.000	.550
Q49_Work_Init	1.000	.577
Q50_Recog_Gd_Job	1.000	.644
Q51_Mgmt_Hlth_Wbng	1.000	.682
Q52_Sense_Team	1.000	.751
Q53_Part_Of_Team	1.000	.732
Q54_Curr_Skls_Use	1.000	.699
Q55_Req_New_Skls	1.000	.578
Q56_Cnct_Wrk_Sch	1.000	.842
Q57_Apply_Cls_Wrk	1.000	.832
Q58_Fdbk_On_Job	1.000	.497
Q59_Wrk_W_Others	1.000	.813
Q60_Wrk_W_Job	1.000	.828
Q61_Cowrk_Dev_Skl	1.000	.711
Q62_Talk_Inform	1.000	.632
Q63_Intrct_Out_Wrk	1.000	.705

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.842	29.304	29.304	10.842	29.304	29.304
2	2.625	7.095	36.399	2.625	7.095	36.399
3	2.062	5.573	41.972	2.062	5.573	41.972
4	1.899	5.133	47.105	1.899	5.133	47.105
5	1.732	4.680	51.785	1.732	4.680	51.785
6	1.458	3.941	55.727	1.458	3.941	55.727
7	1.349	3.647	59.374	1.349	3.647	59.374
8	1.330	3.595	62.969	1.330	3.595	62.969
9	1.137	3.072	66.041	1.137	3.072	66.041
10	1.086	2.935	68.976	1.086	2.935	68.976
11	.949	2.565	71.541			
12	.889	2.402	73.943			
13	.808	2.183	76.125			
14	.786	2.124	78.249			
15	.753	2.035	80.284			
16	.670	1.810	82.094			
17	.611	1.652	83.746			
18	.602	1.628	85.373			
19	.506	1.368	86.742			
20	.502	1.356	88.097			
21	.484	1.307	89.404			
22	.445	1.203	90.607			
23	.395	1.068	91.675			
24	.384	1.039	92.714			
25	.343	.927	93.641			
26	.317	.857	94.497			
27	.284	.768	95.266			
28	.257	.694	95.960			
29	.248	.670	96.630			
30	.220	.595	97.225			
31	.206	.557	97.782			
32	.182	.493	98.275			
33	.172	.464	98.738			
34	.149	.404	99.142			
35	.129	.348	99.490			
36	.105	.283	99.774			
37	.084	.226	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component									
	1	2	3	4	5	6	7	8	9	10
Q27_Comp_Proj	.403	-.296	.263	-.075	-.041	.290	.005	.253	-.226	.384
Q28_Complex_Dec	.653	-.340	.105	.065	-.068	-.032	-.032	.152	-.159	-.261
Q29_Chall_Work	.683	-.331	.065	.041	-.183	-.004	.050	.061	-.157	-.142
Q30_Adeq_Res	-.116	-.167	.497	.241	-.094	.232	-.219	.031	.532	-.091
Q31_Influ_Amt	.385	.038	.286	.228	.212	-.193	-.408	.038	-.182	.356
Q32_Influ_Dec	.608	-.001	.153	.073	.018	-.185	-.417	.035	-.191	-.100
Q33_Do_Diff	.639	.096	-.162	.022	-.027	-.315	-.057	.205	-.183	.165
Q34_Impact_Org	.578	-.231	-.298	.033	-.123	-.091	.207	.065	-.162	.123
Q35_Work_On_Own	.148	-.013	.267	-.085	.674	.099	.145	.071	-.055	-.112
Q36_Indp_Tht_Act	.605	-.330	.313	.123	.202	.112	.136	-.057	-.210	-.289
Q37_Clear_Obj	.584	-.201	-.356	-.086	-.106	.058	.216	-.049	.022	-.072
Q38_Choose_Meth	.657	-.104	.155	.095	.121	.038	-.261	-.182	.071	-.151
Q39_Help_Cowrk	.571	.174	-.235	-.150	.149	.044	-.087	-.485	-.177	-.089
Q40_Help_Supr	.489	-.061	-.365	-.168	.218	.098	-.096	-.416	.148	-.011
Q41_Achiev_App	.546	-.169	-.308	-.084	.402	.147	.048	.070	.345	.175
Q42_Supr_Enc_Dec	.704	-.271	-.260	.173	.034	.048	-.210	.214	.072	.110
Q43_Supr_Enc_Spk	.645	-.308	-.210	.198	.099	.245	-.230	.169	.030	-.109
Q44_Supr_Dev_Sklls	.656	-.099	-.289	-.174	-.247	.259	-.154	-.070	.169	-.068
Q45_Clim_Comp	.392	-.042	.186	.541	-.112	.168	.225	-.175	-.007	-.223
Q46_Clim_Enc_Supp	.709	.333	-.038	-.160	-.001	.070	.047	-.103	-.154	-.144
Q47_Clim_Relax	.309	.403	.129	-.173	.225	.459	.101	.236	-.092	.174
Q48_Clim_Rigid	-.126	-.335	-.094	.256	-.230	.092	.487	.010	.015	.220
Q49_Work_Init	.578	-.022	.321	-.178	-.213	.030	.115	.171	.046	-.131
Q50_Recog_Gd_Job	.668	.034	-.169	.054	.293	-.076	.120	.140	.199	.010
Q51_Mgmt_Hlth_Wbng	.402	.289	.001	-.358	.299	-.142	.299	.265	.062	-.188
Q52_Sense_Team	.451	.478	.177	-.154	-.329	.230	-.002	.266	.085	-.158
Q53_Part_Of_Team	.652	.417	.056	-.171	-.290	-.016	.082	.090	.057	-.002
Q54_Curr_Skls_Use	.663	-.159	.203	-.145	.077	-.340	.154	-.058	-.133	.083
Q55_Req_New_Skls	.552	.205	-.017	-.194	-.233	.064	-.226	-.016	.104	.270
Q56_Cnct_Wrk_Sch	.497	-.299	.359	-.373	-.117	-.270	.103	-.246	.252	.129
Q57_Apply_Cls_Wrk	.553	-.235	.432	-.281	-.033	-.250	.123	-.200	.246	.163
Q58_Fdbk_On_Job	.578	-.108	-.149	.225	.051	.015	.072	.147	.183	.124
Q59_Wrk_W_Others	.488	.500	-.066	.399	.000	-.356	.011	-.035	.163	-.072
Q60_Wrk_W_Job	.449	.375	-.045	.554	.044	-.312	.162	.131	.184	.017
Q61_Cowrk_Dev_Skl	.686	.254	-.085	-.018	-.375	.072	-.057	-.106	-.088	-.003
Q62_Talk_Inform	.337	.501	.264	.128	.211	.261	.056	-.196	-.014	.164
Q63_Intrct_Out_Wrk	.390	.125	.147	.367	-.063	.255	.233	-.405	-.141	.272

Extraction Method: Principal Component Analysis.

a. 10 components extracted.

Table 9b: Results from factor analysis, specifying five factors

Communalities (variance explained by 5 factors)

	Initial	Extraction
Q27_Comp_Proj	1.000	.326
Q28_Complex_Dec	1.000	.562
Q29_Chall_Work	1.000	.616
Q30_Adeq_Res	1.000	.355
Q31_Influ_Amt	1.000	.328
Q32_Influ_Dec	1.000	.399
Q33_Do_Diff	1.000	.445
Q34_Impact_Org	1.000	.492
Q35_Work_On_Own	1.000	.554
Q36_Indp_Tht_Act	1.000	.629
Q37_Clear_Obj	1.000	.526
Q38_Choose_Meth	1.000	.491
Q39_Help_Cowrk	1.000	.457
Q40_Help_Supr	1.000	.452
Q41_Achiev_App	1.000	.590
Q42_Supr_Enc_Dec	1.000	.668
Q43_Supr_Enc_Spk	1.000	.605
Q44_Supr_Dev_Sklls	1.000	.615
Q45_Clim_Comp	1.000	.495
Q46_Clim_Enc_Supp	1.000	.641
Q47_Clim_Relax	1.000	.355
Q48_Clim_Rigid	1.000	.255
Q49_Work_Init	1.000	.514
Q50_Recog_Gd_Job	1.000	.565
Q51_Mgmt_Hlth_Wbng	1.000	.463
Q52_Sense_Team	1.000	.595
Q53_Part_Of_Team	1.000	.714
Q54_Curr_Skls_Use	1.000	.532
Q55_Req_New_Skls	1.000	.439
Q56_Cnct_Wrk_Sch	1.000	.618
Q57_Apply_Cls_Wrk	1.000	.627
Q58_Fdbk_On_Job	1.000	.421
Q59_Wrk_W_Others	1.000	.653
Q60_Wrk_W_Job	1.000	.653
Q61_Cowrk_Dev_Skl	1.000	.684
Q62_Talk_Inform	1.000	.496
Q63_Intrct_Out_Wrk	1.000	.328

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumula-tive %	Total	% of Variance	Cumula-tive %
1	10.842	29.304	29.304	10.842	29.304	29.304	5.438	14.697	14.697
2	2.625	7.095	36.399	2.625	7.095	36.399	4.566	12.340	27.038
3	2.062	5.573	41.972	2.062	5.573	41.972	3.345	9.040	36.078
4	1.899	5.133	47.105	1.899	5.133	47.105	3.263	8.820	44.898
5	1.732	4.680	51.785	1.732	4.680	51.785	2.548	6.888	51.785
6	1.458	3.941	55.727						
7	1.349	3.647	59.374						
8	1.330	3.595	62.969						
9	1.137	3.072	66.041						
10	1.086	2.935	68.976						
11	.949	2.565	71.541						
12	.889	2.402	73.943						
13	.808	2.183	76.125						
14	.786	2.124	78.249						
15	.753	2.035	80.284						
16	.670	1.810	82.094						
17	.611	1.652	83.746						
18	.602	1.628	85.373						
19	.506	1.368	86.742						
20	.502	1.356	88.097						
21	.484	1.307	89.404						
22	.445	1.203	90.607						
23	.395	1.068	91.675						
24	.384	1.039	92.714						
25	.343	.927	93.641						
26	.317	.857	94.497						
27	.284	.768	95.266						
28	.257	.694	95.960						
29	.248	.670	96.630						
30	.220	.595	97.225						
31	.206	.557	97.782						
32	.182	.493	98.275						
33	.172	.464	98.738						
34	.149	.404	99.142						
35	.129	.348	99.490						
36	.105	.283	99.774						
37	.084	.226	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix

	Component				
	1	2	3	4	5
Q27_Comp_Proj	.403	-.296	.263	-.075	-.041
Q28_Complex_Dec	.653	-.340	.105	.065	-.068
Q29_Chall_Work	.683	-.331	.065	.041	-.183
Q30_Adeq_Res	-.116	-.167	.497	.241	-.094
Q31_Influ_Amt	.385	.038	.286	.228	.212
Q32_Influ_Dec	.608	-.001	.153	.073	.018
Q33_Do_Diff	.639	.096	-.162	.022	-.027
Q34_Impact_Org	.578	-.231	-.298	.033	-.123
Q35_Work_On_Own	.148	-.013	.267	-.085	.674
Q36_Indp_Tht_Act	.605	-.330	.313	.123	.202
Q37_Clear_Obj	.584	-.201	-.356	-.086	-.106
Q38_Choose_Meth	.657	-.104	.155	.095	.121
Q39_Help_Cowrk	.571	.174	-.235	-.150	.149
Q40_Help_Supr	.489	-.061	-.365	-.168	.218
Q41_Achiev_App	.546	-.169	-.308	-.084	.402
Q42_Supr_Enc_Dec	.704	-.271	-.260	.173	.034
Q43_Supr_Enc_Spk	.645	-.308	-.210	.198	.099
Q44_Supr_Dev_Sklls	.656	-.099	-.289	-.174	-.247
Q45_Clim_Comp	.392	-.042	.186	.541	-.112
Q46_Clim_Enc_Supp	.709	.333	-.038	-.160	-.001
Q47_Clim_Relax	.309	.403	.129	-.173	.225
Q48_Clim_Rigid	-.126	-.335	-.094	.256	-.230
Q49_Work_Init	.578	-.022	.321	-.178	-.213
Q50_Recog_Gd_Job	.668	.034	-.169	.054	.293
Q51_Mgmt_Hlth_Wbng	.402	.289	.001	-.358	.299
Q52_Sense_Team	.451	.478	.177	-.154	-.329
Q53_Part_Of_Team	.652	.417	.056	-.171	-.290
Q54_Curr_Skls_Use	.663	-.159	.203	-.145	.077
Q55_Req_New_Skls	.552	.205	-.017	-.194	-.233
Q56_Cnct_Wrk_Sch	.497	-.299	.359	-.373	-.117
Q57_Apply_Cls_Wrk	.553	-.235	.432	-.281	-.033
Q58_Fdbk_On_Job	.578	-.108	-.149	.225	.051
Q59_Wrk_W_Others	.488	.500	-.066	.399	.000
Q60_Wrk_W_Job	.449	.375	-.045	.554	.044
Q61_Cowrk_Dev_Skl	.686	.254	-.085	-.018	-.375
Q62_Talk_Inform	.337	.501	.264	.128	.211
Q63_Intrct_Out_Wrk	.390	.125	.147	.367	-.063

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Table 10: Questions assigned to each factor in factor analysis with no limit on the number of factors; this set of ten factors explains approximately 69% of the variance of the results.

Factor assignment	Questions	Theme(s)
1	27, 28, 29, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 49, 50, 51, 53, 54, 55, 56, 57, 58, 61	Job and task characteristics, help/encouragement from others, connect work and school
2	52, 59, 62	Team relationships (sense of team, depend on ability to work with others, informal interactions)
3	No questions assigned	
4	45, 60	Competitiveness and dealing with others
5	35	Work independently
6	47	Relaxed work climate
7	31, 48	Rigid work climate and lack of influence
8	63	Interaction outside of work
9	30	Assignments without adequate resources
10	No questions assigned	

Table 11: Questions assigned to each factor in factor analysis limited to five factors; this set of factors explains approximately 52% of the variance of the results.

Factor assignment	Questions	Theme(s)
1	27, 28, 29, 31, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 49, 50, 51, 53, 54, 55, 56, 57, 58, 61, 63	Job and task characteristics, help/encouragement from others, connect work and school
2	47, 48, 52, 59, 62	Team relationships and relaxed vs. rigid work climate
3	30	Assignments without adequate resources
4	45, 60	Competitiveness and dealing with others
5	35	Work independently

Table 12: Results from Chronbach's alpha test, which analyzes item reliability for the data

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.935	.942	42

Item Statistics

	Mean	Std. Deviation	N
Q27_Comp_Proj	3.8264	1.10813	121
Q28_Complex_Dec	3.3967	.95288	121
Q29_Chall_Work	3.9587	.78948	121
Q30_Adeq_Res	2.5041	1.09639	121
Q31_Influ_Amt	3.7769	.89896	121
Q32_Influ_Dec	3.5868	.92799	121
Q33_Do_Diff	3.8760	1.01300	121
Q34_Impact_Org	3.7355	.83435	121
Q35_Work_On_Own	4.1570	.83674	121
Q36_Indp_Tht_Act	4.0661	.83402	121
Q37_Clear_Obj	3.7686	.97263	121
Q38_Choose_Meth	3.9504	.90232	121
Q39_Help_Cowrk	4.7934	.59044	121
Q40_Help_Supr	4.3884	.94315	121
Q41_Achiev_App	4.4545	.76376	121
Q42_Supr_Enc_Dec	3.9752	1.06037	121
Q43_Supr_Enc_Spk	4.1322	.92143	121
Q44_Supr_Dev_Sklls	4.0744	1.00966	121
Q45_Clim_Comp	2.6364	.95743	121
Q46_Clim_Enc_Supp	4.3884	.76781	121
Q47_Clim_Relax	4.1818	.76376	121
Q48_Clim_Rigid	2.5537	.92151	121
Q49_Work_Init	4.0083	.82154	121
Q50_Recog_Gd_Job	4.1322	.80563	121
Q51_Mgmt_Hlth_Wbng	4.2479	.81936	121
Q52_Sense_Team	4.1983	.86236	121
Q53_Part_Of_Team	4.0248	.96145	121
Q54_Curr_Skls_Use	3.9587	.94337	121
Q55_Req_New_Skls	4.1570	.82672	121

Q56_Cnct_Wrk_Sch	3.4050	.93611	121
Q57_Apply_Cls_Wrk	3.3554	.93861	121
Q58_Fdbk_On_Job	3.6694	.86976	121
Q59_Wrk_W_Others	3.9008	.94344	121
Q60_Wrk_W_Job	3.7934	1.10240	121
Q61_Cowrk_Dev_Skl	4.1736	.99731	121
Q62_Talk_Inform	4.2149	.75506	121
Q63_Intrct_Out_Wrk	3.1405	1.21316	121
C1_27_34_Job_Tsk_Char	3.5826	.54284	121
C2_35_38_Level_Dir	3.9855	.59275	121
C3_39_53_Org_Cult	4.0126	.47738	121
C4_54_57_Skl_Know	3.7190	.70384	121
C5_58_63_Soc_Int	3.8154	.65787	121

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Q27_Comp_Proj	157.8508	358.485	.388		.934
Q28_Complex_Dec	158.2805	353.151	.613		.932
Q29_Chall_Work	157.7186	356.076	.648		.932
Q30_Adeq_Res	159.1731	378.230	-.081		.939
Q31_Influ_Amt	157.9004	362.371	.374		.934
Q32_Influ_Dec	158.0905	355.529	.560		.932
Q33_Do_Diff	157.8012	352.991	.577		.932
Q34_Impact_Org	157.9417	358.913	.518		.933
Q35_Work_On_Own	157.5202	370.521	.148		.936
Q36_Indp_Tht_Act	157.6111	356.466	.598		.932
Q37_Clear_Obj	157.9086	355.653	.529		.933
Q38_Choose_Meth	157.7268	353.773	.631		.932
Q39_Help_Cowrk	156.8838	364.218	.507		.933
Q40_Help_Supr	157.2888	359.995	.422		.934
Q41_Achiev_App	157.2227	360.764	.505		.933
Q42_Supr_Enc_Dec	157.7020	348.922	.655		.931
Q43_Supr_Enc_Spk	157.5450	354.320	.600		.932
Q44_Supr_Dev_Sklls	157.6029	352.352	.597		.932
Q45_Clim_Comp	159.0409	360.857	.391		.934
Q46_Clim_Enc_Supp	157.2888	356.585	.649		.932
Q47_Clim_Relax	157.4954	367.120	.283		.935
Q48_Clim_Rigid	159.1235	378.935	-.106		.938

Q49_Work_Init	157.6690	357.988	.558		.933
Q50_Recog_Gd_Job	157.5450	356.394	.623		.932
Q51_Mgmt_Hlth_Wbng	157.4293	364.459	.347		.934
Q52_Sense_Team	157.4789	361.713	.413		.934
Q53_Part_Of_Team	157.6524	353.191	.605		.932
Q54_Curr_Skls_Use	157.7186	352.671	.633		.932
Q55_Req_New_Skls	157.5202	359.400	.508		.933
Q56_Cnct_Wrk_Sch	158.2723	358.412	.471		.933
Q57_Apply_Cls_Wrk	158.3219	356.041	.538		.933
Q58_Fdbk_On_Job	158.0078	356.998	.555		.933
Q59_Wrk_W_Others	157.7764	358.687	.459		.933
Q60_Wrk_W_Job	157.8838	356.748	.433		.934
Q61_Cowrk_Dev_Skl	157.5037	351.107	.639		.932
Q62_Talk_Inform	157.4624	365.821	.333		.934
Q63_Intrct_Out_Wrk	158.5367	356.661	.390		.935
C1_27_34_Job_Tsk_Char	158.0946	358.844	.820		.932
C2_35_38_Level_Dir	157.6917	358.666	.756		.932
C3_39_53_Org_Cult	157.6646	359.321	.909		.932
C4_54_57_Skl_Know	157.9582	356.294	.723		.932
C5_58_63_Soc_Int	157.8618	357.119	.742		.932

Table 13: Correlation matrix for demographic survey questions

		Startup	Duration Employed	First Intern-ship	No Credit	No Tuition	Pell Recipient	Student Loan	GPA	Female	Domestic	Female Supr
Startup	Pearson Correlation	1	.069	.165*	-.004	.009	-.124	-.036	.084	.083	-.056	.028
	p-value (2-tailed)		.433	.060*	.966	.919	.157	.684	.343	.348	.524	.751
	N	131	131	131	131	131	131	131	129	131	131	131
Duration Employed	Pearson Correlation	.069	1	-.031	-.126	-.104	-.015	.018	-.130	.041	.243***	.046
	p-value (2-tailed)	.433		.725	.150	.238	.861	.838	.141	.644	.005***	.605
	N	131	131	131	131	131	131	131	129	131	131	131
First Internship	Pearson Correlation	.165*	-.031	1	-.201**	-.056	-.052	.077	.047	.071	-.019	.045
	p-value (2-tailed)	.060*	.725		.021**	.528	.555	.381	.599	.421	.834	.609
	N	131	131	131	131	131	131	131	129	131	131	131
No Credit	Pearson Correlation	-.004	-.126	-.201**	1	.277***	-.087	-.082	.157*	.006	-.030	-.047
	p-value (2-tailed)	.966	.150	.021**		.001***	.323	.350	.075*	.943	.733	.597
	N	131	131	131	131	131	131	131	129	131	131	131
No Tuition	Pearson Correlation	.009	-.104	-.056	.277***	1	.189**	.097	.036	-.042	.272***	.037
	p-value (2-tailed)	.919	.238	.528	.001***		.030**	.270	.687	.636	.002***	.679
	N	131	131	131	131	131	131	131	129	131	131	131

Pell Receipient	Pearson Correlation	-.124	-.015	-.052	-.087	.189**	1	.193*	-.052	.006	.142	-.117
	p-value (2-tailed)	.157	.861	.555	.323	.030**		.027*	.556	.945	.105	.183
	N	131	131	131	131	131	131	131	129	131	131	131
Student Loan	Pearson Correlation	-.036	.018	.077	-.082	.097	.193**	1	-.240***	-.074	.184**	-.007
	p-value (2-tailed)	.684	.838	.381	.350	.270	.027**		.006***	.402	.035**	.933
	N	131	131	131	131	131	131	131	129	131	131	131
GPA	Pearson Correlation	.084	-.130	.047	.157*	.036	-.052	-.240***	1	-.121	-.204**	.151*
	p-value (2-tailed)	.343	.141	.599	.075*	.687	.556	.006***		.173	.020**	.087*
	N	129	129	129	129	129	129	129	129	129	129	129
Female	Pearson Correlation	.083	.041	.071	.006	-.042	.006	-.074	-.121	1	-.001	.292***
	p-value (2-tailed)	.348	.644	.421	.943	.636	.945	.402	.173		.991	.001***
	N	131	131	131	131	131	131	131	129	131	131	131
Domestic	Pearson Correlation	-.056	.243***	-.019	-.030	.272***	.142	.184**	-.204**	-.001	1	-.016
	p-value (2-tailed)	.524	.005***	.834	.733	.002***	.105	.035**	.020**	.991		.854
	N	131	131	131	131	131	131	131	129	131	131	131
Female Supervisor	Pearson Correlation	.028	.046	.045	-.047	.037	-.117	-.007	.151	.292***	-.016	1
	p-value (2-tailed)	.751	.605	.609	.597	.679	.183	.933	.087*	.001***	.854	
	N	131	131	131	131	131	131	131	129	131	131	131

*p-value <0.1; **p-value <0.05; ***p-value <0.01

To view the entire correlation matrix, please view the supplemental file named **Zehr correlation matrix.xls**. This file contains the correlation matrix including demographics, Likert scale survey questions, survey constructs, and the additional questions at the end of the survey with checkboxes.

Table 14: T-test results from survey questions comparing students who interned at established companies and students who interned at startups

Group Statistics

Estab_Startup		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Established	116	3.7845	1.10969	.10303
	Startup	15	4.0667	.79881	.20625
Q28_Complex_Dec	Established	115	3.4000	.95330	.08890
	Startup	14	3.3571	.84190	.22501
Q29_Chall_Work	Established	115	3.9478	.79299	.07395
	Startup	15	4.2000	.77460	.20000
Q30_Adeq_Res	Established	116	2.5776	1.15081	.10685
	Startup	15	2.6000	1.05560	.27255
Q31_Influ_Amt	Established	116	3.7672	.90753	.08426
	Startup	15	4.0000	.84515	.21822
Q32_Influ_Dec	Established	115	3.6174	.93267	.08697
	Startup	15	3.6000	.91026	.23503
Q33_Do_Diff	Established	116	3.8707	1.00026	.09287
	Startup	15	4.0000	1.00000	.25820
Q34_Impact_Org	Established	116	3.7500	.85338	.07923
	Startup	15	3.7333	.79881	.20625
Q35_Work_On_Own	Established	116	4.1724	.80516	.07476
	Startup	15	4.2000	1.01419	.26186
Q36_Indp_Tht_Act	Established	115	4.0609	.81957	.07643
	Startup	15	4.2667	.88372	.22817
Q37_Clear_Obj	Established	116	3.7500	.95894	.08904
	Startup	15	4.0000	.92582	.23905
Q38_Choose_Meth	Established	116	3.9655	.92248	.08565
	Startup	15	4.0667	.70373	.18170
Q39_Help_Cowrk	Established	116	4.7845	.64344	.05974
	Startup	15	4.6667	.61721	.15936
Q40_Help_Supr	Established	116	4.4224	.93391	.08671
	Startup	15	4.2000	.94112	.24300
Q41_Achiev_App	Established	116	4.4655	.76250	.07080
	Startup	14	4.3571	.74495	.19910
Q42_Supr_Enc_Dec	Established	115	3.9304*	1.07378	.10013
	Startup	15	4.4000*	.91026	.23503
Q43_Supr_Enc_Spk	Established	116	4.1121	.94888	.08810
	Startup	15	4.3333	.81650	.21082
Q44_Supr_Dev_Skills	Established	116	4.0690	1.01916	.09463

	Startup	15	4.2000	.86189	.22254
Q45_Clim_Comp	Established	116	2.5776	.88613	.08228
	Startup	15	2.9333	1.33452	.34457
Q46_Clim_Enc_Supp	Established	116	4.3534	.80492	.07474
	Startup	15	4.5333	.63994	.16523
Q47_Clim_Relax	Established	115	4.1478	.78632	.07333
	Startup	15	4.3333	.61721	.15936
Q48_Clim_Rigid	Established	116	2.5862	.91432	.08489
	Startup	15	2.3333	1.04654	.27021
Q49_Work_Init	Established	116	3.9741*	.81786	.07594
	Startup	15	4.4000*	.73679	.19024
Q50_Recog_Gd_Job	Established	116	4.1379	.79012	.07336
	Startup	15	4.0667	.96115	.24817
Q51_Mgmt_Hlth_Wbng	Established	116	4.2155	.83203	.07725
	Startup	15	4.2667	.88372	.22817
Q52_Sense_Team	Established	116	4.1638	.87421	.08117
	Startup	15	4.4667	.74322	.19190
Q53_Part_Of_Team	Established	114	4.0175	.95919	.08984
	Startup	15	4.1333	.91548	.23637
Q54_Curr_Skls_Use	Established	116	3.9828	.97787	.09079
	Startup	15	4.1333	.83381	.21529
Q55_Req_New_Skls	Established	116	4.1638	.84384	.07835
	Startup	15	4.1333	.91548	.23637
Q56_Cnct_Wrk_Sch	Established	115	3.3913	.91475	.08530
	Startup	15	3.4667	.99043	.25573
Q57_Apply_Cls_Wrk	Established	116	3.3534	.93487	.08680
	Startup	15	3.4667	.99043	.25573
Q58_Fdbk_On_Job	Established	116	3.6724	.87254	.08101
	Startup	15	3.7333	.88372	.22817
Q59_Wrk_W_Others	Established	116	3.9310	.93923	.08721
	Startup	15	3.8667	.99043	.25573
Q60_Wrk_W_Job	Established	115	3.7652*	1.09489	.10210
	Startup	15	4.2667*	.96115	.24817
Q61_Cowrk_Dev_Skl	Established	116	4.1983	.98881	.09181
	Startup	15	4.0667	.96115	.24817
Q62_Talk_Inform	Established	115	4.23	.738	.069
	Startup	15	4.27	.961	.248
Q63_Intrct_Out_Wrk	Established	116	3.1379	1.23638	.11480
	Startup	15	3.4667	.91548	.23637
C1_27_34_Job_Tsk_Char	Established	116	3.5901	.55251	.05130
	Startup	15	3.7012	.47080	.12156

C2_35_38_Level_Dir	Established	116	3.9856	.58734	.05453
	Startup	15	4.1333	.59662	.15405
C3_39_53_Org_Cult	Established	116	3.9975	.48638	.04516
	Startup	15	4.1079	.49421	.12760
C4_54_57_Skl_Know	Established	116	3.7256	.71298	.06620
	Startup	15	3.8000	.68920	.17795
C5_58_63_Soc_Int	Established	116	3.8224	.65242	.06058
	Startup	15	3.9444	.73639	.19013
Q66_Task_Assgn_Supr	Established	116	.8879	.31682	.02942
	Startup	15	.8667	.35187	.09085
Q66_Task_Assgn_Cowrk	Established	116	.5690*	.49737	.04618
	Startup	15	.3333*	.48795	.12599
Q66_Task_Req_Dec	Established	116	.6724	.47137	.04377
	Startup	15	.8000	.41404	.10690
Q66_Task_Req_Tech_Sk	Established	116	.6638	.47446	.04405
	Startup	15	.6667	.48795	.12599
Q66_Task_Req_Nont_Sk	Established	116	.7845*	.41296	.03834
	Startup	15	.9333*	.25820	.06667
Q66_Task_Id_Own	Established	116	.5603	.49850	.04628
	Startup	15	.7333	.45774	.11819
Q66_Task_Req_Collab_Int	Established	116	.8276	.37938	.03522
	Startup	15	.7333	.45774	.11819
Q66_Task_Req_Collab_Ext	Established	116	.2845	.45313	.04207
	Startup	15	.4667	.51640	.13333
Q67_Ask_Cowrk_Asst	Established	116	.8879	.31682	.02942
	Startup	15	.7333	.45774	.11819
Q67_Ask_Supr_Asst	Established	116	.6983	.46100	.04280
	Startup	15	.7333	.45774	.11819
Q67_Figure_Out_Own	Established	116	.9052	.29425	.02732
	Startup	15	.8667	.35187	.09085
Q67_Org_Resource	Established	116	.6034	.49130	.04562
	Startup	15	.4000	.50709	.13093
Q67_Public_Resource	Established	116	.7586	.42978	.03990
	Startup	15	.8000	.41404	.10690
Q68_Coworkers	Established	116	.9828	.13073	.01214
	Startup	15	.9333	.25820	.06667
Q68_Supr	Established	116	.8793***	.32718	.03038
	Startup	15	1.0000***	0.00000	0.00000
Q68_Comp_Materials	Established	116	.7845	.41296	.03834
	Startup	15	.6667	.48795	.12599
Q68_Comp_Train	Established	116	.6466*	.48011	.04458

	Startup	15	.4000*	.50709	.13093
Q70_Int_Client	Established	116	.1724**	.37938	.03522
	Startup	15	.5333**	.51640	.13333
Q70_Int_Cowrk	Established	116	.9569	.20397	.01894
	Startup	15	.9333	.25820	.06667
Q70_Int_Supr	Established	116	.8879	.31682	.02942
	Startup	15	.9333	.25820	.06667
Q70_Int_Vendor	Established	116	.1897	.39373	.03656
	Startup	15	.1333	.35187	.09085
Q70_Int_Oth_Dept	Established	116	.5517***	.49947	.04638
	Startup	15	.1333***	.35187	.09085
Q70_Int_Oth_Intrn	Established	116	.7069	.45716	.04245
	Startup	15	.6000	.50709	.13093

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Differ-ence	Std. Error Differ-ence	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	2.585	.110	-.952	129	.343	-.28218	.29641	-.86865	.30428
	Equal variances not assumed			-1.224	21.695	.234	-.28218	.23055	-.76071	.19635
Q28_Complex_Dec	Equal variances assumed	.504	.479	.161	127	.873	.04286	.26679	-.48506	.57078
	Equal variances not assumed			.177	17.327	.861	.04286	.24193	-.46684	.55255
Q29_Chall_Work	Equal variances assumed	.171	.680	-1.161	128	.248	-.25217	.21715	-.68184	.17749
	Equal variances not assumed			-1.183	18.048	.252	-.25217	.21323	-.70007	.19573
Q30_Adeq_Res	Equal variances assumed	.352	.554	-.072	129	.943	-.02241	.31304	-.64176	.59693
	Equal variances not assumed			-.077	18.581	.940	-.02241	.29275	-.63608	.59126
Q31_Influ_Amt	Equal variances assumed	1.666	.199	-.942	129	.348	-.23276	.24721	-.72188	.25636
	Equal variances not assumed			-.995	18.436	.333	-.23276	.23392	-.72338	.25786
Q32_Influ_Dec	Equal variances assumed	.007	.934	.068	128	.946	.01739	.25537	-.48791	.52269

	Equal variances not assumed			.069	18.055	.945	.01739	.25060	-.50899	.54377
Q33_Do_Diff	Equal variances assumed	.001	.974	-.471	129	.638	-.12931	.27445	-.67232	.41369
	Equal variances not assumed			-.471	17.821	.643	-.12931	.27439	-.70621	.44759
Q34_Impact_Org	Equal variances assumed	.011	.916	.072	129	.943	.01667	.23258	-.44349	.47683
	Equal variances not assumed			.075	18.388	.941	.01667	.22095	-.44682	.48016
Q35_Work_On_Own	Equal variances assumed	.694	.406	-.121	129	.904	-.02759	.22785	-.47839	.42321
	Equal variances not assumed			-.101	16.362	.921	-.02759	.27232	-.60385	.54868
Q36_Indp_Tht_Act	Equal variances assumed	.388	.534	-.907	128	.366	-.20580	.22698	-.65492	.24333
	Equal variances not assumed			-.855	17.291	.404	-.20580	.24063	-.71284	.30125
Q37_Clear_Obj	Equal variances assumed	.364	.547	-.954	129	.342	-.25000	.26215	-.76867	.26867
	Equal variances not assumed			-.980	18.111	.340	-.25000	.25509	-.78568	.28568
Q38_Choose_Meth	Equal variances assumed	1.329	.251	-.409	129	.683	-.10115	.24731	-.59045	.38815
	Equal variances not assumed			-.504	20.788	.620	-.10115	.20088	-.51916	.31686
Q39_Help_Cowrk	Equal variances assumed	.707	.402	.670	129	.504	.11782	.17578	-.22998	.46561
	Equal variances not assumed			.692	18.168	.498	.11782	.17019	-.23951	.47514
Q40_Help_Supr	Equal variances assumed	.004	.950	.867	129	.387	.22241	.25647	-.28501	.72984

	Equal variances not assumed			.862	17.757	.400	.22241	.25800	-.32017	.76499
Q41_Achiev_App	Equal variances assumed	.004	.952	.504	128	.615	.10837	.21524	-.31751	.53425
	Equal variances not assumed			.513	16.466	.615	.10837	.21131	-.33855	.55530
Q42_Supr_Enc_Dec	Equal variances assumed	.876	.351	-1.618	128	.108	-.46957	.29021	-1.04379	.10466
	Equal variances not assumed			-1.838	19.465	.081*	-.46957	.25547	-1.00340	.06427
Q43_Supr_Enc_Spk	Equal variances assumed	.065	.799	-.862	129	.390	-.22126	.25667	-.72908	.28655
	Equal variances not assumed			-.968	19.246	.345	-.22126	.22849	-.69908	.25655
Q44_Supr_Dev_Sklls	Equal variances assumed	.115	.735	-.476	129	.635	-.13103	.27529	-.67569	.41363
	Equal variances not assumed			-.542	19.443	.594	-.13103	.24182	-.63639	.37433
Q45_Clim_Comp	Equal variances assumed	8.386	.004	-1.372	129	.173	-.35575	.25933	-.86884	.15735
	Equal variances not assumed			-1.004	15.636	.331	-.35575	.35426	-1.10817	.39667
Q46_Clim_Enc_Supp	Equal variances assumed	.645	.423	-.831	129	.407	-.17989	.21640	-.60805	.24828
	Equal variances not assumed			-.992	20.211	.333	-.17989	.18135	-.55792	.19815
Q47_Clim_Relax	Equal variances assumed	.322	.571	-.878	128	.382	-.18551	.21128	-.60357	.23255
	Equal variances not assumed			-1.057	20.443	.303	-.18551	.17542	-.55093	.17991
Q48_Clim_Rigid	Equal variances assumed	.351	.554	.991	129	.323	.25287	.25506	-.25178	.75752

	Equal variances not assumed			.893	16.880	.385	.25287	.28324	-.34503	.85077
Q49_Work_Init	Equal variances assumed	.112	.738	-1.917	129	.057*	-.42586	.22210	-.86530	.01357
	Equal variances not assumed			-2.079	18.759	.052*	-.42586	.20483	-.85496	.00323
Q50_Recog_Gd_Job	Equal variances assumed	.550	.460	.320	129	.749	.07126	.22237	-.36870	.51123
	Equal variances not assumed			.275	16.538	.786	.07126	.25878	-.47589	.61841
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	.445	.506	-.223	129	.824	-.05115	.22988	-.50597	.40367
	Equal variances not assumed			-.212	17.366	.834	-.05115	.24090	-.55858	.45628
Q52_Sense_Team	Equal variances assumed	.384	.537	-1.282	129	.202	-.30287	.23623	-.77027	.16452
	Equal variances not assumed			-1.454	19.382	.162	-.30287	.20836	-.73839	.13265
Q53_Part_Of_Team	Equal variances assumed	.006	.939	-.442	127	.659	-.11579	.26216	-.63455	.40297
	Equal variances not assumed			-.458	18.289	.652	-.11579	.25287	-.64645	.41487
Q54_Curr_Skls_Use	Equal variances assumed	.202	.654	-.570	129	.570	-.15057	.26431	-.67352	.37237
	Equal variances not assumed			-.644	19.348	.527	-.15057	.23365	-.63902	.33787
Q55_Req_New_Skls	Equal variances assumed	.013	.910	.130	129	.897	.03046	.23375	-.43202	.49294
	Equal variances not assumed			.122	17.220	.904	.03046	.24902	-.49442	.55534
Q56_Cnct_Wrk_Sch	Equal variances assumed	.144	.705	-.297	128	.767	-.07536	.25347	-.57690	.42618

	Equal variances not assumed			-.280	17.262	.783	-.07536	.26958	-.64347	.49274
Q57_Apply_Cls_Wrk	Equal variances assumed	.082	.775	-.438	129	.662	-.11322	.25821	-.62410	.39766
	Equal variances not assumed			-.419	17.384	.680	-.11322	.27006	-.68203	.45560
Q58_Fdbk_On_Job	Equal variances assumed	.001	.981	-.254	129	.800	-.06092	.23975	-.53526	.41342
	Equal variances not assumed			-.252	17.718	.804	-.06092	.24213	-.57020	.44836
Q59_Wrk_W_Others	Equal variances assumed	.447	.505	.248	129	.804	.06437	.25927	-.44861	.57735
	Equal variances not assumed			.238	17.417	.814	.06437	.27019	-.50464	.63338
Q60_Wrk_W_Job	Equal variances assumed	.574	.450	-1.690	128	.094*	-.50145	.29678	-1.08867	.08577
	Equal variances not assumed			-1.869	19.073	.077*	-.50145	.26835	-1.06297	.06007
Q61_Cowrk_Dev_Skl	Equal variances assumed	.363	.548	.487	129	.627	.13161	.27050	-.40358	.66680
	Equal variances not assumed			.497	18.053	.625	.13161	.26461	-.42419	.68741
Q62_Talk_Inform	Equal variances assumed	2.073	.152	-.193	128	.847	-.041	.210	-.457	.375
	Equal variances not assumed			-.158	16.225	.877	-.041	.258	-.586	.505
Q63_Intrct_Out_Wrk	Equal variances assumed	1.959	.164	-.994	129	.322	-.32874	.33082	-.98328	.32581
	Equal variances not assumed			-1.251	21.239	.225	-.32874	.26278	-.87483	.21736
C1_27_34_Job_Tsk_Char	Equal variances assumed	.600	.440	-.744	129	.458	-.11114	.14933	-.40660	.18432

	Equal variances not assumed			-.842	19.356	.410	-.11114	.13194	-.38695	.16467
C2_35_38_Level_Dir	Equal variances assumed	.098	.754	-.915	129	.362	-.14770	.16143	-.46711	.17170
	Equal variances not assumed			-.904	17.695	.378	-.14770	.16341	-.49145	.19604
C3_39_53_Org_Cult	Equal variances assumed	.087	.768	-.826	129	.410	-.11039	.13369	-.37490	.15412
	Equal variances not assumed			-.816	17.693	.426	-.11039	.13536	-.39512	.17434
C4_54_57_Skl_Know	Equal variances assumed	.030	.863	-.382	129	.703	-.07442	.19493	-.46010	.31126
	Equal variances not assumed			-.392	18.101	.700	-.07442	.18987	-.47316	.32431
C5_58_63_Soc_Int	Equal variances assumed	.634	.427	-.672	129	.503	-.12199	.18166	-.48140	.23742
	Equal variances not assumed			-.611	16.965	.549	-.12199	.19955	-.54307	.29910
Q66_Task_Assgn_Supr	Equal variances assumed	.224	.637	.242	129	.809	.02126	.08803	-.15290	.19542
	Equal variances not assumed			.223	17.066	.826	.02126	.09549	-.18015	.22268
Q66_Task_Assgn_Cowrk	Equal variances assumed	3.985	.048	1.730	129	.086*	.23563	.13619	-.03383	.50509
	Equal variances not assumed			1.756	17.975	.096*	.23563	.13418	-.04631	.51757
Q66_Task_Req_Dec	Equal variances assumed	6.381	.013	-.999	129	.320	-.12759	.12772	-.38029	.12512
	Equal variances not assumed			-1.104	19.021	.283	-.12759	.11552	-.36935	.11417
Q66_Task_Req_Tech_Sk	Equal variances assumed	.002	.965	-.022	129	.982	-.00287	.13059	-.26125	.25551

	Equal variances not assumed			-.022	17.600	.983	-.00287	.13347	-.28374	.27799
Q66_Task_Req_Nont_Sk	Equal variances assumed	11.099	.001	-1.359	129	.176	-.14885	.10950	-.36550	.06780
	Equal variances not assumed			-1.935	24.468	.065*	-.14885	.07691	-.30742	.00972
Q66_Task_Id_Own	Equal variances assumed	16.766	.000	-1.276	129	.204	-.17299	.13561	-.44130	.09532
	Equal variances not assumed			-1.363	18.570	.189	-.17299	.12693	-.43907	.09309
Q66_Task_Req_Collab_Int	Equal variances assumed	2.474	.118	.884	129	.378	.09425	.10664	-.11674	.30524
	Equal variances not assumed			.764	16.582	.455	.09425	.12332	-.16644	.35495
Q66_Task_Req_Collab_Ext	Equal variances assumed	3.199	.076	-1.442	129	.152	-.18218	.12633	-.43213	.06776
	Equal variances not assumed			-1.303	16.906	.210	-.18218	.13981	-.47729	.11292
Q67_Ask_Cowrk_Asst	Equal variances assumed	8.333	.005	1.682	129	.095*	.15460	.09192	-.02726	.33646
	Equal variances not assumed			1.269	15.781	.223	.15460	.12179	-.10388	.41308
Q67_Ask_Supr_Asst	Equal variances assumed	.350	.555	-.277	129	.782	-.03506	.12639	-.28513	.21502
	Equal variances not assumed			-.279	17.876	.784	-.03506	.12570	-.29927	.22916
Q67_Figure_Out_Own	Equal variances assumed	.810	.370	.466	129	.642	.03851	.08260	-.12492	.20193
	Equal variances not assumed			.406	16.630	.690	.03851	.09487	-.16199	.23900
Q67_Org_Resource	Equal variances assumed	.003	.960	1.504	129	.135	.20345	.13528	-.06421	.47111

	Equal variances not assumed			1.467	17.573	.160	.20345	.13865	-.08835	.49525
Q67_Public_Resource	Equal variances assumed	.559	.456	-.352	129	.725	-.04138	.11746	-.27378	.19102
	Equal variances not assumed			-.363	18.130	.721	-.04138	.11411	-.28099	.19823
Q68_Coworkers	Equal variances assumed	5.546	.020	1.202	129	.232	.04943	.04113	-.03196	.13081
	Equal variances not assumed			.729	14.942	.477	.04943	.06776	-.09506	.19391
Q68_Supr	Equal variances assumed	10.895	.001	-1.424	129	.157	-.12069	.08476	-.28839	.04701
	Equal variances not assumed			-3.973	115.000	.000***	-.12069	.03038	-.18086	-.0605
Q68_Comp_Materials	Equal variances assumed	2.882	.092	1.018	129	.311	.11782	.11572	-.11114	.34677
	Equal variances not assumed			.895	16.696	.384	.11782	.13169	-.16042	.39605
Q68_Comp_Train	Equal variances assumed	.373	.543	1.860	129	.065*	.24655	.13256	-.01572	.50882
	Equal variances not assumed			1.783	17.405	.092*	.24655	.13831	-.04474	.53785
Q70_Int_Client	Equal variances assumed	10.855	.001	-3.317	129	.001***	-.36092	.10881	-.57620	-.1456
	Equal variances not assumed			-2.617	16.013	.019**	-.36092	.13791	-.65325	-.0686
Q70_Int_Cowrk	Equal variances assumed	.642	.424	.408	129	.684	.02356	.05777	-.09073	.13786
	Equal variances not assumed			.340	16.338	.738	.02356	.06930	-.12311	.17024
Q70_Int_Supr	Equal variances assumed	1.246	.266	-.532	129	.596	-.04540	.08533	-.21423	.12343

	Equal variances not assumed			-.623	19.890	.540	-.04540	.07287	-.19746	.10665
Q70_Int_Vendor	Equal variances assumed	1.277	.260	.527	129	.599	.05632	.10685	-.15508	.26772
	Equal variances not assumed			.575	18.840	.572	.05632	.09793	-.14877	.26141
Q70_Int_Oth_Dept	Equal variances assumed	96.034	.000	3.140	129	.002***	.41839	.13325	.15475	.68203
	Equal variances not assumed			4.102	22.064	.000***	.41839	.10200	.20688	.62990
Q70_Int_Oth_Intrn	Equal variances assumed	1.732	.191	.842	129	.401	.10690	.12700	-.14437	.35816
	Equal variances not assumed			.777	17.074	.448	.10690	.13764	-.18340	.39719

* p-value <0.1; ** p-value <0.05; *** p-value <0.01

Table 15: Mann-Whitney tests on survey Likert questions and constructs comparing students who interned at established companies to those who interned at startups

Test Statistics[a]

	Mann-Whitney U	Wilcoxon W	Z	*p*-value (2-tailed)
Q27_Comp_Proj	775.000	7561.000	-.717	.473
Q28_Complex_Dec	776.500	881.500	-.228	.820
Q29_Chall_Work	718.500	7388.500	-1.128	.259
Q30_Adeq_Res	844.500	7630.500	-.197	.844
Q31_Influ_Amt	739.000	7525.000	-1.006	.314
Q32_Influ_Dec	816.500	936.500	-.356	.722
Q33_Do_Diff	811.500	7597.500	-.443	.658
Q34_Impact_Org	833.500	953.500	-.281	.779
Q35_Work_On_Own	802.000	7588.000	-.532	.594
Q36_Indp_Tht_Act	720.500	7390.500	-1.118	.263
Q37_Clear_Obj	747.000	7533.000	-.943	.346
Q38_Choose_Meth	843.500	7629.500	-.203	.839
Q39_Help_Cowrk	761.500	881.500	-1.255	.209
Q40_Help_Supr	725.500	845.500	-1.206	.228
Q41_Achiev_App	732.000	837.000	-.685	.494
Q42_Supr_Enc_Dec	643.500	7313.500	-1.684	.092*
Q43_Supr_Enc_Spk	767.500	7553.500	-.792	.428
Q44_Supr_Dev_Sklls	831.000	7617.000	-.300	.764
Q45_Clim_Comp	747.000	7533.000	-.948	.343

Q46_Clim_Enc_Supp	778.000	7564.000	-.740	.459
Q47_Clim_Relax	770.000	7440.000	-.735	.463
Q48_Clim_Rigid	730.500	850.500	-1.075	.282
Q49_Work_Init	620.000	7406.000	-1.936	.053*
Q50_Recog_Gd_Job	854.000	974.000	-.123	.902
Q51_Mgmt_Hlth_Wbng	834.000	7620.000	-.280	.779
Q52_Sense_Team	705.000	7491.000	-1.282	.200
Q53_Part_Of_Team	801.000	7356.000	-.421	.674
Q54_Curr_Skls_Use	815.500	7601.500	-.415	.678
Q55_Req_New_Skls	861.500	981.500	-.066	.947
Q56_Cnct_Wrk_Sch	845.000	7515.000	-.134	.893
Q57_Apply_Cls_Wrk	811.000	7597.000	-.448	.654
Q58_Fdbk_On_Job	853.000	7639.000	-.132	.895
Q59_Wrk_W_Others	830.500	950.500	-.301	.764
Q60_Wrk_W_Job	632.000	7302.000	-1.752	.080*
Q61_Cowrk_Dev_Skl	788.000	908.000	-.640	.522
Q62_Talk_Inform	792.500	7462.500	-.552	.581
Q63_Intrct_Out_Wrk	751.000	7537.000	-.885	.376
C1_27_34_Job_Tsk_Char	798.500	7584.500	-.518	.604
C2_35_38_Level_Dir	734.500	7520.500	-.990	.322

C3_39_53_Org_Cult	773.000	7559.000	-.702	.483
C4_54_57_Skl_Know	832.000	7618.000	-.276	.782
C5_58_63_Soc_Int	780.000	7566.000	-.652	.514

a. Grouping Variable: Estab_Startup

* p-value <0.1

Table 16: T-tests results on survey questions comparing male students to female students

Group Statistics

Female		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Male	76	3.9079	.99569	.11421
	Female	55	3.6909	1.18435	.15970
Q28_Complex_Dec	Male	75	3.4667	1.00449	.11599
	Female	54	3.2963	.83845	.11410
Q29_Chall_Work	Male	75	4.0533	.80360	.09279
	Female	55	3.8727	.77111	.10398
Q30_Adeq_Res	Male	76	2.5658	1.11158	.12751
	Female	55	2.6000	1.18008	.15912
Q31_Influ_Amt	Male	76	3.8816	.87889	.10082
	Female	55	3.6727	.92405	.12460
Q32_Influ_Dec	Male	76	3.5658	.99780	.11446
	Female	54	3.6852	.82013	.11161
Q33_Do_Diff	Male	76	3.9474	.96464	.11065
	Female	55	3.8000	1.04350	.14071
Q34_Impact_Org	Male	76	3.7105	.84563	.09700
	Female	55	3.8000	.84765	.11430
Q35_Work_On_Own	Male	76	4.1579	.83351	.09561
	Female	55	4.2000	.82552	.11131
Q36_Indp_Tht_Act	Male	76	4.0395	.87087	.09990
	Female	54	4.1481	.76250	.10376
Q37_Clear_Obj	Male	76	3.6711	.94358	.10824
	Female	55	3.9273	.95945	.12937
Q38_Choose_Meth	Male	76	3.9605	.98578	.11308
	Female	55	4.0000	.76980	.10380
Q39_Help_Cowrk	Male	76	4.8158	.53443	.06130
	Female	55	4.7091	.76189	.10273
Q40_Help_Supr	Male	76	4.2632**	1.02461	.11753
	Female	55	4.5818**	.76233	.10279
Q41_Achiev_App	Male	75	4.4133	.83978	.09697
	Female	55	4.5091	.63458	.08557
Q42_Supr_Enc_Dec	Male	75	3.9733	1.02632	.11851
	Female	55	4.0000	1.12217	.15131
Q43_Supr_Enc_Spk	Male	76	4.0789	1.00350	.11511
	Female	55	4.2182	.83202	.11219
Q44_Supr_Dev_Sklls	Male	76	4.0000	1.09545	.12566
	Female	55	4.2000	.84765	.11430

Q45_Clim_Comp	Male	76	2.5526	.99860	.11455
	Female	55	2.7091	.87502	.11799
Q46_Clim_Enc_Supp	Male	76	4.3947	.74974	.08600
	Female	55	4.3455	.84367	.11376
Q47_Clim_Relax	Male	76	4.1974	.76629	.08790
	Female	54	4.1296	.77815	.10589
Q48_Clim_Rigid	Male	76	2.6447	.94804	.10875
	Female	55	2.4364	.89781	.12106
Q49_Work_Init	Male	76	4.0526	.81478	.09346
	Female	55	3.9818	.82756	.11159
Q50_Recog_Gd_Job	Male	76	4.1711	.80644	.09251
	Female	55	4.0727	.81319	.10965
Q51_Mgmt_Hlth_Wbng	Male	76	4.2105	.83771	.09609
	Female	55	4.2364	.83807	.11300
Q52_Sense_Team	Male	76	4.1842	.82802	.09498
	Female	55	4.2182	.91674	.12361
Q53_Part_Of_Team	Male	76	4.0526	.95072	.10905
	Female	53	4.0000	.96077	.13197
Q54_Curr_Skls_Use	Male	76	4.0395	.94433	.10832
	Female	55	3.9455	.98917	.13338
Q55_Req_New_Skls	Male	76	4.2237	.80992	.09290
	Female	55	4.0727	.89968	.12131
Q56_Cnct_Wrk_Sch	Male	76	3.3553	.84386	.09680
	Female	54	3.4630	1.02263	.13916
Q57_Apply_Cls_Wrk	Male	76	3.3026	.84884	.09737
	Female	55	3.4545	1.05089	.14170
Q58_Fdbk_On_Job	Male	76	3.6711	.88526	.10155
	Female	55	3.6909	.85792	.11568
Q59_Wrk_W_Others	Male	76	3.8816	.92329	.10591
	Female	55	3.9818	.97165	.13102
Q60_Wrk_W_Job	Male	76	3.7895	1.03686	.11894
	Female	54	3.8704	1.16629	.15871
Q61_Cowrk_Dev_Skl	Male	76	4.1053	.98764	.11329
	Female	55	4.2909	.97511	.13148
Q62_Talk_Inform	Male	75	4.19	.766	.088
	Female	55	4.29	.762	.103
Q63_Intrct_Out_Wrk	Male	76	3.2105	1.21453	.13932
	Female	55	3.1273	1.20269	.16217
C1_27_34_Job_Tsk_Char	Male	76	3.6389	.55023	.06312
	Female	55	3.5529	.53457	.07208
C2_35_38_Level_Dir	Male	76	3.9572	.61832	.07093

	Female	55	4.0651	.54261	.07317
C3_39_53_Org_Cult	Male	76	4.0004	.47541	.05453
	Female	55	4.0237	.50584	.06821
C4_54_57_Skl_Know	Male	76	3.7303	.61341	.07036
	Female	55	3.7394	.82731	.11155
C5_58_63_Soc_Int	Male	76	3.8079	.64657	.07417
	Female	55	3.8757	.68364	.09218
Q66_Task_Assgn_Supr	Male	76	.8553	.35417	.04063
	Female	55	.9273	.26208	.03534
Q66_Task_Assgn_Cowrk	Male	76	.6316**	.48558	.05570
	Female	55	.4182**	.49781	.06712
Q66_Task_Req_Dec	Male	76	.6711	.47295	.05425
	Female	55	.7091	.45837	.06181
Q66_Task_Req_Tech_Sk	Male	76	.6842	.46792	.05367
	Female	55	.6364	.48548	.06546
Q66_Task_Req_Nont_Sk	Male	76	.8289	.37906	.04348
	Female	55	.7636	.42876	.05781
Q66_Task_Id_Own	Male	76	.6579**	.47757	.05478
	Female	55	.4727**	.50386	.06794
Q66_Task_Req_Collab_Int	Male	76	.8684*	.34028	.03903
	Female	55	.7455*	.43962	.05928
Q66_Task_Req_Collab_Ext	Male	76	.2632	.44327	.05085
	Female	55	.3636	.48548	.06546
Q67_Ask_Cowrk_Asst	Male	76	.8816	.32525	.03731
	Female	55	.8545	.35581	.04798
Q67_Ask_Supr_Asst	Male	76	.6579	.47757	.05478
	Female	55	.7636	.42876	.05781
Q67_Figure_Out_Own	Male	76	.8816	.32525	.03731
	Female	55	.9273	.26208	.03534
Q67_Org_Resource	Male	76	.6053	.49204	.05644
	Female	55	.5455	.50252	.06776
Q67_Public_Resource	Male	76	.7632	.42797	.04909
	Female	55	.7636	.42876	.05781
Q68_Coworkers	Male	76	.9868	.11471	.01316
	Female	55	.9636	.18892	.02547
Q68_Supr	Male	76	.8947	.30893	.03544
	Female	55	.8909	.31463	.04242
Q68_Comp_Materials	Male	76	.7500	.43589	.05000
	Female	55	.8000	.40369	.05443
Q68_Comp_Train	Male	76	.6184	.48900	.05609
	Female	55	.6182	.49031	.06611

Q70_Int_Client	Male	76	.2105	.41039	.04708
	Female	55	.2182	.41682	.05620
Q70_Int_Cowrk	Male	76	.9737	.16114	.01848
	Female	55	.9273	.26208	.03534
Q70_Int_Supr	Male	76	.8947	.30893	.03544
	Female	55	.8909	.31463	.04242
Q70_Int_Vendor	Male	76	.2105	.41039	.04708
	Female	55	.1455	.35581	.04798
Q70_Int_Oth_Dept	Male	76	.5000	.50332	.05774
	Female	55	.5091	.50452	.06803
Q70_Int_Oth_Intrn	Male	76	.7105	.45653	.05237
	Female	55	.6727	.47354	.06385

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	2.552	.113	1.136	129	.258	.21699	.19096	-.16083	.59481
	Equal variances not assumed			1.105	103.813	.272	.21699	.19634	-.17237	.60634
Q28_Complex_Dec	Equal variances assumed	2.265	.135	1.017	127	.311	.17037	.16754	-.16117	.50191
	Equal variances not assumed			1.047	124.169	.297	.17037	.16270	-.15166	.49240
Q29_Chall_Work	Equal variances assumed	.077	.781	1.288	128	.200	.18061	.14025	-.09691	.45812
	Equal variances not assumed			1.296	119.126	.197	.18061	.13936	-.09534	.45655
Q30_Adeq_Res	Equal variances assumed	.500	.481	-.169	129	.866	-.03421	.20195	-.43377	.36535
	Equal variances not assumed			-.168	112.281	.867	-.03421	.20391	-.43821	.36979
Q31_Influ_Amt	Equal variances assumed	.879	.350	1.314	129	.191	.20885	.15899	-.10571	.52341
	Equal variances not assumed			1.303	112.984	.195	.20885	.16028	-.10869	.52639
Q32_Influ_Dec	Equal variances assumed	3.721	.056	-.723	128	.471	-.11940	.16523	-.44633	.20754

	Equal variances not assumed			-.747	125.225	.457	-.11940	.15986	-.43578	.19699
Q33_Do_Diff	Equal variances assumed	.100	.752	.834	129	.406	.14737	.17675	-.20233	.49707
	Equal variances not assumed			.823	110.904	.412	.14737	.17900	-.20734	.50208
Q34_Impact_Org	Equal variances assumed	.249	.619	-.597	129	.552	-.08947	.14985	-.38596	.20701
	Equal variances not assumed			-.597	116.344	.552	-.08947	.14991	-.38638	.20743
Q35_Work_On_Own	Equal variances assumed	.278	.599	-.286	129	.775	-.04211	.14697	-.33288	.24867
	Equal variances not assumed			-.287	117.157	.775	-.04211	.14674	-.33271	.24850
Q36_Indp_Tht_Act	Equal variances assumed	.005	.943	-.738	128	.462	-.10867	.14732	-.40017	.18282
	Equal variances not assumed			-.754	122.444	.452	-.10867	.14404	-.39380	.17645
Q37_Clear_Obj	Equal variances assumed	.192	.662	-1.523	129	.130	-.25622	.16822	-.58906	.07662
	Equal variances not assumed			-1.519	115.358	.132	-.25622	.16868	-.59033	.07789
Q38_Choose_Meth	Equal variances assumed	9.160	.003	-.247	129	.805	-.03947	.15963	-.35530	.27635
	Equal variances not assumed			-.257	128.211	.797	-.03947	.15349	-.34318	.26424
Q39_Help_Cowrk	Equal variances assumed	3.083	.081	.942	129	.348	.10670	.11322	-.11731	.33071
	Equal variances not assumed			.892	90.996	.375	.10670	.11963	-.13094	.34434
Q40_Help_Supr	Equal variances assumed	6.929	.010	-1.948	129	.054*	-.31866	.16356	-.64227	.00495

	Equal variances not assumed			-2.041	128.884	.043**	-.31866	.15614	-.62759	-.00973
Q41_Achiev_App	Equal variances assumed	2.724	.101	-.710	128	.479	-.09576	.13492	-.36272	.17120
	Equal variances not assumed			-.740	127.867	.460	-.09576	.12932	-.35165	.16013
Q42_Supr_Enc_Dec	Equal variances assumed	.773	.381	-.141	128	.888	-.02667	.18956	-.40175	.34841
	Equal variances not assumed			-.139	110.285	.890	-.02667	.19220	-.40755	.35421
Q43_Supr_Enc_Spk	Equal variances assumed	1.470	.227	-.841	129	.402	-.13923	.16562	-.46692	.18845
	Equal variances not assumed			-.866	126.556	.388	-.13923	.16074	-.45732	.17885
Q44_Supr_Dev_Sklls	Equal variances assumed	2.670	.105	-1.131	129	.260	-.20000	.17689	-.54999	.14999
	Equal variances not assumed			-1.177	128.384	.241	-.20000	.16986	-.53609	.13609
Q45_Clim_Comp	Equal variances assumed	.459	.499	-.931	129	.353	-.15646	.16797	-.48879	.17588
	Equal variances not assumed			-.951	124.276	.343	-.15646	.16444	-.48193	.16902
Q46_Clim_Enc_Supp	Equal variances assumed	.783	.378	.352	129	.725	.04928	.13993	-.22757	.32613
	Equal variances not assumed			.346	107.969	.730	.04928	.14261	-.23340	.33196
Q47_Clim_Relax	Equal variances assumed	.143	.706	.494	128	.623	.06774	.13726	-.20386	.33933
	Equal variances not assumed			.492	113.215	.624	.06774	.13762	-.20491	.34039
Q48_Clim_Rigid	Equal variances assumed	.234	.629	1.269	129	.207	.20837	.16417	-.11644	.53318

	Equal variances not assumed			1.280	120.035	.203	.20837	.16273	-.11382	.53057
Q49_Work_Init	Equal variances assumed	.263	.609	.488	129	.627	.07081	.14519	-.21645	.35808
	Equal variances not assumed			.487	115.435	.628	.07081	.14556	-.21750	.35912
Q50_Recog_Gd_Job	Equal variances assumed	.192	.662	.686	129	.494	.09833	.14327	-.18513	.38178
	Equal variances not assumed			.685	115.936	.494	.09833	.14346	-.18582	.38247
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	.187	.666	-.174	129	.862	-.02584	.14833	-.31930	.26763
	Equal variances not assumed			-.174	116.477	.862	-.02584	.14834	-.31962	.26795
Q52_Sense_Team	Equal variances assumed	.136	.713	-.222	129	.825	-.03397	.15335	-.33739	.26944
	Equal variances not assumed			-.218	109.183	.828	-.03397	.15589	-.34293	.27499
Q53_Part_Of_Team	Equal variances assumed	.147	.702	.308	127	.759	.05263	.17088	-.28550	.39077
	Equal variances not assumed			.307	111.286	.759	.05263	.17120	-.28660	.39187
Q54_Curr_Skls_Use	Equal variances assumed	.432	.512	.551	129	.582	.09402	.17054	-.24340	.43144
	Equal variances not assumed			.547	113.252	.585	.09402	.17182	-.24639	.43443
Q55_Req_New_Skls	Equal variances assumed	.370	.544	1.005	129	.317	.15096	.15024	-.14629	.44820
	Equal variances not assumed			.988	108.936	.325	.15096	.15280	-.15189	.45380
Q56_Cnct_Wrk_Sch	Equal variances assumed	3.504	.064	-.656	128	.513	-.10770	.16411	-.43243	.21703

	Equal variances not assumed			-.635	100.129	.527	-.10770	.16952	-.44401	.22861
Q57_Apply_Cls_Wrk	Equal variances assumed	4.688	.032	-.914	129	.362	-.15191	.16618	-.48071	.17688
	Equal variances not assumed			-.884	100.844	.379	-.15191	.17193	-.49298	.18916
Q58_Fdbk_On_Job	Equal variances assumed	.168	.682	-.128	129	.898	-.01986	.15471	-.32595	.28624
	Equal variances not assumed			-.129	118.586	.898	-.01986	.15393	-.32466	.28495
Q59_Wrk_W_Others	Equal variances assumed	.038	.845	-.600	129	.550	-.10024	.16709	-.43083	.23035
	Equal variances not assumed			-.595	112.915	.553	-.10024	.16847	-.43401	.23353
Q60_Wrk_W_Job	Equal variances assumed	1.966	.163	-.416	128	.678	-.08090	.19441	-.46557	.30378
	Equal variances not assumed			-.408	105.688	.684	-.08090	.19833	-.47412	.31233
Q61_Cowrk_Dev_Skl	Equal variances assumed	.187	.666	-1.067	129	.288	-.18565	.17392	-.52975	.15845
	Equal variances not assumed			-1.070	117.367	.287	-.18565	.17356	-.52936	.15807
Q62_Talk_Inform	Equal variances assumed	.045	.833	-.768	128	.444	-.104	.136	-.373	.164
	Equal variances not assumed			-.769	116.843	.443	-.104	.136	-.373	.164
Q63_Intrct_Out_Wrk	Equal variances assumed	.020	.888	.389	129	.698	.08325	.21413	-.34042	.50692
	Equal variances not assumed			.389	117.168	.698	.08325	.21380	-.34015	.50666
	Equal variances assumed	.008	.930	.893	129	.374	.08594	.09626	-.10450	.27639

C1_27_34_Job_Tsk_Char	Equal variances not assumed			.897	118.424	.372	.08594	.09581	-.10378	.27566
C2_35_38_Level_Dir	Equal variances assumed	.699	.405	-1.037	129	.302	-.10791	.10406	-.31379	.09798
	Equal variances not assumed			-1.059	124.204	.292	-.10791	.10190	-.30959	.09378
C3_39_53_Org_Cult	Equal variances assumed	.035	.852	-.270	129	.787	-.02338	.08646	-.19444	.14768
	Equal variances not assumed			-.268	112.117	.789	-.02338	.08733	-.19640	.14965
C4_54_57_Skl_Know	Equal variances assumed	5.198	.024	-.073	129	.942	-.00914	.12584	-.25811	.23984
	Equal variances not assumed			-.069	94.720	.945	-.00914	.13189	-.27098	.25271
C5_58_63_Soc_Int	Equal variances assumed	.042	.838	-.579	129	.564	-.06785	.11725	-.29984	.16414
	Equal variances not assumed			-.573	112.575	.567	-.06785	.11831	-.30226	.16656
Q66_Task_Assgn_Supr	Equal variances assumed	7.010	.009	-1.276	129	.204	-.07201	.05645	-.18370	.03968
	Equal variances not assumed			-1.337	128.922	.183	-.07201	.05385	-.17855	.03453
Q66_Task_Assgn_Cowrk	Equal variances assumed	1.173	.281	2.456	129	.015**	.21340	.08688	.04151	.38528
	Equal variances not assumed			2.447	114.785	.016**	.21340	.08722	.04062	.38618
Q66_Task_Req_Dec	Equal variances assumed	.872	.352	-.460	129	.646	-.03804	.08266	-.20158	.12550
	Equal variances not assumed			-.463	118.583	.645	-.03804	.08224	-.20089	.12481
	Equal variances assumed	1.220	.271	.569	129	.571	.04785	.08415	-.11865	.21434

Q66_Task_Req_Tech_Sk	Equal variances not assumed			.565	113.936	.573	.04785	.08465	-.11985	.21555
Q66_Task_Req_Nont_Sk	Equal variances assumed	3.322	.071	.921	129	.359	.06531	.07092	-.07501	.20563
	Equal variances not assumed			.903	107.582	.369	.06531	.07234	-.07809	.20871
Q66_Task_Id_Own	Equal variances assumed	5.515	.020	2.140	129	.034**	.18517	.08652	.01398	.35635
	Equal variances not assumed			2.122	112.732	.036**	.18517	.08727	.01226	.35808
Q66_Task_Req_Collab_Int	Equal variances assumed	12.976	.000	1.804	129	.074*	.12297	.06816	-.01188	.25781
	Equal variances not assumed			1.733	97.747	.086*	.12297	.07098	-.01789	.26382
Q66_Task_Req_Collab_Ext	Equal variances assumed	5.443	.021	-1.230	129	.221	-.10048	.08168	-.26209	.06113
	Equal variances not assumed			-1.212	109.989	.228	-.10048	.08289	-.26475	.06379
Q67_Ask_Cowrk_Asst	Equal variances assumed	.809	.370	.451	129	.653	.02703	.05990	-.09149	.14555
	Equal variances not assumed			.445	110.075	.657	.02703	.06078	-.09341	.14748
Q67_Ask_Supr_Asst	Equal variances assumed	7.325	.008	-1.305	129	.194	-.10574	.08104	-.26608	.05460
	Equal variances not assumed			-1.328	123.067	.187	-.10574	.07965	-.26339	.05191
Q67_Figure_Out_Own	Equal variances assumed	3.069	.082	-.859	129	.392	-.04569	.05319	-.15092	.05953
	Equal variances not assumed			-.889	127.456	.376	-.04569	.05139	-.14738	.05599
Q67_Org_Resource	Equal variances assumed	1.458	.229	.681	129	.497	.05981	.08789	-.11408	.23370

	Equal variances not assumed			.678	115.051	.499	.05981	.08819	-.11487	.23449
Q67_Public_ Resource	Equal variances assumed	.000	.990	-.006	129	.995	-.00048	.07582	-.15050	.14954
	Equal variances not assumed			-.006	116.380	.995	-.00048	.07585	-.15069	.14974
Q68_Cowor kers	Equal variances assumed	3.089	.081	.872	129	.385	.02321	.02661	-.02944	.07585
	Equal variances not assumed			.809	82.433	.421	.02321	.02867	-.03383	.08024
Q68_Supr	Equal variances assumed	.019	.890	.069	129	.945	.00383	.05511	-.10522	.11287
	Equal variances not assumed			.069	115.247	.945	.00383	.05528	-.10566	.11332
Q68_Comp_ Materials	Equal variances assumed	1.850	.176	-.668	129	.505	-.05000	.07483	-.19806	.09806
	Equal variances not assumed			-.676	121.361	.500	-.05000	.07391	-.19632	.09632
Q68_Comp_ Train	Equal variances assumed	.000	.996	.003	129	.998	.00024	.08667	-.17123	.17171
	Equal variances not assumed			.003	116.324	.998	.00024	.08670	-.17148	.17196
Q70_Int_Cli ent	Equal variances assumed	.044	.835	-.105	129	.917	-.00766	.07313	-.15235	.13703
	Equal variances not assumed			-.104	115.437	.917	-.00766	.07331	-.15287	.13756
Q70_Int_Co wrk	Equal variances assumed	6.460	.012	1.252	129	.213	.04641	.03707	-.02693	.11976
	Equal variances not assumed			1.164	83.108	.248	.04641	.03988	-.03291	.12573
Q70_Int_Su pr	Equal variances assumed	.019	.890	.069	129	.945	.00383	.05511	-.10522	.11287

	Equal variances not assumed			.069	115.247	.945	.00383	.05528	-.10566	.11332
Q70_Int_Vendor	Equal variances assumed	3.769	.054	.946	129	.346	.06507	.06877	-.07100	.20114
	Equal variances not assumed			.968	124.766	.335	.06507	.06722	-.06796	.19810
Q70_Int_Oth_Dept	Equal variances assumed	.025	.875	-.102	129	.919	-.00909	.08919	-.18556	.16738
	Equal variances not assumed			-.102	116.344	.919	-.00909	.08923	-.18581	.16763
Q70_Int_Oth_Intrn	Equal variances assumed	.820	.367	.460	129	.646	.03780	.08209	-.12463	.20022
	Equal variances not assumed			.458	113.954	.648	.03780	.08258	-.12579	.20139

* p-value <0.1; ** p-value <0.05; *** p-value <0.01

Table 17: T-tests results on survey questions comparing domestic students to international students

Group Statistics

Domestic		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	International	19	3.9474	.91127	.20906
	Domestic	112	3.7946	1.10802	.10470
Q28_Complex_Dec	International	19	3.0000**	.74536	.17100
	Domestic	110	3.4636**	.95473	.09103
Q29_Chall_Work	International	19	4.1053	.87526	.20080
	Domestic	111	3.9550	.77913	.07395
Q30_Adeq_Res	International	19	2.7368	.87191	.20003
	Domestic	112	2.5536	1.17664	.11118
Q31_Influ_Amt	International	19	3.6842	.82007	.18814
	Domestic	112	3.8125	.91564	.08652
Q32_Influ_Dec	International	19	3.7368	1.04574	.23991
	Domestic	111	3.5946	.90833	.08621
Q33_Do_Diff	International	19	3.9474	.84811	.19457
	Domestic	112	3.8750	1.02338	.09670
Q34_Impact_Org	International	19	3.6842	.88523	.20308
	Domestic	112	3.7589	.84091	.07946
Q35_Work_On_Own	International	19	3.8947	.99413	.22807
	Domestic	112	4.2232	.79082	.07473
Q36_Indp_Tht_Act	International	18	4.2222	.64676	.15244
	Domestic	112	4.0625	.85193	.08050
Q37_Clear_Obj	International	19	3.7368	.99119	.22739
	Domestic	112	3.7857	.95322	.09007
Q38_Choose_Meth	International	19	4.1579	1.06787	.24499
	Domestic	112	3.9464	.86825	.08204
Q39_Help_Cowrk	International	19	4.6316	.95513	.21912
	Domestic	112	4.7946	.57168	.05402
Q40_Help_Supr	International	19	4.5263	.84119	.19298
	Domestic	112	4.3750	.95034	.08980
Q41_Achiev_App	International	19	4.6316	.49559	.11370
	Domestic	111	4.4234	.79257	.07523
Q42_Supr_Enc_Dec	International	19	4.1053	.99413	.22807
	Domestic	111	3.9640	1.07811	.10233
Q43_Supr_Enc_Spk	International	19	4.4211*	.69248	.15887
	Domestic	112	4.0893*	.96379	.09107
Q44_Supr_Dev_Sklls	International	19	4.3684	1.11607	.25604

	Domestic	112	4.0357	.97656	.09228
Q45_Clim_Comp	International	19	3.0000	1.15470	.26491
	Domestic	112	2.5536	.89884	.08493
Q46_Clim_Enc_Supp	International	19	4.2105	1.08418	.24873
	Domestic	112	4.4018	.72857	.06884
Q47_Clim_Relax	International	19	4.0526	.97032	.22261
	Domestic	111	4.1892	.73254	.06953
Q48_Clim_Rigid	International	19	2.8421	1.16729	.26780
	Domestic	112	2.5089	.88017	.08317
Q49_Work_Init	International	19	3.9474	.84811	.19457
	Domestic	112	4.0357	.81571	.07708
Q50_Recog_Gd_Job	International	19	4.2632	.80568	.18484
	Domestic	112	4.1071	.80937	.07648
Q51_Mgmt_Hlth_Wbng	International	19	4.2105	1.03166	.23668
	Domestic	112	4.2232	.80213	.07579
Q52_Sense_Team	International	19	4.1579	.76472	.17544
	Domestic	112	4.2054	.88163	.08331
Q53_Part_Of_Team	International	19	4.0000	1.00000	.22942
	Domestic	110	4.0364	.94750	.09034
Q54_Curr_Skls_Use	International	19	3.8947	.93659	.21487
	Domestic	112	4.0179	.96779	.09145
Q55_Req_New_Skls	International	19	4.1579	1.11869	.25664
	Domestic	112	4.1607	.80038	.07563
Q56_Cnct_Wrk_Sch	International	19	3.4737	.90483	.20758
	Domestic	111	3.3874	.92610	.08790
Q57_Apply_Cls_Wrk	International	19	3.5789	.83771	.19218
	Domestic	112	3.3304	.95284	.09003
Q58_Fdbk_On_Job	International	19	3.7895	.85498	.19615
	Domestic	112	3.6607	.87563	.08274
Q59_Wrk_W_Others	International	19	3.8421	.89834	.20609
	Domestic	112	3.9375	.95182	.08994
Q60_Wrk_W_Job	International	19	3.8421	1.11869	.25664
	Domestic	111	3.8198	1.08877	.10334
Q61_Cowrk_Dev_Skl	International	19	4.2105	1.27275	.29199
	Domestic	112	4.1786	.93205	.08807
Q62_Talk_Inform	International	19	4.32	.749	.172
	Domestic	111	4.22	.768	.073
Q63_Intrct_Out_Wrk	International	19	3.3158	1.33552	.30639
	Domestic	112	3.1518	1.18709	.11217
C1_27_34_Job_Tsk_Char	International	19	3.6053	.51415	.11795
	Domestic	112	3.6024	.55031	.05200

C2_35_38_Level_Dir	International	19	3.9912	.62665	.14376
	Domestic	112	4.0045	.58412	.05519
C3_39_53_Org_Cult	International	19	4.0912	.61508	.14111
	Domestic	112	3.9964	.46335	.04378
C4_54_57_Skl_Know	International	19	3.7763	.73075	.16764
	Domestic	112	3.7269	.70731	.06683
C5_58_63_Soc_Int	International	19	3.8861	.74341	.17055
	Domestic	112	3.8280	.64888	.06131
Q66_Task_Assgn_Supr	International	19	.8421	.37463	.08595
	Domestic	112	.8929	.31068	.02936
Q66_Task_Assgn_Cowrk	International	19	.4737	.51299	.11769
	Domestic	112	.5536	.49936	.04718
Q66_Task_Req_Dec	International	19	.5789	.50726	.11637
	Domestic	112	.7054	.45793	.04327
Q66_Task_Req_Tech_Sk	International	19	.6316	.49559	.11370
	Domestic	112	.6696	.47246	.04464
Q66_Task_Req_Nont_Sk	International	19	.5789**	.50726	.11637
	Domestic	112	.8393**	.36892	.03486
Q66_Task_Id_Own	International	19	.3158**	.47757	.10956
	Domestic	112	.6250**	.48630	.04595
Q66_Task_Req_Collab_Int	International	19	.5263**	.51299	.11769
	Domestic	112	.8661**	.34211	.03233
Q66_Task_Req_Collab_Ext	International	19	.2632	.45241	.10379
	Domestic	112	.3125	.46560	.04399
Q67_Ask_Cowrk_Asst	International	19	.7895	.41885	.09609
	Domestic	112	.8839	.32175	.03040
Q67_Ask_Supr_Asst	International	19	.6842	.47757	.10956
	Domestic	112	.7054	.45793	.04327
Q67_Figure_Out_Own	International	19	.9474	.22942	.05263
	Domestic	112	.8929	.31068	.02936
Q67_Org_Resource	International	19	.4737	.51299	.11769
	Domestic	112	.5982	.49246	.04653
Q67_Public_Resource	International	19	.8947*	.31530	.07234
	Domestic	112	.7411*	.44002	.04158
Q68_Coworkers	International	19	.9474	.22942	.05263
	Domestic	112	.9821	.13303	.01257
Q68_Supr	International	19	.8947	.31530	.07234
	Domestic	112	.8929	.31068	.02936
Q68_Comp_Materials	International	19	.6316	.49559	.11370
	Domestic	112	.7946	.40578	.03834
Q68_Comp_Train	International	19	.6316	.49559	.11370

	Domestic	112	.6161	.48853	.04616
Q70_Int_Client	International	19	.2105	.41885	.09609
	Domestic	112	.2143	.41217	.03895
Q70_Int_Cowrk	International	19	.8947	.31530	.07234
	Domestic	112	.9643	.18641	.01761
Q70_Int_Supr	International	19	.8421	.37463	.08595
	Domestic	112	.9018	.29894	.02825
Q70_Int_Vendor	International	19	.2105	.41885	.09609
	Domestic	112	.1786	.38471	.03635
Q70_Int_Oth_Dept	International	19	.2632**	.45241	.10379
	Domestic	112	.5446**	.50024	.04727
Q70_Int_Oth_Intrn	International	19	.5263	.51299	.11769
	Domestic	112	.7232	.44942	.04247

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	1.425	.235	.569	129	.571	.15273	.26864	-.37878	.68423
	Equal variances not assumed			.653	27.877	.519	.15273	.23381	-.32631	.63176
Q28_Complex_Dec	Equal variances assumed	9.119	.003	-2.011	127	.046**	-.46364	.23054	-.91982	-.00745
	Equal variances not assumed			-2.393	29.260	.023**	-.46364	.19372	-.85968	-.06759
Q29_Chall_Work	Equal variances assumed	.455	.501	.763	128	.447	.15031	.19697	-.23943	.54005
	Equal variances not assumed			.702	23.144	.489	.15031	.21398	-.29220	.59281
Q30_Adeq_Res	Equal variances assumed	2.396	.124	.648	129	.518	.18327	.28261	-.37588	.74242
	Equal variances not assumed			.801	30.370	.429	.18327	.22885	-.28387	.65041
Q31_Influ_Amt	Equal variances assumed	.062	.804	-.573	129	.568	-.12829	.22402	-.57153	.31495
	Equal variances not assumed			-.620	26.228	.541	-.12829	.20708	-.55376	.29718
Q32_Influ_Dec	Equal variances assumed	.038	.846	.617	128	.538	.14225	.23062	-.31407	.59856

	Equal variances not assumed			.558	22.887	.582	.14225	.25493	-.38526	.66975
Q33_Do_Diff	Equal variances assumed	2.252	.136	.291	129	.771	.07237	.24830	-.41890	.56364
	Equal variances not assumed			.333	27.716	.742	.07237	.21728	-.37291	.51764
Q34_Impact_Org	Equal variances assumed	.030	.862	-.355	129	.723	-.07472	.21021	-.49062	.34119
	Equal variances not assumed			-.343	23.842	.735	-.07472	.21808	-.52496	.37553
Q35_Work_On_Own	Equal variances assumed	1.495	.224	-1.610	129	.110	-.32848	.20400	-.73210	.07515
	Equal variances not assumed			-1.369	22.031	.185	-.32848	.24000	-.82617	.16921
Q36_Indp_Tht_Act	Equal variances assumed	.507	.478	.760	128	.449	.15972	.21016	-.25612	.57557
	Equal variances not assumed			.927	27.476	.362	.15972	.17239	-.19371	.51316
Q37_Clear_Obj	Equal variances assumed	.043	.836	-.205	129	.838	-.04887	.23784	-.51945	.42171
	Equal variances not assumed			-.200	23.995	.843	-.04887	.24458	-.55367	.45593
Q38_Choose_Meth	Equal variances assumed	1.043	.309	.948	129	.345	.21147	.22300	-.22974	.65267
	Equal variances not assumed			.818	22.218	.422	.21147	.25836	-.32403	.74696
Q39_Help_Cowrk	Equal variances assumed	4.881	.029	-1.028	129	.306	-.16306	.15858	-.47682	.15069
	Equal variances not assumed			-.723	20.242	.478	-.16306	.22568	-.63347	.30734
Q40_Help_Supr	Equal variances assumed	.634	.427	.652	129	.516	.15132	.23220	-.30810	.61074

	Equal variances not assumed			.711	26.438	.483	.15132	.21285	-.28586	.58849
Q41_Achiev_App	Equal variances assumed	4.064	.046	1.106	128	.271	.20816	.18816	-.16415	.58047
	Equal variances not assumed			1.527	36.078	.136	.20816	.13633	-.06832	.48463
Q42_Supr_Enc_Dec	Equal variances assumed	.647	.423	.534	128	.595	.14130	.26484	-.38272	.66532
	Equal variances not assumed			.565	25.806	.577	.14130	.24997	-.37272	.65532
Q43_Supr_Enc_Spk	Equal variances assumed	1.282	.260	1.437	129	.153	.33177	.23092	-.12511	.78864
	Equal variances not assumed			1.812	31.227	.080*	.33177	.18312	-.04159	.70513
Q44_Supr_Dev_Skills	Equal variances assumed	.478	.490	1.345	129	.181	.33271	.24742	-.15682	.82223
	Equal variances not assumed			1.222	22.917	.234	.33271	.27216	-.23042	.89584
Q45_Clim_Comp	Equal variances assumed	.512	.475	1.917	129	.057*	.44643	.23291	-.01440	.90725
	Equal variances not assumed			1.605	21.853	.123	.44643	.27819	-.13072	1.02358
Q46_Clim_Enc_Supp	Equal variances assumed	1.162	.283	-.978	129	.330	-.19126	.19548	-.57803	.19551
	Equal variances not assumed			-.741	20.844	.467	-.19126	.25808	-.72821	.34569
Q47_Clim_Relax	Equal variances assumed	.932	.336	-.714	128	.477	-.13656	.19128	-.51503	.24192
	Equal variances not assumed			-.586	21.650	.564	-.13656	.23321	-.62066	.34755
Q48_Clim_Rigid	Equal variances assumed	2.568	.112	1.451	129	.149	.33318	.22965	-.12120	.78755

	Equal variances not assumed			1.188	21.607	.248	.33318	.28041	-.24898	.91533
Q49_Work_Init	Equal variances assumed	.679	.412	-.434	129	.665	-.08835	.20353	-.49103	.31434
	Equal variances not assumed			-.422	23.997	.677	-.08835	.20928	-.52028	.34359
Q50_Recog_Gd_Job	Equal variances assumed	.151	.698	.777	129	.438	.15602	.20069	-.24105	.55308
	Equal variances not assumed			.780	24.574	.443	.15602	.20003	-.25632	.56835
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	1.679	.197	-.061	129	.951	-.01269	.20791	-.42403	.39866
	Equal variances not assumed			-.051	21.844	.960	-.01269	.24852	-.52830	.50292
Q52_Sense_Team	Equal variances assumed	1.013	.316	-.221	129	.826	-.04746	.21493	-.47271	.37778
	Equal variances not assumed			-.244	26.811	.809	-.04746	.19421	-.44609	.35116
Q53_Part_Of_Team	Equal variances assumed	.052	.820	-.153	127	.878	-.03636	.23729	-.50591	.43319
	Equal variances not assumed			-.147	23.920	.884	-.03636	.24656	-.54533	.47261
Q54_Curr_Skls_Use	Equal variances assumed	.005	.944	-.515	129	.607	-.12312	.23906	-.59610	.34986
	Equal variances not assumed			-.527	24.979	.603	-.12312	.23352	-.60408	.35784
Q55_Req_New_Skls	Equal variances assumed	3.812	.053	-.013	129	.989	-.00282	.21138	-.42105	.41541
	Equal variances not assumed			-.011	21.236	.992	-.00282	.26756	-.55886	.55322
Q56_Cnct_Wrk_Sch	Equal variances assumed	.052	.820	.377	128	.707	.08630	.22919	-.36720	.53979

	Equal variances not assumed			.383	24.903	.705	.08630	.22543	-.37807	.55066
Q57_Apply_Cls_Wrk	Equal variances assumed	.783	.378	1.069	129	.287	.24859	.23264	-.21169	.70887
	Equal variances not assumed			1.171	26.561	.252	.24859	.21223	-.18720	.68438
Q58_Fdbk_On_Job	Equal variances assumed	.687	.409	.595	129	.553	.12876	.21655	-.29969	.55721
	Equal variances not assumed			.605	24.848	.551	.12876	.21288	-.30982	.56734
Q59_Wrk_W_Others	Equal variances assumed	.406	.525	-.407	129	.685	-.09539	.23435	-.55907	.36828
	Equal variances not assumed			-.424	25.360	.675	-.09539	.22486	-.55818	.36739
Q60_Wrk_W_Job	Equal variances assumed	.117	.733	.082	128	.935	.02229	.27137	-.51467	.55924
	Equal variances not assumed			.081	24.206	.936	.02229	.27667	-.54847	.59305
Q61_Cowrk_Dev_Skl	Equal variances assumed	1.078	.301	.131	129	.896	.03195	.24481	-.45240	.51631
	Equal variances not assumed			.105	21.395	.918	.03195	.30498	-.60158	.66548
Q62_Talk_Inform	Equal variances assumed	.015	.902	.524	128	.601	.100	.190	-.276	.475
	Equal variances not assumed			.533	24.916	.599	.100	.187	-.285	.484
Q63_Intrct_Out_Wrk	Equal variances assumed	.564	.454	.547	129	.585	.16400	.29994	-.42944	.75745
	Equal variances not assumed			.503	23.081	.620	.16400	.32628	-.51082	.83883
	Equal variances assumed	1.359	.246	.021	129	.983	.00290	.13532	-.26484	.27064

C1_27_34_Job_Tsk_Char	Equal variances not assumed			.022	25.520	.982	.00290	.12891	-.26232	.26811
C2_35_38_Level_Dir	Equal variances assumed	.665	.416	-.091	129	.928	-.01325	.14645	-.30300	.27649
	Equal variances not assumed			-.086	23.614	.932	-.01325	.15399	-.33136	.30485
C3_39_53_Org_Cult	Equal variances assumed	2.273	.134	.783	129	.435	.09471	.12092	-.14453	.33396
	Equal variances not assumed			.641	21.600	.528	.09471	.14774	-.21202	.40144
C4_54_57_Skl_Know	Equal variances assumed	.182	.671	.280	129	.780	.04938	.17632	-.29947	.39822
	Equal variances not assumed			.274	24.078	.787	.04938	.18048	-.32304	.42180
C5_58_63_Soc_Int	Equal variances assumed	.496	.482	.353	129	.724	.05810	.16447	-.26731	.38350
	Equal variances not assumed			.321	22.891	.751	.05810	.18124	-.31692	.43311
Q66_Task_Assgn_Supr	Equal variances assumed	1.496	.224	-.638	129	.524	-.05075	.07949	-.20802	.10652
	Equal variances not assumed			-.559	22.396	.582	-.05075	.09082	-.23891	.13741
Q66_Task_Assgn_Cowrk	Equal variances assumed	.120	.729	-.642	129	.522	-.07989	.12437	-.32596	.16619
	Equal variances not assumed			-.630	24.151	.535	-.07989	.12679	-.34149	.18172
Q66_Task_Req_Dec	Equal variances assumed	2.678	.104	-1.095	129	.275	-.12641	.11540	-.35474	.10192
	Equal variances not assumed			-1.018	23.249	.319	-.12641	.12416	-.38310	.13028
	Equal variances assumed	.349	.556	-.322	129	.748	-.03806	.11804	-.27161	.19548

Q66_Task_Req_Tech_Sk	Equal variances not assumed			-.312	23.886	.758	-.03806	.12215	-.29023	.21410
Q66_Task_Req_Nont_Sk	Equal variances assumed	14.052	.000	-2.682	129	.008***	-.26034	.09705	-.45236	-.06831
	Equal variances not assumed			-2.143	21.347	.044**	-.26034	.12148	-.51272	-.00795
Q66_Task_Id_Own	Equal variances assumed	1.278	.260	-2.569	129	.011**	-.30921	.12036	-.54734	-.07108
	Equal variances not assumed			-2.603	24.765	.015**	-.30921	.11881	-.55402	-.06440
Q66_Task_Req_Collab_Int	Equal variances assumed	21.353	.000	-3.694	129	.000***	-.33976	.09198	-.52174	-.15777
	Equal variances not assumed			-2.784	20.799	.011**	-.33976	.12205	-.59371	-.08580
Q66_Task_Req_Collab_Ext	Equal variances assumed	.873	.352	-.429	129	.669	-.04934	.11507	-.27701	.17833
	Equal variances not assumed			-.438	24.919	.665	-.04934	.11273	-.28155	.18287
Q67_Ask_Cowrk_Asst	Equal variances assumed	4.329	.039	-1.130	129	.261	-.09445	.08361	-.25988	.07097
	Equal variances not assumed			-.937	21.749	.359	-.09445	.10079	-.30361	.11470
Q67_Ask_Supr_Asst	Equal variances assumed	.127	.722	-.185	129	.854	-.02115	.11431	-.24731	.20502
	Equal variances not assumed			-.180	23.959	.859	-.02115	.11780	-.26429	.22200
Q67_Figure_Out_Own	Equal variances assumed	2.385	.125	.731	129	.466	.05451	.07460	-.09309	.20211
	Equal variances not assumed			.905	30.465	.373	.05451	.06027	-.06849	.17751
Q67_Org_Resource	Equal variances assumed	.639	.426	-1.013	129	.313	-.12453	.12291	-.36771	.11865

	Equal variances not assumed			-.984	23.973	.335	-.12453	.12655	-.38574	.13668
Q67_Public_Resource	Equal variances assumed	13.093	.000	1.458	129	.147	.15367	.10540	-.05488	.36221
	Equal variances not assumed			1.842	31.304	.075*	.15367	.08343	-.01643	.32376
Q68_Coworkers	Equal variances assumed	3.388	.068	-.933	129	.353	-.03477	.03728	-.10853	.03898
	Equal variances not assumed			-.643	20.101	.528	-.03477	.05411	-.14761	.07806
Q68_Supr	Equal variances assumed	.002	.961	.024	129	.981	.00188	.07725	-.15095	.15471
	Equal variances not assumed			.024	24.311	.981	.00188	.07807	-.15913	.16289
Q68_Comp_Materials	Equal variances assumed	6.086	.015	-1.567	129	.120	-.16306	.10408	-.36898	.04285
	Equal variances not assumed			-1.359	22.280	.188	-.16306	.11999	-.41172	.08560
Q68_Comp_Train	Equal variances assumed	.071	.790	.128	129	.899	.01551	.12146	-.22480	.25581
	Equal variances not assumed			.126	24.316	.900	.01551	.12271	-.23758	.26860
Q70_Int_Client	Equal variances assumed	.005	.941	-.037	129	.971	-.00376	.10250	-.20655	.19904
	Equal variances not assumed			-.036	24.293	.971	-.00376	.10368	-.21762	.21010
Q70_Int_Cowrk	Equal variances assumed	6.737	.011	-1.340	129	.183	-.06955	.05191	-.17225	.03316
	Equal variances not assumed			-.934	20.186	.361	-.06955	.07445	-.22475	.08566
Q70_Int_Supr	Equal variances assumed	2.177	.143	-.774	129	.440	-.05968	.07707	-.21216	.09280

	Equal variances not assumed			-.660	22.057	.516	-.05968	.09047	-.24728	.12791
Q70_Int_Vendor	Equal variances assumed	.407	.525	.331	129	.742	.03195	.09668	-.15933	.22324
	Equal variances not assumed			.311	23.443	.759	.03195	.10274	-.18035	.24426
Q70_Int_Oth_Dept	Equal variances assumed	23.408	.000	-2.297	129	.023**	-.28148	.12253	-.52391	-.03906
	Equal variances not assumed			-2.468	26.059	.020**	-.28148	.11405	-.51589	-.04708
Q70_Int_Oth_Intrn	Equal variances assumed	4.515	.036	-1.730	129	.086*	-.19690	.11384	-.42213	.02834
	Equal variances not assumed			-1.574	22.929	.129	-.19690	.12512	-.45576	.06197

* p-value <0.1; ** p-value <0.05; *** p-value <0.01

Table 18: T-tests results on survey questions comparing business students and engineering students

Group Statistics

Major_B_E		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Business	25	3.6800	1.28193	.25639
	Engineering/STEM	106	3.8491	1.03088	.10013
Q28_Complex_Dec	Business	25	3.2800	1.02144	.20429
	Engineering/STEM	104	3.4231	.92108	.09032
Q29_Chall_Work	Business	25	3.9200	.86217	.17243
	Engineering/STEM	105	3.9905	.77825	.07595
Q30_Adeq_Res	Business	25	2.5600	1.04403	.20881
	Engineering/STEM	106	2.5849	1.16184	.11285
Q31_Influ_Amt	Business	25	3.7600	1.09087	.21817
	Engineering/STEM	106	3.8019	.85546	.08309
Q32_Influ_Dec	Business	24	3.5417	1.06237	.21685
	Engineering/STEM	106	3.6321	.89789	.08721
Q33_Do_Diff	Business	25	3.9600	1.01980	.20396
	Engineering/STEM	106	3.8679	.99595	.09674
Q34_Impact_Org	Business	25	3.8800	.83267	.16653
	Engineering/STEM	106	3.7170	.84802	.08237
Q35_Work_On_Own	Business	25	4.0000	.86603	.17321
	Engineering/STEM	106	4.2170	.81655	.07931
Q36_Indp_Tht_Act	Business	25	3.8400	1.06771	.21354
	Engineering/STEM	105	4.1429	.75229	.07342
Q37_Clear_Obj	Business	25	3.9600	.97809	.19562
	Engineering/STEM	106	3.7358	.94920	.09219
Q38_Choose_Meth	Business	25	4.0400	.88882	.17776
	Engineering/STEM	106	3.9623	.90422	.08783
Q39_Help_Cowrk	Business	25	4.8800	.33166	.06633
	Engineering/STEM	106	4.7453	.69091	.06711
Q40_Help_Supr	Business	25	4.6400*	.63770	.12754
	Engineering/STEM	106	4.3396*	.98452	.09562
Q41_Achiev_App	Business	25	4.4800	.65320	.13064
	Engineering/STEM	105	4.4476	.78423	.07653
Q42_Supr_Enc_Dec	Business	24	4.0417	1.19707	.24435
	Engineering/STEM	106	3.9717	1.03701	.10072
Q43_Supr_Enc_Spk	Business	25	4.0000	.95743	.19149
	Engineering/STEM	106	4.1698	.93066	.09039

Q44_Supr_Dev_Skls	Business	25	4.2000	1.00000	.20000
	Engineering/STEM	106	4.0566	1.00314	.09743
Q45_Clim_Comp	Business	25	2.6000	1.08012	.21602
	Engineering/STEM	106	2.6226	.92017	.08938
Q46_Clim_Enc_Supp	Business	25	4.4800	.58595	.11719
	Engineering/STEM	106	4.3491	.82857	.08048
Q47_Clim_Relax	Business	25	4.3200	.74833	.14967
	Engineering/STEM	105	4.1333	.77294	.07543
Q48_Clim_Rigid	Business	25	2.4000	.86603	.17321
	Engineering/STEM	106	2.5943	.94394	.09168
Q49_Work_Init	Business	25	4.1200	.72572	.14514
	Engineering/STEM	106	4.0000	.83950	.08154
Q50_Recog_Gd_Job	Business	25	4.2400	.83066	.16613
	Engineering/STEM	106	4.1038	.80391	.07808
Q51_Mgmt_Hlth_Wbng	Business	25	4.0800	.81240	.16248
	Engineering/STEM	106	4.2547	.84020	.08161
Q52_Sense_Team	Business	25	4.4000	.70711	.14142
	Engineering/STEM	106	4.1509	.89221	.08666
Q53_Part_Of_Team	Business	23	4.3043	.87567	.18259
	Engineering/STEM	106	3.9717	.96073	.09331
Q54_Curr_Skls_Use	Business	25	4.1600	.98658	.19732
	Engineering/STEM	106	3.9623	.95543	.09280
Q55_Req_New_Skls	Business	25	4.4000*	.70711	.14142
	Engineering/STEM	106	4.1038*	.87210	.08471
Q56_Cnct_Wrk_Sch	Business	25	3.4000	.91287	.18257
	Engineering/STEM	105	3.4000	.92612	.09038
Q57_Apply_Cls_Wrk	Business	25	3.2400	1.01160	.20232
	Engineering/STEM	106	3.3962	.92251	.08960
Q58_Fdbk_On_Job	Business	25	4.0400**	.78951	.15790
	Engineering/STEM	106	3.5943**	.87045	.08455
Q59_Wrk_W_Others	Business	25	4.3600***	.86023	.17205
	Engineering/STEM	106	3.8208***	.93398	.09072
Q60_Wrk_W_Job	Business	24	4.5417***	.72106	.14719
	Engineering/STEM	106	3.6604***	1.09446	.10630
Q61_Cowrk_Dev_Skl	Business	25	4.4000	.76376	.15275
	Engineering/STEM	106	4.1321	1.02423	.09948
Q62_Talk_Inform	Business	25	4.32	.748	.150
	Engineering/STEM	105	4.21	.768	.075
Q63_Intrct_Out_Wrk	Business	25	3.5600*	1.15758	.23152
	Engineering/STEM	106	3.0849*	1.20410	.11695
	Business	25	3.5743	.60345	.12069

C1_27_34_Job_Tsk_Char	Engineering/STEM	106	3.6095	.53103	.05158
C2_35_38_Level_Dir	Business	25	3.9600	.69477	.13895
	Engineering/STEM	106	4.0126	.56318	.05470
C3_39_53_Org_Cult	Business	25	4.0779	.42153	.08431
	Engineering/STEM	106	3.9942	.50124	.04868
C4_54_57_Skl_Know	Business	25	3.8000	.72169	.14434
	Engineering/STEM	106	3.7186	.70743	.06871
C5_58_63_Soc_Int	Business	25	4.2000***	.56101	.11220
	Engineering/STEM	106	3.7506***	.65539	.06366
Q66_Task_Assgn_Supr	Business	25	1.0000***	0.00000	0.00000
	Engineering/STEM	106	.8585***	.35020	.03401
Q66_Task_Assgn_Cowrk	Business	25	.6800	.47610	.09522
	Engineering/STEM	106	.5094	.50229	.04879
Q66_Task_Req_Dec	Business	25	.6400	.48990	.09798
	Engineering/STEM	106	.6981	.46126	.04480
Q66_Task_Req_Tech_Sk	Business	25	.6800	.47610	.09522
	Engineering/STEM	106	.6604	.47583	.04622
Q66_Task_Req_Nont_Sk	Business	25	.8800	.33166	.06633
	Engineering/STEM	106	.7830	.41415	.04023
Q66_Task_Id_Own	Business	25	.6000	.50000	.10000
	Engineering/STEM	106	.5755	.49662	.04824
Q66_Task_Req_Collab_Int	Business	25	.8400	.37417	.07483
	Engineering/STEM	106	.8113	.39311	.03818
Q66_Task_Req_Collab_Ext	Business	25	.4800*	.50990	.10198
	Engineering/STEM	106	.2642*	.44297	.04303
Q67_Ask_Cowrk_Asst	Business	25	.8800	.33166	.06633
	Engineering/STEM	106	.8679	.34018	.03304
Q67_Ask_Supr_Asst	Business	25	.8800***	.33166	.06633
	Engineering/STEM	106	.6604***	.47583	.04622
Q67_Figure_Out_Own	Business	25	.8800	.33166	.06633
	Engineering/STEM	106	.9057	.29369	.02853
Q67_Org_Resource	Business	25	.5200	.50990	.10198
	Engineering/STEM	106	.5943	.49335	.04792
Q67_Public_Resource	Business	25	.6400	.48990	.09798
	Engineering/STEM	106	.7925	.40748	.03958
Q68_Coworkers	Business	25	.9600	.20000	.04000
	Engineering/STEM	106	.9811	.13670	.01328
Q68_Supr	Business	25	.9600	.20000	.04000
	Engineering/STEM	106	.8774	.32958	.03201
Q68_Comp_Materials	Business	25	.7200	.45826	.09165
	Engineering/STEM	106	.7830	.41415	.04023

Q68_Comp_Train	Business	25	.6000	.50000	.10000
	Engineering/STEM	106	.6226	.48703	.04730
Q70_Int_Client	Business	25	.4800***	.50990	.10198
	Engineering/STEM	106	.1509***	.35969	.03494
Q70_Int_Cowrk	Business	25	.9600	.20000	.04000
	Engineering/STEM	106	.9528	.21301	.02069
Q70_Int_Supr	Business	25	1.0000***	0.00000	0.00000
	Engineering/STEM	106	.8679***	.34018	.03304
Q70_Int_Vendor	Business	25	.1200	.33166	.06633
	Engineering/STEM	106	.1981	.40047	.03890
Q70_Int_Oth_Dept	Business	25	.6400	.48990	.09798
	Engineering/STEM	106	.4717	.50157	.04872
Q70_Int_Oth_Intrn	Business	25	.8000	.40825	.08165
	Engineering/STEM	106	.6698	.47252	.04589

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	2.607	.109	-.703	129	.483	-.16906	.24057	-.64503	.30692
	Equal variances not assumed			-.614	31.711	.543	-.16906	.27524	-.72991	.39180
Q28_Complex_Dec	Equal variances assumed	.133	.716	-.683	127	.496	-.14308	.20957	-.55779	.27163
	Equal variances not assumed			-.641	33.997	.526	-.14308	.22336	-.59701	.31085
Q29_Chall_Work	Equal variances assumed	.994	.321	-.399	128	.691	-.07048	.17684	-.42039	.27944
	Equal variances not assumed			-.374	33.921	.711	-.07048	.18842	-.45342	.31247
Q30_Adeq_Res	Equal variances assumed	.349	.556	-.098	129	.922	-.02491	.25365	-.52676	.47695
	Equal variances not assumed			-.105	39.301	.917	-.02491	.23735	-.50487	.45506
Q31_Influ_Amt	Equal variances assumed	.258	.613	-.208	129	.835	-.04189	.20097	-.43952	.35574
	Equal variances not assumed			-.179	31.316	.859	-.04189	.23346	-.51784	.43406
Q32_Influ_Dec	Equal variances assumed	1.201	.275	-.430	128	.668	-.09041	.21014	-.50620	.32538
	Equal variances not assumed			-.387	30.865	.702	-.09041	.23373	-.56720	.38638

Q33_Do_Diff	Equal variances assumed	.709	.401	.414	129	.680	.09208	.22243	-.34801	.53216
	Equal variances not assumed			.408	35.600	.686	.09208	.22574	-.36592	.55007
Q34_Impact_Org	Equal variances assumed	.350	.555	.868	129	.387	.16302	.18792	-.20878	.53482
	Equal variances not assumed			.877	36.677	.386	.16302	.18579	-.21354	.53958
Q35_Work_On_Own	Equal variances assumed	.002	.968	-1.182	129	.240	-.21698	.18365	-.58033	.14637
	Equal variances not assumed			-1.139	34.770	.262	-.21698	.19050	-.60381	.16985
Q36_Indp_Tht_Act	Equal variances assumed	5.666	.019	-1.658	128	.100	-.30286	.18264	-.66424	.05853
	Equal variances not assumed			-1.341	29.912	.190	-.30286	.22581	-.76408	.15836
Q37_Clear_Obj	Equal variances assumed	1.299	.256	1.056	129	.293	.22415	.21225	-.19580	.64410
	Equal variances not assumed			1.037	35.446	.307	.22415	.21626	-.21467	.66298
Q38_Choose_Meth	Equal variances assumed	.059	.808	.388	129	.699	.07774	.20041	-.31878	.47425
	Equal variances not assumed			.392	36.647	.697	.07774	.19828	-.32414	.47961
Q39_Help_Cowrk	Equal variances assumed	3.793	.054	.947	129	.345	.13472	.14219	-.14662	.41605
	Equal variances not assumed			1.428	79.285	.157	.13472	.09436	-.05309	.32252
Q40_Help_Supr	Equal variances assumed	4.695	.032	1.453	129	.149	.30038	.20674	-.10866	.70941
	Equal variances not assumed			1.884	54.621	.065*	.30038	.15941	-.01913	.61989

Q41_Achiev_App	Equal variances assumed	.601	.440	.191	128	.849	.03238	.16944	-.30288	.36764
	Equal variances not assumed			.214	42.155	.832	.03238	.15141	-.27314	.33790
Q42_Supr_Enc_Dec	Equal variances assumed	.798	.373	.290	128	.772	.06997	.24132	-.40753	.54746
	Equal variances not assumed			.265	31.282	.793	.06997	.26430	-.46887	.60881
Q43_Supr_Enc_Spk	Equal variances assumed	.269	.605	-.816	129	.416	-.16981	.20804	-.58142	.24180
	Equal variances not assumed			-.802	35.486	.428	-.16981	.21175	-.59947	.25985
Q44_Supr_Dev_Sklls	Equal variances assumed	.061	.806	.643	129	.521	.14340	.22291	-.29763	.58442
	Equal variances not assumed			.645	36.277	.523	.14340	.22247	-.30768	.59447
Q45_Clim_Comp	Equal variances assumed	.450	.504	-.107	129	.915	-.02264	.21166	-.44141	.39613
	Equal variances not assumed			-.097	32.700	.923	-.02264	.23378	-.49844	.45316
Q46_Clim_Enc_Supp	Equal variances assumed	1.921	.168	.746	129	.457	.13094	.17545	-.21618	.47807
	Equal variances not assumed			.921	49.460	.361	.13094	.14216	-.15467	.41656
Q47_Clim_Relax	Equal variances assumed	.487	.487	1.092	128	.277	.18667	.17100	-.15168	.52501
	Equal variances not assumed			1.114	37.187	.273	.18667	.16760	-.15287	.52620
Q48_Clim_Rigid	Equal variances assumed	.350	.555	-.940	129	.349	-.19434	.20676	-.60342	.21474
	Equal variances not assumed			-.992	38.640	.328	-.19434	.19597	-.59085	.20217

Q49_Work_Init	Equal variances assumed	.107	.744	.659	129	.511	.12000	.18221	-.24051	.48051
	Equal variances not assumed			.721	40.615	.475	.12000	.16648	-.21631	.45631
Q50_Recog_Gd_Job	Equal variances assumed	.008	.927	.757	129	.450	.13623	.17986	-.21963	.49209
	Equal variances not assumed			.742	35.380	.463	.13623	.18357	-.23629	.50874
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	.320	.573	-.941	129	.348	-.17472	.18567	-.54208	.19264
	Equal variances not assumed			-.961	37.096	.343	-.17472	.18182	-.54309	.19366
Q52_Sense_Team	Equal variances assumed	1.176	.280	1.301	129	.195	.24906	.19139	-.12961	.62772
	Equal variances not assumed			1.502	43.990	.140	.24906	.16586	-.08522	.58333
Q53_Part_Of_Team	Equal variances assumed	.028	.868	1.528	127	.129	.33265	.21773	-.09820	.76350
	Equal variances not assumed			1.622	34.500	.114	.33265	.20505	-.08385	.74914
Q54_Curr_Skls_Use	Equal variances assumed	.187	.666	.925	129	.357	.19774	.21373	-.22514	.62061
	Equal variances not assumed			.907	35.396	.371	.19774	.21805	-.24475	.64022
Q55_Req_New_Skls	Equal variances assumed	.213	.645	1.579	129	.117	.29623	.18762	-.07498	.66744
	Equal variances not assumed			1.797	43.043	.079*	.29623	.16485	-.03621	.62867
Q56_Cnct_Wrk_Sch	Equal variances assumed	.116	.734	0.000	128	1.000	0.00000	.20555	-.40671	.40671
	Equal variances not assumed			0.000	36.695	1.000	0.00000	.20372	-.41289	.41289

Q57_Apply_Cls_Wrk	Equal variances assumed	.016	.899	-.748	129	.456	-.15623	.20894	-.56961	.25716
	Equal variances not assumed			-.706	34.039	.485	-.15623	.22127	-.60589	.29344
Q58_Fdbk_On_Job	Equal variances assumed	3.394	.068	2.342	129	.021**	.44566	.19031	.06912	.82220
	Equal variances not assumed			2.488	39.001	.017**	.44566	.17911	.08337	.80795
Q59_Wrk_W_Others	Equal variances assumed	.060	.807	2.634	129	.009***	.53925	.20471	.13422	.94427
	Equal variances not assumed			2.772	38.520	.009***	.53925	.19450	.14568	.93281
Q60_Wrk_W_Job	Equal variances assumed	6.088	.015	3.758	128	.000***	.88129	.23449	.41731	1.34527
	Equal variances not assumed			4.854	50.258	.000***	.88129	.18156	.51666	1.24592
Q61_Cowrk_Dev_Skl	Equal variances assumed	.995	.320	1.228	129	.222	.26792	.21812	-.16363	.69948
	Equal variances not assumed			1.470	46.754	.148	.26792	.18229	-.09885	.63470
Q62_Talk_Inform	Equal variances assumed	.284	.595	.649	128	.517	.110	.170	-.226	.447
	Equal variances not assumed			.660	37.020	.513	.110	.167	-.229	.450
Q63_Intrct_Out_Wrk	Equal variances assumed	.003	.957	1.787	129	.076*	.47509	.26582	-.05084	1.00103
	Equal variances not assumed			1.832	37.257	.075*	.47509	.25938	-.05034	1.00053
C1_27_34_Job_Tsk_Char	Equal variances assumed	.931	.336	-.291	129	.772	-.03523	.12122	-.27508	.20462
	Equal variances not assumed			-.268	33.313	.790	-.03523	.13125	-.30216	.23170

C2_35_38_Level_Dir	Equal variances assumed	.812	.369	-.401	129	.689	-.05258	.13115	-.31207	.20692
	Equal variances not assumed			-.352	31.840	.727	-.05258	.14933	-.35682	.25167
C3_39_53_Org_Cult	Equal variances assumed	1.388	.241	.772	129	.442	.08366	.10837	-.13074	.29807
	Equal variances not assumed			.859	41.617	.395	.08366	.09735	-.11286	.28018
C4_54_57_Skl_Know	Equal variances assumed	.007	.934	.516	129	.607	.08144	.15788	-.23093	.39382
	Equal variances not assumed			.509	35.692	.614	.08144	.15986	-.24286	.40575
C5_58_63_Soc_Int	Equal variances assumed	1.853	.176	3.163	129	.002***	.44933	.14205	.16828	.73037
	Equal variances not assumed			3.483	40.967	.001***	.44933	.12900	.18880	.70986
Q66_Task_Assgn_Supr	Equal variances assumed	23.271	.000	2.014	129	.046**	.14151	.07025	.00252	.28050
	Equal variances not assumed			4.160	105.000	.000***	.14151	.03401	.07406	.20895
Q66_Task_Assgn_Cowrk	Equal variances assumed	15.253	.000	1.542	129	.126	.17057	.11062	-.04829	.38942
	Equal variances not assumed			1.594	37.661	.119	.17057	.10699	-.04609	.38722
Q66_Task_Req_Dec	Equal variances assumed	1.018	.315	-.560	129	.576	-.05811	.10377	-.26342	.14720
	Equal variances not assumed			-.539	34.738	.593	-.05811	.10774	-.27689	.16066
Q66_Task_Req_Tech_Sk	Equal variances assumed	.148	.701	.185	129	.853	.01962	.10581	-.18972	.22896
	Equal variances not assumed			.185	36.181	.854	.01962	.10584	-.19500	.23424

Q66_Task_Req_Nont_Sk	Equal variances assumed	5.916	.016	1.090	129	.278	.09698	.08896	-.07902	.27298
	Equal variances not assumed			1.250	43.551	.218	.09698	.07758	-.05941	.25337
Q66_Task_Id_Own	Equal variances assumed	.233	.630	.222	129	.825	.02453	.11056	-.19421	.24327
	Equal variances not assumed			.221	36.022	.826	.02453	.11103	-.20064	.24969
Q66_Task_Req_Collab_Int	Equal variances assumed	.464	.497	.331	129	.741	.02868	.08664	-.14273	.20009
	Equal variances not assumed			.341	37.541	.735	.02868	.08401	-.14146	.19882
Q66_Task_Req_Collab_Ext	Equal variances assumed	6.929	.010	2.128	129	.035**	.21585	.10142	.01518	.41652
	Equal variances not assumed			1.950	33.065	.060*	.21585	.11069	-.00932	.44102
Q67_Ask_Cowrk_Asst	Equal variances assumed	.105	.746	.160	129	.873	.01208	.07529	-.13688	.16103
	Equal variances not assumed			.163	36.868	.871	.01208	.07411	-.13810	.16225
Q67_Ask_Supr_Asst	Equal variances assumed	37.025	.000	2.183	129	.031**	.21962	.10061	.02057	.41868
	Equal variances not assumed			2.717	50.251	.009***	.21962	.08085	.05726	.38199
Q67_Figure_Out_Own	Equal variances assumed	.567	.453	-.383	129	.702	-.02566	.06695	-.15812	.10680
	Equal variances not assumed			-.355	33.436	.725	-.02566	.07221	-.17249	.12117
Q67_Org_Resource	Equal variances assumed	.820	.367	-.673	129	.502	-.07434	.11038	-.29274	.14406
	Equal variances not assumed			-.660	35.374	.514	-.07434	.11268	-.30300	.15432

Q67_Public_Resource	Equal variances assumed	7.071	.009	-1.617	129	.108	-.15245	.09428	-.33898	.03408
	Equal variances not assumed			-1.443	32.275	.159	-.15245	.10567	-.36763	.06272
Q68_Coworkers	Equal variances assumed	1.570	.212	-.631	129	.529	-.02113	.03346	-.08734	.04508
	Equal variances not assumed			-.501	29.499	.620	-.02113	.04215	-.10727	.06500
Q68_Supr	Equal variances assumed	6.839	.010	1.201	129	.232	.08264	.06884	-.05356	.21884
	Equal variances not assumed			1.613	59.051	.112	.08264	.05123	-.01987	.18516
Q68_Comp_Materials	Equal variances assumed	1.555	.215	-.671	129	.504	-.06302	.09398	-.24897	.12293
	Equal variances not assumed			-.630	33.850	.533	-.06302	.10009	-.26646	.14042
Q68_Comp_Train	Equal variances assumed	.153	.697	-.208	129	.836	-.02264	.10883	-.23796	.19268
	Equal variances not assumed			-.205	35.536	.839	-.02264	.11062	-.24710	.20182
Q70_Int_Client	Equal variances assumed	23.216	.000	3.775	129	.000***	.32906	.08716	.15661	.50151
	Equal variances not assumed			3.053	29.870	.005***	.32906	.10780	.10886	.54925
Q70_Int_Cowrk	Equal variances assumed	.095	.759	.153	129	.879	.00717	.04684	-.08549	.09983
	Equal variances not assumed			.159	37.938	.874	.00717	.04503	-.08400	.09834
Q70_Int_Supr	Equal variances assumed	20.847	.000	1.936	129	.055*	.13208	.06824	-.00293	.26708
	Equal variances not assumed			3.997	105.000	.000***	.13208	.03304	.06656	.19759

Q70_Int_Vendor	Equal variances assumed	3.864	.051	-.904	129	.368	-.07811	.08640	-.24906	.09283
	Equal variances not assumed			-1.016	42.203	.315	-.07811	.07690	-.23327	.07705
Q70_Int_Oth_Dept	Equal variances assumed	6.879	.010	1.516	129	.132	.16830	.11104	-.05139	.38800
	Equal variances not assumed			1.538	36.819	.133	.16830	.10942	-.05345	.39005
Q70_Int_Oth_Intrn	Equal variances assumed	9.423	.003	1.270	129	.207	.13019	.10255	-.07271	.33309
	Equal variances not assumed			1.390	40.634	.172	.13019	.09366	-.05902	.31940

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 19: T-tests results on survey questions comparing students interning for the first time to those who participated in previous internships

Group Statistics

First_Internship		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Previous	65	3.7538	1.06111	.13161
	First int	66	3.8788	1.10266	.13573
Q28_Complex_Dec	Previous	65	3.4154	.95020	.11786
	First int	64	3.3750	.93435	.11679
Q29_Chall_Work	Previous	64	4.0156	.80656	.10082
	First int	66	3.9394	.78208	.09627
Q30_Adeq_Res	Previous	65	2.5231	1.20036	.14889
	First int	66	2.6364	1.07612	.13246
Q31_Influ_Amt	Previous	65	3.9231	.92378	.11458
	First int	66	3.6667	.86528	.10651
Q32_Influ_Dec	Previous	65	3.8000**	.92195	.11435
	First int	65	3.4308**	.90085	.11174
Q33_Do_Diff	Previous	65	3.9538	.99107	.12293
	First int	66	3.8182	1.00627	.12386
Q34_Impact_Org	Previous	65	3.7231	.78078	.09684
	First int	66	3.7727	.90801	.11177
Q35_Work_On_Own	Previous	65	4.2154	.80024	.09926
	First int	66	4.1364	.85730	.10553
Q36_Indp_Tht_Act	Previous	65	4.1692	.82100	.10183
	First int	65	4.0000	.82916	.10284
Q37_Clear_Obj	Previous	65	3.6769	.92039	.11416
	First int	66	3.8788	.98473	.12121
Q38_Choose_Meth	Previous	65	4.0462	.87376	.10838
	First int	66	3.9091	.92366	.11369
Q39_Help_Cowrk	Previous	65	4.8769*	.33108	.04107
	First int	66	4.6667*	.82896	.10204
Q40_Help_Supr	Previous	65	4.5846**	.80801	.10022
	First int	66	4.2121**	1.01550	.12500
Q41_Achiev_App	Previous	65	4.4462	.79118	.09813
	First int	65	4.4615	.73052	.09061
Q42_Supr_Enc_Dec	Previous	64	3.9063	1.15083	.14385
	First int	66	4.0606	.97474	.11998
Q43_Supr_Enc_Spk	Previous	65	4.0923	.97984	.12153
	First int	66	4.1818	.89286	.10990
Q44_Supr_Dev_Sklls	Previous	65	3.9846	1.03821	.12877

	First int	66	4.1818	.95931	.11808
Q45_Clim_Comp	Previous	65	2.6462	.97517	.12096
	First int	66	2.5909	.92781	.11421
Q46_Clim_Enc_Supp	Previous	65	4.5231**	.58916	.07308
	First int	66	4.2273**	.92479	.11383
Q47_Clim_Relax	Previous	65	4.2000	.81394	.10096
	First int	65	4.1385	.72623	.09008
Q48_Clim_Rigid	Previous	65	2.4769	.95374	.11830
	First int	66	2.6364	.90531	.11144
Q49_Work_Init	Previous	65	4.1385	.70438	.08737
	First int	66	3.9091	.90685	.11163
Q50_Recog_Gd_Job	Previous	65	4.2000	.73314	.09094
	First int	66	4.0606	.87493	.10770
Q51_Mgmt_Hlth_Wbng	Previous	65	4.2462	.82974	.10292
	First int	66	4.1970	.84525	.10404
Q52_Sense_Team	Previous	65	4.2615	.83436	.10349
	First int	66	4.1364	.89247	.10986
Q53_Part_Of_Team	Previous	64	4.1094	.96143	.12018
	First int	65	3.9538	.94258	.11691
Q54_Curr_Skls_Use	Previous	65	4.0923	.96377	.11954
	First int	66	3.9091	.95639	.11772
Q55_Req_New_Skls	Previous	65	4.2462	.81069	.10055
	First int	66	4.0758	.88249	.10863
Q56_Cnct_Wrk_Sch	Previous	64	3.4219	.92247	.11531
	First int	66	3.3788	.92429	.11377
Q57_Apply_Cls_Wrk	Previous	65	3.4154	.93361	.11580
	First int	66	3.3182	.94721	.11659
Q58_Fdbk_On_Job	Previous	65	3.8154*	.86408	.10718
	First int	66	3.5455*	.86259	.10618
Q59_Wrk_W_Others	Previous	65	3.9846	.99204	.12305
	First int	66	3.8636	.89247	.10986
Q60_Wrk_W_Job	Previous	65	3.8154	1.13044	.14021
	First int	65	3.8308	1.05430	.13077
Q61_Cowrk_Dev_Skl	Previous	65	4.2308	.96451	.11963
	First int	66	4.1364	1.00593	.12382
Q62_Talk_Inform	Previous	65	4.26	.776	.096
	First int	65	4.20	.754	.094
Q63_Intrct_Out_Wrk	Previous	65	3.1231	1.15255	.14296
	First int	66	3.2273	1.26242	.15539
C1_27_34_Job_Tsk_Char	Previous	65	3.6390	.54780	.06795
	First int	66	3.5671	.54064	.06655

C2_35_38_Level_Dir	Previous	65	4.0269	.56098	.06958
	First int	66	3.9785	.61678	.07592
C3_39_53_Org_Cult	Previous	65	4.0465	.43348	.05377
	First int	66	3.9745	.53480	.06583
C4_54_57_Skl_Know	Previous	65	3.7987	.68178	.08456
	First int	66	3.6705	.73270	.09019
C5_58_63_Soc_Int	Previous	65	3.8718	.63518	.07878
	First int	66	3.8015	.68788	.08467
Q66_Task_Assgn_Supr	Previous	65	.8923	.31240	.03875
	First int	66	.8788	.32887	.04048
Q66_Task_Assgn_Cowrk	Previous	65	.6462**	.48188	.05977
	First int	66	.4394**	.50012	.06156
Q66_Task_Req_Dec	Previous	65	.7231	.45096	.05593
	First int	66	.6515	.48014	.05910
Q66_Task_Req_Tech_Sk	Previous	65	.7385*	.44289	.05493
	First int	66	.5909*	.49543	.06098
Q66_Task_Req_Nont_Sk	Previous	65	.8000	.40311	.05000
	First int	66	.8030	.40076	.04933
Q66_Task_Id_Own	Previous	65	.5385	.50240	.06231
	First int	66	.6212	.48880	.06017
Q66_Task_Req_Collab_Int	Previous	65	.8462	.36361	.04510
	First int	66	.7879	.41194	.05071
Q66_Task_Req_Collab_Ext	Previous	65	.3692	.48635	.06032
	First int	66	.2424	.43183	.05316
Q67_Ask_Cowrk_Asst	Previous	65	.8769	.33108	.04107
	First int	66	.8636	.34580	.04257
Q67_Ask_Supr_Asst	Previous	65	.6769	.47129	.05846
	First int	66	.7273	.44877	.05524
Q67_Figure_Out_Own	Previous	65	.9538**	.21145	.02623
	First int	66	.8485**	.36130	.04447
Q67_Org_Resource	Previous	65	.6154	.49029	.06081
	First int	66	.5455	.50175	.06176
Q67_Public_Resource	Previous	65	.7692	.42460	.05267
	First int	66	.7576	.43183	.05316
Q68_Coworkers	Previous	65	1.0000*	0.00000	0.00000
	First int	66	.9545*	.20990	.02584
Q68_Supr	Previous	65	.8923	.31240	.03875
	First int	66	.8939	.31027	.03819
Q68_Comp_Materials	Previous	65	.7692	.42460	.05267
	First int	66	.7727	.42228	.05198
Q68_Comp_Train	Previous	65	.6615	.47687	.05915

	First int	66	.5758	.49801	.06130
Q70_Int_Client	Previous	65	.2000	.40311	.05000
	First int	66	.2273	.42228	.05198
Q70_Int_Cowrk	Previous	65	.9846*	.12403	.01538
	First int	66	.9242*	.26664	.03282
Q70_Int_Supr	Previous	65	.9077	.29171	.03618
	First int	66	.8788	.32887	.04048
Q70_Int_Vendor	Previous	65	.1385	.34807	.04317
	First int	66	.2273	.42228	.05198
Q70_Int_Oth_Dept	Previous	65	.5692	.49904	.06190
	First int	66	.4394	.50012	.06156
Q70_Int_Oth_Intrn	Previous	65	.8154***	.39100	.04850
	First int	66	.5758***	.49801	.06130

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Differ-ence	Std. Error Differ-ence	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	.000	.985	-.661	129	.510	-.12494	.18912	-.49912	.24923
	Equal variances not assumed			-.661	128.932	.510	-.12494	.18906	-.49901	.24912
Q28_Complex_Dec	Equal variances assumed	.019	.890	.243	127	.808	.04038	.16595	-.28800	.36877
	Equal variances not assumed			.243	127.000	.808	.04038	.16593	-.28795	.36872
Q29_Chall_Work	Equal variances assumed	.536	.466	.547	128	.585	.07623	.13933	-.19946	.35193
	Equal variances not assumed			.547	127.513	.585	.07623	.13940	-.19961	.35207
Q30_Adeq_Res	Equal variances assumed	.774	.381	-.569	129	.570	-.11329	.19912	-.50724	.28067
	Equal variances not assumed			-.568	127.043	.571	-.11329	.19928	-.50763	.28105
Q31_Influ_Amt	Equal variances assumed	.075	.785	1.640	129	.103	.25641	.15636	-.05295	.56577
	Equal variances not assumed			1.639	128.166	.104	.25641	.15644	-.05313	.56595
Q32_Influ_Dec	Equal variances assumed	.819	.367	2.309	128	.023**	.36923	.15988	.05288	.68558

	Equal variances not assumed			2.309	127.931	.023**	.36923	.15988	.05288	.68559
Q33_Do_Diff	Equal variances assumed	.154	.696	.777	129	.438	.13566	.17453	-.20965	.48097
	Equal variances not assumed			.777	129.000	.438	.13566	.17451	-.20960	.48093
Q34_Impact_Org	Equal variances assumed	1.334	.250	-.335	129	.738	-.04965	.14806	-.34259	.24329
	Equal variances not assumed			-.336	126.704	.738	-.04965	.14789	-.34230	.24300
Q35_Work_On_Own	Equal variances assumed	.068	.795	.545	129	.587	.07902	.14495	-.20776	.36581
	Equal variances not assumed			.545	128.633	.586	.07902	.14487	-.20762	.36566
Q36_Indp_Tht_Act	Equal variances assumed	.086	.770	1.169	128	.244	.16923	.14473	-.11714	.45560
	Equal variances not assumed			1.169	127.987	.244	.16923	.14473	-.11714	.45560
Q37_Clear_Obj	Equal variances assumed	.024	.877	-1.212	129	.228	-.20186	.16659	-.53148	.12775
	Equal variances not assumed			-1.212	128.651	.228	-.20186	.16651	-.53131	.12758
Q38_Choose_Meth	Equal variances assumed	.000	.999	.872	129	.385	.13706	.15714	-.17384	.44797
	Equal variances not assumed			.873	128.793	.385	.13706	.15707	-.17372	.44784
Q39_Help_Cowrk	Equal variances assumed	15.816	.000	1.901	129	.060*	.21026	.11061	-.00858	.42909
	Equal variances not assumed			1.912	85.484	.059*	.21026	.10999	-.00842	.42893
Q40_Help_Supr	Equal variances assumed	4.494	.036	2.321	129	.022**	.37249	.16049	.05495	.69003

	Equal variances not assumed			2.325	123.569	.022**	.37249	.16022	.05537	.68962
Q41_Achiev_App	Equal variances assumed	.064	.801	-.115	128	.908	-.01538	.13357	-.27967	.24890
	Equal variances not assumed			-.115	127.194	.908	-.01538	.13357	-.27969	.24892
Q42_Supr_Enc_Dec	Equal variances assumed	1.774	.185	-.826	128	.410	-.15436	.18684	-.52406	.21535
	Equal variances not assumed			-.824	123.305	.412	-.15436	.18732	-.52514	.21643
Q43_Supr_Enc_Spk	Equal variances assumed	.426	.515	-.547	129	.586	-.08951	.16374	-.41348	.23446
	Equal variances not assumed			-.546	127.512	.586	-.08951	.16386	-.41374	.23472
Q44_Supr_Dev_Sklls	Equal variances assumed	.001	.982	-1.129	129	.261	-.19720	.17461	-.54268	.14827
	Equal variances not assumed			-1.129	127.865	.261	-.19720	.17472	-.54292	.14851
Q45_Clim_Comp	Equal variances assumed	.016	.899	.332	129	.740	.05524	.16629	-.27376	.38425
	Equal variances not assumed			.332	128.455	.740	.05524	.16635	-.27390	.38439
Q46_Clim_Enc_Supp	Equal variances assumed	5.924	.016	2.180	129	.031**	.29580	.13571	.02729	.56431
	Equal variances not assumed			2.187	110.546	.031**	.29580	.13527	.02774	.56387
Q47_Clim_Relax	Equal variances assumed	2.577	.111	.455	128	.650	.06154	.13530	-.20618	.32925
	Equal variances not assumed			.455	126.371	.650	.06154	.13530	-.20621	.32929
Q48_Clim_Rigid	Equal variances assumed	.359	.550	-.981	129	.328	-.15944	.16245	-.48086	.16198

	Equal variances not assumed			-.981	128.416	.328	-.15944	.16252	-.48100	.16212
Q49_Work_Init	Equal variances assumed	2.763	.099	1.615	129	.109	.22937	.14202	-.05162	.51036
	Equal variances not assumed			1.618	122.385	.108	.22937	.14175	-.05123	.50997
Q50_Recog_Gd_Job	Equal variances assumed	3.722	.056	.988	129	.325	.13939	.14114	-.13986	.41865
	Equal variances not assumed			.989	125.787	.325	.13939	.14095	-.13955	.41834
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	.207	.650	.336	129	.737	.04918	.14637	-.24040	.33877
	Equal variances not assumed			.336	128.999	.737	.04918	.14634	-.24036	.33873
Q52_Sense_Team	Equal variances assumed	.119	.731	.829	129	.409	.12517	.15100	-.17359	.42394
	Equal variances not assumed			.829	128.654	.408	.12517	.15092	-.17344	.42379
Q53_Part_Of_Team	Equal variances assumed	.012	.911	.928	127	.355	.15553	.16764	-.17620	.48726
	Equal variances not assumed			.928	126.841	.355	.15553	.16767	-.17625	.48731
Q54_Curr_Skls_Use	Equal variances assumed	.048	.826	1.092	129	.277	.18322	.16777	-.14871	.51515
	Equal variances not assumed			1.092	128.931	.277	.18322	.16778	-.14873	.51517
Q55_Req_New_Skls	Equal variances assumed	.000	.996	1.150	129	.252	.17040	.14812	-.12266	.46345
	Equal variances not assumed			1.151	128.383	.252	.17040	.14802	-.12248	.46328
Q56_Cnct_Wrk_Sch	Equal variances assumed	.070	.791	.266	128	.791	.04309	.16199	-.27744	.36362

	Equal variances not assumed			.266	127.892	.791	.04309	.16199	-.27744	.36361
Q57_Apply_Cls_Wrk	Equal variances assumed	.029	.865	.591	129	.555	.09720	.16435	-.22796	.42237
	Equal variances not assumed			.592	129.000	.555	.09720	.16433	-.22792	.42233
Q58_Fdbk_On_Job	Equal variances assumed	.727	.395	1.789	129	.076*	.26993	.15086	-.02856	.56842
	Equal variances not assumed			1.789	128.962	.076*	.26993	.15087	-.02856	.56842
Q59_Wrk_W_Others	Equal variances assumed	.005	.944	.734	129	.464	.12098	.16482	-.20512	.44707
	Equal variances not assumed			.733	127.149	.465	.12098	.16495	-.20543	.44738
Q60_Wrk_W_Job	Equal variances assumed	.003	.958	-.080	128	.936	-.01538	.19173	-.39475	.36399
	Equal variances not assumed			-.080	127.383	.936	-.01538	.19173	-.39477	.36400
Q61_Cowrk_Dev_Skl	Equal variances assumed	.002	.969	.548	129	.585	.09441	.17223	-.24635	.43517
	Equal variances not assumed			.548	128.909	.584	.09441	.17217	-.24625	.43506
Q62_Talk_Inform	Equal variances assumed	.357	.551	.458	128	.647	.062	.134	-.204	.327
	Equal variances not assumed			.458	127.894	.647	.062	.134	-.204	.327
Q63_Intrct_Out_Wrk	Equal variances assumed	1.848	.176	-.493	129	.623	-.10420	.21130	-.52225	.31386
	Equal variances not assumed			-.493	128.269	.623	-.10420	.21115	-.52198	.31359
	Equal variances assumed	.029	.866	.756	129	.451	.07191	.09510	-.11624	.26006

C1_27_34_Job_Tsk_Char	Equal variances not assumed			.756	128.895	.451	.07191	.09511	-.11626	.26008
C2_35_38_Level_Dir	Equal variances assumed	1.002	.319	.470	129	.639	.04839	.10306	-.15551	.25229
	Equal variances not assumed			.470	128.195	.639	.04839	.10298	-.15537	.25216
C3_39_53_Org_Cult	Equal variances assumed	1.362	.245	.846	129	.399	.07201	.08513	-.09643	.24044
	Equal variances not assumed			.847	124.416	.399	.07201	.08500	-.09622	.24023
C4_54_57_Skl_Know	Equal variances assumed	.260	.611	1.037	129	.302	.12827	.12370	-.11648	.37302
	Equal variances not assumed			1.037	128.589	.301	.12827	.12363	-.11635	.37289
C5_58_63_Soc_Int	Equal variances assumed	.304	.583	.607	129	.545	.07021	.11573	-.15876	.29918
	Equal variances not assumed			.607	128.471	.545	.07021	.11566	-.15863	.29905
Q66_Task_Assgn_Supr	Equal variances assumed	.233	.630	.241	129	.810	.01352	.05606	-.09740	.12444
	Equal variances not assumed			.241	128.833	.810	.01352	.05604	-.09735	.12439
Q66_Task_Assgn_Cowrk	Equal variances assumed	3.504	.063	2.409	129	.017**	.20676	.08583	.03695	.37657
	Equal variances not assumed			2.410	128.939	.017**	.20676	.08580	.03700	.37652
Q66_Task_Req_Dec	Equal variances assumed	3.061	.083	.879	129	.381	.07156	.08141	-.08952	.23264
	Equal variances not assumed			.879	128.712	.381	.07156	.08137	-.08944	.23256
	Equal variances assumed	11.798	.001	1.796	129	.075*	.14755	.08215	-.01498	.31008

Q66_Task_Req_Tech_Sk	Equal variances not assumed			1.798	127.814	.075*	.14755	.08208	-.01485	.30996
Q66_Task_Req_Nont_Sk	Equal variances assumed	.007	.931	-.043	129	.966	-.00303	.07024	-.14199	.13593
	Equal variances not assumed			-.043	128.942	.966	-.00303	.07024	-.14200	.13594
Q66_Task_Id_Own	Equal variances assumed	2.926	.090	-.956	129	.341	-.08275	.08660	-.25410	.08860
	Equal variances not assumed			-.955	128.764	.341	-.08275	.08662	-.25414	.08863
Q66_Task_Req_Collab_Int	Equal variances assumed	2.991	.086	.858	129	.393	.05828	.06793	-.07612	.19267
	Equal variances not assumed			.859	127.488	.392	.05828	.06786	-.07601	.19256
Q66_Task_Req_Collab_Ext	Equal variances assumed	9.637	.002	1.579	129	.117	.12681	.08033	-.03213	.28574
	Equal variances not assumed			1.577	126.737	.117	.12681	.08040	-.03230	.28591
Q67_Ask_Cowrk_Asst	Equal variances assumed	.202	.654	.225	129	.823	.01329	.05917	-.10377	.13035
	Equal variances not assumed			.225	128.898	.823	.01329	.05915	-.10374	.13031
Q67_Ask_Supr_Asst	Equal variances assumed	1.561	.214	-.626	129	.532	-.05035	.08040	-.20942	.10872
	Equal variances not assumed			-.626	128.469	.532	-.05035	.08043	-.20948	.10879
Q67_Figure_Out_Own	Equal variances assumed	18.637	.000	2.033	129	.044**	.10536	.05183	.00282	.20790
	Equal variances not assumed			2.041	105.157	.044**	.10536	.05163	.00299	.20773
Q67_Org_Resource	Equal variances assumed	2.240	.137	.807	129	.421	.06993	.08669	-.10159	.24145

	Equal variances not assumed			.807	128.992	.421	.06993	.08668	-.10156	.24142
Q67_Public_Resource	Equal variances assumed	.097	.756	.156	129	.876	.01166	.07484	-.13641	.15972
	Equal variances not assumed			.156	129.000	.876	.01166	.07483	-.13639	.15970
Q68_Coworkers	Equal variances assumed	13.442	.000	1.746	129	.083*	.04545	.02604	-.00606	.09697
	Equal variances not assumed			1.759	65.000	.083*	.04545	.02584	-.00614	.09705
Q68_Supr	Equal variances assumed	.004	.952	-.030	129	.976	-.00163	.05440	-.10927	.10601
	Equal variances not assumed			-.030	128.936	.976	-.00163	.05441	-.10928	.10601
Q68_Comp_Materials	Equal variances assumed	.009	.925	-.047	129	.962	-.00350	.07399	-.14989	.14290
	Equal variances not assumed			-.047	128.944	.962	-.00350	.07400	-.14990	.14291
Q68_Comp_Train	Equal variances assumed	3.706	.056	1.007	129	.316	.08578	.08521	-.08281	.25438
	Equal variances not assumed			1.007	128.899	.316	.08578	.08518	-.08276	.25432
Q70_Int_Client	Equal variances assumed	.573	.450	-.378	129	.706	-.02727	.07215	-.17002	.11548
	Equal variances not assumed			-.378	128.876	.706	-.02727	.07212	-.16997	.11543
Q70_Int_Cowrk	Equal variances assumed	11.965	.001	1.657	129	.100	.06037	.03643	-.01170	.13245
	Equal variances not assumed			1.666	92.182	.099*	.06037	.03625	-.01162	.13236
Q70_Int_Supr	Equal variances assumed	1.141	.288	.532	129	.596	.02890	.05434	-.07862	.13643

	Equal variances not assumed			.532	127.618	.595	.02890	.05429	-.07853	.13634
Q70_Int_Vendor	Equal variances assumed	7.147	.008	-1.312	129	.192	-.08881	.06767	-.22270	.04507
	Equal variances not assumed			-1.314	125.134	.191	-.08881	.06757	-.22254	.04492
Q70_Int_Oth_Dept	Equal variances assumed	.039	.844	1.487	129	.139	.12984	.08730	-.04289	.30256
	Equal variances not assumed			1.487	128.977	.139	.12984	.08730	-.04289	.30256
Q70_Int_Oth_Intrn	Equal variances assumed	34.822	.000	3.060	129	.003***	.23963	.07831	.08469	.39456
	Equal variances not assumed			3.066	122.923	.003***	.23963	.07817	.08490	.39435

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 20: T-tests results on survey questions comparing Pell recipients to students who did not receive Pell grants

Group Statistics

Pell Recipient		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Not Pell	117	3.8120	1.07424	.09931
	Pell	14	3.8571	1.16732	.31198
Q28_Complex_Dec	Not Pell	115	3.3826	.93267	.08697
	Pell	14	3.5000	1.01905	.27235
Q29_Chall_Work	Not Pell	117	3.9487	.79704	.07369
	Pell	13	4.2308	.72501	.20108
Q30_Adeq_Res	Not Pell	117	2.5128	1.07170	.09908
	Pell	14	3.1429	1.51186	.40406
Q31_Influ_Amt	Not Pell	117	3.7863	.84923	.07851
	Pell	14	3.8571	1.29241	.34541
Q32_Influ_Dec	Not Pell	116	3.6034	.88346	.08203
	Pell	14	3.7143	1.26665	.33853
Q33_Do_Diff	Not Pell	117	3.9231	.95731	.08850
	Pell	14	3.5714	1.28388	.34313
Q34_Impact_Org	Not Pell	117	3.7265	.82654	.07641
	Pell	14	3.9286	.99725	.26653
Q35_Work_On_Own	Not Pell	117	4.1966	.82252	.07604
	Pell	14	4.0000	.87706	.23440
Q36_Indp_Tht_Act	Not Pell	116	4.0948	.82334	.07645
	Pell	14	4.0000	.87706	.23440
Q37_Clear_Obj	Not Pell	117	3.7521	.94601	.08746
	Pell	14	4.0000	1.03775	.27735
Q38_Choose_Meth	Not Pell	117	3.9658	.87031	.08046
	Pell	14	4.0714	1.14114	.30498
Q39_Help_Cowrk	Not Pell	117	4.7863	.56977	.05268
	Pell	14	4.6429	1.08182	.28913
Q40_Help_Supr	Not Pell	117	4.4188	.89288	.08255
	Pell	14	4.2143	1.25137	.33444
Q41_Achiev_App	Not Pell	116	4.4483	.77285	.07176
	Pell	14	4.5000	.65044	.17384
Q42_Supr_Enc_Dec	Not Pell	116	4.0086	1.05084	.09757
	Pell	14	3.7857	1.18831	.31759
Q43_Supr_Enc_Spk	Not Pell	117	4.1368	.92760	.08576
	Pell	14	4.1429	1.02711	.27451
Q44_Supr_Dev_Sklls	Not Pell	117	4.0598	1.02798	.09504

	Pell	14	4.2857	.72627	.19410
Q45_Clim_Comp	Not Pell	117	2.6581	.94834	.08767
	Pell	14	2.2857	.91387	.24424
Q46_Clim_Enc_Supp	Not Pell	117	4.3675	.78343	.07243
	Pell	14	4.4286	.85163	.22761
Q47_Clim_Relax	Not Pell	116	4.1638	.76833	.07134
	Pell	14	4.2143	.80178	.21429
Q48_Clim_Rigid	Not Pell	117	2.4957	.86726	.08018
	Pell	14	3.0714	1.26881	.33910
Q49_Work_Init	Not Pell	117	4.0256	.79287	.07330
	Pell	14	4.0000	1.03775	.27735
Q50_Recog_Gd_Job	Not Pell	117	4.1282	.81514	.07536
	Pell	14	4.1429	.77033	.20588
Q51_Mgmt_Hlth_Wbng	Not Pell	117	4.1880	.85027	.07861
	Pell	14	4.5000	.65044	.17384
Q52_Sense_Team	Not Pell	117	4.1709	.87386	.08079
	Pell	14	4.4286	.75593	.20203
Q53_Part_Of_Team	Not Pell	115	4.0261	.94089	.08774
	Pell	14	4.0714	1.07161	.28640
Q54_Curr_Skls_Use	Not Pell	117	3.9744	.94195	.08708
	Pell	14	4.2143	1.12171	.29979
Q55_Req_New_Skls	Not Pell	117	4.1282	.86641	.08010
	Pell	14	4.4286	.64621	.17271
Q56_Cnct_Wrk_Sch	Not Pell	117	3.3846	.92705	.08571
	Pell	13	3.5385	.87706	.24325
Q57_Apply_Cls_Wrk	Not Pell	117	3.3419	.93921	.08683
	Pell	14	3.5714	.93761	.25059
Q58_Fdbk_On_Job	Not Pell	117	3.6752	.86929	.08037
	Pell	14	3.7143	.91387	.24424
Q59_Wrk_W_Others	Not Pell	117	3.9402	.93117	.08609
	Pell	14	3.7857	1.05090	.28087
Q60_Wrk_W_Job	Not Pell	116	3.8707	1.08371	.10062
	Pell	14	3.4286	1.08941	.29116
Q61_Cowrk_Dev_Skl	Not Pell	117	4.1624	.99963	.09242
	Pell	14	4.3571	.84190	.22501
Q62_Talk_Inform	Not Pell	117	4.24	.750	.069
	Pell	13	4.15	.899	.249
Q63_Intrct_Out_Wrk	Not Pell	117	3.1282	1.17105	.10826
	Pell	14	3.5714	1.45255	.38821
C1_27_34_Job_Tsk_Char	Not Pell	117	3.5881	.52572	.04860
	Pell	14	3.7258	.68365	.18271

C2_35_38_Level_Dir	Not Pell	117	4.0007	.57522	.05318
	Pell	14	4.0179	.71026	.18982
C3_39_53_Org_Cult	Not Pell	117	4.0057	.49095	.04539
	Pell	14	4.0476	.46449	.12414
C4_54_57_Skl_Know	Not Pell	117	3.7073	.70274	.06497
	Pell	14	3.9584	.73944	.19762
C5_58_63_Soc_Int	Not Pell	117	3.8362	.64589	.05971
	Pell	14	3.8381	.80131	.21416
Q66_Task_Assgn_Supr	Not Pell	117	.8718***	.33576	.03104
	Pell	14	1.0000***	0.00000	0.00000
Q66_Task_Assgn_Cowrk	Not Pell	117	.5385	.50066	.04629
	Pell	14	.5714	.51355	.13725
Q66_Task_Req_Dec	Not Pell	117	.6838	.46701	.04317
	Pell	14	.7143	.46881	.12529
Q66_Task_Req_Tech_Sk	Not Pell	117	.6581	.47638	.04404
	Pell	14	.7143	.46881	.12529
Q66_Task_Req_Nont_Sk	Not Pell	117	.8120	.39242	.03628
	Pell	14	.7143	.46881	.12529
Q66_Task_Id_Own	Not Pell	117	.5983	.49235	.04552
	Pell	14	.4286	.51355	.13725
Q66_Task_Req_Collab_Int	Not Pell	117	.8291	.37808	.03495
	Pell	14	.7143	.46881	.12529
Q66_Task_Req_Collab_Ext	Not Pell	117	.3162	.46701	.04317
	Pell	14	.2143	.42582	.11380
Q67_Ask_Cowrk_Asst	Not Pell	117	.8718	.33576	.03104
	Pell	14	.8571	.36314	.09705
Q67_Ask_Supr_Asst	Not Pell	117	.6838	.46701	.04317
	Pell	14	.8571	.36314	.09705
Q67_Figure_Out_Own	Not Pell	117	.9145	.28078	.02596
	Pell	14	.7857	.42582	.11380
Q67_Org_Resource	Not Pell	117	.5812	.49549	.04581
	Pell	14	.5714	.51355	.13725
Q67_Public_Resource	Not Pell	117	.7692	.42314	.03912
	Pell	14	.7143	.46881	.12529
Q68_Coworkers	Not Pell	117	.9744*	.15874	.01468
	Pell	14	1.0000*	0.00000	0.00000
Q68_Supr	Not Pell	117	.9060	.29311	.02710
	Pell	14	.7857	.42582	.11380
Q68_Comp_Materials	Not Pell	117	.7778	.41753	.03860
	Pell	14	.7143	.46881	.12529
Q68_Comp_Train	Not Pell	117	.6581**	.47638	.04404

	Pell	14	.2857**	.46881	.12529
Q70_Int_Client	Not Pell	117	.2308*	.42314	.03912
	Pell	14	.0714*	.26726	.07143
Q70_Int_Cowrk	Not Pell	117	.9573	.20313	.01878
	Pell	14	.9286	.26726	.07143
Q70_Int_Supr	Not Pell	117	.8803***	.32596	.03013
	Pell	14	1.0000***	0.00000	0.00000
Q70_Int_Vendor	Not Pell	117	.1795	.38541	.03563
	Pell	14	.2143	.42582	.11380
Q70_Int_Oth_Dept	Not Pell	117	.5043	.50213	.04642
	Pell	14	.5000	.51887	.13868
Q70_Int_Oth_Intrn	Not Pell	117	.7094	.45599	.04216
	Pell	14	.5714	.51355	.13725

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Differ-ence	Std. Error Differ-ence	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	.037	.847	-.147	129	.883	-.04518	.30655	-.65169	.56134
	Equal variances not assumed			-.138	15.750	.892	-.04518	.32741	-.74014	.64979
Q28_Complex_Dec	Equal variances assumed	.329	.567	-.440	127	.660	-.11739	.26661	-.64496	.41018
	Equal variances not assumed			-.411	15.768	.687	-.11739	.28590	-.72420	.48942
Q29_Chall_Work	Equal variances assumed	.001	.977	-1.22	128	.225	-.28205	.23113	-.73937	.17527
	Equal variances not assumed			-1.32	15.411	.207	-.28205	.21416	-.73746	.17336
Q30_Adeq_Res	Equal variances assumed	6.05	.015	-1.98	129	.050*	-.63004	.31784	-1.2589	-.0012
	Equal variances not assumed			-1.51	14.604	.151	-.63004	.41603	-1.5189	.2588
Q31_Influ_Amt	Equal variances assumed	5.85	.017	-.277	129	.782	-.07082	.25559	-.57651	.43488
	Equal variances not assumed			-.200	14.374	.844	-.07082	.35422	-.82870	.68706
	Equal variances assumed	2.78	.098	-.421	128	.674	-.11084	.26302	-.63126	.40958

Q32_Influ_Dec	Equal variances not assumed			-.318	14.566	.755	-.11084	.34832	-.85520	.63353
Q33_Do_Diff	Equal variances assumed	1.57	.212	1.250	129	.214	.35165	.28141	-.20513	.90843
	Equal variances not assumed			.992	14.780	.337	.35165	.35436	-.40464	1.1080
Q34_Impact_Org	Equal variances assumed	.003	.958	-.845	129	.399	-.20208	.23905	-.67505	.27090
	Equal variances not assumed			-.729	15.213	.477	-.20208	.27726	-.79233	.38818
Q35_Work_On_Own	Equal variances assumed	.252	.617	.839	129	.403	.19658	.23421	-.26681	.65997
	Equal variances not assumed			.798	15.861	.437	.19658	.24643	-.32620	.71936
Q36_Indp_Tht_Act	Equal variances assumed	.055	.815	.404	128	.687	.09483	.23454	-.36924	.55890
	Equal variances not assumed			.385	15.892	.706	.09483	.24655	-.42813	.61779
Q37_Clear_Obj	Equal variances assumed	.056	.813	-.917	129	.361	-.24786	.27026	-.78258	.28685
	Equal variances not assumed			-.852	15.697	.407	-.24786	.29081	-.86533	.36960
Q38_Choose_Meth	Equal variances assumed	.759	.385	-.414	129	.679	-.10562	.25489	-.60992	.39868
	Equal variances not assumed			-.335	14.865	.742	-.10562	.31542	-.77845	.56721
Q39_Help_Cowrk	Equal variances assumed	3.13	.079	.792	129	.430	.14347	.18105	-.21474	.50168
	Equal variances not assumed			.488	13.876	.633	.14347	.29389	-.48739	.77432
	Equal variances assumed	3.63	.059	.773	129	.441	.20452	.26449	-.31878	.72782

Q40_Help_Supr	Equal variances not assumed			.594	14.626	.562	.20452	.34448	-.53136	.94040
Q41_Achiev_App	Equal variances assumed	.431	.512	-.240	128	.811	-.05172	.21540	-.47793	.37448
	Equal variances not assumed			-.275	17.749	.786	-.05172	.18807	-.44724	.34379
Q42_Supr_Enc_Dec	Equal variances assumed	.463	.497	.739	128	.461	.22291	.30149	-.37365	.81946
	Equal variances not assumed			.671	15.554	.512	.22291	.33224	-.48305	.92887
Q43_Supr_Enc_Spk	Equal variances assumed	.581	.447	-.023	129	.982	-.00611	.26530	-.53100	.51879
	Equal variances not assumed			-.021	15.645	.983	-.00611	.28759	-.61689	.60468
Q44_Supr_Dev_Sklls	Equal variances assumed	1.52	.220	-.797	129	.427	-.22589	.28328	-.78636	.33459
	Equal variances not assumed			-1.045	19.852	.309	-.22589	.21612	-.67692	.22515
Q45_Clim_Comp	Equal variances assumed	.037	.849	1.394	129	.166	.37241	.26722	-.15630	.90112
	Equal variances not assumed			1.435	16.535	.170	.37241	.25950	-.17627	.92108
Q46_Clim_Enc_Supp	Equal variances assumed	.001	.972	-.273	129	.785	-.06105	.22357	-.50339	.38129
	Equal variances not assumed			-.256	15.748	.802	-.06105	.23885	-.56806	.44596
Q47_Clim_Relax	Equal variances assumed	.369	.544	-.231	128	.818	-.05049	.21836	-.48256	.38158
	Equal variances not assumed			-.224	16.019	.826	-.05049	.22585	-.52922	.42824
	Equal variances assumed	2.49	.117	-2.22	129	.028**	-.57570	.25897	-1.0881	-.0633

Q48_Clim_Rigid	Equal variances not assumed			-1.65	14.489	.120	-.57570	.34845	-1.3207	.16930
Q49_Work_Init	Equal variances assumed	.695	.406	.110	129	.912	.02564	.23214	-.43366	.48494
	Equal variances not assumed			.089	14.871	.930	.02564	.28687	-.58628	.63756
Q50_Recog_Gd_Job	Equal variances assumed	.204	.652	-.064	129	.949	-.01465	.22928	-.46828	.43898
	Equal variances not assumed			-.067	16.683	.948	-.01465	.21924	-.47787	.44857
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	1.51	.219	-1.33	129	.187	-.31197	.23538	-.77766	.15373
	Equal variances not assumed			-1.64	18.772	.119	-.31197	.19079	-.71161	.08768
Q52_Sense_Team	Equal variances assumed	.271	.604	-1.06	129	.293	-.25763	.24397	-.74034	.22508
	Equal variances not assumed			-1.18	17.440	.252	-.25763	.21758	-.71581	.20055
Q53_Part_Of_Team	Equal variances assumed	.317	.575	-.168	127	.867	-.04534	.27035	-.58032	.48964
	Equal variances not assumed			-.151	15.539	.882	-.04534	.29954	-.68187	.59119
Q54_Curr_Skls_Use	Equal variances assumed	.942	.334	-.882	129	.379	-.23993	.27194	-.77796	.29811
	Equal variances not assumed			-.769	15.274	.454	-.23993	.31218	-.90429	.42444
Q55_Req_New_Skls	Equal variances assumed	.637	.426	-1.25	129	.212	-.30037	.23948	-.77418	.17345
	Equal variances not assumed			-1.58	19.095	.131	-.30037	.19038	-.69869	.09796
	Equal variances assumed	.140	.709	-.570	128	.569	-.15385	.26969	-.68747	.37978

Q56_Cnct_Wrk_Sch	Equal variances not assumed			-.597	15.140	.560	-.15385	.25791	-.70312	.39543
Q57_Apply_Cls_Wrk	Equal variances assumed	.036	.850	-.864	129	.389	-.22955	.26556	-.75497	.29587
	Equal variances not assumed			-.866	16.283	.399	-.22955	.26521	-.79097	.33187
Q58_Fdbk_On_Job	Equal variances assumed	.031	.860	-.158	129	.875	-.03907	.24714	-.52804	.44989
	Equal variances not assumed			-.152	15.946	.881	-.03907	.25713	-.58430	.50616
Q59_Wrk_W_Others	Equal variances assumed	.613	.435	.579	129	.564	.15446	.26694	-.37369	.68261
	Equal variances not assumed			.526	15.542	.606	.15446	.29376	-.46979	.77870
Q60_Wrk_W_Job	Equal variances assumed	.119	.730	1.441	128	.152	.44212	.30678	-.16490	1.0491
	Equal variances not assumed			1.435	16.264	.170	.44212	.30805	-.21006	1.0943
Q61_Cowrk_Dev_Skl	Equal variances assumed	.100	.752	-.699	129	.486	-.19475	.27852	-.74582	.35632
	Equal variances not assumed			-.801	17.700	.434	-.19475	.24325	-.70641	.31691
Q62_Talk_Inform	Equal variances assumed	1.72	.192	.382	128	.703	.085	.224	-.357	.528
	Equal variances not assumed			.330	13.922	.746	.085	.259	-.470	.641
Q63_Intrct_Out_Wrk	Equal variances assumed	1.68	.197	-1.30	129	.195	-.44322	.34004	-1.1160	.22955
	Equal variances not assumed			-1.10	15.091	.289	-.44322	.40302	-1.3018	.41535
C1_27_34_Jo	Equal variances assumed	2.12	.148	-.896	129	.372	-.13772	.15376	-.44194	.16651

b_Tsk_Char	Equal variances not assumed			-.728	14.896	.478	-.13772	.18907	-.54095	.26552
C2_35_38_Level_Dir	Equal variances assumed	.616	.434	-.103	129	.918	-.01715	.16692	-.34740	.31310
	Equal variances not assumed			-.087	15.110	.932	-.01715	.19713	-.43706	.40276
C3_39_53_Org_Cult	Equal variances assumed	.228	.634	-.304	129	.762	-.04194	.13810	-.31518	.23130
	Equal variances not assumed			-.317	16.674	.755	-.04194	.13218	-.32123	.23734
C4_54_57_Skl_Know	Equal variances assumed	.016	.900	-1.26	129	.211	-.25109	.19981	-.64641	.14423
	Equal variances not assumed			-1.21	15.941	.245	-.25109	.20803	-.69223	.19004
C5_58_63_Soc_Int	Equal variances assumed	1.85	.176	-.011	129	.992	-.00197	.18755	-.37305	.36911
	Equal variances not assumed			-.009	15.090	.993	-.00197	.22233	-.47561	.47167
Q66_Task_Asgn_Supr	Equal variances assumed	11.1	.001	-1.42	129	.157	-.12821	.09004	-.30635	.04994
	Equal variances not assumed			-4.13	116.00	.000***	-.12821	.03104	-.18969	-.0667
Q66_Task_Asgn_Cowrk	Equal variances assumed	.350	.555	-.232	129	.817	-.03297	.14196	-.31384	.24790
	Equal variances not assumed			-.228	16.102	.823	-.03297	.14485	-.33987	.27394
Q66_Task_Req_Dec	Equal variances assumed	.242	.624	-.231	129	.818	-.03053	.13212	-.29193	.23088
	Equal variances not assumed			-.230	16.245	.821	-.03053	.13252	-.31112	.25007
Q66_Task_R	Equal variances assumed	.894	.346	-.418	129	.677	-.05617	.13451	-.32229	.20996

eq_Tech_Sk	Equal variances not assumed			-.423	16.383	.678	-.05617	.13281	-.33717	.22484
Q66_Task_Req_Nont_Sk	Equal variances assumed	2.28	.134	.862	129	.390	.09768	.11334	-.12657	.32193
	Equal variances not assumed			.749	15.259	.465	.09768	.13044	-.17994	.37530
Q66_Task_Id_Own	Equal variances assumed	.116	.734	1.214	129	.227	.16972	.13985	-.10698	.44642
	Equal variances not assumed			1.174	15.995	.258	.16972	.14460	-.13683	.47627
Q66_Task_Req_Collab_Int	Equal variances assumed	3.26	.073	1.046	129	.298	.11477	.10978	-.10242	.33197
	Equal variances not assumed			.882	15.092	.391	.11477	.13008	-.16233	.39188
Q66_Task_Req_Collab_Ext	Equal variances assumed	3.53	.063	.779	129	.438	.10195	.13094	-.15712	.36103
	Equal variances not assumed			.838	16.972	.414	.10195	.12172	-.15488	.35879
Q67_Ask_Cowrk_Asst	Equal variances assumed	.091	.764	.153	129	.879	.01465	.09576	-.17481	.20412
	Equal variances not assumed			.144	15.777	.887	.01465	.10190	-.20160	.23091
Q67_Ask_Supr_Asst	Equal variances assumed	13.2	.000	-1.340	129	.183	-.17338	.12941	-.42943	.08266
	Equal variances not assumed			-1.632	18.573	.119	-.17338	.10622	-.39605	.04929
Q67_Figure_Out_Own	Equal variances assumed	7.44	.007	1.525	129	.130	.12882	.08445	-.03826	.29589
	Equal variances not assumed			1.104	14.384	.288	.12882	.11673	-.12091	.37855
	Equal variances assumed	.017	.895	.069	129	.945	.00977	.14065	-.26850	.28804

Q67_Org_Resource	Equal variances not assumed			.068	16.035	.947	.00977	.14469	-.29692	.31645
Q67_Public_Resource	Equal variances assumed	.696	.406	.454	129	.651	.05495	.12103	-.18451	.29440
	Equal variances not assumed			.419	15.641	.681	.05495	.13126	-.22383	.33372
Q68_Coworkers	Equal variances assumed	1.53	.218	-.602	129	.548	-.02564	.04257	-.10987	.05858
	Equal variances not assumed			-1.75	116.00	.083*	-.02564	.01468	-.05471	.00343
Q68_Supr	Equal variances assumed	6.08	.015	1.376	129	.171	.12027	.08741	-.05267	.29320
	Equal variances not assumed			1.028	14.511	.321	.12027	.11699	-.12981	.37035
Q68_Comp_Materials	Equal variances assumed	.931	.336	.531	129	.596	.06349	.11962	-.17317	.30016
	Equal variances not assumed			.484	15.569	.635	.06349	.13111	-.21507	.34205
Q68_Comp_Train	Equal variances assumed	.894	.346	2.769	129	.006***	.37241	.13451	.10628	.63853
	Equal variances not assumed			2.804	16.383	.013**	.37241	.13281	.09140	.65341
Q70_Int_Client	Equal variances assumed	11.9	.001	1.374	129	.172	.15934	.11598	-.07013	.38881
	Equal variances not assumed			1.957	21.749	.063*	.15934	.08144	-.00967	.32835
Q70_Int_Cowrk	Equal variances assumed	.890	.347	.482	129	.631	.02869	.05952	-.08908	.14646
	Equal variances not assumed			.389	14.851	.703	.02869	.07386	-.12886	.18625
Q70_Int_Supr	Equal variances assumed	10.039	.002	-1.37	129	.173	-.11966	.08741	-.29261	.05329

	Equal variances not assumed			-3.97	116.00	.000***	-.11966	.03013	-.17934	-.0598
Q70_Int_Vendor	Equal variances assumed	.366	.546	-.316	129	.753	-.03480	.11020	-.25283	.18323
	Equal variances not assumed			-.292	15.657	.774	-.03480	.11925	-.28805	.21845
Q70_Int_Oth_Dept	Equal variances assumed	.001	.975	.030	129	.976	.00427	.14249	-.27764	.28619
	Equal variances not assumed			.029	16.054	.977	.00427	.14624	-.30565	.31420
Q70_Int_Oth_Intrn	Equal variances assumed	2.25	.136	1.056	129	.293	.13797	.13069	-.12059	.39654
	Equal variances not assumed			.961	15.553	.351	.13797	.14358	-.16712	.44306

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 21: T-tests results on survey questions comparing students with a female supervisor to those with a male supervisor

Group Statistics

Female Supervisor		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Male Sup	92	3.8152	1.04754	.10921
	Female Sup	39	3.8205	1.16691	.18685
Q28_Complex_Dec	Male Sup	90	3.3889	.99091	.10445
	Female Sup	39	3.4103	.81815	.13101
Q29_Chall_Work	Male Sup	91	4.0549*	.83483	.08751
	Female Sup	39	3.7949*	.65612	.10506
Q30_Adeq_Res	Male Sup	92	2.5978	1.14891	.11978
	Female Sup	39	2.5385	1.12029	.17939
Q31_Influ_Amt	Male Sup	92	3.8587	.85910	.08957
	Female Sup	39	3.6410	.98641	.15795
Q32_Influ_Dec	Male Sup	92	3.6196	.97036	.10117
	Female Sup	38	3.6053	.82329	.13356
Q33_Do_Diff	Male Sup	92	3.8261	1.06502	.11104
	Female Sup	39	4.0256	.81069	.12981
Q34_Impact_Org	Male Sup	92	3.7174	.88113	.09186
	Female Sup	39	3.8205	.75644	.12113
Q35_Work_On_Own	Male Sup	92	4.2391	.78962	.08232
	Female Sup	39	4.0256	.90284	.14457
Q36_Indp_Tht_Act	Male Sup	92	4.0435	.87597	.09133
	Female Sup	38	4.1842	.69185	.11223
Q37_Clear_Obj	Male Sup	92	3.7391	.99305	.10353
	Female Sup	39	3.8718	.86388	.13833
Q38_Choose_Meth	Male Sup	92	3.9239	.97478	.10163
	Female Sup	39	4.1026	.68036	.10894
Q39_Help_Cowrk	Male Sup	92	4.7609	.66909	.06976
	Female Sup	39	4.7949	.57029	.09132
Q40_Help_Supr	Male Sup	92	4.3261	1.03890	.10831
	Female Sup	39	4.5641	.59802	.09576
Q41_Achiev_App	Male Sup	91	4.3736**	.79789	.08364
	Female Sup	39	4.6410**	.62774	.10052
Q42_Supr_Enc_Dec	Male Sup	91	3.8901	1.06927	.11209
	Female Sup	39	4.2051	1.03057	.16502
Q43_Supr_Enc_Spk	Male Sup	92	4.0870	.97948	.10212
	Female Sup	39	4.2564	.81815	.13101
Q44_Supr_Dev_Sklls	Male Sup	92	4.0435	1.01541	.10586

	Female Sup	39	4.1795	.96986	.15530
Q45_Clim_Comp	Male Sup	92	2.6196	.98162	.10234
	Female Sup	39	2.6154	.87706	.14044
Q46_Clim_Enc_Supp	Male Sup	92	4.3696	.79445	.08283
	Female Sup	39	4.3846	.78188	.12520
Q47_Clim_Relax	Male Sup	92	4.1522	.78355	.08169
	Female Sup	38	4.2105	.74100	.12021
Q48_Clim_Rigid	Male Sup	92	2.5326	.91928	.09584
	Female Sup	39	2.6154	.96287	.15418
Q49_Work_Init	Male Sup	92	4.0217	.82513	.08603
	Female Sup	39	4.0256	.81069	.12981
Q50_Recog_Gd_Job	Male Sup	92	4.0652	.82281	.08578
	Female Sup	39	4.2821	.75911	.12155
Q51_Mgmt_Hlth_Wbng	Male Sup	92	4.2065	.83255	.08680
	Female Sup	39	4.2564	.84970	.13606
Q52_Sense_Team	Male Sup	92	4.2283	.83998	.08757
	Female Sup	39	4.1282	.92280	.14777
Q53_Part_Of_Team	Male Sup	92	4.0109	.96641	.10076
	Female Sup	37	4.0811	.92431	.15196
Q54_Curr_Skls_Use	Male Sup	92	3.9565	.98241	.10242
	Female Sup	39	4.1026	.91176	.14600
Q55_Req_New_Skls	Male Sup	92	4.1739	.77896	.08121
	Female Sup	39	4.1282	1.00471	.16088
Q56_Cnct_Wrk_Sch	Male Sup	91	3.3846	.91614	.09604
	Female Sup	39	3.4359	.94018	.15055
Q57_Apply_Cls_Wrk	Male Sup	92	3.3478	.91909	.09582
	Female Sup	39	3.4103	.99255	.15894
Q58_Fdbk_On_Job	Male Sup	92	3.5978*	.90250	.09409
	Female Sup	39	3.8718*	.76707	.12283
Q59_Wrk_W_Others	Male Sup	92	3.8370*	.98647	.10285
	Female Sup	39	4.1282*	.80064	.12821
Q60_Wrk_W_Job	Male Sup	92	3.6196***	1.11771	.11653
	Female Sup	38	4.3158***	.84166	.13654
Q61_Cowrk_Dev_Skl	Male Sup	92	4.2283	.91511	.09541
	Female Sup	39	4.0769	1.13287	.18140
Q62_Talk_Inform	Male Sup	91	4.21	.823	.086
	Female Sup	39	4.28	.605	.097
Q63_Intrct_Out_Wrk	Male Sup	92	3.1630	1.21598	.12678
	Female Sup	39	3.2051	1.19603	.19152
C1_27_34_Job_Tsk_Char	Male Sup	92	3.6112	.56032	.05842
	Female Sup	39	3.5829	.50735	.08124

C2_35_38_Level_Dir	Male Sup	92	3.9864	.64126	.06686
	Female Sup	39	4.0406	.44257	.07087
C3_39_53_Org_Cult	Male Sup	92	3.9793	.49822	.05194
	Female Sup	39	4.0831	.45604	.07302
C4_54_57_Skl_Know	Male Sup	92	3.7192	.69883	.07286
	Female Sup	39	3.7692	.73758	.11811
C5_58_63_Soc_Int	Male Sup	92	3.7761*	.67841	.07073
	Female Sup	39	3.9786*	.60117	.09626
Q66_Task_Assgn_Supr	Male Sup	92	.8696	.33863	.03530
	Female Sup	39	.9231	.26995	.04323
Q66_Task_Assgn_Cowrk	Male Sup	92	.5978*	.49302	.05140
	Female Sup	39	.4103*	.49831	.07979
Q66_Task_Req_Dec	Male Sup	92	.6413*	.48225	.05028
	Female Sup	39	.7949*	.40907	.06550
Q66_Task_Req_Tech_Sk	Male Sup	92	.6304	.48533	.05060
	Female Sup	39	.7436	.44236	.07083
Q66_Task_Req_Nont_Sk	Male Sup	92	.7826	.41473	.04324
	Female Sup	39	.8462	.36552	.05853
Q66_Task_Id_Own	Male Sup	92	.5652	.49844	.05197
	Female Sup	39	.6154	.49286	.07892
Q66_Task_Req_Collab_Int	Male Sup	92	.8152	.39025	.04069
	Female Sup	39	.8205	.38878	.06225
Q66_Task_Req_Collab_Ext	Male Sup	92	.2717	.44729	.04663
	Female Sup	39	.3846	.49286	.07892
Q67_Ask_Cowrk_Asst	Male Sup	92	.8696	.33863	.03530
	Female Sup	39	.8718	.33869	.05423
Q67_Ask_Supr_Asst	Male Sup	92	.6739	.47135	.04914
	Female Sup	39	.7692	.42683	.06835
Q67_Figure_Out_Own	Male Sup	92	.8913	.31296	.03263
	Female Sup	39	.9231	.26995	.04323
Q67_Org_Resource	Male Sup	92	.5761	.49688	.05180
	Female Sup	39	.5897	.49831	.07979
Q67_Public_Resource	Male Sup	92	.7500	.43539	.04539
	Female Sup	39	.7949	.40907	.06550
Q68_Coworkers	Male Sup	92	.9783	.14663	.01529
	Female Sup	39	.9744	.16013	.02564
Q68_Supr	Male Sup	92	.8696	.33863	.03530
	Female Sup	39	.9487	.22346	.03578
Q68_Comp_Materials	Male Sup	92	.7391	.44152	.04603
	Female Sup	39	.8462	.36552	.05853
Q68_Comp_Train	Male Sup	92	.6087	.49072	.05116

	Female Sup	39	.6410	.48597	.07782
Q70_Int_Client	Male Sup	92	.1630*	.37143	.03872
	Female Sup	39	.3333*	.47757	.07647
Q70_Int_Cowrk	Male Sup	92	.9674	.17858	.01862
	Female Sup	39	.9231	.26995	.04323
Q70_Int_Supr	Male Sup	92	.8587**	.35024	.03652
	Female Sup	39	.9744**	.16013	.02564
Q70_Int_Vendor	Male Sup	92	.2065	.40703	.04244
	Female Sup	39	.1282	.33869	.05423
Q70_Int_Oth_Dept	Male Sup	92	.5000	.50274	.05241
	Female Sup	39	.5128	.50637	.08108
Q70_Int_Oth_Intrn	Male Sup	92	.7065	.45785	.04773
	Female Sup	39	.6667	.47757	.07647

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	.321	.572	-.026	129	.980	-.00530	.20714	-.41513	.40454
	Equal variances not assumed			-.024	65.220	.981	-.00530	.21643	-.43751	.42692
Q28_Complex_Dec	Equal variances assumed	1.653	.201	-.118	127	.906	-.02137	.18069	-.37893	.33619
	Equal variances not assumed			-.128	86.706	.899	-.02137	.16755	-.35441	.31167
Q29_Chall_Work	Equal variances assumed	2.298	.132	1.729	128	.086*	.26007	.15044	-.03759	.55774
	Equal variances not assumed			1.902	90.607	.060*	.26007	.13674	-.01156	.53170
Q30_Adeq_Res	Equal variances assumed	.048	.826	.272	129	.786	.05936	.21793	-.37182	.49055
	Equal variances not assumed			.275	73.349	.784	.05936	.21571	-.37050	.48923
Q31_Influ_Amt	Equal variances assumed	2.383	.125	1.268	129	.207	.21767	.17168	-.12200	.55734
	Equal variances not assumed			1.199	63.620	.235	.21767	.18158	-.14512	.58046
Q32_Influ_Dec	Equal variances assumed	1.116	.293	.080	128	.937	.01430	.17938	-.34064	.36924

	Equal variances not assumed			.085	80.823	.932	.01430	.16755	-.31907	.34768
Q33_Do_Diff	Equal variances assumed	6.143	.014	-1.048	129	.297	-.19955	.19048	-.57642	.17731
	Equal variances not assumed			-1.168	93.127	.246	-.19955	.17082	-.53877	.13966
Q34_Impact_Org	Equal variances assumed	3.935	.049	-.638	129	.525	-.10312	.16171	-.42307	.21683
	Equal variances not assumed			-.678	82.842	.499	-.10312	.15202	-.40550	.19925
Q35_Work_On_Own	Equal variances assumed	.792	.375	1.355	129	.178	.21349	.15756	-.09825	.52523
	Equal variances not assumed			1.283	63.837	.204	.21349	.16637	-.11888	.54586
Q36_Indp_Tht_Act	Equal variances assumed	.372	.543	-.883	128	.379	-.14073	.15947	-.45627	.17480
	Equal variances not assumed			-.973	86.754	.333	-.14073	.14470	-.42834	.14688
Q37_Clear_Obj	Equal variances assumed	1.859	.175	-.726	129	.469	-.13266	.18283	-.49439	.22906
	Equal variances not assumed			-.768	81.780	.445	-.13266	.17278	-.47640	.21107
Q38_Choose_Meth	Equal variances assumed	5.336	.022	-1.041	129	.300	-.17865	.17161	-.51819	.16089
	Equal variances not assumed			-1.199	100.979	.233	-.17865	.14899	-.47420	.11690
Q39_Help_Cowrk	Equal variances assumed	.361	.549	-.277	129	.782	-.03400	.12259	-.27655	.20854
	Equal variances not assumed			-.296	83.424	.768	-.03400	.11492	-.26255	.19454
Q40_Help_Supr	Equal variances assumed	8.647	.004	-1.338	129	.183	-.23802	.17789	-.58997	.11394

	Equal variances not assumed			-1.646	117.274	.102	-.23802	.14457	-.52433	.04830
Q41_Achiev_App	Equal variances assumed	3.329	.070	-1.859	128	.065*	-.26740	.14381	-.55196	.01716
	Equal variances not assumed			-2.045	90.516	.044**	-.26740	.13077	-.52717	-.00763
Q42_Supr_Enc_Dec	Equal variances assumed	.015	.902	-1.556	128	.122	-.31502	.20248	-.71565	.08562
	Equal variances not assumed			-1.579	74.460	.119	-.31502	.19949	-.71247	.08244
Q43_Supr_Enc_Spk	Equal variances assumed	.693	.407	-.949	129	.345	-.16945	.17863	-.52288	.18397
	Equal variances not assumed			-1.020	85.088	.311	-.16945	.16611	-.49971	.16081
Q44_Supr_Dev_Sklls	Equal variances assumed	.006	.936	-.710	129	.479	-.13601	.19150	-.51489	.24288
	Equal variances not assumed			-.724	74.778	.472	-.13601	.18795	-.51044	.23843
Q45_Clim_Comp	Equal variances assumed	.309	.579	.023	129	.982	.00418	.18191	-.35573	.36409
	Equal variances not assumed			.024	79.689	.981	.00418	.17377	-.34166	.35002
Q46_Clim_Enc_Supp	Equal variances assumed	.099	.753	-.100	129	.921	-.01505	.15110	-.31400	.28390
	Equal variances not assumed			-.100	72.723	.920	-.01505	.15012	-.31426	.28416
Q47_Clim_Relax	Equal variances assumed	.083	.774	-.392	128	.696	-.05835	.14877	-.35272	.23602
	Equal variances not assumed			-.401	72.759	.689	-.05835	.14534	-.34802	.23132
Q48_Clim_Rigid	Equal variances assumed	.523	.471	-.465	129	.643	-.08278	.17815	-.43525	.26969

	Equal variances not assumed			-.456	68.753	.650	-.08278	.18154	-.44497	.27942
Q49_Work_Init	Equal variances assumed	.396	.530	-.025	129	.980	-.00390	.15686	-.31425	.30644
	Equal variances not assumed			-.025	72.838	.980	-.00390	.15573	-.31429	.30648
Q50_Recog_Gd_Job	Equal variances assumed	.020	.888	-1.410	129	.161	-.21683	.15374	-.52100	.08734
	Equal variances not assumed			-1.457	77.273	.149	-.21683	.14878	-.51307	.07940
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	.044	.834	-.312	129	.756	-.04989	.16005	-.36656	.26678
	Equal variances not assumed			-.309	70.358	.758	-.04989	.16139	-.37174	.27197
Q52_Sense_Team	Equal variances assumed	.558	.456	.605	129	.546	.10006	.16532	-.22703	.42715
	Equal variances not assumed			.583	65.983	.562	.10006	.17177	-.24289	.44300
Q53_Part_Of_Team	Equal variances assumed	.478	.491	-.378	127	.706	-.07021	.18585	-.43797	.29754
	Equal variances not assumed			-.385	69.312	.701	-.07021	.18232	-.43391	.29349
Q54_Curr_Skls_Use	Equal variances assumed	.964	.328	-.794	129	.428	-.14604	.18384	-.50978	.21769
	Equal variances not assumed			-.819	76.836	.415	-.14604	.17834	-.50118	.20910
Q55_Req_New_Skls	Equal variances assumed	3.430	.066	.281	129	.779	.04571	.16274	-.27628	.36770
	Equal variances not assumed			.254	58.254	.801	.04571	.18022	-.31501	.40642
	Equal variances assumed	.004	.951	-.290	128	.772	-.05128	.17672	-.40095	.29839

Q56_Cnct_Wrk_Sch	Equal variances not assumed			-.287	70.304	.775	-.05128	.17857	-.40741	.30484
Q57_Apply_Cls_Wrk	Equal variances assumed	.189	.665	-.347	129	.729	-.06243	.17987	-.41830	.29344
	Equal variances not assumed			-.336	66.952	.738	-.06243	.18559	-.43287	.30801
Q58_Fdbk_On_Job	Equal variances assumed	5.199	.024	-1.658	129	.100	-.27397	.16525	-.60091	.05297
	Equal variances not assumed			-1.771	83.654	.080*	-.27397	.15473	-.58168	.03374
Q59_Wrk_W_Others	Equal variances assumed	1.194	.276	-1.629	129	.106	-.29125	.17877	-.64494	.06245
	Equal variances not assumed			-1.772	87.512	.080*	-.29125	.16436	-.61790	.03541
Q60_Wrk_W_Job	Equal variances assumed	4.673	.032	-3.454	128	.001***	-.69622	.20160	-1.0951	-.29733
	Equal variances not assumed			-3.879	90.920	.000***	-.69622	.17950	-1.0528	-.33966
Q61_Cowrk_Dev_Skl	Equal variances assumed	.753	.387	.805	129	.422	.15134	.18807	-.22077	.52345
	Equal variances not assumed			.738	60.012	.463	.15134	.20496	-.25865	.56133
Q62_Talk_Inform	Equal variances assumed	5.519	.020	-.500	128	.618	-.073	.146	-.363	.216
	Equal variances not assumed			-.565	96.628	.574	-.073	.130	-.331	.184
Q63_Intrct_Out_Wrk	Equal variances assumed	.002	.966	-.182	129	.856	-.04208	.23123	-.49958	.41541
	Equal variances not assumed			-.183	72.763	.855	-.04208	.22968	-.49985	.41569
C1_27_34_Job	Equal variances assumed	1.711	.193	.272	129	.786	.02836	.10419	-.17778	.23449

_Tsk_Char	Equal variances not assumed			.283	78.671	.778	.02836	.10006	-.17083	.22754
C2_35_38_Level_Dir	Equal variances assumed	4.971	.028	-.481	129	.631	-.05418	.11268	-.27712	.16877
	Equal variances not assumed			-.556	101.999	.579	-.05418	.09743	-.24742	.13907
C3_39_53_Org_Cult	Equal variances assumed	1.719	.192	-1.117	129	.266	-.10376	.09290	-.28756	.08004
	Equal variances not assumed			-1.158	77.858	.250	-.10376	.08961	-.28217	.07465
C4_54_57_Skl_Know	Equal variances assumed	.365	.547	-.368	129	.713	-.05002	.13575	-.31862	.21857
	Equal variances not assumed			-.360	68.294	.720	-.05002	.13877	-.32692	.22687
C5_58_63_Soc_Int	Equal variances assumed	.995	.320	-1.614	129	.109	-.20253	.12546	-.45076	.04570
	Equal variances not assumed			-1.695	80.327	.094*	-.20253	.11946	-.44024	.03518
Q66_Task_Assgn_Supr	Equal variances assumed	3.309	.071	-.875	129	.383	-.05351	.06113	-.17446	.06744
	Equal variances not assumed			-.959	89.055	.340	-.05351	.05581	-.16441	.05738
Q66_Task_Assgn_Cowrk	Equal variances assumed	.028	.867	1.985	129	.049**	.18757	.09450	.00059	.37455
	Equal variances not assumed			1.976	70.977	.052*	.18757	.09492	-.00169	.37683
Q66_Task_Req_Dec	Equal variances assumed	16.25	.000	-1.740	129	.084*	-.15357	.08826	-.32819	.02105
	Equal variances not assumed			-1.860	83.815	.066*	-.15357	.08258	-.31778	.01065
Q66_Task_Req	Equal variances assumed	7.853	.006	-1.252	129	.213	-.11315	.09039	-.29200	.06569

Tech Sk	Equal variances not assumed			-1.300	78.175	.197	-.11315	.08705	-.28645	.06014
Q66_Task_Req_Nont_Sk	Equal variances assumed	3.035	.084	-.830	129	.408	-.06355	.07660	-.21509	.08800
	Equal variances not assumed			-.873	80.752	.385	-.06355	.07277	-.20834	.08125
Q66_Task_Id_Own	Equal variances assumed	1.324	.252	-.528	129	.598	-.05017	.09493	-.23799	.13765
	Equal variances not assumed			-.531	72.410	.597	-.05017	.09449	-.23852	.13818
Q66_Task_Req_Collab_Int	Equal variances assumed	.020	.887	-.071	129	.943	-.00530	.07448	-.15267	.14207
	Equal variances not assumed			-.071	71.916	.943	-.00530	.07437	-.15355	.14296
Q66_Task_Req_Collab_Ext	Equal variances assumed	4.961	.028	-1.281	129	.203	-.11288	.08812	-.28723	.06148
	Equal variances not assumed			-1.231	65.817	.223	-.11288	.09167	-.29591	.07016
Q67_Ask_Cowrk_Asst	Equal variances assumed	.005	.945	-.034	129	.973	-.00223	.06471	-.13025	.12580
	Equal variances not assumed			-.034	71.656	.973	-.00223	.06471	-.13124	.12678
Q67_Ask_Supr_Asst	Equal variances assumed	5.662	.019	-1.088	129	.279	-.09532	.08764	-.26872	.07809
	Equal variances not assumed			-1.132	78.664	.261	-.09532	.08418	-.26289	.07225
Q67_Figure_Out_Own	Equal variances assumed	1.272	.262	-.553	129	.582	-.03177	.05750	-.14554	.08200
	Equal variances not assumed			-.587	82.459	.559	-.03177	.05416	-.13950	.07596
	Equal variances assumed	.088	.767	-.144	129	.886	-.01366	.09502	-.20166	.17435

Q67_Org_Resource	Equal variances not assumed			-.144	71.481	.886	-.01366	.09513	-.20333	.17601
Q67_Public_Resource	Equal variances assumed	1.295	.257	-.549	129	.584	-.04487	.08174	-.20660	.11686
	Equal variances not assumed			-.563	75.945	.575	-.04487	.07969	-.20360	.11386
Q68_Coworkers	Equal variances assumed	.073	.787	.135	129	.892	.00390	.02880	-.05308	.06089
	Equal variances not assumed			.131	66.317	.896	.00390	.02985	-.05569	.06350
Q68_Supr	Equal variances assumed	8.202	.005	-1.340	129	.183	-.07915	.05908	-.19604	.03774
	Equal variances not assumed			-1.575	106.036	.118	-.07915	.05027	-.17881	.02050
Q68_Comp_Materials	Equal variances assumed	8.543	.004	-1.332	129	.185	-.10702	.08036	-.26602	.05197
	Equal variances not assumed			-1.437	85.833	.154	-.10702	.07446	-.25505	.04101
Q68_Comp_Train	Equal variances assumed	.527	.469	-.346	129	.730	-.03233	.09350	-.21732	.15266
	Equal variances not assumed			-.347	72.308	.729	-.03233	.09313	-.21797	.15331
Q70_Int_Client	Equal variances assumed	15.60	.000	-2.197	129	.030**	-.17029	.07750	-.32362	-.01696
	Equal variances not assumed			-1.987	58.384	.052*	-.17029	.08572	-.34185	.00127
Q70_Int_Cowrk	Equal variances assumed	4.870	.029	1.106	129	.271	.04431	.04006	-.03495	.12358
	Equal variances not assumed			.942	52.650	.351	.04431	.04707	-.05010	.13873
Q70_Int_Supr	Equal variances assumed	19.81	.000	-1.973	129	.051*	-.11566	.05861	-.23163	.00030

	Equal variances not assumed			-2.592	128.215	.011**	-.11566	.04462	-.20395	-.02738
Q70_Int_Vendor	Equal variances assumed	5.045	.026	1.056	129	.293	.07832	.07417	-.06842	.22506
	Equal variances not assumed			1.137	85.406	.259	.07832	.06886	-.05859	.21522
Q70_Int_Oth_Dept	Equal variances assumed	.060	.808	-.133	129	.894	-.01282	.09627	-.20329	.17765
	Equal variances not assumed			-.133	71.201	.895	-.01282	.09655	-.20533	.17969
Q70_Int_Oth_Intrn	Equal variances assumed	.741	.391	.450	129	.654	.03986	.08861	-.13546	.21517
	Equal variances not assumed			.442	69.006	.660	.03986	.09015	-.13998	.21969

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 22: ANOVA analysis of survey questions and construct comparing students who interned at startups with those who interned at established companies

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	1.058	1	1.058	.906	.343
	Within Groups	150.545	129	1.167		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.023	1	.023	.026	.873
	Within Groups	112.814	127	.888		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	.844	1	.844	1.349	.248
	Within Groups	80.087	128	.626		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.007	1	.007	.005	.943
	Within Groups	167.902	129	1.302		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	.720	1	.720	.886	.348
	Within Groups	104.716	129	.812		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.004	1	.004	.005	.946
	Within Groups	110.765	128	.865		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	.222	1	.222	.222	.638
	Within Groups	129.060	129	1.000		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.004	1	.004	.005	.943
	Within Groups	92.683	129	.718		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	.010	1	.010	.015	.904
	Within Groups	88.952	129	.690		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.562	1	.562	.822	.366
	Within Groups	87.507	128	.684		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	.830	1	.830	.909	.342
	Within Groups	117.750	129	.913		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.136	1	.136	.167	.683
	Within Groups	104.795	129	.812		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.184	1	.184	.449	.504
	Within Groups	52.945	129	.410		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	.657	1	.657	.752	.387
	Within Groups	112.702	129	.874		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.147	1	.147	.254	.615
	Within Groups	74.076	128	.579		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	2.926	1	2.926	2.618	.108
	Within Groups	143.043	128	1.118		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	.650	1	.650	.743	.390
	Within Groups	112.876	129	.875		
	Total	113.527	130			
Q44_Supr_Dev_Skills	Between Groups	.228	1	.228	.227	.635
	Within Groups	129.848	129	1.007		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	1.681	1	1.681	1.882	.173
	Within Groups	115.235	129	.893		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	.430	1	.430	.691	.407
	Within Groups	80.242	129	.622		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.457	1	.457	.771	.382
	Within Groups	75.820	128	.592		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	.849	1	.849	.983	.323
	Within Groups	111.471	129	.864		
	Total	112.321	130			
Q49_Work_Init	Between Groups	2.409	1	2.409	3.676	.057**
	Within Groups	84.522	129	.655		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	.067	1	.067	.103	.749
	Within Groups	84.726	129	.657		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	.035	1	.035	.050	.824
	Within Groups	90.545	129	.702		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	1.218	1	1.218	1.644	.202

	Within Groups	95.621	129	.741		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.178	1	.178	.195	.659
	Within Groups	115.698	127	.911		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	.301	1	.301	.325	.570
	Within Groups	119.699	129	.928		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	.012	1	.012	.017	.897
	Within Groups	93.621	129	.726		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.075	1	.075	.088	.767
	Within Groups	109.125	128	.853		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.170	1	.170	.192	.662
	Within Groups	114.242	129	.886		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	.049	1	.049	.065	.800
	Within Groups	98.485	129	.763		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	.055	1	.055	.062	.804
	Within Groups	115.182	129	.893		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	3.337	1	3.337	2.855	.094*
	Within Groups	149.594	128	1.169		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	.230	1	.230	.237	.627
	Within Groups	125.373	129	.972		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.022	1	.022	.037	.847
	Within Groups	75.055	128	.586		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	1.435	1	1.435	.987	.322
	Within Groups	187.526	129	1.454		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.164	1	.164	.554	.458
	Within Groups	38.209	129	.296		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.290	1	.290	.837	.362
	Within Groups	44.654	129	.346		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.162	1	.162	.682	.410
	Within Groups	30.624	129	.237		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.074	1	.074	.146	.703
	Within Groups	65.109	129	.505		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	.198	1	.198	.451	.503
	Within Groups	56.541	129	.438		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.006	1	.006	.058	.809
	Within Groups	13.276	129	.103		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	.737	1	.737	2.993	.086*
	Within Groups	31.782	129	.246		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.216	1	.216	.998	.320
	Within Groups	27.952	129	.217		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.000	1	.000	.000	.982
	Within Groups	29.221	129	.227		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.294	1	.294	1.848	.176
	Within Groups	20.545	129	.159		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	.397	1	.397	1.627	.204
	Within Groups	31.511	129	.244		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.118	1	.118	.781	.378
	Within Groups	19.485	129	.151		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.441	1	.441	2.080	.152
	Within Groups	27.345	129	.212		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.317	1	.317	2.829	.095*
	Within Groups	14.476	129	.112		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.016	1	.016	.077	.782
	Within Groups	27.373	129	.212		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.020	1	.020	.217	.642
	Within Groups	11.690	129	.091		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.550	1	.550	2.262	.135
	Within Groups	31.359	129	.243		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.023	1	.023	.124	.725
	Within Groups	23.641	129	.183		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.032	1	.032	1.444	.232
	Within Groups	2.899	129	.022		
	Total	2.931	130			
Q68_Supr	Between Groups	.193	1	.193	2.027	.157
	Within Groups	12.310	129	.095		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.184	1	.184	1.037	.311
	Within Groups	22.945	129	.178		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	.807	1	.807	3.459	.065*
	Within Groups	30.109	129	.233		
	Total	30.916	130			
Q70_Int_Client	Between Groups	1.730	1	1.730	11.003	.001***
	Within Groups	20.285	129	.157		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.007	1	.007	.166	.684
	Within Groups	5.718	129	.044		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.027	1	.027	.283	.596
	Within Groups	12.476	129	.097		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.042	1	.042	.278	.599
	Within Groups	19.561	129	.152		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	2.325	1	2.325	9.859	.002***
	Within Groups	30.423	129	.236		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	.152	1	.152	.709	.401
	Within Groups	27.634	129	.214		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 23: ANOVA analysis of survey questions and constructs comparing female students to male students

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	1.502	1	1.502	1.291	.258
	Within Groups	150.101	129	1.164		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.911	1	.911	1.034	.311
	Within Groups	111.926	127	.881		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	1.035	1	1.035	1.658	.200
	Within Groups	79.896	128	.624		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.037	1	.037	.029	.866
	Within Groups	167.871	129	1.301		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	1.392	1	1.392	1.726	.191
	Within Groups	104.043	129	.807		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.450	1	.450	.522	.471
	Within Groups	110.319	128	.862		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	.693	1	.693	.695	.406
	Within Groups	128.589	129	.997		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.255	1	.255	.357	.552
	Within Groups	92.432	129	.717		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	.057	1	.057	.082	.775
	Within Groups	88.905	129	.689		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.373	1	.373	.544	.462
	Within Groups	87.696	128	.685		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	2.095	1	2.095	2.320	.130
	Within Groups	116.485	129	.903		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.050	1	.050	.061	.805
	Within Groups	104.882	129	.813		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.363	1	.363	.888	.348
	Within Groups	52.767	129	.409		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	3.240	1	3.240	3.796	.054*
	Within Groups	110.119	129	.854		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.291	1	.291	.504	.479
	Within Groups	73.932	128	.578		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	.023	1	.023	.020	.888
	Within Groups	145.947	128	1.140		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	.619	1	.619	.707	.402
	Within Groups	112.908	129	.875		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	1.276	1	1.276	1.278	.260
	Within Groups	128.800	129	.998		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	.781	1	.781	.868	.353
	Within Groups	116.135	129	.900		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	.077	1	.077	.124	.725
	Within Groups	80.594	129	.625		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.145	1	.145	.244	.623
	Within Groups	76.132	128	.595		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	1.385	1	1.385	1.611	.207
	Within Groups	110.935	129	.860		
	Total	112.321	130			
Q49_Work_Init	Between Groups	.160	1	.160	.238	.627
	Within Groups	86.771	129	.673		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	.308	1	.308	.471	.494
	Within Groups	84.485	129	.655		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	.021	1	.021	.030	.862
	Within Groups	90.559	129	.702		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	.037	1	.037	.049	.825

	Within Groups	96.803	129	.750		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.086	1	.086	.095	.759
	Within Groups	115.789	127	.912		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	.282	1	.282	.304	.582
	Within Groups	119.718	129	.928		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	.727	1	.727	1.010	.317
	Within Groups	92.906	129	.720		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.366	1	.366	.431	.513
	Within Groups	108.834	128	.850		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.736	1	.736	.836	.362
	Within Groups	113.676	129	.881		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	.013	1	.013	.016	.898
	Within Groups	98.522	129	.764		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	.321	1	.321	.360	.550
	Within Groups	114.916	129	.891		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	.207	1	.207	.173	.678
	Within Groups	152.724	128	1.193		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	1.100	1	1.100	1.139	.288
	Within Groups	124.503	129	.965		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.345	1	.345	.591	.444
	Within Groups	74.732	128	.584		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	.221	1	.221	.151	.698
	Within Groups	188.741	129	1.463		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.236	1	.236	.797	.374
	Within Groups	38.138	129	.296		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.372	1	.372	1.075	.302
	Within Groups	44.572	129	.346		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.017	1	.017	.073	.787
	Within Groups	30.769	129	.239		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.003	1	.003	.005	.942
	Within Groups	65.180	129	.505		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	.147	1	.147	.335	.564
	Within Groups	56.592	129	.439		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.165	1	.165	1.627	.204
	Within Groups	13.117	129	.102		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	1.453	1	1.453	6.034	.015**
	Within Groups	31.066	129	.241		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.046	1	.046	.212	.646
	Within Groups	28.122	129	.218		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.073	1	.073	.323	.571
	Within Groups	29.148	129	.226		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.136	1	.136	.848	.359
	Within Groups	20.704	129	.160		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	1.094	1	1.094	4.580	.034**
	Within Groups	30.814	129	.239		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.482	1	.482	3.255	.074*
	Within Groups	19.121	129	.148		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.322	1	.322	1.513	.221
	Within Groups	27.464	129	.213		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.023	1	.023	.204	.653
	Within Groups	14.771	129	.115		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.357	1	.357	1.703	.194
	Within Groups	27.033	129	.210		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.067	1	.067	.738	.392
	Within Groups	11.643	129	.090		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.114	1	.114	.463	.497
	Within Groups	31.794	129	.246		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.000	1	.000	.000	.995
	Within Groups	23.664	129	.183		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.017	1	.017	.761	.385
	Within Groups	2.914	129	.023		
	Total	2.931	130			
Q68_Supr	Between Groups	.000	1	.000	.005	.945
	Within Groups	12.503	129	.097		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.080	1	.080	.446	.505
	Within Groups	23.050	129	.179		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	.000	1	.000	.000	.998
	Within Groups	30.916	129	.240		
	Total	30.916	130			
Q70_Int_Client	Between Groups	.002	1	.002	.011	.917
	Within Groups	22.013	129	.171		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.069	1	.069	1.567	.213
	Within Groups	5.656	129	.044		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.000	1	.000	.005	.945
	Within Groups	12.503	129	.097		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.135	1	.135	.895	.346
	Within Groups	19.468	129	.151		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	.003	1	.003	.010	.919
	Within Groups	32.745	129	.254		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	.046	1	.046	.212	.646
	Within Groups	27.741	129	.215		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 24: ANOVA analysis of survey questions and constructs comparing students who interned for the first time with those who had interned previously

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	.511	1	.511	.436	.510
	Within Groups	151.092	129	1.171		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.053	1	.053	.059	.808
	Within Groups	112.785	127	.888		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	.189	1	.189	.299	.585
	Within Groups	80.742	128	.631		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.420	1	.420	.324	.570
	Within Groups	167.488	129	1.298		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	2.153	1	2.153	2.689	.103
	Within Groups	103.282	129	.801		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	4.431	1	4.431	5.333	.023**
	Within Groups	106.338	128	.831		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	.603	1	.603	.604	.438
	Within Groups	128.680	129	.998		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.081	1	.081	.112	.738
	Within Groups	92.606	129	.718		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	.204	1	.204	.297	.587
	Within Groups	88.757	129	.688		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.931	1	.931	1.367	.244
	Within Groups	87.138	128	.681		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	1.334	1	1.334	1.468	.228
	Within Groups	117.246	129	.909		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.615	1	.615	.761	.385
	Within Groups	104.316	129	.809		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	1.448	1	1.448	3.614	.060*
	Within Groups	51.682	129	.401		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	4.544	1	4.544	5.387	.022**
	Within Groups	108.815	129	.844		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.008	1	.008	.013	.908
	Within Groups	74.215	128	.580		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	.774	1	.774	.682	.410
	Within Groups	145.195	128	1.134		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	.262	1	.262	.299	.586
	Within Groups	113.264	129	.878		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	1.274	1	1.274	1.275	.261
	Within Groups	128.803	129	.998		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	.100	1	.100	.110	.740
	Within Groups	116.816	129	.906		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	2.865	1	2.865	4.751	.031**
	Within Groups	77.806	129	.603		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.123	1	.123	.207	.650
	Within Groups	76.154	128	.595		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	.832	1	.832	.963	.328
	Within Groups	111.488	129	.864		
	Total	112.321	130			
Q49_Work_Init	Between Groups	1.723	1	1.723	2.608	.109
	Within Groups	85.208	129	.661		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	.636	1	.636	.975	.325
	Within Groups	84.158	129	.652		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	.079	1	.079	.113	.737
	Within Groups	90.501	129	.702		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	.513	1	.513	.687	.409

	Within Groups	96.327	129	.747		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.780	1	.780	.861	.355
	Within Groups	115.096	127	.906		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	1.099	1	1.099	1.193	.277
	Within Groups	118.901	129	.922		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	.951	1	.951	1.323	.252
	Within Groups	92.683	129	.718		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.060	1	.060	.071	.791
	Within Groups	109.140	128	.853		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.309	1	.309	.350	.555
	Within Groups	114.103	129	.885		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	2.386	1	2.386	3.201	.076*
	Within Groups	96.148	129	.745		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	.479	1	.479	.539	.464
	Within Groups	114.757	129	.890		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	.008	1	.008	.006	.936
	Within Groups	152.923	128	1.195		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	.292	1	.292	.300	.585
	Within Groups	125.311	129	.971		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.123	1	.123	.210	.647
	Within Groups	74.954	128	.586		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	.356	1	.356	.243	.623
	Within Groups	188.606	129	1.462		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.169	1	.169	.572	.451
	Within Groups	38.204	129	.296		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.077	1	.077	.220	.639
	Within Groups	44.867	129	.348		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.170	1	.170	.715	.399
	Within Groups	30.616	129	.237		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.539	1	.539	1.075	.302
	Within Groups	64.644	129	.501		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	.161	1	.161	.368	.545
	Within Groups	56.578	129	.439		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.006	1	.006	.058	.810
	Within Groups	13.276	129	.103		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	1.400	1	1.400	5.803	.017**
	Within Groups	31.119	129	.241		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.168	1	.168	.773	.381
	Within Groups	28.000	129	.217		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.713	1	.713	3.226	.075*
	Within Groups	28.508	129	.221		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.000	1	.000	.002	.966
	Within Groups	20.839	129	.162		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	.224	1	.224	.913	.341
	Within Groups	31.684	129	.246		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.111	1	.111	.736	.393
	Within Groups	19.492	129	.151		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.527	1	.527	2.492	.117
	Within Groups	27.260	129	.211		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.006	1	.006	.050	.823
	Within Groups	14.788	129	.115		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.083	1	.083	.392	.532
	Within Groups	27.306	129	.212		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.364	1	.364	4.133	.044**
	Within Groups	11.346	129	.088		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.160	1	.160	.651	.421
	Within Groups	31.748	129	.246		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.004	1	.004	.024	.876
	Within Groups	23.660	129	.183		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.068	1	.068	3.048	.083*
	Within Groups	2.864	129	.022		
	Total	2.931	130			
Q68_Supr	Between Groups	.000	1	.000	.001	.976
	Within Groups	12.504	129	.097		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.000	1	.000	.002	.962
	Within Groups	23.129	129	.179		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	.241	1	.241	1.013	.316
	Within Groups	30.675	129	.238		
	Total	30.916	130			
Q70_Int_Client	Between Groups	.024	1	.024	.143	.706
	Within Groups	21.991	129	.170		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.119	1	.119	2.747	.100
	Within Groups	5.606	129	.043		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.027	1	.027	.283	.596
	Within Groups	12.476	129	.097		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.258	1	.258	1.722	.192
	Within Groups	19.345	129	.150		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	.552	1	.552	2.212	.139
	Within Groups	32.196	129	.250		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	1.880	1	1.880	9.364	.003***
	Within Groups	25.906	129	.201		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 25: ANOVA analysis of survey questions and constructs comparing students who worked for a male supervisor compared to those who worked for a female supervisor

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	.001	1	.001	.001	.980
	Within Groups	151.602	129	1.175		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.012	1	.012	.014	.906
	Within Groups	112.825	127	.888		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	1.847	1	1.847	2.989	.086*
	Within Groups	79.084	128	.618		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.097	1	.097	.074	.786
	Within Groups	167.812	129	1.301		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	1.298	1	1.298	1.608	.207
	Within Groups	104.137	129	.807		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.006	1	.006	.006	.937
	Within Groups	110.764	128	.865		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	1.091	1	1.091	1.098	.297
	Within Groups	128.192	129	.994		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.291	1	.291	.407	.525
	Within Groups	92.396	129	.716		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	1.248	1	1.248	1.836	.178
	Within Groups	87.713	129	.680		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.533	1	.533	.779	.379
	Within Groups	87.537	128	.684		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	.482	1	.482	.527	.469
	Within Groups	118.098	129	.915		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.874	1	.874	1.084	.300
	Within Groups	104.057	129	.807		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.032	1	.032	.077	.782
	Within Groups	53.098	129	.412		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	1.552	1	1.552	1.790	.183
	Within Groups	111.807	129	.867		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	1.952	1	1.952	3.457	.065*
	Within Groups	72.271	128	.565		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	2.709	1	2.709	2.421	.122
	Within Groups	143.260	128	1.119		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	.786	1	.786	.900	.345
	Within Groups	112.740	129	.874		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	.507	1	.507	.504	.479
	Within Groups	129.570	129	1.004		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	.000	1	.000	.001	.982
	Within Groups	116.916	129	.906		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	.006	1	.006	.010	.921
	Within Groups	80.666	129	.625		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.092	1	.092	.154	.696
	Within Groups	76.185	128	.595		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	.188	1	.188	.216	.643
	Within Groups	112.133	129	.869		
	Total	112.321	130			
Q49_Work_Init	Between Groups	.000	1	.000	.001	.980
	Within Groups	86.931	129	.674		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	1.288	1	1.288	1.989	.161
	Within Groups	83.506	129	.647		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	.068	1	.068	.097	.756
	Within Groups	90.512	129	.702		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	.274	1	.274	.366	.546

	Within Groups	96.565	129	.749		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.130	1	.130	.143	.706
	Within Groups	115.746	127	.911		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	.584	1	.584	.631	.428
	Within Groups	119.416	129	.926		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	.057	1	.057	.079	.779
	Within Groups	93.576	129	.725		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.072	1	.072	.084	.772
	Within Groups	109.128	128	.853		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.107	1	.107	.120	.729
	Within Groups	114.305	129	.886		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	2.056	1	2.056	2.749	.100
	Within Groups	96.479	129	.748		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	2.323	1	2.323	2.654	.106
	Within Groups	112.913	129	.875		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	13.035	1	13.035	11.927	.001***
	Within Groups	139.895	128	1.093		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	.627	1	.627	.648	.422
	Within Groups	124.976	129	.969		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.147	1	.147	.250	.618
	Within Groups	74.930	128	.585		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	.049	1	.049	.033	.856
	Within Groups	188.913	129	1.464		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.022	1	.022	.074	.786
	Within Groups	38.351	129	.297		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.080	1	.080	.231	.631
	Within Groups	44.864	129	.348		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.295	1	.295	1.247	.266
	Within Groups	30.491	129	.236		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.069	1	.069	.136	.713
	Within Groups	65.114	129	.505		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	1.123	1	1.123	2.606	.109
	Within Groups	55.616	129	.431		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.078	1	.078	.766	.383
	Within Groups	13.204	129	.102		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	.964	1	.964	3.939	.049**
	Within Groups	31.555	129	.245		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.646	1	.646	3.028	.084*
	Within Groups	27.522	129	.213		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.351	1	.351	1.567	.213
	Within Groups	28.871	129	.224		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.111	1	.111	.688	.408
	Within Groups	20.729	129	.161		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	.069	1	.069	.279	.598
	Within Groups	31.839	129	.247		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.001	1	.001	.005	.943
	Within Groups	19.602	129	.152		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.349	1	.349	1.641	.203
	Within Groups	27.437	129	.213		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.000	1	.000	.001	.973
	Within Groups	14.794	129	.115		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.249	1	.249	1.183	.279
	Within Groups	27.140	129	.210		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.028	1	.028	.305	.582
	Within Groups	11.682	129	.091		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.005	1	.005	.021	.886
	Within Groups	31.903	129	.247		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.055	1	.055	.301	.584
	Within Groups	23.609	129	.183		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.000	1	.000	.018	.892
	Within Groups	2.931	129	.023		
	Total	2.931	130			
Q68_Supr	Between Groups	.172	1	.172	1.795	.183
	Within Groups	12.332	129	.096		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.314	1	.314	1.774	.185
	Within Groups	22.816	129	.177		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	.029	1	.029	.120	.730
	Within Groups	30.887	129	.239		
	Total	30.916	130			
Q70_Int_Client	Between Groups	.794	1	.794	4.828	.030**
	Within Groups	21.221	129	.165		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.054	1	.054	1.223	.271
	Within Groups	5.671	129	.044		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.366	1	.366	3.894	.051*
	Within Groups	12.137	129	.094		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.168	1	.168	1.115	.293
	Within Groups	19.435	129	.151		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	.005	1	.005	.018	.894
	Within Groups	32.744	129	.254		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	.044	1	.044	.202	.654
	Within Groups	27.743	129	.215		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0,01

Table 26: ANOVA analysis of survey questions and constructs comparing domestic students to international students

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	.379	1	.379	.323	.571
	Within Groups	151.224	129	1.172		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	3.483	1	3.483	4.045	.046**
	Within Groups	109.355	127	.861		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	.367	1	.367	.582	.447
	Within Groups	80.564	128	.629		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.546	1	.546	.421	.518
	Within Groups	167.363	129	1.297		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	.267	1	.267	.328	.568
	Within Groups	105.168	129	.815		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.328	1	.328	.380	.538
	Within Groups	110.441	128	.863		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	.085	1	.085	.085	.771
	Within Groups	129.197	129	1.002		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.091	1	.091	.126	.723
	Within Groups	92.596	129	.718		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	1.753	1	1.753	2.593	.110
	Within Groups	87.209	129	.676		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.396	1	.396	.578	.449
	Within Groups	87.674	128	.685		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	.039	1	.039	.042	.838
	Within Groups	118.541	129	.919		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.726	1	.726	.899	.345
	Within Groups	104.205	129	.808		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.432	1	.432	1.057	.306
	Within Groups	52.698	129	.409		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	.372	1	.372	.425	.516
	Within Groups	112.987	129	.876		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.703	1	.703	1.224	.271
	Within Groups	73.520	128	.574		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	.324	1	.324	.285	.595
	Within Groups	145.645	128	1.138		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	1.788	1	1.788	2.064	.153
	Within Groups	111.739	129	.866		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	1.798	1	1.798	1.808	.181
	Within Groups	128.278	129	.994		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	3.237	1	3.237	3.674	.057*
	Within Groups	113.679	129	.881		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	.594	1	.594	.957	.330
	Within Groups	80.078	129	.621		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.303	1	.303	.510	.477
	Within Groups	75.974	128	.594		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	1.803	1	1.803	2.105	.149
	Within Groups	110.517	129	.857		
	Total	112.321	130			
Q49_Work_Init	Between Groups	.127	1	.127	.188	.665
	Within Groups	86.805	129	.673		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	.395	1	.395	.604	.438
	Within Groups	84.398	129	.654		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	.003	1	.003	.004	.951
	Within Groups	90.578	129	.702		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	.037	1	.037	.049	.826

	Within Groups	96.803	129	.750		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.021	1	.021	.023	.878
	Within Groups	115.855	127	.912		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	.246	1	.246	.265	.607
	Within Groups	119.754	129	.928		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	.000	1	.000	.000	.989
	Within Groups	93.633	129	.726		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.121	1	.121	.142	.707
	Within Groups	109.079	128	.852		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	1.004	1	1.004	1.142	.287
	Within Groups	113.408	129	.879		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	.269	1	.269	.354	.553
	Within Groups	98.265	129	.762		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	.148	1	.148	.166	.685
	Within Groups	115.089	129	.892		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	.008	1	.008	.007	.935
	Within Groups	152.923	128	1.195		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	.017	1	.017	.017	.896
	Within Groups	125.586	129	.974		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.161	1	.161	.275	.601
	Within Groups	74.916	128	.585		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	.437	1	.437	.299	.585
	Within Groups	188.525	129	1.461		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.000	1	.000	.000	.983
	Within Groups	38.373	129	.297		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.003	1	.003	.008	.928
	Within Groups	44.941	129	.348		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.146	1	.146	.613	.435
	Within Groups	30.640	129	.238		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.040	1	.040	.078	.780
	Within Groups	65.143	129	.505		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	.055	1	.055	.125	.724
	Within Groups	56.684	129	.439		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.042	1	.042	.408	.524
	Within Groups	13.241	129	.103		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	.104	1	.104	.413	.522
	Within Groups	32.415	129	.251		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.260	1	.260	1.200	.275
	Within Groups	27.908	129	.216		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.024	1	.024	.104	.748
	Within Groups	29.198	129	.226		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	1.101	1	1.101	7.195	.008***
	Within Groups	19.739	129	.153		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	1.553	1	1.553	6.600	.011**
	Within Groups	30.355	129	.235		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	1.875	1	1.875	13.645	.000***
	Within Groups	17.728	129	.137		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.040	1	.040	.184	.669
	Within Groups	27.747	129	.215		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.145	1	.145	1.276	.261
	Within Groups	14.649	129	.114		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.007	1	.007	.034	.854
	Within Groups	27.382	129	.212		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.048	1	.048	.534	.466
	Within Groups	11.662	129	.090		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.252	1	.252	1.027	.313
	Within Groups	31.656	129	.245		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.384	1	.384	2.125	.147
	Within Groups	23.281	129	.180		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.020	1	.020	.870	.353
	Within Groups	2.912	129	.023		
	Total	2.931	130			
Q68_Supr	Between Groups	.000	1	.000	.001	.981
	Within Groups	12.504	129	.097		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.432	1	.432	2.455	.120
	Within Groups	22.698	129	.176		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	.004	1	.004	.016	.899
	Within Groups	30.912	129	.240		
	Total	30.916	130			
Q70_Int_Client	Between Groups	.000	1	.000	.001	.971
	Within Groups	22.015	129	.171		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.079	1	.079	1.795	.183
	Within Groups	5.647	129	.044		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.058	1	.058	.600	.440
	Within Groups	12.446	129	.096		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.017	1	.017	.109	.742
	Within Groups	19.586	129	.152		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	1.287	1	1.287	5.277	.023**
	Within Groups	31.461	129	.244		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	.630	1	.630	2.992	.086*
	Within Groups	27.156	129	.211		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 27: ANOVA analysis of survey questions and constructs comparing students by major (business, engineering, or STEM)

ANOVA

		Sum of Squares	df	Mean Square	F	*p* -value
Q27_Comp_Proj	Between Groups	1.969	2	.985	.842	.433
	Within Groups	149.634	128	1.169		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.766	2	.383	.431	.651
	Within Groups	112.071	126	.889		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	.257	2	.129	.202	.817
	Within Groups	80.674	127	.635		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	.248	2	.124	.095	.910
	Within Groups	167.660	128	1.310		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	.306	2	.153	.186	.830
	Within Groups	105.129	128	.821		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.280	2	.140	.161	.851
	Within Groups	110.489	127	.870		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	.322	2	.161	.160	.852
	Within Groups	128.960	128	1.008		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.754	2	.377	.525	.593
	Within Groups	91.933	128	.718		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	.962	2	.481	.700	.499
	Within Groups	88.000	128	.688		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	2.957	2	1.478	2.206	.114
	Within Groups	85.113	127	.670		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	1.620	2	.810	.887	.415
	Within Groups	116.960	128	.914		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.351	2	.176	.215	.807
	Within Groups	104.580	128	.817		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.513	2	.256	.624	.538
	Within Groups	52.617	128	.411		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	2.823	2	1.412	1.635	.199
	Within Groups	110.536	128	.864		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.067	2	.033	.057	.944
	Within Groups	74.156	127	.584		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	.766	2	.383	.335	.716
	Within Groups	145.203	127	1.143		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	1.527	2	.763	.872	.420
	Within Groups	112.000	128	.875		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	1.293	2	.647	.643	.528
	Within Groups	128.783	128	1.006		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	.151	2	.075	.083	.921
	Within Groups	116.765	128	.912		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	1.006	2	.503	.808	.448
	Within Groups	79.666	128	.622		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.858	2	.429	.722	.488
	Within Groups	75.419	127	.594		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	1.446	2	.723	.834	.436
	Within Groups	110.875	128	.866		
	Total	112.321	130			
Q49_Work_Init	Between Groups	2.455	2	1.227	1.860	.160
	Within Groups	84.477	128	.660		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	1.012	2	.506	.773	.464
	Within Groups	83.782	128	.655		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	1.804	2	.902	1.300	.276
	Within Groups	88.776	128	.694		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	1.261	2	.630	.844	.432

	Within Groups	95.579	128	.747		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	2.762	2	1.381	1.538	.219
	Within Groups	113.114	126	.898		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	4.592	2	2.296	2.546	.082*
	Within Groups	115.408	128	.902		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	1.868	2	.934	1.303	.275
	Within Groups	91.765	128	.717		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.087	2	.043	.050	.951
	Within Groups	109.113	127	.859		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.587	2	.293	.330	.720
	Within Groups	113.825	128	.889		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	4.699	2	2.350	3.205	.044**
	Within Groups	93.835	128	.733		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	7.602	2	3.801	4.520	.013***
	Within Groups	107.635	128	.841		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	15.268	2	7.634	7.043	.001***
	Within Groups	137.662	127	1.084		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	1.572	2	.786	.811	.447
	Within Groups	124.031	128	.969		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	1.178	2	.589	1.012	.366
	Within Groups	73.899	127	.582		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	4.802	2	2.401	1.669	.193
	Within Groups	184.160	128	1.439		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.196	2	.098	.328	.721
	Within Groups	38.178	128	.298		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.424	2	.212	.609	.545
	Within Groups	44.520	128	.348		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.399	2	.199	.840	.434
	Within Groups	30.387	128	.237		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.439	2	.220	.434	.649
	Within Groups	64.744	128	.506		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	4.086	2	2.043	4.966	.008***
	Within Groups	52.653	128	.411		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.407	2	.204	2.025	.136
	Within Groups	12.875	128	.101		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	.745	2	.372	1.500	.227
	Within Groups	31.774	128	.248		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.339	2	.170	.780	.461
	Within Groups	27.829	128	.217		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.077	2	.039	.170	.844
	Within Groups	29.144	128	.228		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.598	2	.299	1.890	.155
	Within Groups	20.242	128	.158		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	.033	2	.017	.067	.935
	Within Groups	31.875	128	.249		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.855	2	.428	2.920	.058*
	Within Groups	18.748	128	.146		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	1.049	2	.524	2.510	.085*
	Within Groups	26.737	128	.209		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.003	2	.002	.015	.985
	Within Groups	14.791	128	.116		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	1.198	2	.599	2.928	.057*
	Within Groups	26.191	128	.205		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.223	2	.111	1.242	.292
	Within Groups	11.487	128	.090		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.321	2	.161	.651	.523
	Within Groups	31.587	128	.247		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.713	2	.356	1.988	.141
	Within Groups	22.951	128	.179		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.012	2	.006	.266	.767
	Within Groups	2.919	128	.023		
	Total	2.931	130			
Q68_Supr	Between Groups	.268	2	.134	1.403	.250
	Within Groups	12.236	128	.096		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.090	2	.045	.249	.780
	Within Groups	23.040	128	.180		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	1.212	2	.606	2.611	.077*
	Within Groups	29.704	128	.232		
	Total	30.916	130			
Q70_Int_Client	Between Groups	2.275	2	1.138	7.377	.001***
	Within Groups	19.740	128	.154		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.020	2	.010	.228	.797
	Within Groups	5.705	128	.045		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.353	2	.177	1.861	.160
	Within Groups	12.151	128	.095		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.147	2	.073	.483	.618
	Within Groups	19.456	128	.152		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	1.613	2	.807	3.316	.039**
	Within Groups	31.135	128	.243		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	1.868	2	.934	4.612	.012**
	Within Groups	25.918	128	.202		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 28: ANOVA analysis of survey questions and constructs comparing students who received a Pell grant to those who did not

ANOVA

		Sum of Squares	df	Mean Square	F	*p*-value
Q27_Comp_Proj	Between Groups	.026	1	.026	.022	.883
	Within Groups	151.578	129	1.175		
	Total	151.603	130			
Q28_Complex_Dec	Between Groups	.172	1	.172	.194	.660
	Within Groups	112.665	127	.887		
	Total	112.837	128			
Q29_Chall_Work	Between Groups	.931	1	.931	1.489	.225
	Within Groups	80.000	128	.625		
	Total	80.931	129			
Q30_Adeq_Res	Between Groups	4.963	1	4.963	3.929	.050*
	Within Groups	162.945	129	1.263		
	Total	167.908	130			
Q31_Influ_Amt	Between Groups	.063	1	.063	.077	.782
	Within Groups	105.372	129	.817		
	Total	105.435	130			
Q32_Influ_Dec	Between Groups	.153	1	.153	.178	.674
	Within Groups	110.616	128	.864		
	Total	110.769	129			
Q33_Do_Diff	Between Groups	1.546	1	1.546	1.561	.214
	Within Groups	127.736	129	.990		
	Total	129.282	130			
Q34_Impact_Org	Between Groups	.511	1	.511	.715	.399
	Within Groups	92.176	129	.715		
	Total	92.687	130			
Q35_Work_On_Own	Between Groups	.483	1	.483	.704	.403
	Within Groups	88.479	129	.686		
	Total	88.962	130			
Q36_Indp_Tht_Act	Between Groups	.112	1	.112	.163	.687
	Within Groups	87.957	128	.687		
	Total	88.069	129			
Q37_Clear_Obj	Between Groups	.768	1	.768	.841	.361
	Within Groups	117.812	129	.913		
	Total	118.580	130			
Q38_Choose_Meth	Between Groups	.139	1	.139	.172	.679
	Within Groups	104.792	129	.812		

	Total	104.931	130			
Q39_Help_Cowrk	Between Groups	.257	1	.257	.628	.430
	Within Groups	52.872	129	.410		
	Total	53.130	130			
Q40_Help_Supr	Between Groups	.523	1	.523	.598	.441
	Within Groups	112.836	129	.875		
	Total	113.359	130			
Q41_Achiev_App	Between Groups	.033	1	.033	.058	.811
	Within Groups	74.190	128	.580		
	Total	74.223	129			
Q42_Supr_Enc_Dec	Between Groups	.621	1	.621	.547	.461
	Within Groups	145.349	128	1.136		
	Total	145.969	129			
Q43_Supr_Enc_Spk	Between Groups	.000	1	.000	.001	.982
	Within Groups	113.526	129	.880		
	Total	113.527	130			
Q44_Supr_Dev_Sklls	Between Groups	.638	1	.638	.636	.427
	Within Groups	129.438	129	1.003		
	Total	130.076	130			
Q45_Clim_Comp	Between Groups	1.734	1	1.734	1.942	.166
	Within Groups	115.182	129	.893		
	Total	116.916	130			
Q46_Clim_Enc_Supp	Between Groups	.047	1	.047	.075	.785
	Within Groups	80.625	129	.625		
	Total	80.672	130			
Q47_Clim_Relax	Between Groups	.032	1	.032	.053	.818
	Within Groups	76.245	128	.596		
	Total	76.277	129			
Q48_Clim_Rigid	Between Groups	4.144	1	4.144	4.942	.028**
	Within Groups	108.176	129	.839		
	Total	112.321	130			
Q49_Work_Init	Between Groups	.008	1	.008	.012	.912
	Within Groups	86.923	129	.674		
	Total	86.931	130			
Q50_Recog_Gd_Job	Between Groups	.003	1	.003	.004	.949
	Within Groups	84.791	129	.657		
	Total	84.794	130			
Q51_Mgmt_Hlth_Wbng	Between Groups	1.217	1	1.217	1.757	.187
	Within Groups	89.363	129	.693		
	Total	90.580	130			
Q52_Sense_Team	Between Groups	.830	1	.830	1.115	.293

	Within Groups	96.010	129	.744		
	Total	96.840	130			
Q53_Part_Of_Team	Between Groups	.026	1	.026	.028	.867
	Within Groups	115.850	127	.912		
	Total	115.876	128			
Q54_Curr_Skls_Use	Between Groups	.720	1	.720	.778	.379
	Within Groups	119.280	129	.925		
	Total	120.000	130			
Q55_Req_New_Skls	Between Groups	1.128	1	1.128	1.573	.212
	Within Groups	92.505	129	.717		
	Total	93.634	130			
Q56_Cnct_Wrk_Sch	Between Groups	.277	1	.277	.325	.569
	Within Groups	108.923	128	.851		
	Total	109.200	129			
Q57_Apply_Cls_Wrk	Between Groups	.659	1	.659	.747	.389
	Within Groups	113.753	129	.882		
	Total	114.412	130			
Q58_Fdbk_On_Job	Between Groups	.019	1	.019	.025	.875
	Within Groups	98.515	129	.764		
	Total	98.534	130			
Q59_Wrk_W_Others	Between Groups	.298	1	.298	.335	.564
	Within Groups	114.938	129	.891		
	Total	115.237	130			
Q60_Wrk_W_Job	Between Groups	2.442	1	2.442	2.077	.152
	Within Groups	150.489	128	1.176		
	Total	152.931	129			
Q61_Cowrk_Dev_Skl	Between Groups	.474	1	.474	.489	.486
	Within Groups	125.129	129	.970		
	Total	125.603	130			
Q62_Talk_Inform	Between Groups	.085	1	.085	.146	.703
	Within Groups	74.991	128	.586		
	Total	75.077	129			
Q63_Intrct_Out_Wrk	Between Groups	2.456	1	2.456	1.699	.195
	Within Groups	186.505	129	1.446		
	Total	188.962	130			
C1_27_34_Job_Tsk_Char	Between Groups	.237	1	.237	.802	.372
	Within Groups	38.136	129	.296		
	Total	38.373	130			
C2_35_38_Level_Dir	Between Groups	.004	1	.004	.011	.918
	Within Groups	44.940	129	.348		
	Total	44.944	130			

C3_39_53_Org_Cult	Between Groups	.022	1	.022	.092	.762
	Within Groups	30.764	129	.238		
	Total	30.786	130			
C4_54_57_Skl_Know	Between Groups	.788	1	.788	1.579	.211
	Within Groups	64.394	129	.499		
	Total	65.183	130			
C5_58_63_Soc_Int	Between Groups	.000	1	.000	.000	.992
	Within Groups	56.739	129	.440		
	Total	56.739	130			
Q66_Task_Assgn_Supr	Between Groups	.206	1	.206	2.027	.157
	Within Groups	13.077	129	.101		
	Total	13.282	130			
Q66_Task_Assgn_Cowrk	Between Groups	.014	1	.014	.054	.817
	Within Groups	32.505	129	.252		
	Total	32.519	130			
Q66_Task_Req_Dec	Between Groups	.012	1	.012	.053	.818
	Within Groups	28.156	129	.218		
	Total	28.168	130			
Q66_Task_Req_Tech_Sk	Between Groups	.039	1	.039	.174	.677
	Within Groups	29.182	129	.226		
	Total	29.221	130			
Q66_Task_Req_Nont_Sk	Between Groups	.119	1	.119	.743	.390
	Within Groups	20.720	129	.161		
	Total	20.840	130			
Q66_Task_Id_Own	Between Groups	.360	1	.360	1.473	.227
	Within Groups	31.548	129	.245		
	Total	31.908	130			
Q66_Task_Req_Collab_Int	Between Groups	.165	1	.165	1.093	.298
	Within Groups	19.438	129	.151		
	Total	19.603	130			
Q66_Task_Req_Collab_Ext	Between Groups	.130	1	.130	.606	.438
	Within Groups	27.656	129	.214		
	Total	27.786	130			
Q67_Ask_Cowrk_Asst	Between Groups	.003	1	.003	.023	.879
	Within Groups	14.791	129	.115		
	Total	14.794	130			
Q67_Ask_Supr_Asst	Between Groups	.376	1	.376	1.795	.183
	Within Groups	27.013	129	.209		
	Total	27.389	130			
Q67_Figure_Out_Own	Between Groups	.207	1	.207	2.327	.130
	Within Groups	11.502	129	.089		

	Total	11.710	130			
Q67_Org_Resource	Between Groups	.001	1	.001	.005	.945
	Within Groups	31.907	129	.247		
	Total	31.908	130			
Q67_Public_Resource	Between Groups	.038	1	.038	.206	.651
	Within Groups	23.626	129	.183		
	Total	23.664	130			
Q68_Coworkers	Between Groups	.008	1	.008	.363	.548
	Within Groups	2.923	129	.023		
	Total	2.931	130			
Q68_Supr	Between Groups	.181	1	.181	1.893	.171
	Within Groups	12.323	129	.096		
	Total	12.504	130			
Q68_Comp_Materials	Between Groups	.050	1	.050	.282	.596
	Within Groups	23.079	129	.179		
	Total	23.130	130			
Q68_Comp_Train	Between Groups	1.734	1	1.734	7.666	.006***
	Within Groups	29.182	129	.226		
	Total	30.916	130			
Q70_Int_Client	Between Groups	.317	1	.317	1.887	.172
	Within Groups	21.698	129	.168		
	Total	22.015	130			
Q70_Int_Cowrk	Between Groups	.010	1	.010	.232	.631
	Within Groups	5.715	129	.044		
	Total	5.725	130			
Q70_Int_Supr	Between Groups	.179	1	.179	1.874	.173
	Within Groups	12.325	129	.096		
	Total	12.504	130			
Q70_Int_Vendor	Between Groups	.015	1	.015	.100	.753
	Within Groups	19.588	129	.152		
	Total	19.603	130			
Q70_Int_Oth_Dept	Between Groups	.000	1	.000	.001	.976
	Within Groups	32.748	129	.254		
	Total	32.748	130			
Q70_Int_Oth_Intrn	Between Groups	.238	1	.238	1.115	.293
	Within Groups	27.548	129	.214		
	Total	27.786	130			

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 29a: Regression results with Level of direction construct as the dependent variable and Startup/Established as the independent variable

Dependent variable: Level of direction construct	Unstandardized Coefficients		Standardized Coefficients	t	*p*-value
	B	Std. Error	Beta		
Startup	.148	.161	.080	.915	.362
Constant	3.986	.055		72.961	.000

$R^2 = 0.006$

Table 29b: Regression results with Level of direction construct as dependent variable, Established/Startup as the independent variable, and the following controls: First internship, Domestic, Female, Female Supervisor, Encouraging & supportive climate (Q46), Extent able to connect what he/she learned in school to work (Q56), Apply knowledge/skills/concepts from class to internship (Q57), Try to figure out on own if he/she does not know how to perform task (option for Q67), Major

Dependent variable: Level of direction construct	Unstandardized Coefficients		Standardized Coefficients	t	*p*-value
	B	Std. Error	Beta		
Startup	.075	.141	.041	.536	.593
First_Internship	.061	.094	.053	.650	.517
Domestic	.021	.129	.013	.163	.871
Female	.049	.095	.042	.518	.606
Female_Supr	.041	.107	.032	.385	.701
Q46_Clim_Enc_Supp	.265	.062	.358	4.290	.000***
Q56_Cnct_Wrk_Sch	.094	.081	.148	1.162	.247
Q57_Apply_Cls_Wrk	.106	.082	.172	1.298	.197
Q67_Figure_Out_Own	.209	.159	.104	1.312	.192
Major_B_E	.066	.124	.045	0.535	.593
Constant	1.760	.402		4.376	.000

R^2 = 0.324

***p-value <.01

Table 30: Regression results with Social interaction construct as dependent variable and male/female as the independent variable and domestic/international, Pell recipient, and male/female supervisor as controls

Dependent variable: Social interaction construct	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Female	.013	.123	.010	.107	.915
Domestic	-.060	.166	-.032	-.358	.721
Pell recipient	.046	.191	.022	.243	.808
Female Supr	.201	.134	.140	1.506	.135
Constant	3.817	.162		23.503	.000

$R^2 = 0.021$

Table 31a: Regression results with Organizational culture construct as the dependent variable and male/female as the independent variable with male/female supervisor as a control

Dependent variable: Organizational culture construct	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Female	-.005	.090	-.005	-.057	.955
Female Supr	.105	.098	.099	1.081	.282
(Constant)	3.981	.059		67.709	.000

$R^2 = 0.010$

Table 31b: Regression results with Organizational culture construct as the dependent variable, Established/Startup as the independent variable, and the following controls: First internship, Domestic, Female supervisor, Major, Extent job involves working with others (Q59), Extent working with others is part of job (Q60), Extent talk informally with coworkers during work (Q62), Extent interact with coworkers outside of work (Q63)

Dependent variable: Organizational culture construct	Unstandardized Coefficients		Standardized Coefficients	t	*p*-value
	B	Std. Error	Beta		
Startup	.077	.122	.051	.630	.530
First_Internship	-.072	.078	-.074	-.922	.359
Domestic	-.056	.109	-.041	-.513	.609
Female_Supr	.050	.090	.047	.561	.576
Q59_Wrk_W_Others	.142	.062	.272	2.294	.024**
Q60_Wrk_W_Job	.047	.056	.104	.838	.404
Q62_Talk_Inform	.096	.058	.150	1.665	.099*
Q63_Intrct_Out_Wrk	.077	.036	.189	2.143	.034**
Major_B_E	.097	.111	.077	0.873	.384
(Constant)	2.510	.356		7.052	.000

R^2 = 0.296

*p-value <0.1; **p-value <0.05

Table 32: Regression results with Skills developed construct as the dependent variable and male/female as the independent variable, with Job characteristics construct, Organizational culture construct, and Social interaction construct as controls

Dependent variable: Skills & knowledge construct	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Female	.016	.095	.011	.171	.865
Job characteristics	.457	.123	.350	3.707	.000***
Level of direction	.201	.113	.166	1.778	.078*
Organizational culture	.338	.156	.233	2.162	.033**
Social interaction	.038	.094	.035	0.397	.692
Constant	-.221	.397		-.557	.578

R^2 = 0.466

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 33a: Regression results with Job characteristics construct as the dependent variable and male/female as the independent variable

Dependent variable: Job tasks & characteristics construct	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Female	-0.086	.096	-0.078367884	-0.893	.374
Constant	3.639	.062		58.343	.000

R^2 = 0.006

Table 33b: Regression results with Job tasks & characteristics as the dependent variable and Established/startup as the independent variable with the following controls: Encouraging & supportive work climate (Q46), Relaxed work climate (Q47), Sense of team in the workplace (Q52), Extent he/she feels part of team (Q53), Extent work with others in job (Q59), Extent working with other part of job (Q60), Extent talk informally with coworkers during work (Q62), Extent interact with coworkers outside of work (Q63), Major

Dependent variable: Job tasks & characteristics construct	Unstandardized Coefficients		Standardized Coefficients	t	*p*-value
	B	Std. Error	Beta		
Startup	.027	.136	.016	.200	.842
Q46_Clim_Enc_Supp	.192	.069	.279	2.772	.006***
Q47_Clim_Relax	-.004	.067	-.006	-.067	.947
Q52_Sense_Team	-.051	.072	-.081	-.715	.476
Q53_Part_Of_Team	.161	.071	.280	2.255	.026**
Q59_Wrk_W_Others	.002	.075	.003	.026	.980
Q60_Wrk_W_Job	.081	.061	.162	1.332	.186
Q62_Talk_Inform	-.036	.071	-.051	-.512	.610
Q63_Intrct_Out_Wrk	.067	.040	.147	1.670	.098*
Major_B_E	.223	.117	.158	1.913	.058*
(Constant)	1.557	.408		3.820	.000

R^2 = 0.314

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 33c: Regression results with Job tasks & characteristics as the dependent variable and Encouraging & supportive work climate (Q46) as the independent variable with the following controls: Sense of team in the workplace (Q52), Extent he/she feels part of team (Q53), Extent work with others in job (Q59), Extent working with other part of job (Q60), Extent talk informally with coworkers during work (Q62), Extent interact with coworkers outside of work (Q63), Female supervisor, Major

Dependent variable: Job tasks & characteristics construct	Unstandardized Coefficients		Standardized Coefficients	t	*p*-value
	B	Std. Error	Beta		
Q46_Clim_Enc_Supp	.191	.067	.277	2.869	.005
Q52_Sense_Team	-.057	.071	-.090	-.802	.424
Q53_Part_Of_Team	.163	.070	.284	2.321	.022
Q59_Wrk_W_Others	-.003	.071	-.005	-.044	.965
Q60_Wrk_W_Job	.096	.060	.190	1.594	.114
Q62_Talk_Inform	-.037	.066	-.051	-.556	.580
Q63_Intrct_Out_Wrk	.066	.040	.145	1.668	.098
Female_Supr	-.075	.099	-.062	-.755	.452
Major_B_E	.209	.118	.147	1.772	.079
(Constant)	1.578	.391		4.038	.000

$R^2 = 0.323$

*p-value <0.1; **p-value <0.05; ***p-value <0.01

Table 34: Regression results with survey Question 40 as the dependent variable and startup/established as the independent variable, and with first internship, Pell recipient, GPA, male/female, domestic/international, and major as controls; Question 40 asks about getting help or support from a supervisor if needed

Dependent variable: Question 40 response (receive help/support from supervisor)	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	*p*-value	Lower Bound	Upper Bound
Startup	-.154	.261	-.053	-.592	.555	-.670	.362
First_Internship	-.387	.164	-.207	-2.361	.020**	-.712	-.063
Pell_Receipient	-.321	.270	-.103	-1.189	.237	-.856	.214
GPA	.187	.250	.068	.749	.455	-.308	.682
Female	.396	.164	.209	2.410	.017**	.071	.722
Domestic	-.154	.242	-.057	-.639	.524	-.633	.324
Major	-.242	.174	-.126	-1.391	.167	-.586	.102
Constant	4.399	1.072		4.102	.000	2.276	6.521

$R^2 = 0.117$

**p-value <0.05

Table 35: Regression results with survey Question 46 as the dependent variable and startup/established as the independent variable, and with first internship, Pell recipient, GPA, male/female, domestic/international, and major as controls; Question 46 asks the extent to which the work climate is encouraging and supportive

Dependent variable: Question 46 response (work climate is encouraging and supportive)	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	*p*-value	Lower Bound	Upper Bound
Startup	.281	.227	.114	1.237	.219	-.169	.731
First_Internship	-.305	.143	-.193	-2.131	.035**	-.588	-.022
Pell_Receipient	.064	.236	.024	.270	.788	-.403	.530
GPA	.059	.218	.025	.269	.788	-.373	.490
Female	-.056	.143	-.035	-.393	.695	-.340	.227
Domestic	.248	.211	.109	1.178	.241	-.169	.665
Major	.023	.152	.014	0.154	.878	-.277	.324
Constant	4.048	.935		4.331	.000	2.198	5.899

$R^2 = 0.057$

**p-value <0.05

Table 36: Regression results with survey Question 49 as the dependent variable and startup/established as the independent variable, and with first internship, Pell recipient, GPA, male/female, domestic/international, and major as controls; Question 49 asks the extent to which take initiative in the work unit

Dependent variable: Question 49 response (workers take initiative in the unit)	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	*p*-value	Lower Bound	Upper Bound
Startup	.477	.235	.186	2.029	.045**	.012	.942
First_Internship	-.293	.148	-.178	-1.977	.050*	-.585	.000
Pell_Receipient	-.011	.244	-.004	-.044	.965	-.493	.472
GPA	.239	.225	.098	1.060	.291	-.207	.685
Female	-.058	.148	-.035	-.388	.699	-.351	.236
Domestic	.169	.218	.071	.775	.440	-.263	.600
Major	.074	.157	.044	.473	.637	-.236	.385
Constant	3.022	.967		3.126	.002	1.108	4.936

$R^2 = 0.070$

*p-value <0.1; **p-value <0.05

Table 37: Regression results with survey Question 59 as the dependent variable and startup/established as the independent variable, and with first internship, Pell recipient, GPA, male/female, domestic/international, and major as controls; Question 59 asks the extent to which the student's job depends on his/her ability to work with others

Dependent variable: Question 59 response (job depends on ability to work with others)	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Startup	-.079	.266	-.027	-.296	.768
First_Internship	-.046	.172	-.024	-.266	.791
Pell_Receipient	-.140	.281	-.045	-.497	.620
GPA	-.155	.266	-.056	-.584	.560
Female	.077	.172	.040	.450	.653
Domestic	-.039	.256	-.014	-.153	.878
Major (Bus/Eng)	-.565	.227	-.237	-2.486	.014**
Constant	5.540	1.213		4.568	.000

R^2 = 0.058

**p-value <0.05

Table 38: Regression results with survey Question 60 as the dependent variable and startup/established as the independent variable, and with first internship, Pell recipient, GPA, male/female, domestic/international, and major as controls; Question 60 asks the extent to which dealing with other people is part of the student's job

Dependent variable: Question 60 response (working with other people is part of job)	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	*p*-value
Startup	.428	.292	.127	1.465	.145
First_Internship	.119	.189	.055	.630	.530
Pell_Receipient	-.296	.308	-.083	-.960	.339
GPA	-.394	.292	-.124	-1.352	.179
Female	-.006	.189	-.003	-.030	.976
Domestic	-.231	.280	-.074	-.824	.412
Major (Bus/Eng)	-1.019	.254	-.368	-4.020	.000***
Constant	7.180	1.334		5.382	.000

$R^2 = 0.143$

***p-value <0.01

Table 39: Occurrences and frequencies of tasks reported in the open-ended question of the survey.

Task	Number of Occurrences	Frequency
Product development	7	5.3%
Testing	9	6.9%
Assigned tasks	10	7.6%
Project management	10	7.6%
Research	14	10.7%
Design	14	10.7%
Software development	20	15.3%
Data analysis	31	23.7%

Table 40: Occurrences and frequencies of skills developed reported in the open-ended question of the survey.

Skill	Number of occurrences	Frequency
Problem solving skills	7	5.3%
Confidence	7	5.3%
Research skills	8	6.1%
General interpersonal skills	11	8.4%
Professional interaction	14	10.7%
Knowledge of industry	15	11.5%
Software skills	20	15.3%
Communication	25	19.1%
Data analysis	31	23.7%
Technical skills related to area of study	74	56.5%

Table 41: Table with demographic information about interview subjects

Subject	Major	Gender	Company Type	Comments
1	Engineering	Male	Established	International student
2	Business	Male	Hybrid	Comment that company was entrepreneurial
3	Business	Male	Established	
4	Engineering	Female	Established	Other interns not welcoming
5	Engineering	Male	Startup	International student
6	Business	Female	Hybrid	Research park office
7	Engineering	Male	Hybrid	International student
8	Business	Female	Startup	
9	Engineering	Female	Established	High GPA
10	Engineering	Male	Hybrid	Pell recipient
11	Engineering	Male	Hybrid	
12	Business	Female	Startup	
13	Business	Male	Established	Financial company
14	Engineering	Male	Established	Pell recipient
15	Engineering	Male	Established	Research park office
16	Engineering	Male	Hybrid	Specific company
17	Engineering	Male	Established	Pell recipient
18	Engineering	Male	Hybrid	Did not feel had impact
19	Engineering	Female	Established	Work used by many people
20	Engineering	Female	Hybrid	Research park office
21	Engineering	Male	Hybrid	Trading company

Table 42: T-test results for all questions in the survey comparing the group of students who only participated in the survey to those who participated in both the survey and an interview

Group Statistics

Interview		N	Mean	Std. Deviation	Std. Error Mean
Q27_Comp_Proj	Survey only	110	3.8091	1.08784	.10372
	Interview	21	3.8571	1.06234	.23182
Q28_Complex_Dec	Survey only	108	3.3981	.95643	.09203
	Interview	21	3.3810	.86465	.18868
Q29_Chall_Work	Survey only	110	3.9545	.80579	.07683
	Interview	20	4.1000	.71818	.16059
Q30_Adeq_Res	Survey only	110	2.6182	1.14124	.10881
	Interview	21	2.3810	1.11697	.24374
Q31_Influ_Amt	Survey only	110	3.7545	.93049	.08872
	Interview	21	4.0000	.70711	.15430
Q32_Influ_Dec	Survey only	109	3.5872	.94488	.09050
	Interview	21	3.7619	.83095	.18133
Q33_Do_Diff	Survey only	110	3.8727	1.03258	.09845
	Interview	21	3.9524	.80475	.17561
Q34_Impact_Org	Survey only	110	3.7364	.82035	.07822
	Interview	21	3.8095	.98077	.21402
Q35_Work_On_Own	Survey only	110	4.2091	.82502	.07866
	Interview	21	4.0000	.83666	.18257
Q36_Indp_Tht_Act	Survey only	109	4.0550	.83705	.08017
	Interview	21	4.2381	.76842	.16768
Q37_Clear_Obj	Survey only	110	3.7455	.97149	.09263
	Interview	21	3.9524	.86465	.18868
Q38_Choose_Meth	Survey only	110	3.9091**	.90407	.08620
	Interview	21	4.3333**	.79582	.17366
Q39_Help_Cowrk	Survey only	110	4.7273***	.68949	.06574
	Interview	21	5.0000***	0.00000	0.00000
Q40_Help_Supr	Survey only	110	4.3364**	.96998	.09248
	Interview	21	4.7143**	.64365	.14046
Q41_Achiev_App	Survey only	109	4.4312	.78607	.07529
	Interview	21	4.5714	.59761	.13041
Q42_Supr_Enc_Dec	Survey only	109	3.9358	1.09100	.10450
	Interview	21	4.2381	.88909	.19401
Q43_Supr_Enc_Spk	Survey only	110	4.0909	.92415	.08811
	Interview	21	4.3810	.97346	.21243
Q44_Supr_Dev_Sklls	Survey only	110	4.0091**	1.01814	.09708

	Interview	21	4.4762**	.81358	.17754
Q45_Clim_Comp	Survey only	110	2.5727	.94295	.08991
	Interview	21	2.8571	.96362	.21028
Q46_Clim_Enc_Supp	Survey only	110	4.3364*	.82703	.07885
	Interview	21	4.5714*	.50709	.11066
Q47_Clim_Relax	Survey only	109	4.2110	.70807	.06782
	Interview	21	3.9524	1.02353	.22335
Q48_Clim_Rigid	Survey only	110	2.5455	.96390	.09190
	Interview	21	2.6190	.74001	.16148
Q49_Work_Init	Survey only	110	4.0455	.81709	.07791
	Interview	21	3.9048	.83095	.18133
Q50_Recog_Gd_Job	Survey only	110	4.1091	.82779	.07893
	Interview	21	4.2381	.70034	.15283
Q51_Mgmt_Hlth_Wbng	Survey only	110	4.2364	.84514	.08058
	Interview	21	4.1429	.79282	.17301
Q52_Sense_Team	Survey only	110	4.1909	.89335	.08518
	Interview	21	4.2381	.70034	.15283
Q53_Part_Of_Team	Survey only	108	4.0370	.92651	.08915
	Interview	21	4.0000	1.09545	.23905
Q54_Curr_Skls_Use	Survey only	110	3.9909	.97204	.09268
	Interview	21	4.0476	.92066	.20090
Q55_Req_New_Skls	Survey only	110	4.1182	.87506	.08343
	Interview	21	4.3810	.66904	.14600
Q56_Cnct_Wrk_Sch	Survey only	109	3.3670	.92956	.08904
	Interview	21	3.5714	.87014	.18988
Q57_Apply_Cls_Wrk	Survey only	110	3.3455	.94273	.08989
	Interview	21	3.4762	.92839	.20259
Q58_Fdbk_On_Job	Survey only	110	3.6273*	.89708	.08553
	Interview	21	3.9524*	.66904	.14600
Q59_Wrk_W_Others	Survey only	110	3.8727	.94925	.09051
	Interview	21	4.1905	.87287	.19048
Q60_Wrk_W_Job	Survey only	109	3.8257	1.07017	.10250
	Interview	21	3.8095	1.20909	.26385
Q61_Cowrk_Dev_Skl	Survey only	110	4.1273*	1.02366	.09760
	Interview	21	4.4762*	.67964	.14831
Q62_Talk_Inform	Survey only	109	4.21	.771	.074
	Interview	21	4.33	.730	.159
Q63_Intrct_Out_Wrk	Survey only	110	3.1273	1.21993	.11632
	Interview	21	3.4286	1.12122	.24467
C1_27_34_Job_Tsk_Char	Survey only	110	3.5925	.56750	.05411
	Interview	21	3.6565	.39984	.08725

C2_35_38_Level_Dir	Survey only	110	3.9780	.60827	.05800
	Interview	21	4.1310	.45839	.10003
C3_39_53_Org_Cult	Survey only	110	3.9879	.50134	.04780
	Interview	21	4.1269	.39046	.08520
C4_54_57_Skl_Know	Survey only	110	3.7083	.72092	.06874
	Interview	21	3.8690	.63551	.13868
C5_58_63_Soc_Int	Survey only	110	3.7991	.66649	.06355
	Interview	21	4.0318	.60684	.13242
Q66_Task_Assgn_Supr	Survey only	110	.8636**	.34474	.03287
	Interview	21	1.0000**	0.00000	0.00000
Q66_Task_Assgn_Cowrk	Survey only	110	.5364	.50096	.04776
	Interview	21	.5714	.50709	.11066
Q66_Task_Req_Dec	Survey only	110	.6636	.47463	.04525
	Interview	21	.8095	.40237	.08781
Q66_Task_Req_Tech_Sk	Survey only	110	.6545	.47769	.04555
	Interview	21	.7143	.46291	.10102
Q66_Task_Req_Nont_Sk	Survey only	110	.8182	.38746	.03694
	Interview	21	.7143	.46291	.10102
Q66_Task_Id_Own	Survey only	110	.5818	.49552	.04725
	Interview	21	.5714	.50709	.11066
Q66_Task_Req_Collab_Int	Survey only	110	.8091	.39482	.03764
	Interview	21	.8571	.35857	.07825
Q66_Task_Req_Collab_Ext	Survey only	110	.3091	.46423	.04426
	Interview	21	.2857	.46291	.10102
Q67_Ask_Cowrk_Asst	Survey only	110	.8727	.33480	.03192
	Interview	21	.8571	.35857	.07825
Q67_Ask_Supr_Asst	Survey only	110	.6727**	.47137	.04494
	Interview	21	.8571**	.35857	.07825
Q67_Figure_Out_Own	Survey only	110	.9000	.30137	.02873
	Interview	21	.9048	.30079	.06564
Q67_Org_Resource	Survey only	110	.6000	.49214	.04692
	Interview	21	.4762	.51177	.11168
Q67_Public_Resource	Survey only	110	.7727	.42099	.04014
	Interview	21	.7143	.46291	.10102
Q68_Coworkers	Survey only	110	.9818	.13422	.01280
	Interview	21	.9524	.21822	.04762
Q68_Supr	Survey only	110	.8909	.31318	.02986
	Interview	21	.9048	.30079	.06564
Q68_Comp_Materials	Survey only	110	.7818	.41490	.03956
	Interview	21	.7143	.46291	.10102
Q68_Comp_Train	Survey only	110	.6182	.48806	.04653

	Interview	21	.6190	.49761	.10859
Q70_Int_Client	Survey only	110	.2182	.41490	.03956
	Interview	21	.1905	.40237	.08781
Q70_Int_Cowrk	Survey only	110	.9545	.20925	.01995
	Interview	21	.9524	.21822	.04762
Q70_Int_Supr	Survey only	110	.8818	.32430	.03092
	Interview	21	.9524	.21822	.04762
Q70_Int_Vendor	Survey only	110	.1818	.38746	.03694
	Interview	21	.1905	.40237	.08781
Q70_Int_Oth_Dept	Survey only	110	.4909	.50221	.04788
	Interview	21	.5714	.50709	.11066
Q70_Int_Oth_Intrn	Survey only	110	.7000	.46035	.04389
	Interview	21	.6667	.48305	.10541
Estab_Startup	Survey only	110	.1091	.31318	.02986
	Interview	21	.1429	.35857	.07825
Duration_Employed	Survey only	110	1.7818	.92252	.08796
	Interview	21	1.6190	.97346	.21243
First_Internship	Survey only	110	.5000	.50229	.04789
	Interview	21	.5238	.51177	.11168
No_Credit	Survey only	110	.8545	.35417	.03377
	Interview	21	.9524	.21822	.04762
No_Tuition	Survey only	110	.5909	.49392	.04709
	Interview	21	.5714	.50709	.11066
Pell_Receipient	Survey only	110	.0818	.27534	.02625
	Interview	21	.2381	.43644	.09524
Stud_Loan	Survey only	110	.2909	.45626	.04350
	Interview	21	.4286	.50709	.11066
GPA	Survey only	108	3.4636**	.34836	.03352
	Interview	21	3.6243**	.25517	.05568
Female	Survey only	110	.4364	.49820	.04750
	Interview	21	.3333	.48305	.10541
Domestic	Survey only	110	.8727	.33480	.03192
	Interview	21	.7619	.43644	.09524
Female_Supr	Survey only	110	.3091	.46423	.04426
	Interview	21	.2381	.43644	.09524
Major_B_E	Survey only	110	1.8182	.38746	.03694
	Interview	21	1.7619	.43644	.09524

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	*p*-value	Mean Difference	Std. Error Difference	Lower	Upper
Q27_Comp_Proj	Equal variances assumed	.201	.655	-.186	129	.853	-.04805	.25813	-.55876	.46266
	Equal variances not assumed			-.189	28.599	.851	-.04805	.25397	-.56779	.47169
Q28_Complex_Dec	Equal variances assumed	.399	.529	.076	127	.939	.01720	.22480	-.42763	.46203
	Equal variances not assumed			.082	30.328	.935	.01720	.20993	-.41135	.44574
Q29_Chall_Work	Equal variances assumed	.171	.680	-.754	128	.452	-.14545	.19286	-.52707	.23616
	Equal variances not assumed			-.817	28.433	.421	-.14545	.17802	-.50987	.21896
Q30_Adeq_Res	Equal variances assumed	.692	.407	.876	129	.383	.23723	.27088	-.29872	.77318
	Equal variances not assumed			.889	28.558	.382	.23723	.26693	-.30907	.78353
Q31_Influ_Amt	Equal variances assumed	4.454	.037	-1.146	129	.254	-.24545	.21420	-.66926	.17835
	Equal variances not assumed			-1.379	34.713	.177	-.24545	.17799	-.60690	.11599
Q32_Influ_Dec	Equal variances assumed	1.543	.216	-.790	128	.431	-.17475	.22115	-.61234	.26284
	Equal variances not assumed			-.862	30.851	.395	-.17475	.20266	-.58816	.23866

Q33_Do_Diff	Equal variances assumed	4.235	.042	-.334	129	.739	-.07965	.23830	-.55113	.39182
	Equal variances not assumed			-.396	33.933	.695	-.07965	.20133	-.48883	.32952
Q34_Impact_Org	Equal variances assumed	.314	.576	-.363	129	.717	-.07316	.20175	-.47234	.32602
	Equal variances not assumed			-.321	25.616	.751	-.07316	.22787	-.54189	.39557
Q35_Work_On_Own	Equal variances assumed	.369	.544	1.062	129	.290	.20909	.19690	-.18048	.59866
	Equal variances not assumed			1.052	27.938	.302	.20909	.19880	-.19817	.61635
Q36_Indp_Tht_Act	Equal variances assumed	.224	.637	-.929	128	.355	-.18305	.19701	-.57287	.20678
	Equal variances not assumed			-.985	29.900	.333	-.18305	.18587	-.56269	.19659
Q37_Clear_Obj	Equal variances assumed	2.736	.101	-.909	129	.365	-.20693	.22759	-.65722	.24337
	Equal variances not assumed			-.984	30.477	.333	-.20693	.21019	-.63591	.22206
Q38_Choose_Meth	Equal variances assumed	.032	.859	-2.006	129	.047**	-.42424	.21150	-.84271	-.00578
	Equal variances not assumed			-2.188	30.727	.036**	-.42424	.19388	-.81980	-.02868
Q39_Help_Cowrk	Equal variances assumed	15.147	.000	-1.807	129	.073*	-.27273	.15093	-.57135	.02589
	Equal variances not assumed			-4.149	109.000	.000***	-.27273	.06574	-.40302	-.14243
Q40_Help_Supr	Equal variances assumed	5.352	.022	-1.712	129	.089*	-.37792	.22074	-.81466	.05882
	Equal variances not assumed			-2.247	39.732	.030**	-.37792	.16817	-.71788	-.03797

Q41_Achiev_App	Equal variances assumed	1.742	.189	-.775	128	.440	-.14024	.18105	-.49847	.21800
	Equal variances not assumed			-.931	34.839	.358	-.14024	.15058	-.44599	.16552
Q42_Supr_Enc_Dec	Equal variances assumed	1.369	.244	-1.195	128	.234	-.30232	.25309	-.80309	.19846
	Equal variances not assumed			-1.372	32.777	.179	-.30232	.22037	-.75077	.14614
Q43_Supr_Enc_Spk	Equal variances assumed	.084	.772	-1.307	129	.194	-.29004	.22194	-.72915	.14906
	Equal variances not assumed			-1.261	27.326	.218	-.29004	.22998	-.76165	.18156
Q44_Supr_Dev_Sklls	Equal variances assumed	.980	.324	-1.983	129	.050*	-.46710	.23557	-.93317	-.00102
	Equal variances not assumed			-2.308	33.203	.027**	-.46710	.20234	-.87868	-.05552
Q45_Clim_Comp	Equal variances assumed	.164	.686	-1.262	129	.209	-.28442	.22532	-.73022	.16139
	Equal variances not assumed			-1.244	27.810	.224	-.28442	.22869	-.75302	.18419
Q46_Clim_Enc_Supp	Equal variances assumed	3.217	.075	-1.256	129	.211	-.23506	.18718	-.60540	.13527
	Equal variances not assumed			-1.730	43.415	.091*	-.23506	.13588	-.50901	.03888
Q47_Clim_Relax	Equal variances assumed	2.135	.146	1.417	128	.159	.25863	.18254	-.10256	.61982
	Equal variances not assumed			1.108	23.821	.279	.25863	.23342	-.22333	.74058
Q48_Clim_Rigid	Equal variances assumed	2.230	.138	-.331	129	.741	-.07359	.22212	-.51305	.36587
	Equal variances not assumed			-.396	34.392	.694	-.07359	.18581	-.45104	.30385

Q49_Work_Init	Equal variances assumed	.486	.487	.721	129	.472	.14069	.19510	-.24531	.52670
	Equal variances not assumed			.713	27.891	.482	.14069	.19736	-.26364	.54503
Q50_Recog_Gd_Job	Equal variances assumed	.855	.357	-.669	129	.504	-.12900	.19274	-.51034	.25233
	Equal variances not assumed			-.750	31.678	.459	-.12900	.17200	-.47951	.22150
Q51_Mgmt_Hlth_Wbng	Equal variances assumed	2.562	.112	.469	129	.640	.09351	.19938	-.30097	.48798
	Equal variances not assumed			.490	29.365	.628	.09351	.19085	-.29662	.48364
Q52_Sense_Team	Equal variances assumed	2.357	.127	-.229	129	.819	-.04719	.20629	-.45533	.36096
	Equal variances not assumed			-.270	33.758	.789	-.04719	.17496	-.40284	.30847
Q53_Part_Of_Team	Equal variances assumed	.192	.662	.163	127	.871	.03704	.22778	-.41371	.48778
	Equal variances not assumed			.145	25.857	.886	.03704	.25513	-.48753	.56160
Q54_Curr_Skls_Use	Equal variances assumed	1.004	.318	-.247	129	.805	-.05671	.22963	-.51103	.39761
	Equal variances not assumed			-.256	29.176	.800	-.05671	.22125	-.50910	.39568
Q55_Req_New_Skls	Equal variances assumed	.691	.407	-1.304	129	.195	-.26277	.20156	-.66157	.13602
	Equal variances not assumed			-1.563	34.521	.127	-.26277	.16816	-.60431	.07877
Q56_Cnct_Wrk_Sch	Equal variances assumed	.186	.667	-.932	128	.353	-.20446	.21937	-.63853	.22961
	Equal variances not assumed			-.975	29.498	.338	-.20446	.20972	-.63306	.22415

Q57_Apply_Cls_Wrk	Equal variances assumed	.011	.916	-.584	129	.560	-.13074	.22397	-.57387	.31240
	Equal variances not assumed			-.590	28.447	.560	-.13074	.22164	-.58442	.32294
Q58_Fdbk_On_Job	Equal variances assumed	11.138	.001	-1.577	129	.117	-.32511	.20615	-.73298	.08276
	Equal variances not assumed			-1.921	35.322	.063*	-.32511	.16921	-.66851	.01829
Q59_Wrk_W_Others	Equal variances assumed	.194	.660	-1.423	129	.157	-.31775	.22333	-.75961	.12412
	Equal variances not assumed			-1.507	29.772	.142	-.31775	.21089	-.74857	.11308
Q60_Wrk_W_Job	Equal variances assumed	2.196	.141	.062	128	.951	.01616	.26049	-.49925	.53158
	Equal variances not assumed			.057	26.382	.955	.01616	.28306	-.56526	.59759
Q61_Cowrk_Dev_Skl	Equal variances assumed	2.299	.132	-1.498	129	.137	-.34892	.23297	-.80985	.11201
	Equal variances not assumed			-1.965	39.709	.056*	-.34892	.17754	-.70783	.00999
Q62_Talk_Inform	Equal variances assumed	.000	.983	-.671	128	.503	-.122	.182	-.483	.238
	Equal variances not assumed			-.696	29.254	.492	-.122	.176	-.481	.237
Q63_Intrct_Out_Wrk	Equal variances assumed	.442	.507	-1.050	129	.296	-.30130	.28700	-.86913	.26653
	Equal variances not assumed			-1.112	29.783	.275	-.30130	.27091	-.85474	.25215
C1_27_34_Job_Tsk_Char	Equal variances assumed	4.481	.036	-.493	129	.623	-.06394	.12976	-.32067	.19279
	Equal variances not assumed			-.623	37.329	.537	-.06394	.10267	-.27190	.14402

C2_35_38_Level_Dir	Equal variances assumed	1.157	.284	-1.093	129	.276	-.15293	.13992	-.42975	.12390
	Equal variances not assumed			-1.323	34.981	.195	-.15293	.11563	-.38766	.08181
C3_39_53_Org_Cult	Equal variances assumed	1.527	.219	-1.202	129	.232	-.13900	.11569	-.36790	.08989
	Equal variances not assumed			-1.423	33.953	.164	-.13900	.09770	-.33756	.05955
C4_54_57_Skl_Know	Equal variances assumed	1.003	.318	-.953	129	.343	-.16071	.16869	-.49446	.17304
	Equal variances not assumed			-1.038	30.694	.307	-.16071	.15478	-.47651	.15509
C5_58_63_Soc_Int	Equal variances assumed	.207	.650	-1.486	129	.140	-.23274	.15660	-.54257	.07710
	Equal variances not assumed			-1.585	29.980	.124	-.23274	.14688	-.53272	.06725
Q66_Task_Assgn_Supr	Equal variances assumed	18.418	.000	-1.807	129	.073*	-.13636	.07547	-.28567	.01295
	Equal variances not assumed			-4.149	109.000	.000***	-.13636	.03287	-.20151	-.07122
Q66_Task_Assgn_Cowrk	Equal variances assumed	.521	.472	-.293	129	.770	-.03506	.11953	-.27155	.20142
	Equal variances not assumed			-.291	27.969	.773	-.03506	.12053	-.28196	.21183
Q66_Task_Req_Dec	Equal variances assumed	11.200	.001	-1.320	129	.189	-.14589	.11053	-.36458	.07281
	Equal variances not assumed			-1.477	31.627	.150	-.14589	.09878	-.34719	.05542
Q66_Task_Req_Tech_Sk	Equal variances assumed	1.396	.239	-.528	129	.599	-.05974	.11322	-.28375	.16427
	Equal variances not assumed			-.539	28.741	.594	-.05974	.11081	-.28646	.16698

Q66_Task_Req_Nont_Sk	Equal variances assumed	3.756	.055	1.090	129	.278	.10390	.09528	-.08461	.29240
	Equal variances not assumed			.966	25.624	.343	.10390	.10756	-.11735	.32514
Q66_Task_Id_Own	Equal variances assumed	.028	.867	.088	129	.930	.01039	.11843	-.22393	.24471
	Equal variances not assumed			.086	27.787	.932	.01039	.12032	-.23616	.25694
Q66_Task_Req_Collab_Int	Equal variances assumed	1.195	.276	-.518	129	.605	-.04805	.09274	-.23153	.13543
	Equal variances not assumed			-.553	30.035	.584	-.04805	.08683	-.22537	.12927
Q66_Task_Req_Collab_Ext	Equal variances assumed	.194	.660	.212	129	.833	.02338	.11050	-.19526	.24201
	Equal variances not assumed			.212	28.226	.834	.02338	.11029	-.20246	.24921
Q67_Ask_Cowrk_Asst	Equal variances assumed	.145	.704	.193	129	.847	.01558	.08063	-.14395	.17512
	Equal variances not assumed			.184	27.074	.855	.01558	.08451	-.15779	.18896
Q67_Ask_Supr_Asst	Equal variances assumed	20.675	.000	-1.699	129	.092*	-.18442	.10852	-.39913	.03030
	Equal variances not assumed			-2.044	34.681	.049**	-.18442	.09023	-.36766	-.00117
Q67_Figure_Out_Own	Equal variances assumed	.018	.894	-.066	129	.947	-.00476	.07175	-.14672	.13719
	Equal variances not assumed			-.066	28.210	.947	-.00476	.07165	-.15149	.14196
Q67_Org_Resource	Equal variances assumed	.758	.386	1.050	129	.296	.12381	.11793	-.10953	.35715
	Equal variances not assumed			1.022	27.528	.316	.12381	.12113	-.12451	.37213

Q67_Public_Resource	Equal variances assumed	1.128	.290	.574	129	.567	.05844	.10187	-.14310	.25998
	Equal variances not assumed			.538	26.692	.595	.05844	.10870	-.16471	.28159
Q68_Coworkers	Equal variances assumed	2.644	.106	.822	129	.412	.02944	.03580	-.04140	.10028
	Equal variances not assumed			.597	22.971	.556	.02944	.04931	-.07257	.13145
Q68_Supr	Equal variances assumed	.143	.706	-.187	129	.852	-.01385	.07413	-.16052	.13282
	Equal variances not assumed			-.192	28.908	.849	-.01385	.07211	-.16136	.13365
Q68_Comp_Materials	Equal variances assumed	1.513	.221	.671	129	.503	.06753	.10066	-.13163	.26669
	Equal variances not assumed			.623	26.491	.539	.06753	.10849	-.15526	.29033
Q68_Comp_Train	Equal variances assumed	.000	.988	-.007	129	.994	-.00087	.11658	-.23152	.22979
	Equal variances not assumed			-.007	27.848	.994	-.00087	.11814	-.24292	.24119
Q70_Int_Client	Equal variances assumed	.339	.561	.282	129	.779	.02771	.09835	-.16688	.22229
	Equal variances not assumed			.288	28.726	.776	.02771	.09631	-.16934	.22475
Q70_Int_Cowrk	Equal variances assumed	.007	.931	.043	129	.966	.00216	.05017	-.09709	.10142
	Equal variances not assumed			.042	27.483	.967	.00216	.05163	-.10368	.10801
Q70_Int_Supr	Equal variances assumed	4.224	.042	-.955	129	.341	-.07056	.07388	-.21674	.07561
	Equal variances not assumed			-1.243	39.144	.221	-.07056	.05678	-.18539	.04427

Q70_Int_Vendor	Equal variances assumed	.034	.854	-.093	129	.926	-.00866	.09283	-.19232	.17501
	Equal variances not assumed			-.091	27.549	.928	-.00866	.09526	-.20393	.18662
Q70_Int_Oth_Dept	Equal variances assumed	2.010	.159	-.672	129	.503	-.08052	.11978	-.31750	.15646
	Equal variances not assumed			-.668	28.011	.510	-.08052	.12057	-.32750	.16646
Q70_Int_Oth_Intrn	Equal variances assumed	.323	.571	.302	129	.763	.03333	.11048	-.18526	.25193
	Equal variances not assumed			.292	27.386	.773	.03333	.11418	-.20080	.26746
Estab_Startup	Equal variances assumed	.740	.391	-.442	129	.659	-.03377	.07636	-.18484	.11731
	Equal variances not assumed			-.403	26.148	.690	-.03377	.08375	-.20587	.13834
Duration_Employed	Equal variances assumed	.094	.759	.734	129	.464	.16277	.22161	-.27569	.60123
	Equal variances not assumed			.708	27.299	.485	.16277	.22992	-.30874	.63428
First_Internship	Equal variances assumed	.246	.621	-.198	129	.843	-.02381	.11997	-.26117	.21355
	Equal variances not assumed			-.196	27.860	.846	-.02381	.12151	-.27277	.22515
No_Credit	Equal variances assumed	7.409	.007	-1.220	129	.225	-.09784	.08018	-.25648	.06081
	Equal variances not assumed			-1.676	43.170	.101	-.09784	.05838	-.21555	.01988
No_Tuition	Equal variances assumed	.092	.762	.165	129	.869	.01948	.11811	-.21421	.25317
	Equal variances not assumed			.162	27.734	.872	.01948	.12026	-.22697	.26593

Pell_Receipient	Equal variances assumed	15.058	.000	-2.145	129	.034*	-.15628	.07285	-.30042	-.01214
	Equal variances not assumed			-1.582	23.130	.127	-.15628	.09879	-.36058	.04802
Stud_Loan	Equal variances assumed	3.331	.070	-1.244	129	.216	-.13766	.11062	-.35652	.08120
	Equal variances not assumed			-1.158	26.544	.257	-.13766	.11890	-.38182	.10650
GPA	Equal variances assumed	3.314	.071	-2.010	127	.047*	-.16077	.07999	-.31906	-.00248
	Equal variances not assumed			-2.474	36.234	.018**	-.16077	.06499	-.29255	-.02898
Female	Equal variances assumed	5.354	.022	.872	129	.385	.10303	.11809	-.13061	.33667
	Equal variances not assumed			.891	28.731	.380	.10303	.11562	-.13353	.33959
Domestic	Equal variances assumed	5.745	.018	1.320	129	.189	.11082	.08394	-.05526	.27690
	Equal variances not assumed			1.103	24.689	.281	.11082	.10045	-.09618	.31783
Female_Supr	Equal variances assumed	2.104	.149	.648	129	.518	.07100	.10955	-.14576	.28775
	Equal variances not assumed			.676	29.322	.504	.07100	.10502	-.14369	.28569
Major_B_E	Equal variances assumed	1.264	.263	.598	129	.551	.05628	.09417	-.13004	.24260
	Equal variances not assumed			.551	26.362	.586	.05628	.10215	-.15356	.26611

*p-value <0.1; **p-value <0.05; ***p-value <0.01

APPENDIX D: INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Office of the Vice Chancellor for Research

Office for the Protection of Research Subjects
528 East Green Street
Suite 203
Champaign, IL 61820

02/24/2015

Jennifer Delaney
Educational Policy Studies

RE: *Student Internship Experiences and Learning Opportunities at Startups Compared to Those at Established Companies*
IRB Protocol Number: 15628

EXPIRATION DATE: 02/23/2018

Dear Dr. Delaney:

Thank you for submitting the completed IRB application form for your project entitled *Student Internship Experiences and Learning Opportunities at Startups Compared to Those at Established Companies*. Your project was assigned Institutional Review Board (IRB) Protocol Number 15628 and reviewed. It has been determined that the research activities described in this application meet the criteria for exemption at 45CFR46.101(b)(2).

This determination of exemption only applies to the research study as submitted. Please note that additional modifications to your project need to be submitted to the IRB for review and exemption determination or approval before the modifications are initiated.

We appreciate your conscientious adherence to the requirements of human subjects research. If you have any questions about the IRB process, or if you need assistance at any time, please feel free to contact me at the OPRS office, or visit our website at http://www.irb.illinois.edu.

Sincerely,

Rose St Clair

Rose St. Clair, BA
Assistant Human Subjects Research Specialist, Office for the Protection of Research Subjects

c: Sarah Zehr

Approval letter from University of Illinois Institutional Review Board, dated 24 February 2015

From: St Clair, Rose Kathryn
Sent: Friday, August 07, 2015 11:24 AM
To: Delaney, Jennifer A
Cc: Zehr, Sarah Marie
Subject: IRB #15628 Minor Modifications Approved

Good morning,

Thank you for letting the IRB know about the modifications to your study. This message serves to supply UIUC IRB approval for the minor modifications being made to your exempt application IRB #15628, *Student Internship Experiences and Learning Opportunities at Startups Compared to Those at Established Companies*:

- Modified survey based on the results of the pilot survey including deleting questions and changing wording;
- Added incentive for the survey research activity – a drawing for one of two $100 Amazon gift certificates. Updated application, recruitment, research, and consent materials as appropriate;
- Updated funding information and provided funding proposal.

EXPIRATION DATE: 02/23/2018

None of the revisions have affected the risk determination for this study. Therefore, the study will remain approved under Exempt category 2. You are now free to continue your study with the above revisions.

Please save a copy of this email for your records as the IRB notice of approval of these modifications and that they have been documented satisfactorily. If you have any questions, please don't hesitate to ask.

Best,

Rose

Rose St. Clair, BA
Assistant Human Subjects Research Specialist | Office for the Protection of Research Subjects
University of Illinois at Urbana-Champaign
528 E. Green Street, Suite 203, MC-419 | Champaign, IL 61820
Direct: (217) 244-3254 | Fax: (217) 333-0405 |Email: rstclai2@illinois.edu
IRB Email: irb@illinois.edu | IRB Website: http://irb.illinois.edu/

E-mail approval for minor modifications (listed in the e-mail) to the study received on 7 August 2015

From: St Clair, Rose Kathryn
Sent: Friday, September 18, 2015 2:24 PM
To: Zehr, Sarah Marie <szehr@illinois.edu>
Cc: Delaney, Jennifer A <delaneyj@illinois.edu>
Subject: IRB #15628 Minor Modifications

Good afternoon,

Thank you for letting the IRB know about the modifications to your study. This message serves to supply UIUC IRB approval for the minor modifications being made to your exempt application IRB #15628, *Student Internship Experiences and Learning Opportunities at Startups Compared to Those at Established Companies*:

- Added incentive for the interview research activity – a $10 Amazon gift certificate. Updated application, recruitment, and consent materials as appropriate.

EXPIRATION DATE: 02/23/2018

None of the revisions have affected the risk determination for this study. Therefore, the study will remain approved under Exempt category 2. You are now free to continue your study with the above revisions.

Please save a copy of this email for your records as the IRB notice of approval of these modifications and that they have been documented satisfactorily. If you have any questions, please don't hesitate to ask.

Best,

Rose

Rose St. Clair, BA
Assistant Human Subjects Research Specialist | Office for the Protection of Research Subjects
University of Illinois at Urbana-Champaign
528 E. Green Street, Suite 203, MC-419 | Champaign, IL 61820
Direct: (217) 244-3254 | Fax: (217) 333-0405 |Email: rstclai2@illinois.edu
OPRS Email: irb@illinois.edu | OPRS Website: http://oprs.research.illinois.edu/

E-mail approval for minor modifications (listed in the e-mail) to the study received on 18 September 2015

APPENDIX E: RECRUITMENT MESSAGE TO STUDENTS

Pilot survey recruitment message

You are invited to participate in a research study to understand the experiences of students who participate in internships. At this stage, you are invited to participate in the testing of a survey to ensure that the questions make sense and will be understood by future participants.

This research project will help university faculty and administrators better understand the types of tasks and responsibilities that students take on in internships and what and how they learn based on these experiences. The purpose is to provide support for the value of internships in higher education. It would be helpful if you have had past internship experience to effectively test the survey.

This research project is conducted by Sarah Zehr, a PhD student in the College of Education and a staff member at the University of Illinois at Urbana-Champaign, and Dr. Jennifer A. Delaney, an associate professor in the College of Education at the University of Illinois.

If you agree to participate in the testing of the survey, you will be asked to complete the current draft of the survey with information on your past experience as an intern. Based on your responses, the survey may be modified before being administered to a number of students in the study. In exchange for your time and feedback, lunch will be provided to you when the session is scheduled.

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your status at or future relations with your university or the University of Illinois.

If you are willing to participate in this research study, please complete the survey by visiting [link] by [date]. A date and location will be set once the testing participants are identified. Your response to the survey is critically important to the success of the study. For more information, please contact Sarah Zehr at szehr@illinois.edu. Thank you for your consideration.

Survey recruitment message

You are invited to participate in a research study to understand the experiences of students who participate in internships. You have been invited to participate because you have been identified as a student who is participating in an internship during Summer 2015. By participating in this study, you will be eligible to enter a random drawing for one of two $100 Amazon.com gift certificates. The drawing will take place in mid to late September once the survey is completed.

Participating in the drawing is completely voluntary and your name and contact information will not be linked to your survey responses.

This research project will help university faculty and administrators better understand the types of tasks and responsibilities that students take on in internships and what and how they learn based on these experiences. The purpose is to provide support for the value of internships in higher education. As a student who is participating in an internship, your participation is critical to the success of this study.

This research project is conducted by Sarah Zehr, a PhD student in the College of Education and a staff member at the University of Illinois at Urbana-Champaign, and Dr. Jennifer A. Delaney, an assistant professor in the College of Education at the University of Illinois.

If you agree to participate, you are asked to do the following:

- Complete a brief survey with information on your experience as an intern during Summer 2015, which will take place in early August 2015 (approximately 10-20 minutes)
- Indicate your willingness to participate in a one-on-one interview in person or via phone at the conclusion of your internship (approximately 30-60 minutes)

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your status at or future relations with your university or the University of Illinois.

If you are willing to participate in this research study, please complete the survey by visiting [link] by August 31, 2015. Your response to the survey is critically important to the success of the study, even if you choose not to participate in an interview. For more information, please contact Sarah Zehr at szehr@illinois.edu. Thank you for your consideration.

Interview invitation message

You may remember completing a survey in August about your experience at your summer internship related to a research study. Thank you for participating in the survey and for your willingness to participate in an interview. At this time, I would like to schedule an interview with you. This interview is part of the same research study to understand the experiences of students who participate in internships.

This research project will help university faculty and administrators better understand the types of tasks and responsibilities that students take on in internships and what and how they learn based on these experiences. The purpose is to provide support for the value of internships in

higher education. As a student who is participating in an internship, your participation is critical to the success of this study.

The interview will take place over the phone or internet or in person based on your current location. It will take approximately 30-60 minutes of your time. Please visit [link] to sign up for a time that is convenient for you and to provide your contact information. After completing the interview, you will receive a $10 gift certificate to Amazon.com via e-mail.

This research project is conducted by Sarah Zehr, a PhD student in the College of Education and a staff member at the University of Illinois at Urbana-Champaign, and Dr. Jennifer A. Delaney, an associate professor in the College of Education at the University of Illinois.

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your status at or future relations with your university or the University of Illinois.

Your participation to the survey is critically important to the success of the study, even if you choose not to participate in an interview. For more information, please contact Sarah Zehr at szehr@illinois.edu. Thank you for your consideration.

APPENDIX F: INFORMED CONSENT DOCUMENTATION

Pilot survey consent form (the consent form will be the first page of the survey):

You are invited to participate in a research study to understand the experiences of students who participate in internships. Specifically, we seek to answer the following research questions:

- What do students experience during internships? What types of tasks and responsibilities are they given? How do they spend their time on these tasks and responsibilities?
- Do students who intern at startups spend time on different types of tasks than those who intern at established companies?
- What types of skills or knowledge do students who intern at startups learn or develop compared to those who intern at established companies? Do learning opportunities at startups differ compared to those at established companies?

This research project is conducted by Sarah Zehr, a staff member at the University of Illinois at Urbana-Champaign and a PhD candidate in the College of Education, and Dr. Jennifer A. Delaney, an associate professor in the College of Education at the University of Illinois at Urbana-Champaign.

As a student participant in the research study, you will be asked to complete an online survey. It is anticipated that it will take approximately 20 minutes to complete the survey. The purpose of this session is to test the survey, so your responses will only be used for this purpose. Your responses will not be kept once the instrument is finalized and will not be included in the results.

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your grades, status at, or future relations with your university.

Your confidentiality will be maintained at all times. Once data has been collected, your name will not be associated with the data collected. Results from the pilot survey will be used to make any necessary changes to the survey before it is administered to students in the study. Eventually, results of the study may be developed into a professional journal article, an academic paper, a presentation, or a conference session, but your responses at this time will not be included.

There are no known risks to individuals participating in this study beyond those that exist in daily life. While your participation in this study may not benefit you personally, it will help us to understand student experiences in internships and what and how students learn though internship experiences.

If you have questions about this research, or if you have a concern or complaint, please contact Sarah Zehr, at szehr@illinois.edu or (217) 244-4448. The principal investigator is Dr. Jennifer A. Delaney, Associate Professor in the College of Education, and can be reached at delaneyj@illinois.edu. If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Illinois Institutional Review Board at (217) 333-2670 or via e-mail at irb@illinois.edu.

Please print a copy of this consent form for your records, if you so desire.

I have read and understand the above consent form, I certify that I am 18 years or older, and by clicking the submit button to enter the survey, I indicate my willingness to voluntarily take part in this study.

(Yes/No)

Survey consent form (the consent form will be the first page of the survey):

You are invited to participate in a research study to understand the experiences of students who participate in internships. Specifically, we seek to answer the following research questions:

- What do students experience during internships? What types of tasks and responsibilities are they given? How do they spend their time on these tasks and responsibilities?
- Do students who intern at startups spend time on different types of tasks than those who intern at established companies?
- What types of skills or knowledge do students who intern at startups learn or develop compared to those who intern at established companies? Do learning opportunities at startups differ compared to those at established companies?

This research project is conducted by Sarah Zehr, a staff member at the University of Illinois at Urbana-Champaign and a PhD candidate in the College of Education, and Dr. Jennifer A. Delaney, an assistant professor in the College of Education at the University of Illinois at Urbana-Champaign.

As a student participant in the research study, you will be asked to complete an online survey. You will also be asked if you are willing to participate in a one-on-one interview after you complete your internship and return to your campus. The survey will take approximately 10-20 minutes to complete.

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your grades, status at, or future relations with your university.

Your confidentiality will be maintained at all times. Once data has been collected, you will be assigned an identification number and your name will not be associated with the data collected. Results of the study may be developed into a professional journal article, an academic paper, a presentation, or a conference session, but no identifiable factors will be included and only aggregate results will be shared. Any quotes shared will not be attributed to a specific individual.

There are no known risks to individuals participating in this study beyond those that exist in daily life. While your participation in this study may not benefit you personally, it will help us to understand student experiences in internships and what and how students learn though internship experiences.

By participating in this survey, you are invited to enter a random drawing for one of two $100 Amazon.com gift certificates. Participating in the drawing is completely voluntary and you can enter the drawing without linking your name and contact information to your survey responses so your confidentiality will be maintained even if you enter the drawing (please note that if you provide contact information in the survey because you are willing to participate in an interview, then your contact information can be linked to your survey responses). You do not have to complete the entire survey to participate in the drawing; if you choose to participate but do not complete the survey, you can still click through to the end, submit the unfinished survey, and then enter your information in the separate form to participate in the drawing. Odds of winning one of the gift certificates will depend on how many students participate in the survey and enter the drawing.

If you have questions about this research, or if you have a concern or complaint, please contact Sarah Zehr, at szehr@illinois.edu or (217) 244-4448. The principal investigator is Dr. Jennifer A. Delaney, Assistant Professor in the College of Education, and can be reached at delaneyj@illinois.edu. If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Illinois College of Education Institutional Review Board at (217) 333-3023 (collect calls will be accepted if you identify yourself as a research participant) or via e-mail at osurr@education.illinois.edu.

Please print a copy of this consent form for your records, if you so desire.

I have read and understand the above consent form, I certify that I am 18 years or older, and by clicking the submit button to enter the survey, I indicate my willingness to voluntarily take part in this study.

(Yes/No)

I provide permission to be contacted regarding participation in an interview as part of this research study. I understand the interview will be recorded but will remain confidential. I understand I may or may not be selected for participation in the interview.

(Yes/No)

Interview consent form (the consent form will be printed or e-mailed to the participant prior to the interview taking place):

You are invited to participate in a research study to understand the experiences of students who participate in internships. Specifically, we seek to answer the following research questions:

- What do students experience during internships? What types of tasks and responsibilities are they given? How do they spend their time on these tasks and responsibilities?
- Do students who intern at startups spend time on different types of tasks than those who intern at established companies?
- What types of skills or knowledge do students who intern at startups learn or develop compared to those who intern at established companies? Do learning opportunities at startups differ compared to those at established companies?

This research project is conducted by Sarah Zehr, a staff member at the University of Illinois at Urbana-Champaign and a PhD candidate in the College of Education, and Dr. Jennifer A. Delaney, an assistant professor in the College of Education at the University of Illinois at Urbana-Champaign.

As a student participant in the research study, you are asked to participate in a one-on-one interview. The interview will take approximately 30-60 minutes.

Participation in this research project is voluntary and you may refuse to participate or discontinue participation at any time without penalty. The decision to participate, decline, or withdraw from participation will have no effect on your grades, status at, or future relations with your university.

Upon completion of the interview, you will receive a $10 gift certificate to Amazon.com, which will be delivered via e-mail.

Your confidentiality will be maintained at all times. Once data has been collected, you will be assigned an identification number and your name will not be associated with the data collected. Results of the study may be developed into a professional journal article, an academic paper, a presentation, or a conference session, but no identifiable factors will be included and only aggregate results will be shared. Any quotes shared will not be attributed to a specific individual.

There are no known risks to individuals participating in this study beyond those that exist in daily life. While your participation in this study may not benefit you personally, it will help us to understand student experiences in internships and what and how students learn though internship experiences.

If you have questions about this research, or if you have a concern or complaint, please contact Sarah Zehr, at szehr@illinois.edu or (217) 244-4448. The principal investigator is Dr. Jennifer A. Delaney, Assistant Professor in the College of Education, and can be reached at delaneyj@illinois.edu. If you have any questions about your rights as a participant in this study or any concerns or complaints, please contact the University of Illinois College of Education Institutional Review Board at (217) 333-3023 (collect calls will be accepted if you identify yourself as a research participant) or via e-mail at osurr@education.illinois.edu.

You will be given a copy of this consent form if you are interviewing in person, or please retain your copy if you are interviewing via phone.

I have read and understand the above consent form, I certify that I am 18 years or older, and I indicate my willingness to voluntarily take part in this study.

Name _____

Signature _____

Date _____

I provide permission for this interview to be recorded. I understand that the recording will be destroyed once the study is completed.

Initials _____

APPENDIX G: SURVEY INSTRUMENT

1. Expected graduation date
2. Institution
3. Degree level (Bachelors, Masters, PhD, Other)
4. Degree area/major (write in)
5. Current GPA (please list your current GPA and the scale)
6. Gender (Male/female)
7. International vs. domestic student
8. Name of company
9. Company location (city, state, country if not US)
10. Number of employees in company (0-10; 11-50; 51-100; 101-10,000; more than 10,000)
11. Industry (drop down to choose from)
12. Title or role
13. In what department/section/unit do you work?
14. How long have you been in this internship position? (Less than 3 months; 3 months to less than 6 months; 6 months to less than 1 year; 1 year or greater)
15. Is this your first internship? (Yes, this is my first internship; No, I have had one previous internship experience; No, I have had more than one previous internship experience)
16. Are you receiving compensation? (Check all that apply: Yes, I am paid hourly; Yes, I am paid a salary; Yes, I am paid by the company/organization; Yes, I am paid by a source other than the company/organization; No, I am not receiving compensation; Other/please specify)
17. Are you registered for a course related to your internship? (Check all that apply: Yes, I am currently registered for a course; I am not currently registered, but took a class before I started my internship; I am not currently registered, but participated in an academic program related to my internship in the past; I am not currently registered, but will take a class after I finish my internship; I am not registered and will not take a course related to my internship at any time; Other/please specify)
18. Will you receive credit for this experience? (Check all that apply: Yes, I will receive credit because I am taking or will take a course related to my internship; Yes, I will receive credit even though I will not take a course related to my internship at any time; No, I will not receive credit for this internship; I will receive credit, but I have to complete academic work in addition to my internship for the credit; Other/please specify)
19. If you are taking a course or receiving credit, are you paying tuition? (Check all that apply: Yes, I am paying tuition during the summer specifically for a course related to my internship; Yes, I am taking a course before or after my internship and paying tuition during that term; Yes, but my tuition is included with other classes; No, I will not paying tuition at any time related to my internship; Not applicable; Other/please specify)
20. Do you receive a Pell grant? (Yes; No)
21. Have you taken out student loans to pay for your degree program at any time? (Yes; No)

22. Are you required to participate in an internship for your degree program? (Yes; No; Other/please specify)
23. Gender of internship supervisor (Male/Female)
24. Title of internship supervisor

Responses based on Likert scale

- Almost always
- Often
- Sometimes
- Infrequently
- Never

25. How often do you see projects or jobs through to completion?**
26. Does your work require complex decisions?
27. Is your work challenging in a positive way?*
28. Are you given assignments without adequate resources to complete them?
29. Can you influence the amount of work assigned to you?*
30. Can you influence decisions that are important for your work?*
31. To what extent do you have an opportunity to do a number of different things?
32. To what extent do you perceive that your tasks and responsibilities impact the organization?
33. How much are you left on your own to do your own work?
34. To what extent do you have the opportunity for independent thought and action?
35. Have clear, planned goals and objectives been defined for your job?*
36. If there are alternative methods for doing your work, can you choose which method to use?
37. If needed, can you get support and help with your work from your coworkers?*
38. If needed, can you get support and help with your work from your immediate supervisor?*
39. Are your work achievements appreciated by your immediate supervisor?*
40. Does your immediate supervisor encourage you to participate in important decisions?*
41. Does your immediate supervisor encourage you to speak up when you have different opinions?
42. Does your immediate supervisor help you to develop your skills?*
43. To what extent is the climate at your work unit competitive?
44. To what extent is the climate in your work unit encouraging and supportive?*
45. To what extent is the climate in your work unit relaxed and comfortable?*
46. To what extent is the climate in your work unit rigid and rule-based?*
47. Do workers take initiative in your work unit?
48. At your organization, are you recognized for a job well done?*
49. To what extent is the management of your organization interested in the health and well-being of the personnel?*
50. To what extent do you feel there is a sense of team in your work unit?

51. To what extent do you feel that you are part of a team in your work unit?
52. Are your current skills and knowledge useful in your work?*
53. Does your job require that you acquire new knowledge and/or new skills?
54. To what extent do you see connections between what you have learned in school and the work you are doing in your internship?
55. How often do you apply knowledge, skills, or concepts you learned in class to your work at your internship?
56. To what extent do you find out how well you are doing on the job as you are working?
57. To what extent does your job depend upon your ability to work with others?**
58. To what extent is dealing with other people part of your job?
59. Do your coworkers help you to develop your skills and/or knowledge?
60. To what extent do you have an opportunity to talk informally with other employees while at work?
61. To what extent do you have an opportunity to interact with your coworkers outside of regular work hours?

*Source: General Nordic Questionnaire (Linstrom et al., 2000)
**Source: Job Characteristics Inventory (Sims et al., 1976)

Additional questions – no scale

62. With whom do you work or interact frequently, at least once per week? (customer/clients, coworkers, immediate supervisor, vendors/suppliers, people in other departments, other/specify – check all that apply)
63. In which of the following types of tasks do you engage regularly on at least a weekly basis? (tasks assigned to you by a supervisor, tasks assigned to you by a coworker, tasks that require making decisions, tasks that require technical skills you learned in college courses, tasks that require nontechnical skills such as communication/leadership/presentation/ initiative/etc., tasks that you identify on your own, tasks that require collaborating with others internal to the organization, tasks that require collaborating with others external to the organization, other/specify – check all that apply)
64. What do you do when you do not know how to perform a task or responsibility? (examples include ask a coworker or supervisor, try to figure it out on your own, seek information from a resource available to you through your workplace, seek information from a publicly available resource such as Google, etc.)
65. What types of resources are available to you to learn in the workplace? (examples include coworkers, your supervisor, company materials or manuals, training or coursework offered or sponsored by your employer, etc.)

Open-ended questions

66. Briefly describe the tasks and responsibilities assigned to you on a regular basis.
67. Of the tasks and responsibilities you listed in the previous question, on which do you spend a significant amount of time (30% or more)?
68. Briefly describe any knowledge or skills you have developed or gained as a result of this internship experience.

69. Is there anything that you were not asked about that you think would be helpful to the researchers?
70. Would you be willing to participate in an interview related to this research project in person or via phone? Interviews would last approximately 30-60 minutes and would take place in person or by phone during Fall 2015 semester (ideally in September) at your convenience.
71. If you answered yes to Question 74 and are willing to participate in an interview, please provide your name, e-mail address, and a phone number where you can be reached for interview scheduling purposes. This information will be used to contact you for interview scheduling, but please note that by providing this information, it can be linked to your survey responses. Students who are willing to interview may or may not be contacted based on the number willing as interview spaces are limited. However, your willingness to participate is greatly appreciated.

Note: Questions with no asterisks were developed by the study author

Students will be invited to complete a separate Webtools form (located at https://illinois.edu/fb/sec/7094786) to submit their name and contact information to enter a drawing for one of two $100 gift certificates from Amazon.com. The drawing will take place in mid to late September once the survey is completed. Students do not have to complete the entire survey to enter the drawing, but they do have to click through to the final page and submit what they complete to get to the thank you page with a link to the survey.

The thank you page will have the following text:
You have successfully completed the survey. Thank you very much for your responses and your time. Good luck with the remainder of your internship and degree program!

If you would like to participate in a drawing for one of two $100 gift certificates from Amazon.com, please go to https://illinois.edu/fb/sec/7094786 and complete the form. Your survey responses will not be tied to the information you enter into this form.

APPENDIX H: INTERVIEW PROTOCOL

Interviews will be conducted using a semi-structured format. The following questions demonstrate the types of questions that would be asked, though some additional questions may be asked depending on the responses from the interviewee (probing, exploring an answer further, etc.). Additional interview questions may be developed based on the survey results.

1. Please state your name, degree level and area, expected graduation date, and the name and location of the company for which you worked over the summer.
2. What were your initial expectations about the internship before you started? What goals did you want to accomplish as a result of this experience?
3. Why did you choose this particular internship? Did you specifically seek out this opportunity or did you find out about it unintentionally?
4. What was your role at the company? How did it fit into your unit/department? Into the larger organization? Did you receive compensation or credit for your internship?
5. Did you notice an increase in the tasks and responsibilities assigned to you during the tenure of your role? If so, can you talk more about this?
6. Talk about how you spent your time during your internship. What tasks or responsibilities were assigned to you? How much time did you spend on each task or responsibility?
7. Did you feel prepared for the tasks you were assigned during your internship? Did you use skills or knowledge you learned through your courses at school? Did you use skills you did not learn in your courses? Did you see a connection between what you were doing at your internship with what you learned in school? Were you able to apply knowledge or concepts you learned in school to your work during your internship? How?
8. What did you do if you did not know how to perform a task or responsibility? Tell me about a time when that happened.
9. What kind of questions did you ask during your internship? Did you learn from other people or from training or from other resources? What types of skills and knowledge did you learn? What types of training were available to you (i.e. orientation, classroom training, technology/online training, workshops, etc.)? Did this help you to better meet the goals and expectations of your internship?
10. What do you feel you can do better now that you completed your internship?
11. Talk about how you interacted with other people at your internship. Did you work closely with others? About how much of your time did you spend interacting with other people? Did your coworkers help you with your work? If so, how and in what ways?
12. Describe the impact or contribution you felt you had on your unit. Describe the impact or contribution that you felt you had on the overall company. Did you enjoy the experience? What did you like about it? What would you have changed?
13. At this point, have you been offered a full-time position as a result of this internship?
14. Is there anything I have not asked you that you think might be helpful or relevant?