EXPERIENTIAL LEARNING AND ITS IMPACT ON STUDENTS’ ENTREPRENEURIAL INTENTION IN TWO INNOVATIVE HIGH SCHOOL PROGRAMS

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Abstract

The purpose of this study was to understand whether the unique experiential learning programs at two innovative high schools might be highly effective models for increasing the Entrepreneurial Intention and skills of their students. The study was placed in the theoretical framework of the Theory of Planned Behavior based on Ajzen. The literature review focused on Experiential Learning Theory, Constructivist Theory, Kolb’s Experiential Learning Theory and an overall look at the state of Entrepreneurial Education. Two research question guided the data collection and analysis: How does IowaBig and BVCAP as community, industry and experience-based secondary programs impact students’ perception of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students, and community- and industry-based partners? What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students? A multi-case study involving teachers, students and industry partners was used to find answers to these questions. By allowing students to articulate and follow their passions teachers can unlock creativity and put learning in context leading to more highly motivated, successful students. The study found; Authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs, In an environment where it is safe to fail, students learn to use iterative thinking and problem solving to deal with ambiguous problems and situations, and due to the structure of the programs, the project work, and the leadership experiences students develop a level of confidence surpassing their traditionally taught peers. The findings of this study, along with the identification and analysis of related themes, have the potential to inform public schools contemplating a project-based learning experience.

Keywords: project-based learning, experiential learning, entrepreneurial education
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Chapter I: Introduction

The positive impact of entrepreneurship goes well beyond the traditional job creation metrics, to include social development (Schmitz, 2016) and even significant reductions in recidivism rates (Rodov & Truong, 2015). The impact of entrepreneurship also goes beyond the shores of the United States. As Zhao (2012) states, for example, The World Economic Forum, for example, has identified entrepreneurship education as the core of its Global Education Initiative (World Economic Forum, 2009, 2011). As stated by the Forum, because “[I]nnovation and entrepreneurship provide a way forward for solving the global challenges of the 21st century, building sustainable development, creating jobs, generating renewed economic growth and advancing human welfare” (World Economic Forum, 2009, p. 7). In short, entrepreneurship and entrepreneurial education can move the World.

In education, the need for entrepreneurs and entrepreneurial skills has not gone unnoticed. Universities in the U.S. and around the world have responded. For instance in 1995, over 400 entrepreneurial courses were being offered in various higher education institutions across the U.S., and by 2003 more than 2200 courses were being taught at over 1,600 universities and colleges. And by 2011 over 60 percent of U.S. colleges and universities offered at least one course in entrepreneurship (Albornoz, 2011).

In keeping with this trend over time, high schools have not been left out of the race to educate tomorrow’s entrepreneurs either. As Bozzo (2012) states, “The growth in entrepreneurial programs at the high school level, much like the more-publicized college ones, appears to touch on both a consumer need and a societal nerve.” Secondary and higher education systems have responded to the demand to supply more students with some level of an entrepreneurial education however, the effectiveness of this education is in question.
Despite the steady growth of entrepreneurial education, several issues exist with the current state of entrepreneurial education (EE). The field suffers from a lack of definitions (Pittaway, Hannon, Gibb, & Thompson, 2009; Schmitz, Urbano, Dandolini, Souza & Guerrero, 2017), of goal alignment within specific programs (Canziani, Welsh, Hsieh, & Tullar, 2015; Lorz, 2013; Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2016) of an integrating theoretical framework (Canziani, Welsh, Hsieh, & Tullar, 2015; Nabi et al., 2017; Pittaway, et al., 2009; von Graevenitz, 2010), and a mixture of measures of effectiveness (Daunfeldt & Elert, 2013; Hoppe, 2016; Mwasalwiba, 2010; Sirelkhatim, Gangi, & Nisar, 2015). The state of EE from the point of view of a researcher is ripe for development. Sirelkhatim et al. (2015), however, provide a suggested focus for those trying to improve the situation “To focus on the basic questions coming from education science: what, how, for whom, why and for which results is the EE (Entrepreneurial Education) programme designed” (p. 1).

Several researchers such as Canziani et al., (2015), Nabi et al., (2017) and Sirelkhatim et al., (2015) have also begun to provide answers to some of those questions, namely that a central part of EE should be an experiential learning element. Canziani et al. (2015) clearly state they “believe that by linking entrepreneurial propensity improvements to experiential learning activities involving entrepreneurship experts and partner businesses, we strengthen the potential for strategic partnerships between the academe and the field of practice” (p. 109).

IowaBig and BVCAPS are two such high school programs that are grounded in experiential learning in the real world and industry, placing students’ learning in their communities. A case study focused on answering how the programs are leveraging experiential learning in their communities and how those experiences foster and support students’ entrepreneurial skills and
dispositions may help to make recommendations as to how entrepreneurial dispositions and skills can be effectively supported through such activities.

**Problem Statement**

Entrepreneurship, historically thought of as starting a new business has undergone a revolution in definition. Zhao (2012), illustrates this broadening definition as follows,

Entrepreneurs are no longer only those who start a business and try to maximize profits. There are social entrepreneurs who recognize a social problem and apply entrepreneurial principles to achieve social change (Martin … Osberg, 2007). There are intrapreneurs who bring significant innovative changes from within an organization (Swearingen, 2008). There are also policy entrepreneurs, whose enterprise is to bring innovative improvement in policy from within public and government institutions (Harris … Kinney, 2004). (p. 4)

As such, Zhao continues, “Everyone needs to be entrepreneurial in the 21st century” and “The entrepreneurial skills and mindset are similar to the new survival skills in the 21st century discussed in The Global Achievement Gap” (p. 8). Developing and entrepreneurial mindset within our students is not merely about starting businesses and creating jobs, it is about our students’ long term survival in a new, dynamic, global world. We are charged with preparing students for the “real world.” This preparation is not complete without developing their ability to be creative, innovative, problem solvers, skills associated with entrepreneurship.

There is strong evidence from several researchers, that entrepreneurship can in fact be taught and entrepreneurial intent can very likely be stimulated (Dickson, Solomon, & Mark Weaver, 2008; Elmuti, Khoury, & Omran, 2012; Geldhof, Porter, Weiner, Malin, Bronk, Agans, Lerner, 2014; Gorman, Hanlon, & King, 1997; Moberg, 2014; Mwasalwiba, 2010; Rosendahl-

Similarly, it has been demonstrated that the skills necessary to develop successful entrepreneurs can be taught at the secondary school level (Cunha & Heckman, 2007; Geldhof, Weiner, Agans, Mueller, & Lerner, 2014; Gorman et al., 1997; Moberg, 2014; Paço, Ferreira, Raposo, Rodrigues, & Dinis, 2011; Rosendahl-Huber et al. 2014). However, much of today’s research regarding Entrepreneurial Intent (EI) is done through a quantitative lens. The studies typically focus on statistically measuring the strength of the relationships between various personal attributes and EI related outcomes (Krueger et al., 2000; Kautonen, van Gelderen, & Fink, 2015; Lee, Wong, Foo, & Leung, 2011; Maresch, Harms, Kailer, & Wimmer-Wurm, 2016; Obschonika, Silbereisen, Cantner, Goethner, 2015; Obschonka, Silbereisen, & Schmitt-Rodermund, 2010; Rauch & Hulsink, 2015; Souitaris, Zerbinati, & Al-Laham, 2007; von Graevenitz, Harhoff, & Weber, 2010). The quantitative results are useful for understanding which characteristics of people or situations may improve EI, but do little to suggest how to improve these characteristics. Paço et al. (2011) remind us that “education and training should centre itself much more in changing/stimulating personal attitudes than in providing technical knowledge about businesses” (p. 34). A qualitative understanding of these personal attitudes could provide a much richer set of data than merely measuring for correlation. A case study involving high schools students from the IowaBig and BVCAPS experiential learning programs is being proposed to understand if EI can be fostered through students’ experience working in their communities in such programs as IowaBig and BVCAPS.

Much of the literature and research surrounding the impact of entrepreneurship education has focused on the post-secondary and other higher educational settings (Rosendahl-Huber et al.,
2014), with little directly tied to high schools. The benefits of studying this age group include; they are nearing employment decisions, have relatively stable thought processes and emotions, and are subject to fewer research challenges. There have also been a few studies of primary school aged children as well (Rosendahl-Huber et al., 2014). However, the benefit of studying the possibility of developing entrepreneurial intent and skills at the high school level includes expanding students’ knowledge and opportunity to pursue entrepreneurship in their future education or employment.

This leaves the secondary school aged youth as a fertile study group (Paço et al., 2011). When considering this age group two schools of thought develop. Moberg (2014) describes these two schools of thought as content-based and pedagogy-based. Those supporting the content position contend that we should have people considering a job as an entrepreneur as young as possible, thus having specific course work in K-12 schools. The pedagogy supporters believe that the cognitive training should be delayed, given the long timeframe between graduation and employment which may cause a relevance gap. However, the pedagogy supporters also believe that training relative to soft-skills associated with entrepreneurship education should begin as early as possible. Entrepreneurial skills can be decomposed into cognitive and non-cognitive skills. Research has demonstrated an interaction between these two skill sets and has also demonstrated long term benefits to early non-cognitive skill development (Cunha & Heckman, 2006; Levin, 2012 Rosendahl-Huber et al., 2014). The conclusion drawn by this author is that a focus on two different high school programs that naturally embed the teaching and learning of entrepreneurial skills in their community- and industry-embedded activities may contribute to a greater understanding of how content and pedagogy can naturally result in the entrepreneurial intent and skills of secondary students.
The findings of this proposed study might yield some insights as to how high school administrators and teachers could employ experiential education models to substantively increase the entrepreneurial intent and skills of their students. The mission of this study is to understand whether the unique experiential learning programs such as IowaBig and BVCAPS might be highly effective models for increasing the EI and skills of their students, helping to identify how other secondary educational institutions, public and private, could contribute to students pursuing entrepreneurship. By collecting both educator and students’ perspectives on how these two different experience-based programs fostered EI in the students and supported their attainment of skills in entrepreneurship, a story may emerge that can inform how policy makers, administrators and faculty across a range of settings could likewise support the growth of EI and entrepreneurial skills in their students. New, innovative businesses tend to be the job creators within the United States economy. By creating more entrepreneurial intent, we can create more entrepreneurs and more entrepreneurs will create more startup businesses which ultimately leads to more jobs and a more productive economy. This study will allow the participants to showcase what they have experienced as part of the IowaBig and BVCAPS programs and let them “brag about their successes.”

Rausch and Hulsink (2015) remind us that,

Entrepreneurship education should be designed in a way that helps students to develop a positive evaluation of entrepreneurship… It especially needs to emphasize the positive aspects of entrepreneurship in such a way that the desire to try it themselves is awakened in students. (p. 199)

This project is intended to help others understand what elements within an experiential learning environments such as IowaBig and BVCAPS can “awaken students.”
Significance of the Research Problem

Wiens and Jackson highlight a significant concern, “The rate at which new businesses are opening has been steadily declining until 2014 and because of their out-sized contributions, this decline has troubling implications for economic dynamism and growth if it is not reversed” (2015). The number of jobs created by these newly formed businesses has also declined, from a high of 4.1 million in 1994 to 3 million in 2015 (United States Department of Labor, Bureau of Labor Statistics, 2016).

Dearie (2014) punctuates the significance of the issue, “Given the critical role start-ups play as the principal source of innovation and job creation, this multi-decade decline in business dynamism is nothing short of a national economic emergency”. New businesses are the engine of innovation in the United States and as such tend to be the creator of the majority of net new jobs. This engine is in need of additional fuel in the form of young people with high levels of entrepreneurial intent.

Statistics from the Ewing Marion Kauffman Foundation indicate companies that were five years old or younger created 1.5 million to 3 million jobs per year between 1988 and 2011 (Miller, 2015; Wiens & Jackson, 2015). The foundation said in a 2014 report, firms five years old or older mostly held steady during the same period or even lost more jobs than they created (Miller, 2015). The number of jobs created by start-up companies peaked in the late 1990s and has declined ever since, the decrease during the last recession is the worst in the history of this data collection (United States Department of Labor, Bureau of Labor Statistics, 2016). In general, over the past few decades, if startup job creation is removed from the equation, there would be resultant negative job growth in the United States. The United States faces a growing demand for entrepreneurs to drive innovation, new business development, and job growth.
Small businesses, those with 500 or less employees, employ between 37% and 55% of the workers in the United States (Lawless, 2014; Neumark, Wall & Zhang, 2011). Although by and large, the majority of companies in the U.S. are small businesses, large firms employ a disproportionately high share of all private-sector workers. For instance, in 2011, 98% of all firms had fewer than 100 employees, whereas 0.2% of firms had 1,000 or more employees (Neumark et al., 2011). Additionally, those small and large firms employed about the same share of workers—37% and 39% respectively (Congressional Budget Office, 2012). Similarly, more than 95% of all firms had fewer than 50 employees, but firms with 50 or more employees accounted for more than 70% of overall employment (Neumark et al., 2011). Therefore, care must be taken when stating small businesses create more jobs than large ones. The data suggests in terms of total employment small and large firms are nearly equal, but if the age of a business is analyzed a different story emerges.

There has long been debate whether the size of the business or the age of the business is more correlated to job growth, with contemporary literature suggesting the later (Lawless, 2014; Litwin & Phan, 2013). In 1931, Robert Gibrat studied the correlation of jobs created by French manufacturing companies with the size of these companies (Daunfeldt & Elert, 2013). Gibrat proposed that the correlation fit a lognormal distribution and was therefore random, implying, the growth of the firm had nothing to do with the initial size of the firm. The growth hypothesis became known as Gibrat’s Law and as quickly as it was adopted it became the focus of intense scrutiny.

Building on Gibrat’s Law, David Birch focused on the job creation capability of small companies versus large ones. Basically, Birch’s research said small firms are the most important source of job creation in the U.S. economy (Neumark et al., 2011). Birch provided the first
evidence supporting the argument small businesses are the primary engines of job growth, claiming 66% of all net new jobs in the United States between 1969 and 1976 were created by firms with twenty or less employees, and 81.5% were created by firms with one hundred or less employees (Neumark et al., 2011). He later added to his statistical database studying the years 1981 to 1985 where, firms with fewer than twenty employees accounted for 82% of employment growth through expansion (Neumark et al., 2011).

There seems to be some agreement throughout the literature indicating business growth rates are not nearly as correlated to size (small versus large) as it is to age (young versus old) (Decker, Haltiwanger, Jarmin, & Miranda, 2014; Elfenbein, Hamilton, & Zenger, 2010; Lawless, 2014; Haltiwanger, Jarmin, Miranda, Javier, 2013; Mazerov & Leachman, 2016; Wiens & Jackson, 2015). What the research finds is young business exhibit significantly more job growth than do older more establish firms. These young firms are very dynamic in nature and respond more quickly to market changing conditions. Their speed and flexibility allow them to hire quickly and as they become profitable, are able to continue an accelerated hiring trend. Wiens and Jackson (2015) sum this up succinctly, “many young firms exhibit an “up or out” dynamic, in which innovative and successful firms grow rapidly and become a wellspring of job and economic growth, or quickly fail and exit the market, allowing capital to be put to more productive uses”. Decker et al. (2014) support this notion of up and out indicating that low productivity young firms exit their markets quickly while highly productive young firms tend to grow more quickly.

The value of a job to the economy is measured by the concept of productivity. Productivity is reported as the value of output produced per unit of time by the worker who holds the job and further, “economic growth is the sum of growth in output per worker and growth in
the number of workers” (Hixon, 2017). The concern with current productivity is that after growing at an average annual rate of about 2.5% since just after World War II, productivity growth has only averaged 1.1% since 2011, less than half the historical trend (Dearie, 2014; Hixon 2017). In 1956, Nobel Laureate economist Robert Solow demonstrated that by and large, much of our economic growth cannot be attributed to increases in capital and labor, but only to gains in productivity, gains driven primarily by innovation (Dearie, 2014). The importance of entrepreneurs in the driving innovation which ultimately drives productivity and ultimately job growth cannot be overstated. Dearie (2014) summarizes the impact of entrepreneurs on innovation and productivity gains as follows,

Throughout modern economic history, entrepreneurs and the start-ups they launch have been the principal source of the innovation that drives productivity gains. For example, most of the radical innovations of the past 100 years—electrification, the railroad, the automobile, the airplane, the telegraph and telephone, air conditioning, the computer—the truly “disruptive” innovations that dramatically enhanced productivity and fundamentally re-made the economic landscape, came from entrepreneurs.

Over the past decade, the percentage of businesses started by people in their 50s and 60s has increased, while at the same time, the portion of 20 to 30-year-old entrepreneurs has declined (Buchanan, 2015). To put that in real terms, in 1996, young people launched 35% of startups and by 2014, it was down to 18%, nearly a 50% decline (Buchanan, 2015). One of the sources of this decline appears to be an element of risk aversion within the millennials. This risk can be characterized as follows, “According to the Global Entrepreneurship Monitor (GEM), a consortium of academic teams in more than 70 countries, until last year 25-to-34-year-olds were significantly more worried about failure than 35-to-54-year-olds” (Buchanan, 2015). However,
the news is not all bad, in 2013 41% of 25 – 34 year olds indicated fear of failure as a critical
dissuader of entrepreneurial pursuit, and by 2014 the number had dropped to 34% (Buchanan,
2015). The statistics regarding high school students is no less troubling. In the past five years
of polling, 33% to 35% of high school students indicated that they planned to start their
own business, in 2017 the number had fallen to 27% (Buehler, 2017). A study in
entrepreneurial intent among high school students at IowaBig and BVCAPS may shed light onto
mechanisms educators can employ to help stop the backslide in the creation of young, innovative
entrepreneurs.

**Positionality Statement**

Much of the work in the area of entrepreneurship education relies on Human Capital
include level of education, work experience, upbringing by entrepreneurial parents, and other life
experiences” (p. 213). Using Martin et al., as a framework, I will describe my positionality as it
relates to the four constructs listed.

I graduated from a very traditional, conservative engineering school, Milwaukee School
of Engineering (MSOE). MSOE’s mission and vision statement are as follows,

**Vision Statement:** MSOE will always be at the forefront of professional education with
emphasis on both theory and technology, coupled with intensive laboratories and career
practice.

**Mission Statement:** MSOE provides a sustained interactive educational climate for
students to become well-rounded, technologically experienced graduates and highly
productive professionals and leaders. (Milwaukee School of Engineering, 2016)
This mission and vision helped turn me and my classmates into employable, productive, practical engineers. However, the mission and vision did not focus on or even address our entrepreneurial skills, our potential to start our own business or consider alternatives to working for an existing company. Although MSOE and other schools are attempting to reinvent themselves, they are lagging the needs of the students, corporations and our economy as a whole.

Contributing to my positionality, I was tooled to be instantly productive, but to focus my productivity on an existing organization. As a practicing engineer I also earned my Masters of Business Administration (MBA) from the University of Iowa. This MBA, like most in its era, was dedicated to teaching courses relevant to an existing organization, finance, accounting, marketing, and information technology. The program, at that time, had no elements of entrepreneurial education. The University of Iowa and MSOE are both examples of what Rideout and Gray (2013) were highlighting when they found that both business schools and engineering schools are more focused on management of an existing business rather than the challenges of starting one from nothing, and I am a product of both of them. Zhao (2012) defines the mission of this educational paradigm “to prepare individuals to find gainful employment in the current economy and to fit into the existing society” (p. 146) rather than to prepare individuals to be unique and entrepreneurial. My personal education did little to develop my entrepreneurial intentionality. It is likely that most people with a similar educational background to mine are working for mid-to-large size companies.

Throughout high school I worked in a very small combination grocery store/butcher shop. The owner, although gruff, was willing to explain how margins worked, what bills he had to pay, and how he made money. As I look back, I wonder if that exposure planted a seed of doubt about my own entrepreneurial abilities or was simply a good learning experience.
Upon graduation from college I was hired by Rockwell Collins, a mid-size avionics company, headquartered in Cedar Rapids, Iowa. Engineering in the highly regulated aerospace industry is more about risk reduction, fail-safe operations of systems and keeping passengers alive, than creative, innovative, quick to market ideas. Obviously this is the right priority, but it embeds a sense of caution in all of its members, including me.

My next career move took me to Johnson Controls, a conglomerate focused primarily on HVAC equipment and building automation systems. It was a common belief across the organization that all of the innovation and entrepreneurship was happening in the field and was not happening within the engineering development departments for which I was responsible. My time at Johnson Controls reinforced a belief that engineers need to stay in their box, do as they are told and let the real creativity take place in other parts of the organization.

My current employer, United Technologies, is by far the most risk averse company of the three I have experienced. Our processes are burdensome and designed to manage as much risk out of everything we do, as possible. Yet another example of how my life experiences have or continue to portray risk as bad, risk takers as the outcasts and entrepreneurial concepts as foreign.

Both of my parents worked outside the home my entire life. Both of them worked for relatively small companies and both were generally speaking, laborers. My father had an eighth grade education and my mother graduated from high school. Although my father had a small repair shop as a side business, I would not consider him an entrepreneur, in fact, his greatest pride was that he worked for the same company for over forty years. My mother worked for her company for over thirty years and they both instilled a sense of commitment into their children. My oldest brother has only worked for two companies in his life and my sister and her husband
ran a dairy farm for over thirty years. In fact, my sister and brother-in-law are the closest people I know personally, that are small business owners and I don’t believe I would consider them entrepreneurs either.

Two final areas of concern, given my positionality are somewhat linked. As I intend to study early secondary level students, I must acknowledge I have never had children so trying to research, analysis and understand them will be a challenge. Related to this weakness, is the fact that although I am in an Ed.D. program, with the exception of a few adjunct classes years ago, I have never been an instructor. I will be acting as a scholar-practitioner, with a mismatch in my practice versus what I am studying.

From the beginning of my doctoral program I have struggled with the merging of my role as a scholar in the educational field with my role as a practitioner in corporate America. I accepted that a scholar practitioner needs to be comfortable with both the research (scholarly) aspects of a problem as well as the practical, “real world” aspects. The research on scholar practitioners highlights this “bridge” (Short, 2011, p. 477) or being able to cross the “cultural divide” (Lararee, 2003, p. 21) as a critical element of the successful scholar-practitioner. However, it wasn’t until Dr. Corliss Brown (2015) put my corporate responsibilities and scholarly pursuit into perspective as follows:

I think who you are as a scholar-practitioner is very much related to your present work challenge and should help shape your interpretation of the readings. So when we start to read about philosophies of education, you should be able to apply the information to how your "mature workforce" learns and how your "young" workforce learns. The way I see this is that you are a corporate type of professor (if you will) that is responsible for
curriculum and program development. It doesn't sound like you teach employees directly, but perhaps you mentor/lead other instructors (managers) that do? This comment helped me realize, I not only teach employees directly in several settings, but am responsible for their long term development, providing them with opportunities for growth. In the context of employee growth and development, I am a scholar-practitioner, able to apply scholarly educational research, to the real world setting of the corporation. The lack of an entrepreneurial background will be somewhat offset by a great deal of experience in the corporate world.

**Theoretical Framework**

Entrepreneurship researchers such as Bae, Qian, Miao, and Fiet (2014), Conner and Armitage (1998), Krueger and Carsrud (1993), and Richard, Van, and De Vries (1996) have argued that Ajzen's theory of planned behavior (TPB) serves as a useful theoretical framework for understanding the impact of distal variables (e.g., personality) on entrepreneurial intentions (Obschonka et al., 2010). The TPB was cited twenty-two times in 1985 and by 2010 the number had grown to 4550 (Ajzen, 2011). Krueger, Reilly, and Carsrud (2000) state, “Intentions are the single best predictor of planned behavior (Bagozzi et al., 1989)” (p. 413) and “understanding intentions thus proves particularly valuable where the focal phenomenon is rare, obscure, or involves unpredictable time lags—a focal phenomenon such as entrepreneurship (MacMillan and Katz 1992)” (p. 413). Additionally, Rauch (2015) reports in a meta-analysis that, various studies have used the theory to explain intentions to become an entrepreneur (Krueger et al., 2000; Liña’n & Chen, 2009) and entrepreneurial behavior (Kautonen, van Gelderen, & Tornikoski, 2013), as well as the effects of entrepreneurship education (Athayde, 2009; Ferreira, Raposo, Rodrigues, Dinis, & do Paço, 2012; Liña’n et al.,
A meta-analysis evaluating the TPB in the context of entrepreneurship reported that attitudes, subjective norms, and perceived behavioral control accounted for 39% of the variance in entrepreneurial intentions (Schlaegel & Koenig, 2011). Thus, the TPB provides a valid framework for studying the relationship between entrepreneurship education and entrepreneurial behavior. (p. 190)

Ajzen’s 1991 and earlier work on the theory of planned behavior and his updates in 2002 have been used to predict individual behaviors ranging from a “decision to stop smoking to choices on how to feed a baby” (Fayolle, 2008, p.93). Fayolle summarizes Ajzen’s TPB as follows, “the concept of intention plays a central and overriding role in predicting and explaining a plannable human behavior that is controlled entirely by will and not dependent on factors outside of the control of the person concerned” (p. 93). Although arguably the success of a person’s behavior may or may not be completely within their control, their intention for the most part tends to be within their control. Three central tenants make up the theory of planned behavior as defined by Ajzen (1991) attitudes towards the behavior, subjective norms and perceived feasibility of control.

Attitude toward the behavior represents the person’s favorable or unfavorable impression regarding activity in presented to them. Subjective norms are the beliefs of others around the person regarding the goodness, importance or prestige of performing the intended behavior and perceived behavioral control describes the extent to which the person believes succeeding at the intended behavior is within their realm of control. It should be noted there can be large differences between perceived and real control. For example, a person might perceive to be in control of creating a successful enterprise, but without critical financial resources they may have
little in the way of actual control of creating a start-up. Krueger et al. (2000) find that, “Across a wide range of studies relating to a wide variety of types of behaviors and the intentions to engage in those behaviors, attitudes explain over 50% of the variance in intentions” and “intentions explain 30% or more of the variance in behavior” (p. 416). The TPB has been shown to be a reliable predictor of behavioral intentions. It has been used across several disciplines, across time spans of well over twenty-five years, and successfully applied to entrepreneurial intentions studies.

A second intention-based model, developed by Shapero (1982) known as Shapero’s Entrepreneurial Event (SEE) model is very similar to the TPB, however it is more focused on the constructs important to entrepreneurial development. The SEE model contains an assumption of that humans tend to be impacted by inertia and a “displacement” is needed to upset that inertia (Krueger et al., 2000). As an example job loss could motivate someone to start their own business. The SEE model, similar to TPB describes three constructs predicting human intentions. Kruger et al. (2000) describe and compare the constructs within the TPB and SEE as follows,

Both contain an element conceptually associated with perceived self-efficacy (perceived behavioral control in TPB; perceived feasibility in SEE). TPB’s other two attitude measures correspond to SEE’s perceived desirability. (p. 419)

Shapero, realizing that several business leaders had little intention of starting business a short time before they actually did and many people with strong intentions of starting a business never do, added a construct addressing volition, namely, the propensity to act.

The literature review portion of the dissertation process will be used to more fully develop an understanding of the independent variables that compose both the TPB and SEE
models to inform the decision which of the two similar intention based models is more appropriate to the study of high school students and the development of entrepreneurial intention.

**Tenets of the Theory**

The basic tenets of the TPB, which will be described in detail in the following literature review, can be described in three main points:

- Attitude toward the behavior directly influences intentions as well as subjective norms (Ajzen, 1991)
- Subjective norms influence intentions as well as perceived behavioral control (Ajzen, 1991)
- Perceived behavioral control not only impacts intentions but subjective norms and attitudes towards a behavior as well (Ajzen, 1991)

Additionally, Shapero’s Entrepreneurial Event Theory uses the most of the same tenets as TPB above, with a few changes and one significant addition (Krueger et al., 2000):

- Specific desirabilities directly impacts a person’s perceived desirability which directly influences their intentions, similar to Ajzen’s TPB
- Shapero has added a tenet that a person’s propensity to act directly influences intentions
- People are heavily influenced by inertia and often a dislocating event is required to break inertia’s hold

The TPB and continued work on SEE helps focus the literature review on the critical constructs of the models and how those critical elements can be targeted not only at entrepreneurship, but how the critical elements apply or don’t apply to high school aged students. The TPB and SEE frameworks help structure questions into three manageable buckets and help
focus the specific questions within each of the three buckets. The framework leads to asking students what experiences they have had regarding attitudes towards entrepreneurship, what they think those around them believe about entrepreneurship and how much that matters to them and lastly by exploring whether or not they feel confident in their entrepreneurial abilities. The framework will help drive a different set of questions for the students versus the faculty, administrators, and industry partners. By using the three key tenants of the TPB or SEE, a set of results can be derived which may help provide entrepreneurial program development guidance to policy makers, administrators and faculty.

Research Questions

The two research questions guiding this study are as follows:

1. How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?

2. What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?
Chapter II: Literature Review

The core of both the theory of planned behavior and Shapero’s Entrepreneurial Event paradigm is the concept of intentionality. Krueger et al. (2000) remind us that,

Intentions have proven the best predictor of planned behavior, particularly when that behavior is rare, hard to observe, or involves unpredictable time lags. New businesses emerge over time and involve considerable planning. Thus, entrepreneurship is exactly the type of planned behavior (Bird 1988; Katz and Gartner 1988) for which intention models are ideally suited. If intention models prove useful in understanding business venture formation intentions, they offer a coherent, parsimonious, highly-generalizable, and robust theoretical framework for understanding and prediction. (p. 411)

This literature review is comprised of four sections. The first section is an overview of the Theory of Planned Behavior (TPB). The theory will be explained in depth, its application will be discussed and a connection to entrepreneurial intention will close the section. The second section describes a second intentions based model, namely, Shapero’s Entrepreneurial Event paradigm. This model follows closely the work of the TPB before it but adds elements that brings its usefulness to entrepreneurial intention more in focus. The third section is a review of the literature surrounding experiential learning. As both IowaBig and BVCAPS can be thought of as advanced applications of experiential learning, a history and descriptions of the benefits and risks of experiential learning is included here. The last section of the literature review is a brief overview of the state of entrepreneurial specific education. The highlights of the section are pertinent to secondary and higher education settings. The section closes with a description of how entrepreneurial education (EE) and experiential learning have merged in the more advanced
programs. It will be clear at the end of the literature review that IowaBig and BVCAPS represent some of the key lessons learned in both EE and experiential learning.

**Intention Models**

Social psychologists have been using a person’s attitude as a predictor of overt behavior for over eighty years (Ajzen & Fishbein, 1973). Generally, social psychologists believe that attitude towards an object likely predicts a consistent favorable or unfavorable response to that object (Ajzen & Fishbein, 1977). As far back as 1969, Wicker concluded, “it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviors than that attitudes will be closely related to actions” (p. 76). Based on the work of Fishbein it has become generally accepted that the behavior of interest to social psychologists tends to be volitional in nature and should therefore be related to the behavioral intentions of the person being studied (Davidson & Jaccard, 1979). Krueger and Day (2010) supply us with a definition as being a “cognitive state temporally and causally prior to the target behavior” (p. 332). The state prior to a decision to act is a good working definition of intention.

Additionally, a cognitive or information processing approach is often used to describe attitude formation, perhaps best displayed by Fishbein and Ajzen’s expectancy-value model (Bagozzi, 1981). Generally stated, we form beliefs about an object, and in the case of attitudes towards behaviors each belief is linked to an outcome or negatively, a cost, of performing that behavior. Given that there was already a judgement good or bad associated with the outcome, the judgement is automatically passed to the behavior. For this automatic connection to occur, people must be able to cognitively correlate that the events are casual in nature (Bandura, 1977). Therefore we favor behaviors which we believe will have positive outcomes for us and we avoid behaviors which we feel may have negative consequences (Ajzen, 1991). If students believe
starting a business may have a positive outcome, they are more likely to take interest in the creation process.

Intention models of human behavior corresponding to their attitude have been long studied and create the basis for much of following research including their application to entrepreneurial intent. Much of the intention modeling research of the late 1960s through the mid-1970s was based on the Theory of Reasoned Action (TRA). As Ajzen (2012) highlights, “Dulany’s (1968) theory of propositional control stimulated the development of what came to be known as the theory of reasoned action (TRA)” whereby “the first determinant of intentions in Dulany’s theory was reconceptualized as attitude toward the behavior of interest” and the second construct, “the behavioral hypothesis, was termed a ‘normative belief’ in the TRA” (p.16). The TRA is based on an assumption that human behavior follows a deliberative process and self-regulation plays a role in decision making (Bagozzi et al., 1992). The weakness, highlighted by the researchers of the day is that the TRA is silent regarding the relationship between favorable attitudes and subjective norms and ones intention to act. The theory of reasoned action quietly assumed a linkage but never explicitly defined nor tested such an interaction.

**Theory of planned behavior, early work.** As a result of the apparent gap left by the TRA, researchers began theorizing about and testing for the relationship between behavioral intentions, subjective norms, and attitudinal factors. According to Fishbein's (1967) modification of Dulany's (1968) theory, there are two major factors that determine specific behavioral intentions: a personal or ‘attitudinal’ factor and a social or ‘normative’ factor (Ajzen & Fishbein, 1973). One central tenet common between the theory of reasoned action and the developing theories of Fishbein and Ajzen is the concept of an individual’s intention to perform a given behavior. Intentions at this point in the theory’s development were assumed to capture
all the factors that would motivate or influence human behavior (Bagozzi, 1989). The assumption clearly held that the stronger the intention to behave in a certain way, the more likely the occurrence of the predicted overt behavior (Ajzen, 1985, 1991).

By 1973, Ajzen and Fishbein had developed an initial Theory of Planned Behavior (TPB). The early version of the theory proposed two independent variables capable of predicting behavioral intentions, a person’s attitude towards the specific act and normative beliefs multiplied by the importance of following the norms (Ajzen & Fishbein, 1973). In the case of Ajzen and Fishbein’s work, they use the term “attitude” to refer to “the evaluation of an object, concept, or behavior along a dimension of favor or disfavor, good or bad, like or dislike” (Ajzen & Fishbein, 2000). Ajzen et al. (2000) also developed empirical data that supported the notion that any other variables thought to impact behavior would be mediated by their influence on the aforementioned constructs, attitude towards the act and social norms. Kim and Hunter (1993) demonstrated across a broad set of studies covering multiple types of behavior and intentions that attitudes explain over 50% of the variance in intentions and intentions explain 30% or more of the variance in behavior.

Similarly, it was found that attitude towards an object can only influence behavior through an impact on intentions, either on the attitude towards the act or normative components (Ajzen & Fishbein, 1973). Stated more completely, “One implication of the theory is that attitudes and subjective norms mediate the effects of other variables on intentions and that intentions mediate the impact of attitudes and subjective norms on behavior” (Bagozzi et al., 1992). Even the early work of Ajzen and Fishbein has applicability to the study of entrepreneurial intention. As Krueger et al. (2000) remind us,
Intentions and attitudes depend on the situation and person. Accordingly, intentions models will predict behavior better than either individual (for example, personality) or situational (for example, employment status) variables. Predictive power is critical to better post hoc explanations of entrepreneurial behavior; intentions models provide superior predictive validity. (p. 412)

Although the early versions of the TPB were incomplete, their relevance to the study of entrepreneurial intention was already becoming clear.

Completion of the theory of planned behavior. Ajzen (1985, 1991, 2012), realizing the two independent variable model was insufficiently addressing behaviors in which people may not have had complete volitional control, introduced the third variable, perceived behavioral control. Ajzen (1991) defines perceived behavioral control as the “perceived ease or difficulty of performing the behavior” (p. 188). The construct includes a person’s past experience as well as any potential obstacles or roadblocks. Ajzen’s definition has some intersection with Bandura’s (1977) view of self-efficacy and the two concepts will be compared later. Perceived behavioral control should not be confused with actual control. Actual control, in terms of entrepreneurship might include things such as availability of resources, skills, networks or innovative ideas. Typically, if a person has formed an intention to perform a behavior and has the actual opportunities, they will likely succeed in the endeavor (Ajzen, 1991). In fact, Davidson and Jaccard (1979) suggest that if all steps within a series of behavioral events are not under actual control of the participant, intention will be a better predictor of the initiation of the behavior than the likelihood of behavioral completion. Figure 2.1 represents the completed TPB, including the added variable, behavioral control.
Three conceptually independent constructs, attitude towards the behavior, subjective norms and perceived behavioral control are purported to provide a determinant of behavior (Ajzen, 1991). Attitude toward the behavior directly influences intentions as well as moderating subjective norms. Subjective norms influence intentions directly as well as indirectly impacting Perceived Behavioral Control (PBC). Perceived behavioral control not only directly impacts intentions and indirectly subjective norms but PBC is the only one of the three constructs that has a direct correlation with the behavior itself (Ajzen, 1991). PBC’s direct influence on behavior is also thought to depend on the amount of actual control the individual has over the behavior.

Each of the independent determinants of overt behavior will be discussed below. Krueger et al. (2000) provide a clear concise summary of the theory of planned behavior, TPB identifies three attitudinal antecedents of intention. Two reflect the perceived desirability of performing the behavior: personal attitude toward outcomes of the
behavior and perceived social norms. The third, perceived behavioral control, reflects perceptions that the behavior is personally controllable. Perceived behavioral control reflects the perceived feasibility of performing the behavior and is thus related to perceptions of situational competence (self-efficacy). P. 416

Empirical support for the TPB has been confirmed in several studies (Kaiser & Scheuthle, 2003; Krueger et al., 2000; Obschonika, Silbereisen, Cantner, Goethner, 2015; Robinson, Huefner, & Hunt, 1991; Schifter & Ajzen, 1985; Sheeran & Orbell, 1999), with adjusted $R^2$ values as high as 0.350. Further, Krueger et al. (2000) summarize the empirical evidence by stating, “Every other relationship predicted by the theory of planned behavior was significant (p 0.05 or better) in the expected direction” and “Each attitude measure was associated significantly with theorized antecedents” (p. 420). Significant research has been conducted regarding the application of Ajzen’s (1985) TPB to a broad spectrum of behavior from; beginning an exercise program to environmental attitudes regarding recycling, from the practice of safe sex to speeding violation avoidance. Although intention is certainly not a perfect predictor of behavior the TPB has received strong empirical support (Conner & Armitage, 1998) and was earlier utilized as the theoretical framework for the prediction of entrepreneurial intentions (Krueger, et al., 2000).

**Antecedents of behavior.** Within the TPB, three types of salient beliefs are critical to the functioning of the model. The salient beliefs include behavioral beliefs normally associated with attitudes towards the behavior, normative beliefs which help to understand the subjective norms, and control beliefs which assess behavioral control. What is sometimes forgotten in the application of the TPB or reasoned action models for that matter, is the fact that the expectancy value model upon which TPB and reasoned action are built relies on a relationship between a
person’s salient beliefs about the behavior and their attitude towards the behavior (Ajzen, 1985, 1991). In order for the models to accurately predict behavior, the beliefs must be salient to the participant and cannot be arbitrary or based on other’s intuition. Further, many different beliefs about an object may exist, but people can generally hold only a small number of beliefs at a given time (Ajzen, 2012). These “accessible” beliefs tend to be the most important determinants of attitude. Each of the constructs, attitude towards the behavior, social norms, and perceived behavioral control will now be discussed in detail.

**Attitude towards the behavior.** The first of the three determinants of behavior within the TPB is known as attitude towards the behavior. Attitude towards the behavior is defined as “the degree to which the person has a favorable or unfavorable appraisal of the behavior in question” (Ajzen, 1991, p. 188). Behaviors, for the purposes of TPB need to be observable actions performed by participants that can be captured by the researcher. Typical behavioral acts include actions such as attending a meeting, going to church, donating blood, buying certain product and so on (Ajzen & Fishbein, 1977). The attitude towards the behavioral act relies on expectations about personal impacts resulting from the behavior, good or bad. Participants’ expectation of outcomes and the probability of occurrence can be measured to evaluate their attitude towards the behavior. These attitudes are generally formed automatically under the right cognitive conditions and are also automatically updated when new information is acquired (Ajzen & Fishbein, 2000). From the point of view of entrepreneurial intentions, typical testable outcomes include personal wealth, stress, autonomy and benefits to the community at large (Shapero, 1982).

**Subjective (social) norms.** Ajzen (1991) defines the second salient construct, subjective norms, as, “the perceived social pressure to perform or not to perform the behavior” (p. 188).
Further, Ajzen states that the construct is actually made up of two parts, the strength of the normative belief and the participant’s motivation to comply. One can contemplate a mathematical multiplication of these two sub-constructs to create the concept of a social norm. Bagozzi et al. (1992) indicate that subjective or social norms are much more cognitive in nature as compared to the more affective nature of attitudes. Subjective norms deal with how we think others expect us to behave or how we expect to be judged, while our own feelings or attitudes towards an object are more emotional than cognitive. The set of others may include family and friends but can be expanded to include colleagues and business partners. Due to this broad definition of influencers, the culture of the participant may also be included in various analyses (Elfving, Brännback, & Carsrud, 2009). Bagozzi et al., (1992) find that state-oriented people or those with low self-regulatory capacity are more influenced by normative considerations, while action oriented people or those with high self-regulatory capacity are more influenced by attitudinal considerations. Put another way, social norms are less predictive of intentions for subjects with a highly internal locus of control (Ajzen 1985; Krueger et al., 2000). Social norms may have the least understood impact on behavior (Ajzen, 1991). Krueger et al. (2000) punctuate the situation saying, “social norms can be hopelessly confounded with other attitudes” (p. 424) and that social norms may mediate or at least moderate the impact of other the other two constructs on intentions. Ajzen found in the set of behaviors studied in 1991 a stronger impact from attitudes towards the behavior than from social norms, meaning a person’s own beliefs carry more weight on developing intention than perceived social influence. From an entrepreneurial intention lens, we must understand who are the influential people in student’s lives and to what extent the students will attempt to please them.
**Perceived behavioral control.** The final antecedent of intention, perceived behavioral control as stated earlier, is the “perceived ease or difficulty of performing the behavior” (Ajzen, 1991, p. 188). Perceived Behavioral Control (PBC) tends to be influenced by the previous constructs. Typically favorable attitudes towards an object coupled with a strong belief that the behavior is socially accepted will lead to a higher level of perceived behavioral control (Ajzen, 1991). This final construct was added by Ajzen and Fishbein to include nonvolitional behaviors into their model. As Conner and Armitage (1998) summarize, “Consideration of perceptions of control are important because they extend the applicability of the theory beyond easily performed, volitional behaviors to those complex goals and outcomes which are dependent upon performance of a complex series of other behaviors (e.g. Losing weight)” (p. 1430). Obviously, entrepreneurial activities would also be considered to be a complex series of behaviors, influenced by perceptions of control, so a study of the construct would be beneficial.

As stated earlier, PBC not only directly impacts intentions and indirectly subjective norms but PBC is the only one of the three constructs that has a direct correlation with the behavior itself. Control beliefs may be based to an extent on past experiences, but are more heavily influenced by second-hand information related to the experience, by factors that may impact the perceived difficulty, or by experiences shared by friends or acquaintances. The extent to which PBC has direct or indirect impact on behavior is relative to the level of volitional control. In contexts of high volitional control behavioral intention will likely be the only predictor of behavior. Similarly, under situations of low volitional control, behavioral intention will account for limited impact on the actual behavior. Ajzen (2002) summarizes this balance as follows,
All else equal, a high level of perceived control should strengthen a person’s intention to perform the behavior, and increase effort and perseverance. In this fashion, perceived behavioral control can affect behavior indirectly, by its impact on intention. (p. 667)

Several concepts tend to become confused during the discussion of BPC. Self-efficacy theories, locus of control, actual control, perceived difficulty, and illusion of control have all been studied under the umbrella of PBC (Conner & Armitage, 1998). Conner and Armitage (1998) attempt to provide clarification by reminding us of the two sets of control beliefs, internal control factors (personal skills or lack thereof) and external control factors (opportunities, resources, dependence on others). Further, Ajzen (2002) acknowledges his addition to the confusion admitting, “In retrospect, the decision to use the term ‘perceived behavioral control’ to denote this component in the theory of planned behavior may have been misleading” (p. 668).

Within the context of the TPB and more specifically within the framework of this dissertation, PBC will use Ajzen’s 2002 definition, “perceived control over performance of a behavior” (p. 668). This definition acknowledges that outcome expectations, those that link control over performance with a likelihood that performing the behavior will result in the desired outcome, are excluded. Research supports the use of this clear definition (Ajzen 2002, 2012; Davidson & Jaccard, 1979).

**Correspondence.** One of the essential conditions for the accurate application of the TPB is the concept of correspondence. Correspondence is comprised of four basic tenets, action, target, context and time (Ajzen, 2012; Ajzen & Fishbein 1977; Bagozzi, 1981; Davidson & Jaccard, 1979). The importance of the first two of these conditions are more eloquently described by Ajzen and Fishbein (1977) “When the target and action elements of the attitudinal entity corresponded to the target and action elements of the behavioral entity, attitude-behavior
correlations were found to be quite high and significant” (p. 903). Bagozzi (1981) supports the importance of correspondence defining it as,

It should be stressed, however, that the intention-behavior relation is one between a mental event and an observable action. Correspondence between the two occurs at the level of the act itself in that the intention refers to the act as an idea or abstract entity, whereas the performance of the behavior is of course a concrete act. Action, target, context, and time elements all address the action as referent and thus constitute the domain of correspondence between intention and behavior. This is to be contrasted with the attitude-intention relation, which is one between two mental events. p. 610

Ajzen’s addition of time relevance to correspondence reflects his belief that the shorter the duration between the attitudes being created and the behavior itself, the better are the attitudinal predictors. Sniehotta, Presseau, and Araújo-Soares (2013) support this belief stating, “The TPB was considerably less predictive of behaviour when studies used a longitudinal rather than a ‘shortitudinal’ design” (p. 1). Ajzen supports this argument with additional data suggesting, “Consistent with this argument, shorter intervals between assessment of intentions and observation of behaviour (5 weeks or less) were associated with stronger correlations than longer time intervals” (2011, p. 1115). Several researchers such as Degeorge and Fayolle (2008), Fayolle and Liñán (2014), and Hallam and Zanella (2016), address the temporal questions related to the TPB with varying opinions. What can be said with some certainty is that research has not yet concluded if the time between intention creation and actual behavior is properly accounted for by the TPB. This is a concern that will be noted in this research project as high schoolers are somewhat unlikely to start business directly after graduation.
An example of correspondence within an entrepreneurial study might include starting a business (specific action) and a target (non-profit socially oriented) within a specific context (in my home town) within a year after graduation (a specific timeframe). As opposed to measuring general attitudes towards employment which would lack specific targets, context and timeframe.

**Past experience and TPB.** One area of debate that after all these years still seems to be unresolved is the impact of past experience on intention. Davidson and Jaccard (1979) contributed to the debate surmising that, “When stating attitudes and intentions about future behaviors, a respondent is probably assuming either that the environment will not change or that it will change in an anticipated manner” (p. 1373). Unexpected changes therefore would seem to lead to a change in those attitudes and behaviors. In Bagozzi’s 1981 work he finds that past behavior does not directly impact behavior but indirectly impacts behavior through its impact on intentions. Bagozzi basically finds that the more we know about a person’s past the better we can predict their future intention. In Bagozzi’s later work (1992) he demonstrates that past behavior adds a large incremental explanation of variation (21 percent) to the TRA model. In Ajzen’s 1991 work he was somewhat vague about how to treat the element of past behavior stating, “In sum, past behavior is best treated not as a measure of habit but as a reflection of all factors that determine the behavior of interest” (p. 203). Ajzen believed that past behavior might cap the theories predictive validity, but did little else to address the debate. In 2002 and again in 2012 Ajzen takes a stronger position stating that past behavior should not be included in the TBP because it cannot be demonstrated to be a casual antecedent of intention. He acknowledges past behavior can have a habitual element but that it is difficult to describe the impact of past behavior on a single instance of current intent. Krueger et al. (2000) take a much stronger
position regarding past experience indicating that long-run behaviors tend to cancel variation over time and building on the Bagozzi’s finding that intentions are unbiased predictors of action state, “Thus, a strong intention to start a business should result in an eventual attempt, even if immediate circumstances such as marriage, child bearing, finishing school, a lucrative or rewarding job, or earthquakes may dictate a long delay” (P. 414). Generally speaking the participants of the dissertation are unlikely to have any past experience in the area of entrepreneurship given their age and experiences. However, the ongoing debate over past experience on attitudes within the framework of the TRB is necessary to describe.

**Critiques and rebuttals of the TRB.** The TRB like most theories is not without its share of critics and specific critiques. The following sections will describe the debates and in most cases, Ajzen’s response to the criticism.

**Aggregation.** Ajzen (1991) defines aggregation as “the assumption that any single sample of behavior reflects not only the influence of a relevant general disposition, but also the influence of various other factors unique to the particular occasion, situation, and action being observed” (p. 180). Ajzen’s belief is that by aggregating different situations and settings, other sources of influence will be cancelled out resulting in a better predictor of intention and therefore behavior. Much empirical research (Ajzen, & Fishbein, 1977) supports the notion that a general attitude will predict a single act criterion better than a multiple-act situation. Later work by Dillon and Kumar (1985) and (Bagozzi & Burnkrant, 1985) leave the door open to future research regarding the single factor model. Both sets of authors find a two-factor model hypothesis cannot be rejected on the basis of empirical data gathered and analyzed. For purposes of this dissertation, a single factor model will be assumed.
**Emotion and rationality.** Sniehotta, Presseau, and Araújo-Soares (2013) have gathered and presented the majority of the critiques of the TBP in their 2013 work. Sniehotta et al. (2013) criticize the TPB for its exclusive focus on rational behavior and an exclusion of emotional content in the framework. In his 2011 work Ajzen had already addressed the inclusion of emotions in the TPB framework stating,

> In the TPB, affect and emotions enter in two ways. First, they can serve as background factors that influence behavioural, normative and/or control beliefs. Thus, it is well known that general moods can have systematic effects on belief strength and evaluations.

p. 1116

The TPB clearly incorporates a sense of emotions of the participants. The TPB does not rely on a rationality assumption portrayed by Sniehotta et al. (2013) rather it accepts the notion that people are irrational and accounts for it properly.

**Validity and utility.** Sniehotta et al. (2013) continue with their criticism in the areas of validity and make special note of the sufficiency hypothesis. Sniehotta et al. contend that the “majority of variability in observed behavior is not accounted for by measures of the TPB” (2013, p. 2). They believe that participants that form a positive intention but later fail to act are largely unaccounted for by TPB research. Further, they find the TPB overly simplistic insofar as it seems obvious that people are more likely to do something they think they can achieve and like to do. Sniehotta et al. (2013) state in no uncertain terms, “More critically, the bold sufficiency hypothesis assuming that all theory-external influences on behaviour are mediated through the TPB is empirically and conceptually indefensible, and has been falsified” (p. 3). They continue that several other potentially valid predictors of intent, socio-economic status, participants’ physical state, habit strength and other motivational measures are left out of the TPB. Lastly
Sniehotta et al. portray the TPB as a static model of behavior while actual behavioral creation is a dynamic process. Liska (1984) shares concerns with the linkages provided by the TPB. Liska perceives an over simplification of the causal structure between attitudes and social norms, claiming the two constructs are not casually independent. Sniehotta et al. (2013) created an opportunity for Ajzen to defend his model of TPB and he did not hesitate to respond.

One of the Ajzen’s contentions documented in his 2013 work with Sheikh and his 2010 work with Fishbein is that much of the empirical work regarding emotion and TPB “is typically measured in relation to not performing a behavior of interest, whereas attitudes, subjective norms, and perceptions of control are assessed in relation to performing the behavior” (Ajzen & Sheikh, 2013, p. 16). Ajzen and Shiekh also find that when the empirical data is collected against the TPB for behaviors in a positive aspect, as the theory was in fact designed, emotion or affect provided little additional explanation of variability. Ajzen strengthens his response in his 2015 work claiming, “In the case of existing favourable intentions, or favourable intentions produced by an intervention, the intentions are likely to be enacted to the extent that the behaviour is under volitional control (and subject to the other contingencies discussed earlier)” (p. 133).

Ajzen (2015) is quick to point out that the TPB does not completely account for all variability and he offers an explanation, “This can in part be attributed to the fact that measures of the theory’s constructs are fallible both with respect to reliability and with respect to construct Validity” (p. 132). However he adds that the model does often explain upwards of 80 percent of variation and this might be a theoretical limit.

Finally Fishbein and Ajzen (2010) addressing the static nature of the model state,
When a behavior is carried out, it can result in unanticipated positive or negative consequences, it can elicit favorable or unfavorable reactions from others, and it can reveal unanticipated difficulties or facilitating factors. This feedback is likely to change the person’s behavioral, normative, and control beliefs and thus affect future intentions and actions. (p. 218)

The very nature of a feedback loop implies a dynamic condition. The feedback allows the system, in this case the TPB, to respond and adjust the outputs. Ajzen’s case for the dynamic nature of the framework seems to hold.

Additional constructs. Ajzen has been open to the addition of independent variables to the TPB from nearly the beginning of its development. He has continued his openness recently stating, “This state of affairs can not only help to account for imperfect predictive validity, but it can also help to explain the frequent finding that adding more variables to the model can improve prediction of intentions” (2015, p. 132). Several studies have investigated the addition of constructs to the TPB and will be briefly discussed.

Sheeran and Orbell (1999) demonstrate that “anticipated regret and descriptive norms were highly significant predictors of intentions and contributed substantial variance over and above the variance explained by attitudes, subjective norms, and PBC alone” (p. 2132). The Sheeran and Orbell study is representative of the addition of affective variables. As Ajzen believes, the addition of these variables tends to improve the predictive ability of the TPB. The addition of these variables may have applicability to the study of entrepreneurship as Sheeran and Orbell believe we can strengthen a participant’s intent if we “promote self-esteem and specific self-efficacy to resist pressure to do what others are doing” (p. 2135). Kaiser and Scheuthle (2003) posit that, “evidence shows that moral considerations affect people’s intention
indirectly” (p. 1045) and that moral concepts influence attitude towards behaviors. This addition like those listed above would also tend to strengthen the predictive nature of the TPB, but one must use care in adding variables if they are not relative to the study at hand.

Others have suggested addition independent variables be added to the TPB (Obschonika, Silbereisen, Cantner, & Goethner, 2015). Rise, Sheeran, and Hukkelberg (2010) suggest that, “these findings warrant the conclusion that self-identity is a vital predictor of intentions and behavior and should be incorporated into the dominant model of attitude–behavior relations; that is, the theory of planned behavior” (p. 1100). Similarly, Richard, Van, & De Vries (1996) purport, “the results of our study indicate that the predictive power of the theory of planned behavior may improve if anticipated, post behavioral, affective reactions are incorporated in the model” (p. 125). Fayolle & Liñán (2014) urge adding the concepts of personal attitude and personal values to the model, while others suggest adding entrepreneurial motivation as an additional construct (Fayolle & Liñán, 2014; Obschonika et al., 2015).

The model referenced above is of course the TPB. In summary, Ajzen has continued to be open about the addition of constructs to the TPB. Many researchers have provided examples backed by empirical evidence of cases where additional variables have in fact strengthened the predictive nature of the TPB. However, caution must be used when adding these variables to ensure that addition is pertinent to the particular application of the TPB.

**Summary of TPB.** This section started with a quote from Krueger et al. (2000) linking intention models to entrepreneurship and entrepreneurial education. The section focused on Ajzen’s theory of planned behavior, its beginnings, a deep definition, a critique, and methods for adjusting the model. There should be little doubt as to the impact the TPB has had on the social sciences. As Ajzen himself mentions in his 2011 work the number of citations related to the
TPB grew from twenty-two in 1985 to over 4500 in 2010. Ajzen has continued to communicate an interest in expanding the independent variables used by the TPB but as researchers have attempted to add empirically proven constructs Ajzen seems to dismiss them for a variety of reasons. Even so, the basic model has proven to explain a wide range of behaviors, demonstrating the linkage between attitudes towards the behavior, subjective norms, perceived behavioral control and the intention to perform a behavior.

One of the criticisms of the TPB has been that it doesn’t attempt to describe the exact relationship between intention and behavior (Bagozzi, 1981; Conner & Armitage 1998). Ajzen somewhat addresses this by outlining a process that separates a decision to act (creating the intention) and actually performing the act. Others researchers such as Connor et al. (1998), Krueger (1993), and Krueger et al. (2000) support this view, describing it as a two-step process, step one is to consider the costs and benefits of pursuit, while step two is the planning stage, figuring out how to obtain the goal. This two-step process works quite well for purposes of this dissertation. Education has a much greater opportunity to impact the intention setting step, while the environment factors beyond the control of the participants impact the second, planning step. Education may be able to raise the salience of attitude towards entrepreneurship.

As stated above, this section started with a quote from Krueger et al. (2000) linking intention based models to entrepreneurship, it will end the same way. Krueger et al. (2000) highlight this linkage provides strong support for why the TPB can be used as a solid theoretical framework for the study of entrepreneurial intention,

Intentions-based models provide practical insight to any planned behavior. This allows us to better encourage the identification of personally-viable, personally-credible opportunities. Teachers, consultants, advisors, and entrepreneurs should benefit from a
better general understanding of how intentions are formed, as well as a specific understanding of how founders’ beliefs, perceptions, and motives coalesce into the intent to start a business. (p. 412).

The TPB is a time proven theoretical framework for studying a plethora of human intentions and behaviors. It is not however the only intention based model for studying entrepreneurship and the following section will define the Shapero Entrepreneurial Event paradigm and others.

**Shapero’s Entrepreneurial Event Model**

Although often discussed as a theory, Shapero’s Entrepreneurial Event (SEE) Model is in his own words, a process “conceptualized as a paradigm” (Shapero & Sokol, 1982, p. 76). Shapero and Sokol claimed to be attempting to avoid “premature closure” (1982, p. 77) that in their opinion too often occurs with law like theories. Shapero and Sokol were hoping to explain the phenomena of how and why entrepreneurs successfully started businesses while non-entrepreneurs could not. Interestingly, Shapero did not proclaim his model was an intentions based model while many of his contemporary researchers certainly did, Krueger et al., 2000, state, “Upon modest reflection, it is clear that Shapero’s (1982) model of the ‘Entrepreneurial Event’ (SEE) is implicitly an intention model, specific to the domain of entrepreneurship” (p. 418).

The SEE in its simplest view is a refactoring of the constructs of the TPB with the addition of the concept of propensity to act. Additionally the SEE is based on the assumption that people live in a state of human inertia and if something doesn’t upset or displace this inertia the person will continue to do what they are doing and not affect any change. Shapero and Sokol (1982), describe this inertial state and necessary event as,
The process of change in an individual's life path can be described in terms of vectors, directed forces that keep the individual moving in a given direction at any given time. The great majority of individuals are held on a given path by the sum of vectors in their lives: a job, family situations, the powerful force of inertia, the daily pushes and pulls that make up the bulk of each individual's life. It takes a powerful force in a new direction or the accumulation of many detracking forces before an individual is pushed to or consciously opts for a major change of life path. (p. 79)

So, according to the SEE a person must undergo some relatively major life event to push them into the entrepreneurial process. In order for a person to continue the entrepreneurial process, other factors, which will be discussed below are also necessary according to the SEE.

**The SEE model.** The SEE model, similar to the TPB has three antecedent constructs which impact a person’s intentions. In the case of the SEE the intentions in questions are specific to the forming of entrepreneurial endeavors, unlike the TPB which attempts to predict a wide range of intentions. Also like the TPB, the SEE assumes the intentions created by the antecedent constructs will predict a person’s actual behavior. The SEE like the TPB assumes exogenous impacts do not directly impact the intentions or behavior but rather indirectly through the constructs (Krueger, et al., 2000). Much of the structure of the SEE has its roots in the TPB.

As stated above, the SEE also assumes a displacement action or entrepreneurial event is necessary to begin the entrepreneurial intention creation process (Krueger et al., 2000). These actions may be positive impacts like winning the lottery or a graduation or negative impacts such as job loss or a milestone birthday. The displacement event forces a personal behavioral change from among a list of possible choices. The choice of behavioral change depends on the
credibility of choices, in the SEE model these are referred to as perceived feasibility and perceived desirability (Krueger, 1993; Kuehn, 2008). The change also depends on the individual’s ability or propensity to act. The SEE basically states that as long as a person sees that it is both desirable and feasible to start a business and that they have a strong propensity towards action, if an entrepreneurial event is introduced into their lives their intention to start their own business will be high. The model implies that the person doesn’t change, only the person’s perception of a situation changes and this situational change drives a change in behavior. The SEE can diagrammatically be seen in figure 2.2 (Krueger et al., 2000, p. 418).

![Figure 2.2. A model of the Shapero-Krueger Model.](image)

Krueger (1993) helps explain the model and some of the complexities beyond the simple diagram, indicating that, “propensity to act is likely to also have indirect influences on relationships in the model” and also that, “intentions may depend on only a threshold level of feasibility and desirability perceptions” (p. 7). Shapero hints at this relationship as well in his 1984 work telling us that if we believe something is desirable it may influence our perception of the feasibility of doing it and vice versa.
Although Shapero did no empirical work in his first published work on his SEE model, others have proven with solid quantitative research that feasibility and desirability perceptions and propensity to act both provide significant predictors of entrepreneurial intentions (Fayolle & Liñán, 2014; Krueger 1993; Krueger et al., 2000). A description of these antecedents and a deeper explanation of the displacing event follow.

**Perceived desirability.** Krueger et al. provide us with a definition of perceived desirability, “Shapero defined perceived desirability as the personal attractiveness of starting a business, including both intrapersonal and extrapersonal impacts” (2000, p. 419). Simply stated, perceived feasibility is a measure of how strongly an individual feels personally capable of starting a business. Shapero (1984) discusses perceptions of desirability in the context of values. Shapero explains, “Values are conceptions of the desirable, explicit or implicit, distinctive of an individual or characteristic of a group, that influences choice” (1984, p. 24). Individual’s perception of desirability within the SEE paradigm are driven by culture, socioeconomic situations, family, friends and important others (Kuehn, 2008). Shapero and Sokol (1982) provide a concrete example of the impact of culture on desirability, “More diffusely, a social system that places a high value on innovation, risk-taking, and independence is more likely to produce entrepreneurial events than a system with contrasting values” (p, 83). We can see strong similarities between the SEE construct of perceived desirability and the TPB constructs of attitude towards the behavior and social norms (Kautonen et al., 2015).

**Propensity to act.** In the same way Ajzen added a volitional construct to the TPB in the form of perceived behavioral control, Shapero added the concept of an individual’s propensity to act. Although the concepts are related, “Shapero conceptualized ‘propensity to act’ as the personal disposition to act on one’s decisions, thus reflecting volitional aspects of intentions”
(Krueger et al., 2000, p. 419) while Ajzen’s construct is much more focused on the control aspects of forming intentions.

In the context of a dislocating event, the construct of propensity to act can be thought of as the desire to gain control of the situation by taking action (Krueger et al., 2000). Krueger (1993) has offered the position that not only does propensity to act have a direct influence on intentions, but also likely moderates the other variables within the SEE model. A person’s propensity to act is developed through a number of mechanisms, previous experiences, personality traits and influence from others to name a few. Propensity to act has been compared to risk-taking propensity and tolerance of ambiguity, and redefined as a person’s willingness to take action when outcomes are not known (Kuehn, 2008). The characteristics of a person’s propensity to act have obvious ties to the characteristics normally associated with entrepreneurs.

**Perceived feasibility.** Perceived feasibility can be thought of as a person’s own perception of their ability to perform an act, in the case of the SEE model, to start a business. Kuehn (2008) reminds us of the similarities between perceived feasibility and perceived behavioral control from the TPB as follows, “This perception is viewed as related to Ajzen’s behavioral control variable in that both of these focus on a person’s assessment of his/her ability to manage the business startup process successfully” (p. 91). Although some support for the relationship between measures of previous experience and personality traits such as self-confidence and perceived feasibility have been found, a much stronger connection between self-efficacy and perceived feasibility is supported by the research (Krueger, et al., 2000; Kuehn, 2008). In Shapero and Sokol’s seminal 1982 work, they describe the relationship between perceived desirability and perceived feasibility as follows,
Perceptions of desirability and perceptions of feasibility necessarily interact. If one perceives the formation of a company as unfeasible, one may conclude it is undesirable. If one perceives the act as undesirable, one may never consider its feasibility. (p. 86)

There is a clear relationship between at least two of the constructs of the SEE model, perceived feasibility and perceived desirability. The last important construct within the SEE model to be discussed in the following section is the dislocation action or “the event.”

**The event.** One of the essential difference between the SEE paradigm and the TPB is that the SEE framework is the assumption of human inertia and the requirement for a dislocating event to cause a person to follow an entrepreneurial path. As stated above, these entrepreneurial events may be positive such as a large inheritance or negative such as an unplanned work related move. Although these events may be positive or negative, research shows a much higher rate of business starting as a result of negative displacements than positive ones, but it is still generally accepted that the combination of negative and positive forces that account for life changes (Shapero et al., 1982). Shapero and Sokol (1982) denote five operational imperatives that describe the entrepreneurial event,

1. Initiative-taking. An individual or group takes the initiative.
2. Consolidation of resources. An organization is formed or restructured to accomplish some objective.
3. Management of the organization by those who took the initiative.
4. Relative autonomy. Resources are disposed of and distributed with relative freedom.
5. Risk-taking. The organization's success or failure is shared by the initiators. (p. 78)

Shapero (1984) also tells us that all five of the imperatives must be present for an activity to be considered an entrepreneurial event. As an example, many business leaders consolidate
resources and may have a certain level of autonomy, but if true success or failure are not shared by the leaders or if they did not initiate the activity, they are performing managerial duties but not participating in an entrepreneurial event. The SEE model also does not consider innovation as an entrepreneurial event, rather it says the entrepreneurial event is the innovation. Although it may seem unlikely that high school students may have encountered an entrepreneurial event early in their lives, Kuehn (2008) provides a broader view of a dislocating interaction,

Another displacement condition would be the urging of a mentor, and presumably by implication, an instructor or respected ‘other’ in the university context who could act as such a trigger. Educators are generally recognized as important molders of the attitudes and beliefs students hold and that would be no less true when it comes to entrepreneurship as a career choice or lifestyle. (p. 88)

The constructs of the SEE model defined above appear to be generally applicable to people of various ages and experience levels, with Kuehn’s insight it seems the entrepreneurial event can be found within the context of high school students as well.

**Other potential antecedents.** Similar to the above discussion regarding TPB several authors have attempted to add additional antecedents to the SEE framework. It has been found that social connections are important predictors of entrepreneurial intent (Kuehn, 2008). A strong social network has not only been found to influence the start of a new business but the ongoing success of the business as well. Shapero may argue that social network influence is a contributing factor to perceived feasibility or desirability depending on the specific interaction with the network. Kuehn has also documented research that suggests work related experience can influence entrepreneurial behavior. This work experience can be attained in many forms and doesn’t have to be specifically related to creating a new venture. Generally speaking, if we have
done something before, our perceived feasibility will likely be stronger and potentially our perceived desirability as well. Kuehn (2008) ties these finding back to students and how best to influence entrepreneurial intention within the SEE framework,

This suggests that students possessing any experience in organizations are more likely than those without such experiences to seek self-employment opportunities. This points us to the importance of direct experience scenarios for our students, with those most related to self-employment being most potent. Internships in entrepreneurial companies and encouraging involvement in student-run businesses would be important in this regard. (p. 93)

Although there is still debate regarding the addition of specific antecedents to the SEE and for that matter the TPB, Kuehn’s message resonates with this author and supports the use of these models for the study of entrepreneurial intent development through experiential learning.

**Summary of SEE model.** Intention models such as the TPB and SEE proclaim to predict a person’s intention to perform an act, in the case of the SEE, specifically the act of starting an entrepreneurial endeavor. The antecedent conditions used as predictors by the SEE include desirability and feasibility of performing the act and an important propensity of an individual to take action. Positive indicators of these predictors plus a life altering change in a person’s situation will create an entrepreneurial intent and a subsequent start of a business according to Shapero and Sokol (1982).

In terms of applying the SEE to high school students, several key observations are found. Peterman and Kennedy (2003) remind us that although the time period between graduation and actually starting a business might be too long to support the concept of feasibility as educators
we could help focus on desirability. Krueger (2000) takes the opposite view saying, “For example role models can help promote entrepreneurial activity, but only if they influence perceptions of desirability or more likely perceptions of feasibility” (p. 8). Krueger and Day (2010) also believe role models, parents, teacher and others can influence self-efficacy and therefore perceived feasibility within students. Shapero himself (1984) believes simple steps can be taken,

In the short run there are many actions to be taken to counteract the consistent denigration of smaller businesses and to enhance their desirability in the perceptions of the young. The first action is to improve the self-images of small business people. (p. 32)

Whether education will impact perception of desirability or feasibility or both may depend on the goals of specific programs, pedagogical beliefs or simply the actions of specific teachers involved.

Comparisons and Limitations of TPB and SEE

Whether implicitly or explicitly stated the SEE clearly has connections to the TPB. Both frameworks have antecedents related to the goodness or badness of performing an action, social norms and attitudes towards the action in TPB and perceived desirability in SEE. Both models rely on predictors of self-efficacy, perceived feasibility in SEE and perceived behavioral control in TPB. As Krueger et al. (2000) remind us that some people may have a stronger desire and believe they have the skills and resources to start a business, yet never do. On the other hand, some business owners, only a few years early, may have had no intention of starting a business yet they did. Because of these cases, Shapero add the concept of propensity to act to his paradigm and created a difference between the TPB and SEE. Research such as (Krueger et al. 2000) and Lee et al. (2011) also highlights that both models have received a great deal of
empirical support. Kuehn, (2008) would point out that the SEE model may have a slightly better predictive power, “both models did reasonably well with the Shapero-Sokol model explaining slightly more variance in intentions than the Ajzen model” (p. 91).

Intention based models are not without their challenges and Krueger et al. (2010) recommend exercising caution when applying these models to research studies. As of a few years ago, there was still debate about the direction of causality of the antecedents. Krueger and Day (2010) summarizing previous research find, “While perceived desirability and perceived feasibility were significant antecedents of intentions, as expected, a rudimentary test found that desirability and intent also clearly predicted feasibility and that feasibility and intent clearly predicted desirability – almost equally” (p. 334) opening the question as to which variable is actually the dependent variable.

Even with these limitations the overwhelming majority of empirical research supports the use of either of the models with the choice more related to the application than the model itself (Kautonen et al., 2015). However, the SEE and TPB are not the only models used to explain entrepreneurial intention and behavior. The follow section will describe and evaluate of few of the other models.

**Additional Models**

While some authors (Hallam & Zanella, 2016) suggest a merging of the TPB and SEE models, for instance combining feasibility with perceived self-efficacy to create a more robust, more generic model others have suggested completely different models. Some of these models are described below.

**Robinson.** Robinson, Huefner, and Hunt (1991) highlight an entrepreneurial behavior model based on the construct of attitude. In their research Robinson et al., (1991) say attitude,
“is a dynamic interactive way of relating to the environment in conjunction with a specific person, place, thing, activity, idea, or life style” (p. 44) In the context of entrepreneurial attitudes, Robinson, et al., suggest a three part model of attitudes as follows, “Tripartite attitude theory indicates that attitudes toward any object composed of three components: affective (one’s feelings or emotions toward the object), cognitive (one’s beliefs and knowledge about the object), and conative (one’s behavioral tendencies toward the object)” (1991, p. 44). One can see several parallels between this attitudinal model and the TPB. Ajzen’s insistence that specific actions within a specific context must be defined in order to rely on the attitudinal prediction of intention, is clearly related to the description of attitudes interacting within the same environment. One can also see similarities between the three components of attitude defined above and the TPB construct of attitude toward the behavior. Researchers may declared their models unique, but a closer look may reveal clear parallels to earlier work.

**Davidsson’s model.** As Shapero’s work is characterized by the addition of an entrepreneurial event and Robinson adds more definition to attitudes, Davidsson brings us the concept of entrepreneurial convictions (Meeks, 2004). Achievement motivation, competitiveness, and autonomy are also characteristics of people Davidsson uses as descriptors within his model (Meeks, 2004). Lastly, Davidsson defines entrepreneurial conviction in terms of pay off and perceived know how. Admittedly, Davidsson’s definition of pay off tends to be for society as a whole rather than for the individual entrepreneur, we can again draw parallels to earlier work. We can see a connection back to the social norms construct within the TPB as well as a tie to perceived behavioral control from TPB and perceived desirability and feasibility from SEE. Again, each of the models provides a nuanced view of the drivers of entrepreneurial intent, but the general frameworks have significant commonalities and overlap.
Application of Intention Models to Experiential Learning

Much of the research cited above links certain learning experiences to the enhancement of entrepreneurial intention. This linkage can be through the development of understanding what entrepreneurs do which may lead to an increase in perceived feasibility or in understanding the benefits of entrepreneurship which may lead to an increase in the influence of social norms and perceived desirability. One way to build these types of understandings is through the use of effective mentors and champions, teachers as an example. However, Krueger et al., (2000) describe another methodology,

Even better are development experiences that provide opportunities to experience mastery at those competencies (McCall, 1992; Senge, 1992). Exposure to diverse life and work experiences broadens individual’s range of what they perceive as feasible. This behavioral modeling can work either vicariously using credible experts or directly by affording members the hands-on experience in safe settings (Bandura, 1986; Weick, 1979). (p. 11)

Peterman and Kennedy's (2003) research indicated that “exposure to entrepreneurship or enterprise education should be included in intentions models as an exposure item” (p. 140). Again, the research supports that exposure to entrepreneurial process may impact perceptions of feasibility, desirability or both. Krueger and Day (2010) discuss education’s ability to change deep mental models which may lead people to see more opportunities or to see themselves as entrepreneurs. Although in their earlier work Krueger and Carsrud (1993) do remind us that, “Teaching people about the realities of entrepreneurship may increase their entrepreneurial self-efficacy, but simultaneously decrease the perceived desirability of starting a business” (p. 327). No doubt showing
students the challenges and risks of starting a business may discourage some from pursuing the entrepreneurial lifestyle, but knowing this may help educators think through proper mechanisms of exposure. The following section will focus on experiential and project-based learning as mechanisms of providing students with exposure to a wide variety of experiences some of which could help build their entrepreneurial intention.

**Experiential Learning**

Many researchers argue that the concept of experiential learning (EL) has been around since at least Dewey’s work (Bereiter & Scardamalia, 2000; Canboy, Montalvo, Buganza, & Emmerling, 2016; La Prad & Hyde, 2017; Trede & Andreasen, 2000; Zhao, 2012) while others may even contend it has its roots back to Plato and Aristotle (Stonehouse, Allison, & Carr, 2011; Trede & Andreasen, 2000). Seaman, Brown, and Quay (2017) believe that under certain definitions EL’s history only dates back to the T groups of the 1950s and 1960s. In any case, EL and its many derivatives and forms continues to be a heavily researched topic and relevant to this dissertation. The participants within this study are students, teachers, administrators and industry partners of two schools whose programs can be defined as experiential in design. This section will start with a definition of EL, a brief history, discuss the various derivatives and underlying theories and finish with a description of how EL and the development of entrepreneurial intent are congruent.

**Experiential learning defined.** One of the challenges for a researcher in the area of EL is sorting through the variety of definitions and derivatives of the various concepts. Ideas such as project based learning, product based learning, experiential learning, inquiry based learning, anchored instruction, problem-based science, constructivism, constructionism and social learning theory all seem to be related and their definitions rich with overlap. Although Thomas (2000)
was talking specifically about problem-based learning when he said, “This diversity of defining
features coupled with the lack of a universally accepted model or theory of Project-Based
Learning has resulted in a great variety of PBL research and development activities” (p. 2) it
applies to the general field of experiential learning as well. A definition of learning is required
before the various types of experiential learning are explored.

Ambrose (2010) provided a pertinent definition of learning as “a process that leads to
change, which occurs as a result of experience and increases the potential for improved
performance and future learning” (p. 3). The working elements of this definition remind us that
learning is a process not an end result, that learning involves change “in knowledge, beliefs,
behaviors, or attitudes” (p. 3) and that the change is continuous and perpetual. Ambrose (2010)
adds that students enter a learning setting with previous knowledge and this knowledge “consists
of an amalgam of facts, concepts, models, perceptions, beliefs, values, and attitudes, some of
which are accurate, complete, and appropriate for the context, some of which are inaccurate,
insufficient for the learning requirements of the course, or simply inappropriate for the context”
(p. 13).

Ambrose’s (2010) definition also demonstrates a connection to the theory of planned
behavior, through changes in attitudes, entrepreneurial intention can be learned. Learning is not
something done to a student but something a student actively does on their own and by the
Ambrose definition, is based on interpretation of students’ experience.

Kolb (1984) in the framework of his Experiential Learning Theory (ELT) provide a very
similar definition of learning as,
The process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience. (p. 41)

The definition of learning, at least by some researchers includes the construct of experience. Several theories or paradigms have been developed regarding the essential elements of providing students with valuable experience. Several of these relevant theories will be discussed in the following sections.

**Experiential learning theory.** Acknowledging a disagreement regarding the history of experiential learning documented above (Seaman et al., 2017), one cannot describe the sphere of knowledge revolving around the topic without mentioning Dewey’s Experiential Learning Theory (ELT). Bower (2014) reminds us that experiential learning has been described many in ways, from a process of discovering processing, applying information and reflection, to a method of linking “academic knowledge and practical skills” (p. 62), and as an application of knowledge to real-world situations. Bower (2014) attributes these descriptions to the early work of Dewey, providing a view of the three central themes of Dewey’s ELT; the social environment as a relationship among teachers, learners, the community and the curriculum, the way students learn through a combination of lecture and hands-on experience, and reflection by the student and teacher on what has been learned. Although Seaman et al. (2017), claim that “there is little evidence Dewey used the actual phrase ‘experiential learning’” (p. 3), it is clear Dewey was connecting experience with learning as far back as 1938.

**Constructivist theory.** Tanner’s (2012) description of Piaget’s (1952) concept of constructivism includes parallels to Dewey’s work, for instance “authentic opportunities challenged students,” students should “construct meaning at their own pace through personal
experiences,” that “learning should be a social process” and that learning should “take place in
the constraints of collaborative groups with peer interaction” (p. 35). Other researchers
considered the same connections to Dewey’s work and developed the following theories.

Researchers such as Krueger and Day (2010) and Kurzel and Rath (2007) divide
instructional models into two broad categories, instructor-driven learning based on cognitive
theories and student-driven models based on constructivist principles. Vygotsky’s (1978) theory
of social learning, sometime referred to as constructivist theory or social constructivism is built
on the social context of learning (Park & Hiver, 2017; Tanner, 2012). Vygotsky highlighted the
interaction between the student and the teacher, the importance of culture in the learning
environment, and the connection of experiences to learning. Tanner (2012) summarizes the
constructivism paradigm,

Proponents of constructivism believe that instruction should begin with content and
experiences that are familiar so that students are able to make a connection between the
learning experience and the real world and concur that the goal of learning should be that
students become autonomous learners. (p. 11)

Vygotsky also discussed the importance of learners thinking about the learning process and how
periodic retrospection could enhance the learning experience. Krueger and Day (2010) in the
context of entrepreneurial learning say, “Constructivism argues for situated learning where
students acquire knowledge but also have to develop their own ways of organizing the
knowledge (building and changing their own mental models to represent knowledge)” (p. 345).
Knowledge acquisition in a constructivist view is personal to the individual learner. Learning is
not one size fits all and does not lend itself to large group lectures and transmission of
information. Constructivists believe learning needs to be student-centered and reflect trial and
error in a social setting (Bush, 2006; Kurzel & Rath, 2007). Constructivism theories are the basis of much of the work in project-based learning as will be described below.

Seaman et al.’s (2017) consistent use of the term experiential learning allows us to witness the progression of research over an extended period of time. Figure 2.3 provide a view of experiential learning research published over nearly 120 years. Seaman et al. (2017) explain the rise in popularity of experiential learning in the 1970s and early 1980s to a connection back to the T group research and application of the 1950s and 1960s. The larger uptick in the experiential learning research in the 1990s is explained by the release of Kolb’s (1984) influential model.

**Figure 1.** Frequency of experiential learning used in scholarship (1900-present). Note. Results obtained by searching all text in JSTOR, PsychInfo, and Dissertation Abstracts International.

**Figure 2.3.** Experiential Learning Referenced in Literature by Decade (Seaman et al., 2017)

**Kolb’s experiential learning cycle.** Kolb’s (1984) holistic experiential learning cycle has been named as such specifically because the learning process can begin in any one of the four quadrants (Botelho, Marietto, Ferreira, & Pimentel, 2016) laid out in figure 2.4. The process is one of constant adaptation from “concrete experience (CE) to reflective observation
(RO), abstract conceptualization (AC) and active experimentation (AE), which in itself results in new CE” (Canboy et al., 2016, p. 446).

Figure 2.4. Kolb’s Experiential Learning Cycle (Botelho et al., 2016, p. 82)

The quadrants are best described by Botelho et al., (2016) as follows,

- Concrete Experience: the learning process begins with the students actively carrying out an experience/activity;
- Reflective Observation: following the Concrete Experience stage, the students consciously reflect back on that experience;
- Abstract Conceptualization: the students attempt to understand the general principles under the experience, trying to conceptualize a theory, model, or hypothesis of what is observed.
- Active Experimentation: the students try to plan how to test a model, theory, and/or plan for new experiences, probably with different behaviors. (p. 81)
Four learning styles emerge from Kolb’s model; divergers that can see a wide variety of ideas and alternative solutions, assimilators are the logical organizers comfortable with theoretical frameworks and inductive reasoning, convergers are the problem solvers, decision makers and provide practical application, strong in problem solving, decision-making, and practical application of ideas, lastly the accommodators are the hands-on learners, solving problems with a trial and error method and are comfortable with risk (Botelho et al., 2016). Kolb’s model not only highlights certain characteristics of entrepreneurs in each of the learning styles but also provides the theoretical framework for much of today’s work on project-based learning. The next section will provide a detailed view of PBL and its various incarnations.

**Project-based learning.** PBL is a clear example of a constructivist learning model incorporating several of the elements of Kolb’s learning cycle theory (Akcay, 2017; Park & Hiver, 2017). Several definitions have been used to describe PBL, Tanner (2012) summarizes the work of others as,

A rigorous teaching method which is organized around an open-ended driving question or challenge. . . creates a need to know essential content and skills. . . requires inquiry to learn and/or create something new. . . requires critical thinking, problem solving, collaboration, and various forms of communication. . . allows some degree of student voice and choice. . . incorporates feedback and revision. . . results in a publicly presented product or performance. (p. 10)

Strevy (2014) highlights the problem of confusing definitions saying, “The terms ‘project-based’ and ‘problem-based are used interchangeably and in many different ways by educators” (p. 462). Although according to Strevy the difference between the terms is subtle, it is worth noting that problem-based learning typically starts with a problem
defined by teachers for students to solve, while project-based learning implies students are responsible for the definition of the problem as well as the solution. Zhao (2012) uses a similar set of terms to define PBL but states that the definition can be broadened if we add “features relating to the use of an authentic (‘driving’) question, a community of inquiry, and the use of cognitive (technology-based) tools from ‘project-based instruction’ and comprehensive school improvement, community service, and multidisciplinary themes from ‘Expeditionary Learning’” (p. 196). Bereiter and Scardamalia (2000) add one additional set of inputs to the definitional process of PBL. Bereiter et al., define PBL (uppercase) as a “distinctive, well-documented instructional approach” while pbl (lowercase) is more loosely defined as “an indefinite range of educational approaches that give problems a central place in learning activity” (p. 185).

Still others (Akçay, 2017; BIE, 2005; Chin & Chia, 2004; Park & Hiver, 2017; Tanner, 2012) have attempted to define PBL using a set of five key elements. The elements normally contain the following:

- A real-world, interdisciplinary, embedded driving question raised by the student, not all information to solve the problem is available.
- Student driven inquiry and extensive investigation, no right way of solving the problem exists
- Cooperative learning and meaningful collaboration between the teacher (serving as a facilitator or coach) and students
- Use of resources and technology to aid in the illustration of students’ ideas and as new information is learned the problem definition may change
• Creation of a product, solution, or artifact that represents their learned knowledge, however students will never know for sure if they made the right choices

Zhao (2012) prefers the term product-oriented learning when describing the benefits of experiential learning, especially in the context of entrepreneurial intention,

Product-oriented learning changes the orientation of the learner from the recipient and consumer to the creator and provider. It changes the relationship between the teacher and the learner as well. The teacher no longer serves as the sole source of knowledge or disciplinary authority, but rather as a motivator, a reviewer, a facilitator, and an organizer. The learner becomes owner of their learning and is responsible for seeking and securing the necessary guidance, knowledge, skills, and support to make high-quality products. These changes facilitate the cultivation of creative entrepreneurs. (p. 240)

Although the definitions are varied and the key elements of PBL are debated (Bush, 2006), the theory of exposing students to real world problems, working in groups, creating a product, solution or physical artifact and holding students accountable for their own learning will pay benefits for the life of the student. This study will investigate whether PBL-like programs also help stimulate entrepreneurial intention.

**Benefits of PBL.** PBL programs typically define the problem or allow the students to do so, before transmission of knowledge occurs. This approach provides the significant benefit of putting the learning into a context (Chin & Chia, 2004) as opposed to traditional learning experiences where the information is first learned and then students are asked to solve problems with the knowledge.

Sizer (1983) instructed us that “the primary burden for learning should be squarely on the student” (p. 36). As the students define and analyze their own problems, they will come to
understand what they don’t know, this knowledge deficiency will guide them in their later self-directed learning (Hmelo-Silver, 2004; Park & Hiver, 2017). According to Hmelo-Silver (2004), this is a cyclic process, students must understand what they do not know, set goals to fill in the knowledge gaps, set a strategy to gain the knowledge, and finally evaluate if they have in fact filled those needs. This cyclic process can then be repeated but in a more abstract and longer term way. The longer term cycle highlights the importance of reflection in the overall learning process, highlighted by Hmelo-Silver “Reflection helps students (a) relate their new knowledge to their prior understanding, (b) mindfully abstract knowledge, and (c) understand how their learning and problem-solving strategies might be reapplied” (2004, p. 247). Reflection, one of the differentiators of PBL over traditional learning is a vital aspect to help students learn how to learn.

Bereiter and Scardamalia (2000) put this concept in a framework of beliefs and attitudes, referring to problem analyzation they say, “It is exploiting the potentialities of new knowledge-revising one's beliefs and practices in light of it, building more powerful conceptual frameworks, and coming up with new ideas” (p. 189). This revision of one beliefs and practices supports a notion that experiential learning may have direct or secondary effects on entrepreneurial intention as beliefs must be altered to change intention and ultimately behavior.

Holding students accountable for their own learning also has the benefit of developing intrinsic motivation (Ambrose, 2010; Hmelo-Silver, 2004). Researchers such as Ambrose (2010), Hmelo-Silver (2004), and Zhao (2012) find that students are motivated by freedom to pursue what they want to pursue, by personally meaningful tasks, and by believing that the outcome of their learning is under their control.
Ambrose (2010) reports that one of the biggest challenges facing students entering college is the struggle to manage their own learning. The problems presented in high school lack the scope, complexity, and open-endedness found in college-level projects. It would seem, the earlier students can be exposed to experiential learning the smoother the transition to ever more abstract and challenging problems.

A properly structured PBL system will also introduce students to the concept of acceptable failure. The failures can be related to ideas, materials, or the collaboration between other students or students and teachers (La Prad & Hyde, 2017). Estabrooks and Couch (2018) have recently found, “that young inventors, like more mature inventors, learn through creative failure as part of the iterative and recursive nature of the invention process” (p. 11). Teachers are responsible for building trusting relationships and encourage failure not for failures sake, but to help students learn from failures and provide feedback in the learning process.

An additional set of more abstract but no less meaningful benefits of PBL have been documented by several researchers. Bereiter and Scardamalia, (2000) list the following rewards of PBL, “good grades, awareness of having learned things of future professional value, and a sense of achievement from solving a problem” (p. 190). Larner (2016) contributes the following characteristics of a successful graduate of a PBL program, “a responsible, resourceful, persistent critical thinker who knows how to learn, works well with others, is a problem solver, communicates well, and manages time and work effectively” (p. 66).

Clearly, the research indicates a wealth of benefits of properly defined and executed PBL learning experiences, from creating a context of why students are learning what they are learning to general characteristics of successful creative problem solvers. Although the benefits of PBL are numerous and far reaching, there are potential challenges as well.
Potential risks of experiential learning. Park and Hiver (2017) remind us that not all students will find PBL methodologies to their liking. Where PBL makes use of peer feedback, some students find the process uncomfortable, both providing critique of others and receiving negative feedback regarding their own thoughts and ideas can be upsetting. Similar distress was found in the setting of working groups. Students were not sure how to handle group members that were not completing their tasks. This discomfort was felt by both the performing and nonperforming students.

Although important in both traditional and PBL settings, the perception of a supportive environment is even more crucial in PBL environments. Ambrose (2010) finds, “If students perceive the environment as unsupportive (for example, “This instructor seems hostile to women in engineering”), it can threaten expectations for success and erode motivation” (p. 78). As PBL tends to have a broader set of characters that can influence the environment, peers, teachers, administrators, and potential outside partners, it becomes critical we monitor for a positive, supportive environment.

Students are not the only ones required to change in the world of PBL. Teachers will also find themselves in a different role. The role of the source of knowledge is replaced by mentor or facilitator. Zhao (2012) states this metamorphosis very eloquently,

Quite the contrary, this new paradigm presents even more challenges to school leaders and teachers because their primary responsibilities have shifted from instilling the prescribed content in students following well-established procedures in a structured fashion to developing an educational environment that affords children the opportunity to live a meaningful and engaging educational life. (p. 176).
Questions also arise relative to the process of demonstrating mastery. Adjustments to the learning process will likely need to be made to account for Local, State, and Federal requirements, those changes are beyond the scope of this paper. Teachers will clearly be challenged under a PBL environment, some may find it a very meaningful and fulfilling change while others may become disenchanted enough to leave a PBL program.

**Summary of experiential/project-based learning.** As far back as 1983 Sizer was pointing out that, “Compartmentalization by English-mathematics-science-social studies-foreign language-physical education-et al. is not the most productive way of organizing a high school program” (p. 35). Research and application of various forms of experiential learning have come a long way to restructuring how we think about productive ways of organizing programs. In the context of entrepreneurial education it is likely that traditional teaching methods have been replaced by more experiential approaches such as PBL. Krueger and Day (2010), support this belief stating, “Indeed, the most popular and successful training techniques used in entrepreneurship tend to strongly reflect the constructivist model” (p. 345). Canboy et al. (2016) tell us these experiential methods work, “The general satisfaction with the course and the transferability of the projects to real workplaces were positively evaluated by students, professors and collaborating companies” (p.455). Although within a University setting and focused on IT projects, Canboy et al.’s case studies are similar to those suggested in this dissertation. A comparison of the results will be interesting.

As noted above many researchers have attempted to define the critical elements of a successful experiential learning program. There is much agreement and overlap with little debate still remaining. A summary of these key elements stated in guidelines for educators can be drawn from Ambrose (2010),
Connect learning material to students’ interest

Provide authentic – real world tasks

Show Relevance to Students’ Current Academic Lives

Demonstrate the Relevance of Higher - Level Skills to Students’ Future Professional Lives

Identify and Reward What You Value

Show Your Own Passion and Enthusiasm for the Discipline (p. 84)

Experiential education programs that consider students’ passions and interests, use those interests to structure real-world problems and projects, and can demonstrate relevance to current academics and future pursuits will likely produce creative, curious, and entrepreneurial lifelong learners that will provide positive impacts on society.

Seaman et al., (2017) provide a challenge however, the challenge they state, “With the concept of experiential learning is that it simultaneously expresses an empirical phenomenon, a set of pedagogical strategies, and an ideology” (p. 14) which should lead us to more focused research. The future research should focus on the relationships between the theory, practice and ideology to achieve more precious definitions and application of experiential learning. A great deal of research over the past fifty or sixty hears has helped us understand the theory and application various experiential learning models, but as Seaman et al., highlight, there is much to be done.

State of Entrepreneurial Education

A strong desire for entrepreneurs and entrepreneurial skills has not gone unnoticed. The Universities in the U. S. and the rest of the world have responded. For instance in 1995, over 400 entrepreneurial courses were being offered in the U.S. at various institutions, by 2003, more
than 2200 courses were being taught at over 1600 schools and of 2011, over 60 percent U.S.
colleges and universities offer at least one course in entrepreneurship (Albornoz, 2011).

High Schools have not been left out of the race to educate tomorrow’s entrepreneurs
either, as Bozzo (2012) reminds us,

The growth in entrepreneurial programs at the high school level, much like the more-
publicized college ones, appears to touch on both a consumer need and a societal nerve.
The Internet age has created hundreds of innovative, charismatic business minds, whose
game-changing ideas have earned them fame and fortune, while changing the work and
recreational lives of millions of people.

This section of the literature review will discuss some of the challenges facing not only
entrepreneurial programs both at the secondary and higher education levels, but a brief
discussion of the challenges and discontinuities facing entrepreneurial education researchers.
The section will end with a description of how entrepreneurial education and experiential
learning have merged to create stronger results.

Definitions. One of the first problems facing entrepreneurial educators is the lack of a
consistent set of terms. Pittaway, Hannon, Gibb, and Thompson (2009) emphasis the point,
saying, “As educators in the area are aware, there are difficulties in definitions and much
diversity in interpretation of the words ‘enterprise” and "entrepreneurship’ when applied to
education and the two words imply different things” (p. 74). Schmitz, Urbano, Dandolini, Souza
and Guerrero (2017) support this set of inconsistencies stating, “Content analysis shows a
fragmented literature, with definitions not showing a clear relationship between innovation and
entrepreneurship, or their use within universities in coherence with their traditional definitions”
(p.369). The definitional inconsistencies manifest themselves in several ways. As Pittaway et al.
(2009) continue, “There are also many debates about how to learn, whatever "it" is and only limited knowledge about how "entrepreneurs" or "enterprising people" themselves learn” (p. 74) This leaves educators uncertain as to what we want students to learn and how best to educate them. Sirelkhatim, Gangi, & Nisar (2015) summarize this dilemma and instruct researchers, “To focus on the basic questions coming from education science: what, how, for whom, why and for which results is the EE (Entrepreneurial Education) programme designed” (p. 1).

Blenker, Elmholdt, Fredericksen, Korsgaard, Wagner, and Matlay (2014) expand the problem set adding two additional challenges, “entrepreneurship is taught from a variety of theoretical perspectives (e.g. discovery vs creation perspectives, entrepreneurship vs a broad enterprising behavior perspective)” an “learning objectives and teaching methods vary significantly since entrepreneurship is taught across faculties by scholars as well as non-academics (e.g. at entrepreneurship centres) with varied backgrounds and experiences” (p. 699). Blenker et al. indicate that this diversity may in fact lead to a healthy learning environment, it challenges the researchers attempting to make sense of entrepreneurial education. Unclear definitions have created challenges not only for entrepreneurial educators, but for those attempting to research the field as well.

**Research challenges.** Blenker et al. (2014) portray the entrepreneurial education (EE) research challenge as follows,

All of these aspects make entrepreneurship education research a challenging venture for any researcher. Some of these challenges have been met by applying appropriate methodological frames to the study of entrepreneurship education. Yet, overall, the field of entrepreneurship education research remains fragmented both in terms of content,
purpose and especially methods. Consequently, there is great potential in strengthening the methodological foundation of this important research. p. 699

Researchers are obviously faced with several challenges when attempting to study entrepreneurial education. Several authors such as Blenker (2014), Maritz and Brown (2017), and Nabi, Liñán, Fayolle, Krueger, and Walmsley (2016) describe both conceptual and methodological fragmentation and the different uses of both qualitative and quantitative methods being used in today’s EE literature. These authors agree that typically the use of quantitative studies is to find extent and of effect of EE while the single case studies typically employed in the qualitative studies bring contextual descriptions. Unfortunately, these authors also agree today’s EE literature suffers from limited generalizability and tends to suffer from a variety of biases.

One of the common recommendations by current researchers to improve the state of EE research is to create and agree upon, a theory driven framework for assessing programs, pedagogies, and outcomes (Canziani, Welsh, Hsieh, & Tullar, 2015; Nabi et al., 2017; Pittaway, et al., 2009; von Graevenitz, 2010). A lack of a consistent framework, these authors argue, also leads to an inconsistent application of methods and therefore inconsistent sometimes contradictory findings.

In addition to an integrating framework to improve today’s EE research, Nabi et al. (2017) suggest focus on specific topics may produce better results. Focus for instance on the pedagogies applied to EE research may provide a clearer understanding, “Confusion regarding the impact of EE may result from the wide diversity of pedagogical methods employed in EE programs” (Nabi, et al., 2017, p. 278). Daunfeldt et al. (2015) tie this lack of pedagogical focus back to this specific dissertation stating,

Further, little attention has been paid to EE programs that target students in primary or secondary schools. This lack of knowledge is problematic as these children comprise the
vast majority of students enrolled in education worldwide (Rosendahl Huber et al., 2012).

It also makes it difficult to infer which skills such programs may foster and to identify mechanisms facilitating the accumulation of entrepreneurial skills. p. 209

If we are going to continue to provide EE programs to our students we owe them an understanding of the impacts of the programs and how to improve their chance of success. A focus on specific aspects of EE pedagogy will be covered in the following section.

**Pedagogies.** Early courses directed toward entrepreneurship typically followed a traditional structure with much of the content coming from business schools (Hoppe, 2016). Since then the plethora of course content, pedagogies attempted and tools used has exploded. Nabi et al. (2017) and Sirelkhatim et al. (2015) refer to this style of teaching entrepreneurship as “supply-led” whereby teachers supply students with the information they know. Since then the plethora of course content, pedagogies attempted and tools used has exploded. Mwasalwiba (2010) groups this explosion into three buckets, lectures, case studies, and group discussions, but adds a more complete list including, games and competitions, setting of real small business ventures, workshops, presentations and study visits. Pittaway and Cope (2007) add to this list of teaching methods and include; (a) the use of the classics, (b) action learning, (c) new venture simulations, (d) technology based simulations, (e) the development of actual ventures, (f) skill-based courses, (g) video role plays, (h) experiential learning and (i) mentoring. Nabi et al. (2017) and Sirelkhatim et al. (2015) refer to these styles of learning that take into account the students’ needs as demand led. Although this list is dynamic and to date still changing, some researchers have attempted to classify the methods into systemic themes.

Researchers such as Mwasalwiba, (2010), Pittaway et al. (2009), and Sirelkhatim et al. (2015) have defined three basic types of EE, about, for, and through. Sirelkhatim et al. (2015), summarizing the work of others provides as definition of about, for and through, as follows,
(1) “about” entrepreneurship (Piperopoulos & Dimov, 2014) and aim to increase awareness about entrepreneurship, encourage students to choose entrepreneurship as a potential career choice (Fayolle & Gailly, 2013) and consider self-employment (Klapper & Tegtmeier, 2010); and practical-oriented courses that teach (2) “for” entrepreneurship (Piperopoulos & Dimov, 2014) aims to encourage students and enhance their intentions to be entrepreneurs in future and (3) “through” entrepreneurship, which aim to graduate entrepreneurs (Vincett & Farlow, 2008), support new venture creation (Lundqvist & Williams Middleton, 2013) and develop entrepreneurial competencies (Bridge, Hegarty, & Porter, 2010). (p. 5)

Generally, teaching “about” entrepreneurship entails basic business courses, business planning as well as some of the traits and characteristics of entrepreneurs and a general awareness of entrepreneurial success and failure.

Teaching “for” entrepreneurship tends to be more focused on how one would actually start and run a business. Classes and discussion would revolve around generating ideas, innovation, opportunity recognition and other tools for people that know they want to start a business.

Teaching “through” entrepreneurship moves beyond simulating businesses and attendant challenges into engaging students in real businesses and real business people. Sirelkhatim et al. (2015) have found that, “While this theme depends heavily on experiential learning and learning by doing, which correlate to entrepreneurial learning suggestions for EE programmes’ best practice, fewer articles discuss the teaching methods explored in this theme” (p. 7).

The integration of EE programs and other forms of experiential learning is ripe for additional research. Further, Pittaway et al. (2009) believe these through forms, about, for, and
through are likely best integrated with an attendant integrated assessment tool as a best practice. Canziani, et al. (2015) support this view that the intersection of experiential learning and EE has merit saying, “To achieve real understanding of the meaning of entrepreneurship, new pedagogical approaches that embrace active and experiential learning, such as student business start-ups, live cases and simulations, should be incorporated into teaching” (p. 101). Using their own empirical findings, Canziani, et al. (2015) indicate that, “Though very preliminary, it does appear that experiential learning courses in our sample foster entrepreneurial motivation better than other styles of pedagogy” (p. 109). Nabi et al. (2017) continue the dialog around experiential forms of EE and state clearly, “To put it more simply, such deeper, more experiential pedagogies seem to have the most potential to have impact at higher levels because students focus on developing behavioral competency in solving problems in real-life entrepreneurial situations” (p. 292).

Hoppe (2016) provides an excellent summary of the pedagogy section of this literature review when he says, “The argument ends in a suggestion that entrepreneurial schooling constitutes a new learning paradigm in two dimensions compared to traditional schooling” (p. 86), where the old fact-based school with predefined knowledge and language is replaced by a dialogical culture where the student takes responsibility of his/her own learning that is grounded in real-life experiences and a creative exploration of the world. Action learning through entrepreneurship (or enterprising behaviour, according to. Gibb 2002) will in this perspective be based on a learning style that involves trial and error, but also a learning process that transcends the subject of entrepreneurship to be applied in all sorts of subjects and academic fields.
Programs like BVCAPS and IowaBig are well reflected by Hoppe’s summary and will provide excellent case studies from which to learn what elements of these programs are able to help create entrepreneurial intentions within our students.

**Other factors.** Diehl (2016) finds that at least in the case of Swedish entrepreneurial education programs where these programs are mandated, that “a need for authenticity and concreteness, for example through interaction with the surrounding society, is also expressed as an important aspect” (p.39). It has been suggested in the earlier literature review section that this authenticity of projects and interaction with the surrounding members of society are important aspects in U. S. programs as well. Kirkley (2017) is delivers and even stronger message as it relates to the importance of culture on the success of an entrepreneurial education program. In the context of the impact a community culture can have on the success of an entrepreneurial education program, Kirkley (2017) says,

> The reference to culture in the context of this study is an important one, particularly when consideration is given to the profound impact that EE has had on the secondary schooling system. The custodians of community culture are its educators, those tasked with perpetuating the values of a community through the provision of education. To build an entrepreneurial community, it is necessary to fundamentally alter traditional strategies and teaching methods in such a way that learning takes on new meaning, not only for students but also for other community stakeholders as well. (p. 18)

One final factor that received some mention in the literature was that of experience level of both the EE program and their staff. Maritz (2017) found that “many EE scholars do not teach current and appropriate content” and further, “that many EE are not adequately tooled nor experienced to deliver entrepreneurship content” (p. 6). It is this author’s opinion that as more
and more programs are researched and more interaction between students and practicing entrepreneurs is introduced into the programs, this problem will begin to disappear.

**Goal and practice alignment.** Lorz (2013) helps highlight one of the next major issues facing entrepreneurial educators, “Continuous improvement of entrepreneurship education can only take place, if educators understand the implications of entrepreneurship trainings and the effects of different pedagogical practices” (p. 124). Educators and administrators need to understand the connections between teaching practices and teaching outcomes. Entrepreneurial education programs that are aligned appear to be more successful than those implemented without a complete strategy. This alignment can be stated in several ways. Nabi et al. (2017) say, “Pedagogical research highlights how the evaluation of impact should be a key dimension of any teaching program and therefore needs to be considered at the program design stage” (p. 279). Canziani et al. (2015) continues on this integration theme with, “To train and cultivate entrepreneurial traits requires an integrated learning and teaching strategy that aligns intended learning outcomes with the effective selection of pedagogy” (p. 98). Lastly, as far back as 2009 in their seminal work on EE assessment, Pittaway, et al. (p. 74) remind us that, “the discussion above illustrates that researchers in assessment practice have concluded that there needs to be alignment between learning outcomes, assessment tasks and the learning opportunities created.” The research leaves no doubt that in order for EE programs to be successful an overarching strategy that includes assessment, pedagogy, and impact goals must be created before implementation begins.

**Summary of state of entrepreneurial education.** After performing his 2017 literature review, Kirkley harshly criticizes previous attempts to enlighten our youth, saying, “Traditionally, the education system has generally inhibited, and may in fact have prevented, the
development of nascent entrepreneurs because it teaches young people to obey, reproduce
information and seek employment once completing school” (p. 21). As this literature section has
shown, the current state of EE is clearly improving. Granted there are still definitional problems
which lead to research challenges. There have been splintered pedagogies and the topical area
has not been studied under one or a handful of theoretical frames, but there appear to be some
consistent findings.

Canziani et al. (2015) provide encouragement and direction for not only future research
but a glimpse of what will be elements of successful EE programs,

With this in mind, we believe that the careful examination and continuous improvement
of academic pedagogies in entrepreneurship will yield more and better entrepreneurs and
intrapreneurs for the variety of business fields that our students will enter. We also
believe that by linking entrepreneurial propensity improvements to experiential learning
activities involving entrepreneurship experts and partner businesses, we strengthen the
potential for strategic partnerships between the academe and the field of practice. p. 109

IowaBig and BVCAPS are two programs that have demonstrated a strong link between students’
learning and the involvement of the surrounding communities. A case study focused on
answering how the programs are using this link to the advantage of the students may help
reinforce Canziani et al.’s theory.

Summary of Literature Review

Ajzen’s Theory of Planned Behavior and other intention based models have been
demonstrated through empirical research to be able to predict people’s behavior based on their
intention. The TPB describes three constructs, attitude towards the behavior, social norms, and
perceived behavioral control that are used to predict intention as none of them uniquely predict
behavior. The TPB has repeatedly been used to understand determinants of entrepreneurial
intention.

Shapero focused his paradigm specifically on the creation of new business ventures.
Shapero’s SEE model assumes people prefer to remain on the path there are on unless an “event”
pushes them to change. These events may cause positive or negative impact to the person, but in
any case they will change their life’s course. Shapero believed, similar to Ajzen, that people
perceive the feasibility and desirability of various actions, in this case starting a business and that
people also have varying levels the propensity to act. Taken together, these three constructs and
the addition of an altering event predict a person’s likelihood of starting a business.

These models provide the theoretical framework for this research project. If the models
are helpful in predicting students’ entrepreneurial intentions and therefore their likelihood of
starting a business, the question raised becomes, what can educators do to stimulate these
intentions. As highlighted above, Krueger et al. (2000) provide some guidance,

Even better are development experiences that provide opportunities to experience
mastery at those competencies (McCall, 1992; Senge, 1992). Exposure to diverse life
and work experiences broadens individual’s range of what they perceive as feasible. This
behavioral modeling can work either vicariously using credible experts or directly by
affording members the hands-on experience in safe settings (Bandura, 1986; Weick,
1979). (p. 11)

A great deal of research regarding experiential learning has been produced over the last
fifty or sixty years. Although definitions overlap and multiple models have emerged, the
bottom line is that learning programs that provide the following key characteristics are
likely to open students’ minds to a plethora of possibilities (Ambrose, 2010),
• Connect learning material to students’ interest
• Provide authentic – real world tasks
• Show Relevance to Students’ Current Academic Lives
• Demonstrate the Relevance of Higher - Level Skills to Students’ Future Professional Lives
• Identify and Reward What You Value
• Show Your Own Passion and Enthusiasm for the Discipline (p. 84)

Researchers such as Krueger and Carsrud (1993), Krueger and Day (2010), and Peterman and Kennedy (2003) have reminded us that experiential learning targeted at entrepreneurship can impact the perceptions of feasibility, desirability or both.

The current state of research on EE is in a state of flux. A lack of agreed to definitions in this space are driving a lack of theory driven research. The pedagogies used in EE both at the high school and higher education level have exploded and the research is following, trying to make sense of what is working and what isn’t. A few critical insights were found relative to this dissertation. Experiential learning and EE have been merging and have been found to be a strong combination for developing entrepreneurial interest among students. Intention models and experiential learning scenarios support each other and will make a strong foundation for acquiring and analyzing field data in the following sections of this dissertation.

Summary

The purpose of this multi-case study based research project is to understand what elements of IowaBig’s community, initiative-based and Blue Valley Center for Advanced Professional Studies (BVCAPS) industry-based, experiential learning environments may be
creating entrepreneurial intention in high school students. This literature review highlights the usefulness of both the TPB and SEE frameworks for studying entrepreneurial intention development. Further, the literature review, strongly supported by Canziani et al.’s. (2015) statement, “We also believe that by linking entrepreneurial propensity improvements to experiential learning activities involving entrepreneurship experts and partner businesses, we strengthen the potential for strategic partnerships between the academe and the field of practice” (p. 109) demonstrates the strong connection between entrepreneurial education and experiential learning.

Both BVCAPS and IowaBig are examples of programs with a mission of entrepreneurial education using experiential learning and industry partnerships as methods to accomplish the mission. This literature review demonstrates support for their missions and their methods of accomplishment as well as a well-researched theoretical framework through which to study the programs
Chapter III: Research Design

The purpose of this multi-case study based research project is to understand what elements of IowaBig’s community, initiative-based and Blue Valley Center for Advanced Professional Studies (BVCAPS) industry-based, experiential learning environments may be creating entrepreneurial intention in high school students. The two research questions guiding this study are as follows:

1. How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?

2. What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?

A multi-case study research approach was used to attempt to answer the above research questions. Case study research has been gaining in popularity especially in the field of education. Case study research is well suited to answer “why” or “how” questions as one studies a particular phenomenon. Case study research methods allow the researcher to integrate many forms of data, in fact Yin (2014) describes six different sources of evidence useful for proving or disproving case study theories: documentation, archival records, interviews, direct observation, participant observation and physical artifacts. It is perhaps this multi-data set approach that is one of the biggest differences between case study research and other qualitative forms. Case study projects need to clearly define the “case,” sometimes referred to as the “unit of analysis,” the specific phenomenon, time frame, location and participants. Normally case studies use a theoretical framework including a literature review to structure the research questions, interview protocols...
and in some cases to allow for deductive analysis. In the instance of this research project, the theoretical frameworks of the theory of planned behavior and Shapero’s Entrepreneurial Event have been described. Case study research methodologies have been well documented by the likes of Yin (2014), Stake (1995), Creswell (2015), and Merriam (1998) and are continuously finding a place in educational research.

Hindle (2004) summarizes the path this author’s appreciation for qualitative methods especially as applied to understanding entrepreneurial intention generation,

In entrepreneurship research, we simply have to try to motivate scholars who are more comfortable close to the positivist pole of the paradigm spectrum to contemplate and involve themselves in qualitative research or at least to learn to respect knowledge perspectives and knowledge production techniques of those for whom the general linear model is not the only engine of wisdom. (p. 577)

Hindle expands his reasoning and suggests that unless entrepreneurial researchers, especially those focused on entrepreneurial cognition, begin to use a wider variety of tools as the rest of the social scientists do, the research results will never achieve their full potential.

This researcher adopted a social constructivist or interpretive approach to this entrepreneurial intention study. Questions developed were of a broad nature. The context had strong elements of social interaction; student-student, student-teacher, and student-industry participant, all provided meaningful insights. A list of the specific questions can be found in Appendix A-C. As a researcher in this setting, it was important to “recognize that their own background shapes their interpretation, and they ‘position themselves’ in the research to acknowledge how their interpretation flows from their own personal, cultural, and historical
experience” (Creswell, 2007, p.87). Personal paradigms were challenged and observation were as neutral as possible while recognizing bias.

**Research Design**

The research design was a qualitative, “two-case” case study. The rationale for a case study approach is highlighted above including multiple data sources, the ability to answer “how” and “why” questions and a desired to understand entrepreneurial intention development beyond quantitative relationships. There are several reasons for selecting a multiple case approach for this study. In the simplest form, Yin (2014) tells us that “If you can do even a ‘two-case’ case study, your chances of doing a good case study will be better than using a single-case design” (p. 64). Yin also suggests that multi-case case studies may have substantial analytical benefits. As IowaBig and BVCAPS have had different histories, different geographies, and slightly different missions, it is fair to assume different findings may evolve. BVCAPS was the first research site, interviews and focus groups were conducted and data was analyzed, the details of which follow in chapters 4 and 5. IowaBig followed the same process with a few days gap between the two sessions. The supporting literature for a case study approach, a specific description of participants, data collection and analysis follows.

**Research Tradition**

Three authors in the case study methodology space have provided seminal work, Yin (2014), Stake (1995) and Merriam (1998). It is necessary to highlight this as the philosophical underpinnings of case study research differ slightly depending upon the author in question. For instance, Yin’s (2014) approach is post-positivist with a formal data gathering approach and a single truth. Stake (1995) on the other hand proposes a constructivist stance with the data gathering approach being considerably less formal reflecting a flexible approach to his method.
Stake’s truth is context based as the constructivist mindset is typically. Merriam (1998) follows a very similar worldview to Stake’s

**Key scholars.** Case study research has a long and varied history. Creswell, Hanson, Plano, and Morales (2007) provide a brief summary of case study history,

The case study approach is familiar to social scientists because of its popularity in psychology (Freud), medicine (case analysis of a problem), law (case law), and political science (case reports). Case study research has a long, distinguished history across many disciplines. Hamel, Dufour, and Fortin (1993) trace the origin of modern social science case studies through anthropology and sociology. They cite the anthropologist Malinowski’s study of the Trobriand Islands, the French sociologist LePlay’s study of families, and the case studies of the University of Chicago Department of Sociology in the 1920s and 1930s through the 1950s (e.g., Thomas & Znaniecki’s, 1918-1920/1958, study of Polish peasants in Europe and American) as antecedents of qualitative case study research. (p. 246)

Modern case study researchers typically draw from three primary authors in the space. Yazan (2015) states, “Yin, Merriam and Stake are the three seminal authors who provide procedures to follow when conducting case study research” (p. 134). Creswell (2013) regularly references Yin, Merriam, and Stake’s work throughout his chapters on case study research.

Several other researchers such as Baxter and Jack (2008), Boblin, Ireland, Kirkpatrick, and Robertson (2013), and Noor (2008) all rely heavily on the work of Yin and Stake and to a more limited extent Merriam. Today’s case study methods, discussions and debates tend to revolve around the seminal work by Yin, Stake and Merriam.
Scholarly debate. There are two main scholarly debates related to case study research methodologies. The first debate is outside the circle of case study researchers and the second debate is internal to the case study researchers mentioned above. Yazan (2015) provides a concise explanation of the debate about the legitimacy of the case study approach, the external debate,

However, it (case study research) still does not have a legitimate status as a social science research strategy because it does not have well-defined and well-structured protocols (Yin, 2002), so emerging researchers who plan to utilize case study usually become confused “as to what a case study is and how it can be differentiated from other types of qualitative research” (Merriam, 1998, p. xi). Research methodologists do not have a consensus on the design and implementation of case study, which makes it a contested terrain and hampers its full evolution. (p. 134)

As such, one of the critical aspects of case study research is that of transparency. Researchers must define their methods clearly and openly, given that no traditional measures of validity or reliability exist as would be found in a quantitative study. As case study research fights a battle to gain relevance outside the sphere of practice, an equally heavy fight continues internally among the key researchers mentioned above.

The first area of internal debate revolves around the topics of validity and reliability. Merriam (1998) and Stake (1995), coming from a constructivist position where there are multiple versions of knowledge, believe it is nearly impossible to apply the traditionally positivist concepts of reliability and validity to qualitative research. Yin (2014) on the other hand, with much more a post-positivist bent believes qualitative research can and should be designed in
such a way to consider validity and reliability, as demonstrated by the five pages of his book highlighting methods researchers can use to improve reliability and validity.

A second major debate among the three seminal authors is that of the actual methodology used in a case study project. Yazan (2015) provides the following insight, “contrary to Yin who suggests a really tight and structured design for case study method, Stake argues for a flexible design which allows researchers to make major changes even after they proceed from design to research” (p. 140). Yin’s post-positivist background is again displayed in his formal research design, data collection, analysis, and report workflow. While Stake believes it is appropriate to allow the data collection to lead to analysis, back to collection, and back for further analysis depending on what the researcher is learning at each stage. Merriam’s position rests between those of Stake’s and Yin’s. Yazan (2015) draws the comparison as, “Merriam’s approach in case study design is close neither to Yin’s nor Stake’s; it is a combination of both approaches” (p. 141). Stake’s lack of defined starting point for data collection would be considered too loose by Yin, while Yin’s stance on purposeful sampling occurring before data collection would be considered too structured by Stake.

As some authors debate whether or not case study research in and of itself is a valid social scientific method, the three seminal authors within the field debate elements of research structure, data gathering and analysis, and measures of design tests.

Each of the three seminal authors describes the application of case study research to investigating “programs.” Whether it is Yin (2014) talking about case studies allowing researchers to explore individuals or organizations, simple through complex interventions, relationships, communities, or programs, Stake (1995) indicating the use of case studies is more beneficial to study programs and people and less beneficial to study events and processes, or
Merriam (1998) defining the case to be a person, a program, a group, or a specific policy, each author indicates that a program within an organization is proper use of case study research. The study proposed by this author is a real school setting in a contemporary (now) time frame. The study is a bounded system, specifically two programs, within two school districts. IowaBig and BVCAPS each reside completely within their respective geography, within a defined, specific school system. The study made use of semi-structured focus groups of students and teacher/administrators and one-on-one interviews with industry partners. The specifics of the data collection follow below.

Research Sites

Participant selection at each of the two schools, IowaBig and BVCAPS a description of the two programs follows.

IowaBig. From IowaBig’s website (2017a) we get a clear description of their intention:
IowaBig, a public high school in Cedar Rapids, Iowa, has taken the mystery out of real-world learning. The school’s competency-based model emphasizes passion, projects, and community rather than a packaged curriculum. Students learn across content areas by choosing to undertake interdisciplinary projects with community nonprofits, businesses, and government agencies.

Each partnering school district sponsoring IowaBig has slots proportional to their financial commitment to the program. Iowa BIG is a partnership of the Cedar Rapids Community School District, the College Community School District (Prairie) and the Linn-Mar Community School District. Students from these districts pay no tuition, and the teaching staff is employed by these three organizations (IowaBig, 2017a).
IowaBig’s creation was community centric, “Iowa BIG was created by the community and through the community building efforts of The Gazette Company and The Cedar Rapids Community School District” (IowaBig, 2017a). The core design principles were developed through this community development and are stated as follow,

- Use student passion to drive deep learning and deliver core academic credits
- Engage students in authentic community projects, problems, and opportunities
- Connect students more deeply to the people and resources of their community

(Cedar Rapids). (IowaBig, 2017a)

The creators and founders of IowaBig believe that the projects must be relevant. Authentic real world projects which are intellectually and academically challenging provide a contextualized, relevant learning experience. The projects must not be “fake” according to TED. He claims that too much of traditional education is, “fake work to do fake assignments fake projects fake case studies it’s just all fake” (personal interview, January 26, 2017). IowaBig and the community provide real world projects for the students. Many of the projects provided by the local corporations are things they want to do but would likely not fund or prioritize. Having the students work on the projects is a win for both the students and the partner organizations. The students can directly see the relevance of what they have learned and are learning. As TED says, “the real advantage has been they (the students) get to see how social studies government statistics physics and English all actually collide in in real world projects that you don’t compartmentalize those things… it’s a fluid set of skills and knowledge” (personal interview, January 26, 2017). Relevancy leads to increased engagement and deeper learning.

This relevance is clear as stated in IowaBig’s central tenets,
- **The student must choose and love the project.** Iowa BIG employs a project pool that is custom generated for us by our community. These projects come from the real needs of businesses, non-profits, and government agencies and are translated into “teenager” by our faculty. Students are free to choose projects they are passionate about. Students and faculty also pitch projects into the pool, which are then partnered with our community.

- **The project must be interdisciplinary.** All projects at Iowa BIG cover material and require understandings of content from multiple traditional courses. This ensures the efficiency of our model and that our projects never become solely “problems from the back of the book.”

- **The project must have a participatory 3rd party audience.** This is the hardest and most important core value of Iowa BIG and what truly separates our model from other educational systems. If we can’t identify an audience outside of the school’s walls willing to participate, assess, and mentor the project, we don’t do it. This goes beyond having an evening where students show off their work, it goes beyond having a professional Skype in for a class period — our students become fully integrated into solving a need of the community. (IowaBig, 2017a)

Furthermore, IowaBig has taken these central design tenets and created the goals of the learning experience. These goals are documented in IowaBig’s compact as follows:

1. Are encouraged and challenged to take ownership of their learning and their path.

2. Engage in projects and experiences they can use to differentiate themselves as college, job, and scholarship applicants. We call this “resume building.”
3. Select projects and are placed in professional settings to help them find their passion and/or to reclaim their “spark” for learning.

4. Work out in the community with business, government, and non-profit organizations on authentic projects.

5. Must demonstrate academic learning AND must learn, practice and refine employability skills like: working in dynamic teams, managing work pace, adapting and adjusting quickly, calendaring and scheduling, email/phone communications, etc... (IowaBig, 2017b)

IowaBig is not a traditional high school in many ways. Although IowaBig’s curriculum is aligned with the Iowa CORE, Common Core, and Next Generation Science Standards, the similarities with a traditional school end there. IowaBig’s website (2017a) compares an IowaBig student’s day to that of a working professional, describing the highlights as follows,

- Meet 1:1 and/or in small groups with BIG faculty on a varying schedule, but no less than once a week. In that time they will: explore content, problem solve, plan next steps, determine what they need to learn next, design, collaborate, and be challenged in a way tailored to the student’s needs.

- Regularly meet in larger groups of BIG students and the community to share their projects, learning, and work to receive feedback and to find others who may share their interest. These are often referred to as “workshops,” “symposiums,” or “seminars.”

- Be expected to spend, at a minimum, the equivalent of their enrolled class time working on their projects and learning, generally during their scheduled BIG time.
This may happen in various locations, including their current high school during the scheduled “BIG” hours, at one of BIG’s spaces in the community, in the “field” relevant to their project, or at home. WHEN they work is not as important to us as THAT they work.

- Have deadlines and attendance expectations. Deadlines are “real-world” in that they are determined by the project team, the customer, and/or the business partner who is part of the project.

IowaBig has over twenty industry, collegiate, and high school partners including local school districts listed above, University of Iowa, Iowa State, Drake, Cornell, and University of Northern Iowa, Wells Fargo and Shive Hattery to name a few. IowaBig has a combine ten administrators and teachers currently serving the student population. As it relates to entrepreneurial intent, IowaBig, in its compact (2017b) adds the stipulation that, “Students may not independently form any legal company or organization as a result of their Iowa BIG work without the express, written consent of IowaBig. In order to receive consent, students must go through an appropriate vetting process, including demonstrating they have secured legal assistance and guidance in developing their ideas into a formal entity” because as the compact continues, “IowaBig has an interest in seeing student companies grow out of BIG and includes this stipulation to ensure a successful and legal launch” (IowaBig, 2017b). Clearly, IowaBig is a solid example of an experiential learning program with some level of entrepreneurial intention woven into the program.

**BVCAPS.** Center for Advanced Professional Studies (CAPS) programs are nationally recognized, innovative high school programs. Students fast forward into their future and are fully immersed in a professional culture, solving real world problems, using industry standard tools
and are mentored by actual employers, all while receiving high school and college credit. CAPS is an example of how business, community and public education can partner to produce personalized learning experiences that educate the workforce of tomorrow, especially in high skill, high demand jobs. Blue Valley Center for Advanced Professional Studies (BVCAPS) is a member of the CAPS national network located in Overland Park, Kansas. The CAPS website (2017), provides the following description, “The Center for Advanced Professional Studies represents the collaboration of education, business and community, providing students with a unique, immersive experience, resulting in highly skilled, adaptable, global innovators and leaders.” CAPS is much more upfront about its entrepreneurial intent as it is called out as the fifth goal,

- **Profession-based Learning**
  
  Instructors develop real-world, project-based learning strategies through collaborations with business and community partners. These interactions enhance the learning experience, preparing students for college and career.

- **Responsiveness**
  
  CAPS supports high-skill, high-demand careers through ongoing innovation in curriculum development, programs and services based on local business and community needs.

- **Self-Discovery and Exploration**
  
  Students realize their strengths and passions by exploring and experiencing potential professions. This allows them to make informed decisions about their future, while learning to exhibit leadership.

- **Professional Skills Development**
Unique experiences allow students to cultivate transformative professional skills such as understanding expectations, time management and other essential business values. These skills are critical to providing students a competitive advantage in their post-secondary education and professional careers.

- **Entrepreneurial Mindset**

  Instructors create an environment where creative thinking and problem solving is encouraged. An innovative culture is key to fostering entrepreneurial and design thinking. (BVCAPS, 2017)

  Blue Valley’s implementation of the CAPS program consists of six “strands.” The strands provide focus such that students can more closely align their interests with partners, projects, and curricula. The six strands include, bioscience, accelerator, business technology media, engineering, human service and medicine and healthcare.

  The Bioscience program provides students who have a passion for contemporary biology experiences to learn through observations of the sources of biological knowledge, the molecules, cells, organisms, and environments each inhabit (BVCAPS, 2017). The Bioscience strand is further subdivided into four more specific programs, Molecular Medicine and Bioengineering, Environmental Science, Bioscience Research and Veterinary Medicine.

  The Accelerator Strand provides an opportunity for students to follow a passionate pursuit from imagination to innovation. Probably the most aligned with entrepreneurial development, the Accelerator allows students to “tap into your strengths, challenge the status quo and discover new ways of doing things, then step back and see what you can really do” (BVCAP, 2017).
The Business, Technology & Media Strand is also subdivided into six additional focus areas including courses in business, digital design and photography, filmmaking, multi-media journalism, world language, and technology solutions.

The BVCAP mission once again highlights a focus on entrepreneurship. Incorporated into the engineering strand description “The CAPS engineering course is for students who are interested in a combination of rigorous science and engineering fundamentals, entrepreneurship, and innovation” (BVCAPS, 2017) is a combination of engineering, innovation and entrepreneurial activities.

Once again, the Human Services Strand is broken into focus areas, namely, pathways of law, public safety, law enforcement and education.

Lastly, the Medicine and Healthcare Strand courses include Foundations of Medicine I and II, Sports Medicine, and Exploring Health Professions, these refined focus areas are consistent across the BVCAP implementation, allowing students to integrate their interests with projects, specific curricula, pertinent guest speakers and industry partners.

Similar to IowaBig, BVCAPS is acutely focused on the importance of industry partners and their related projects, the significance of these relationships are captured as follows,

Developing relationships with business, industry and higher education partners is critical to the success of any CAPS program. The CAPS Network is designed to create rich and meaningful experiences for students, as well as partners. Programs that partner with the CAPS Network share best practices and connections with professional partners, post-secondary institutions and students. (CAPS, 2017)

BVCAPS currently enjoys thirteen industry partners including Accenture, Garmin, Edison Universe and the Ewing Marion Kauffman Foundation as well as others. BVCAP is also
aligned with thirteen national universities including Arizona State University, Missouri and Missouri State Universities, and Washington and St. Louis Universities. BVCAP also integrates a mentoring relationship into the CAPS program. The local business professionals helps students with their business and project plans, career explorations, and other life choices they are making right now.

BVCAPS certainly has a more formal feel to its program compared to IowaBig whether it is its dress code, structure of the strands or being part of a national organization, namely CAPS. BVCAPS program is significantly larger than IowaBig as well reporting a total of twenty-eight teachers and eight dedicated administrators. Although the programs are similar in their heavy reliance on project-based, student focused pedagogies, their differences will enhance this multi-case based dissertation project.

Participants

Participants were selected from students with at least one but preferably two years of experience in each respective program to insure the students have had ample time in the program to understand the benefits and challenges of the particular program. An attempt was made to include males and females and different races as appropriate. One teacher-administer focus group, two student focus groups and four one-on-one interviews were conducted at IowaBig. A similar format was followed at BVCAPS, but given its larger size and longer tenure, the researcher held one teacher focus group, three student focus groups one each from the accelerator strand, the global business strand, and the engineering strand, and six one-on-one partner interviews. With the help of the school leader and Creswell’s (2013) purposeful sampling strategy, the group of students, teachers-administrators, and projects provides a cross
section of each of the school settings. More detail on the data collection methodologies and participants can be found in chapter four.

**Recruitment and Access**

The leaders of both IowaBig and BVCAFS were contacted to discuss their students, teachers, and administrator participation. The leaders of both schools participated in the Network of Experiential Learning Teachers (NExT) on Northeastern University Campus in July of 2017, and Dr. Chris Unger provided an initial introduction. Without a formal request, the leaders of each of the schools stated they would be open to their participation if indeed I should pursue this study. The leader of IowaBig has already been interviewed by this researcher with prior approval being obtained from Northeastern University IRB office.

After approval from the Northeastern University Institutional Review Board (IRB) was received, contact was made with each of the school leaders. A joint plan for travel, student, teacher and administrator access and a tentative schedule was created. Additionally, a suggestion for industry partners was requested from each school leader and contact, coordination and scheduling of the partners was all provided by the school leaders. Interview sessions and focus groups lasting approximately forty-five minutes to one hour were scheduled by the school leaders. At the beginning of each session permission for follow up emails with each of the participants was requested. Participation was strictly voluntary throughout this process, and all participants signed an Informed Consent document.

**Data Collection**

All three of the above mentioned seminal scholars contend that it is extremely important for case study researchers to use multiple sources of data. As mentioned earlier, Yin (2014) goes so far to suggest six main input data sources, documentation, archival records, interviews, direct
observation, participant observation and physical artifacts. However, Stake (1995) and Merriam (1998) limit the allowable data collections to interviews, observation, and documentation analysis. Yin (2014) also believes that the data sources should work together and provide a “triangulation” (p. 120) to help the research corroborate on findings and strategies.

In order to triangulate the case study data, three types of data will be collected. A documentation review of pertinent information shared by the school leaders was conducted after the interview and focus group data collection.

Interviews and focus groups, the second data source were conducted with students, teachers-administrators, and industry partners as described above. All the focus groups with the students, teachers-administrators were on school premises during normal school hours. The interviews with the industry partners were also conveniently held at the BVCAPS and IowaBig facilities.

The third data source, observations of project work was conducted as time allowed. Given that the researcher was able to spend free time as he wished, several project team meetings were attended, makerspace activities were witnessed, and informal hallway discussion about project work was conducted.

All interviews and project observations were recorded on an iPhone using rev.com. A second iPhone running rev.com was used as a backup. The audio files were transcribed using the rev.com service. The transcription files were verified for completeness and have been the iPhones. All interview recording procedures will meet the Protection of Human Subjects requirements as documented in the approved IRB application.
Data Analysis

The topic of case study analysis from both a strategic and tactical view is probably the most contentious topic between the three seminal researchers. Once again we find Yin (2014) with a very structured view of analysis, Stake (1995) with significantly less formal description and Merriam (1998) somewhere between the two.

Not only are the sources of data in dispute among the seminal authors, but the process of gathering data as well. As to be expected given his post-positivist background, Yin (2014) believes an orderly process developing research questions, interview protocols, and analysis methods must be done before data collection can begin and analysis should start only after data collection is complete. Stake (1995) on the other hand says, “Data analysis is the process of making sense out of the data...[which] involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read – it is the process of making meaning” (p. 178). Once again, Merriam (1998) is somewhere between the extremes of rigid formality and a more agile approach supporting the simultaneity of data collection and analysis.

Once all transcripts of the interviews were received from the rev.com they were loaded into MaxQDA. The data was then be analyzed using the following methodology.

For this meaning making exercise a combination of inductive and deductive coding was used. The first pass through the data was an inductive process allowing the data to speak for itself. As Creswell (2007) suggests a somewhat limited number of codes was developed to keep the process of theme development manageable. All interviews were analyzed inductively first and an initial set of themes was created.

A second pass was also used to flush out additional themes and strengthen and support the first set of themes. The second pass was a deductive view of the data.
Duening’s (2010) five entrepreneurial minds, a list of eleven deductive codes were created, see Table 3.1. The Duening minds were mapped to the list of inductive codes that had been captured in the first pass. The inductive codes that were not clearly mapped to Duening’s five minds were combined and classified into the six other etic codes captured in table 3.1.

Table 3.1

Second Pass Codes

<table>
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<tbody>
<tr>
<td>Disciplined Mind*</td>
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<td>Synthesizing Mind*</td>
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<td>Creating Mind*</td>
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<td>Respectful Mind*</td>
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<td>Ethical Mind*</td>
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<tr>
<td>Perseverance</td>
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<tr>
<td>Self- Starter</td>
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<tr>
<td>Risk Taker</td>
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<td>Tolerates Failure</td>
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<td>Resource Manager</td>
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<td>Confident</td>
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* One of Duening’s five entrepreneurial minds

Trustworthiness

Wright and Wright (2002) highlighting the importance of our participants state,

In particular, although there are at least three primary stakeholder groups in organizational behavior research, the consequences of much of our research appear to be primarily considered from the perspective of only two of these stakeholder groups, the research scientist and the actual study organization. Ironically, it appears that we have all
too often neglected our most important stakeholder group, the actual research participants themselves. (p. 174)

Trustworthiness is the act of keeping the participants in the forefront of our minds, of protecting them while at the same time using their valuable feedback to make positive changes in our world. Wright and Wright (2002) continuously say in their work that our primary motivation for doing qualitative organizational research is to drive positive changes to the organization based on sound data and input from our participants. As they say, the moral obligation does not stop at the data collection phase, it extends into the reporting, the story telling, and the organizational changes the researcher is obligated to make.

Ely (1991) reminds us that validity and reliability are concepts that are used differently in the context of quantitative research as opposed to qualitative research. Without getting into a semantic debate with quantitative researchers, Ely recommends that qualitative research strive for credibility. Relying on Lincoln and Guba’s (1985) work, Ely (1991) states that in order to gain credibility a research must,

- Have prolonged engagement in the field;
- Do persistent observation;
- Triangulate;
- Search for the negative case;
- Determine referential adequacy;
- Experience peer debriefing;
- Check with people one studied; p. (96)

In terms of this dissertation project, spending multiple days with each school, attempting to understand the culture and dynamics served as prolonged engagement. Interviewing a broad
range of students (twenty-seven total), two sets of teacher-administrator groups (seventeen total) and eleven industry participants accounts for persistent observation. The concept of searching for a negative case is interesting and important. One of this researcher’s biases is to think that all students will see the benefit of experiential learning and be excited to be able to be involved in this form of education. Although the literature review has proven that to be a false assumption it is still important to pay attention to the bias. Referential adequacy was considered as a result of the data gathering phase. Member checking was used to insure the results and interpretation are validated by the participants.

As Lindorff (2007) says, “if research is driven by a desire to meet goals of the sponsoring or collaborating organization or academic achievement, then it is difficult to provide benefits to participants” (p. 21). Long term student benefit must also be the goal of this and most research. Having today’s students pave the way for improved experiential learning is at the heart of this research. This research is driven by a desire to help the education system create more entrepreneurial intention in our young people. This dissertation is an honest evaluation of the impact of experiential learning on building this, much needed growth in entrepreneurial intention.

**Protection of Human Subjects**

Petrova, Dewing, and Camilleri (2016), remind us that protection of our human participants is somewhat of a continuous process. Protection of human participants must be contemplated and accounted for during recruitment, during data collection, during transcription and data analysis, and obviously during the dissemination of the results (Petrova, et al., 2016). Although the IRB process was part of this continuous process, the behavior of the researcher in written and more importantly face-to-face communication became the responsibility of the
researcher and the researcher alone. Repeated discussions with the participants about the purpose of the research, continued dialog regarding informed consent, and careful scrutiny of raw data to protect against indirect disclosure are all solid strategies for protecting our participants. Petrova et al. (2016) also remind us that although we plan for and incorporate mechanisms to handle ethical dilemmas, often times the ethical dilemmas arise during the data collection process and we will have to adjust to the challenges in real time. At these times, relying on honesty, trust and openness are likely to provide protection to our valuable participants.

This author did not any of the participants in the study. All participation was completely voluntary and all participants’ names were replaced with pseudonyms from the beginning of data collection all the way through final publication. Participants were offered the opportunity to review the analyzed data for accuracy or instances where certain phrases might reveal their identities.

Lastly, it is easy to focus on the “negative” aspects of protecting human participants while forgetting the importance of giving them voice. The participants have a right to expect that their thoughts, feelings and opinions will be used to affect positive change. As Wright and Wright (2002) say, “As a result, this focus on the negative fails to consider that research participants can and do experience a wide variety of life events, both good and bad, over the course of the design and implementation of a research study” (p. 176). Wright and Wright continuously say in their work that our primary motivation for doing qualitative organizational research is to drive positive changes to the organization based on sound data and input from our participants. As Wright and Wright imply, the moral obligation does not stop at the data
collection phase, it extends into the reporting, the story telling, and the organizational changes the researcher is obligated to suggest.
Chapter IV: Research Findings

The purpose of this study was to understand whether unique experiential learning programs such as IowaBig and BVCAPS might be highly effective models for increasing the entrepreneurial intention and skills of students, helping to identify how other secondary educational institutions, public and private, could contribute to students pursuing entrepreneurship. Developing an entrepreneurial mindset within our students is not merely about starting businesses and creating jobs, it is about our students’ long term survival in a new, dynamic, global world. We are charged with preparing students for the “real [and future] world.” This preparation is not complete without developing their ability to be creative, innovative, critical thinkers, and problem solvers, some of the skills associated with being entrepreneurial.

The research questions are as follows:

1. How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?

2. What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?

This chapter will present the demographics of the participants, describe the data collection and analysis process, and present the themes that were captured through an iterative analysis of the transcripts.
Summary of Study Site, Participants, Focus Groups and Data Collected

The participants in this study were drawn from two innovative, “real world,” projected-based high schools. Blue Valley Center for Advanced Studies (BVCAPS) and IowaBig are both part of public high school systems, one in Overland Park, KS and the other in Cedar Rapids, IA respectively. Three groups of stakeholders were interviewed or participated in focus groups at both schools, teachers-administrators, industry partners, and students. The format for the interviews and focus groups were the same at both sites. The teachers-administrators and students were organized into focus groups while the industry partners were interviewed in one-on-one settings. The school leaders at each site provided lists of volunteers for all three participating groups and also scheduled the interviews and focus groups. The leaders also provided the participants with letters of introduction and the applicable Internal Review Board consent documents. Table 4.1 depicts the participants from BVCAPS while table 4.2 presents the participants from IowaBig.

Table 4.1

BVCAPS Participants of the Study

<table>
<thead>
<tr>
<th>Partners</th>
<th>Gender</th>
<th>Time as Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>NICK</td>
<td>male</td>
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</tr>
<tr>
<td>GRACE</td>
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</tr>
<tr>
<td>STEVE</td>
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</tr>
<tr>
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</tr>
<tr>
<td>WENDY</td>
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<td>3 years</td>
</tr>
<tr>
<td>NATHAN</td>
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<td>3 years</td>
</tr>
<tr>
<td>Teachers</td>
<td>Gender</td>
<td>Time Teacher at BVCAPS</td>
</tr>
<tr>
<td>------------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>ERIC</td>
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</tr>
<tr>
<td>ROMAN</td>
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<td>7 years</td>
</tr>
<tr>
<td>SAM</td>
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<td>10 years</td>
</tr>
<tr>
<td>JOSH</td>
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</tr>
<tr>
<td>GREG</td>
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<td>8 years</td>
</tr>
<tr>
<td>CARL</td>
<td>male</td>
<td>7 years</td>
</tr>
<tr>
<td>SANDY</td>
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</tr>
<tr>
<td>GABI</td>
<td>female</td>
<td>5.5 years</td>
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<tr>
<td>TESSA</td>
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<td>3 years</td>
</tr>
<tr>
<td>MARY</td>
<td>female</td>
<td>8 years</td>
</tr>
<tr>
<td>BONNIE</td>
<td>female</td>
<td>0.5 years</td>
</tr>
<tr>
<td>DAVE</td>
<td>male</td>
<td>10 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students</th>
<th>Gender</th>
<th>Grade</th>
<th>Semesters at BVCAPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASTON</td>
<td>male</td>
<td>Senior</td>
<td>1</td>
</tr>
<tr>
<td>MIA</td>
<td>male</td>
<td>Senior</td>
<td>1</td>
</tr>
<tr>
<td>BEN</td>
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<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>TUCKER</td>
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<td>Senior</td>
<td>1</td>
</tr>
<tr>
<td>CAMI</td>
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<td>Senior</td>
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</tr>
<tr>
<td>SHELLEY</td>
<td>female</td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>PUJA</td>
<td>female</td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>DEB</td>
<td>female</td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>LEXI</td>
<td>female</td>
<td>Senior</td>
<td>3</td>
</tr>
<tr>
<td>KOLETTE</td>
<td>female</td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>KELLY</td>
<td>female</td>
<td>Senior</td>
<td>2</td>
</tr>
<tr>
<td>MEAGAN</td>
<td>female</td>
<td>Senior</td>
<td>4</td>
</tr>
<tr>
<td>Partners</td>
<td>Gender</td>
<td>Time as Partner</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>FRANK</td>
<td>male</td>
<td>Senior 2</td>
<td></td>
</tr>
<tr>
<td>EARL</td>
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<td>Senior 2</td>
<td></td>
</tr>
<tr>
<td>DAWSON</td>
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<td>Senior 2</td>
<td></td>
</tr>
<tr>
<td>MIKE</td>
<td>male</td>
<td>Senior 2</td>
<td></td>
</tr>
<tr>
<td>SUE</td>
<td>female</td>
<td>Senior 1</td>
<td></td>
</tr>
<tr>
<td>MARTY</td>
<td>male</td>
<td>Senior 2</td>
<td></td>
</tr>
<tr>
<td>CARLYE</td>
<td>female</td>
<td>Senior 2</td>
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</tr>
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</table>

Table 4.2
*IowaBig Participants of the Study*

<table>
<thead>
<tr>
<th>Partners</th>
<th>Gender</th>
<th>Time as Partner</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABBY</td>
<td>female</td>
<td>4 years</td>
</tr>
<tr>
<td>VINCE</td>
<td>male</td>
<td>4 years</td>
</tr>
<tr>
<td>PAULA</td>
<td>female</td>
<td>5 years</td>
</tr>
<tr>
<td>TOM</td>
<td>male</td>
<td>1.5 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Gender</th>
<th>Time Teacher at IowaBig</th>
</tr>
</thead>
<tbody>
<tr>
<td>JASON</td>
<td>male</td>
<td>4 years</td>
</tr>
<tr>
<td>MARK</td>
<td>male</td>
<td>4 years</td>
</tr>
<tr>
<td>DONALD</td>
<td>male</td>
<td>5 years</td>
</tr>
<tr>
<td>TED</td>
<td>male</td>
<td>5 years</td>
</tr>
<tr>
<td>KRIS</td>
<td>female</td>
<td>2 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students</th>
<th>Gender</th>
<th>Grade</th>
<th>Semesters at IowaBig</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLTON</td>
<td>male</td>
<td>Senior</td>
<td>5</td>
</tr>
<tr>
<td>SHANE</td>
<td>male</td>
<td>Junior</td>
<td>5</td>
</tr>
<tr>
<td>JIM</td>
<td>male</td>
<td>Senior</td>
<td>4</td>
</tr>
<tr>
<td>BETH</td>
<td>female</td>
<td>Junior</td>
<td>4</td>
</tr>
</tbody>
</table>
The researcher held one teacher focus group, three student focus groups and seven one-on-one partner interviews at BVCAPS. Similarly, one teacher focus group, two student focus groups and four one-on-one interviews were conducted at IowaBig. The questions for each of the different groups, teachers, partners, and students were tailored for the difference of the groups although some questions were the same. See Appendices A-C for the interview and focus group protocols.

The focus groups and interviews were recorded using REV.COM and were subsequently transcribed by the same service. The transcriptions were entered into MaxQDA, grouped and then coded. A two-step coding process was employed. The first pass process was based on the In vivo coding method whereby individual words or phrases were highlighted and captured. The In vivo codes allowed for a first pass description of emerging themes. A second pass was also used to flush out additional themes and strengthen and support the first set of themes. The second pass was a deductive view of the data. Starting with Duening’s (2010) five entrepreneurial minds, a list of eleven deductive codes were created, see Table 4.3. The Duening minds were mapped to the list of inductive codes that had been captured in the first pass. The inductive codes that were not clearly mapped to Duening’s five minds were combined and classified into the six other etic codes captured in table 4.3.

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Year</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX</td>
<td>male</td>
<td>Senior</td>
<td>4</td>
</tr>
<tr>
<td>HUNTER</td>
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<td>Senior</td>
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</tr>
<tr>
<td>CASSEY</td>
<td>female</td>
<td>Junior</td>
<td>4</td>
</tr>
<tr>
<td>JENETTE</td>
<td>female</td>
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<td>6</td>
</tr>
</tbody>
</table>
Table 4.3

*Second Pass Codes*

<table>
<thead>
<tr>
<th>Second Pass Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disciplined Mind*</td>
</tr>
<tr>
<td>Synthesizing Mind*</td>
</tr>
<tr>
<td>Creating Mind*</td>
</tr>
<tr>
<td>Respectful Mind*</td>
</tr>
<tr>
<td>Ethical Mind*</td>
</tr>
<tr>
<td>Perseverance</td>
</tr>
<tr>
<td>Self- Starter</td>
</tr>
<tr>
<td>Risk Taker</td>
</tr>
<tr>
<td>Tolerates Failure</td>
</tr>
<tr>
<td>Resource Manager</td>
</tr>
<tr>
<td>Confident</td>
</tr>
</tbody>
</table>

* One of Duening’s five entrepreneurial minds

The following section depicts an overview of the themes developed through the analysis of the qualitative data. It is organized first within the context of each research question by each participating school and finally by the groups, teachers, partners, and students.

**Research Question 1: How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?**

The themes identified in response to this research question by school and then by each group are presented below, first in Table format and then subsequently discussed.
BVCAPS. The themes identified in response to research question one by each participant group are presented in Table 4.4 and discussed below.

Table 4.4

*Themes identified by group in response to Research Question 1 (BVCAPS)*

<table>
<thead>
<tr>
<th>Teachers</th>
<th>BVCAPS teachers believe that students understand and appreciate the cross functional nature of most of the project work.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BVCAPS teachers are able to leverage different learning styles, opening the door to students’ creativity.</td>
</tr>
<tr>
<td></td>
<td>BVCAPS teachers state that from ambiguity, students learn adaptability, flexibility and creativity.</td>
</tr>
<tr>
<td>Partners</td>
<td>BVCAPS highlights how students are exposed to, understand, and make use of the business processes.</td>
</tr>
<tr>
<td></td>
<td>BVCAPS partners articulate the confidence students gained from working with professional adults.</td>
</tr>
<tr>
<td></td>
<td>BVCAPS partners find ways to leveraging students’ skills and experience to solve real problems.</td>
</tr>
<tr>
<td>Students</td>
<td>BVCAPS students adjust and flourish with the freedom provided by the BVCAPS program.</td>
</tr>
<tr>
<td></td>
<td>BVCAPS students attribute their hard work, dedication and results to being able to follow their passion.</td>
</tr>
<tr>
<td></td>
<td>BVCAPS students experience first-hand the power of collaboration.</td>
</tr>
</tbody>
</table>

*Teachers.* The themes identified in response to research question 1 for teachers are discussed below.

*BVCAPS teachers believe that students understand and appreciate the cross functional nature of most of the project work.* Many of the BVCAP projects involve several of the strands simultaneously. One of the teachers, explaining how multiple strands can work together says,
I teach is food science but then how does this fit in the larger scheme of things and so the global business trend they offer lots of opportunities for learning core business concepts that people from all around the building will then come. So there is a lot more cross disciplinary things, like BETTY worked on projects with the film making class so there's a lot more cross disciplinary collaboration.

A long-tenured teacher also believes these cross functional opportunities help students in several ways, “I think that challenging the status quo, when I think about everything we're involved with and is disruptive, I think about business, engineering, medical field, and I think about how rigid it (those fields) is.” The students are exposed to different strands and different disciplines because of the project work.

**BVCAPS teachers are able to leverage different learning styles, opening the door to students’ creativity.** Project-based learning systems like BVCAPS help students learn how they want to learn which leads to a more creative experience. A teacher explains his teaching style,

I try and teach them how to get the information and learn themselves, each one learns in a different way instead of me pulling down a screen and saying we're gonna learn how to do this. I'm more of a provider of information for them to learn how to teach themselves how to do things.

One participating teacher believes there is a critical element of timing when it comes to learning. “…whereas here you start with the project first and then students learn and learn as they encounter the need to learn and therefore the learning becomes much more applicable and much more appropriate, and it's kind of the just in time learning versus the just in case learning.” One of the newer teachers at BVCAPS ties the concept of project-based learning back to early education in an interesting way, “Right, in kindergarten we gave them colors and said have fun,
what color should this tree be? And it's a green tree, it's a blue tree, it's whatever. And we're giving students an opportunity to do that with this (BVCAPS program).”

Student led, project-based education allows teachers to be creative, leading to more creative students,

So when you're teaching in this environment when you have more autonomy to go where the students are leading you is a key differentiator from top down, here's the standards you need to get, here's how you're going to be measured, and that's the other box that teachers are in.

BVCAPS gets both teachers and students out of their respective boxes. The teachers are allowed to follow the students to where the students want to learn.

*BVCAPS teachers demonstrate that from ambiguity, students learn adaptability, flexibility and creativity.* One long term teacher describes the learning path at BVCAPS as anything but straight, “we don’t know what they are going to learn – much less the steps we will take to get them there,” and another teacher says initially the students struggle, “That freaks them out and so really I think that having, because the real world is a much grayer area but these students are so attached to no, tell me what boxes to check and I will remember which ones to check.” However, yet another continues,

I think as they navigate that ambiguity they also learn failure, what you're talking about earlier and then it's a challenge that's complex enough, they're gonna learn that they can't do it too so they're gonna learn to access others, leverage their strengths and those are all important tangibles in the workplace.

Ambiguity can often lead to failure and when it does within an environment like BVCAP, the teacher finds ways to help the students learn from the failure and move ahead.
Other teachers agree that students not only develop a tolerance for ambiguity but can flourish from the experience. The tolerance for ambiguity and dealing with change can be limited to changes within a project or as broad as changing strands as one teacher says,

I would pick a student who is currently in that too who came in with one idea of what she wanted to do and then being exposed to all these other things took advantage of all these opportunities and within that field shifted because she was so good at taking advantage of the opportunities and trying new things which completely changed her path.

Tolerance for ambiguity can also be tied back to the concept of passion. If a change in path is deemed necessary students will likely choose a new path that is more in line with their passion. As one of the BVCAPS teachers highlights,

I have a similar student in mind who took advantage of opportunities that were in front of her and has done very well because of that, but wasn’t afraid to be adaptable along the way. She even just this semester had one idea going into it, a very specific thing she wanted to do, was introduced as another opportunity similar but different and is now pursuing that because it felt good, it connected with her passion and it was a good road to take. So she’s adaptable enough to follow the good energy.

The concept of an environment and method of teaching that could replicate creativity demonstrated by kindergarteners seems to resonate with the BVCAPS teachers. Once again, we hear a different teacher refer to kindergarten,

I really do think that when you give them that freedom to set their own project or to take a problem we present to them and say we have no idea how you're supposed to do this, we have an idea, we say you figure out how to solve this it really makes them be creative like they were back in kindergarten.
BVCAP teachers provide ample evidence that when students are allowed to face ambiguity in project work, a creative energy is released in ways traditional schools are unable to find.

**Partners.** The themes identified in response to research question 1 for BVCAPS partners are discussed below.

*BVCAPS highlight how students are exposed to, understand, and make use of the business processes.* The concepts of market segmentation, product segmentation, detailed competitive assessments, and disruptive innovation, were mentioned by students and industry partners alike. As one of the business partners said in reference to one of the student team members, “He was right spot on with suggestions that made business sense, an analytical mind that was able to quickly work through, what are the holes in our business plan, what are our goals,” This CEO partner goes on to say, “students want to understand our business model,” some of the BVCAPS students are not satisfied to just be handed a project and work on it. BVCAPS students want the greater context, the “goals and objectives” of the client organization.

BVCAPS student are responsible to create project plans whereby they need to subdivide the work, assign work to individuals and make the assignment based on skills and expertise. The students are also responsible for measuring the work as it was progressing and providing periodic updates to their clients. They also get to learn how to hand off a project that isn’t completely done, preparing it for the students that will follow them in the next semester. Project planning teaches the students to trust the process not the product, to be responsible for entire project from requirements capture to conceptual design and finally to building the tangible product.

When discussing project leadership, one of the industry partners describing how project managers are selected says,
I leave that up to them too. The way it works out is, since they don't work in front of us every day, they can work here and they can work outside, I'll ask for someone to step up and be the team leader, the main point of contact. Somebody that'll take the notes and make sure the stuffs getting done, make sure the presentations are ready, instead of all five or six of them coming together the night before trying to piece ... However it works, but just to have some kind of organized philosophy just like the real world.

Project management is a critical skill in businesses of all sized and types. BVCAP students are learning this important skill.

Students are also exposed to the financial implication of their projects. Some of the more complex projects undertaken by the students from BVCAP include detailed financial scenarios. A long time and somewhat demanding BVCAP business client says,

The last semester we were looking at DISTRIBUTING WIDGETS, so we just had them do some basic concepts of, if this industry used 1000 WIDGETS to make their PRODUCTS or whatever we said they made, what does the bill look like from the WIDGET PROVIDER or from the POWER PROVIDER and how was it broken down. Now if you buy TECHNOGY 1 or you buy TECHNOLOGY 2 to start offsetting that cost. You've got these capital costs, what else does it come along with? You need some kind of maintenance, you need some other infrastructure and whatever, so we start laying out basic calculations with some examples where they go away and work on it.

The BVCAPS partners expose the students to complex financial calculations to help the students understand all the ramifications of business decisions.

_BVCAPS partners articulate the confidence students gained from working with professional adults._ The best quote for highlighting the confidence exhibited by the BVCAPS
students comes from the CEO business partner, “She was able to easily move away from ‘It's not working’ to continuing the presentation seamlessly, without being frazzled, without saying, ‘everyone hold on a minute,’ stuff that sometimes polished executives can't do.” As the researcher, this author felt the confidence when interviewing the students. They made eye contact, spoke directly, spoke without nervousness and were very articulate. Business partners also witness the confidences, one of them characterizes this behavior in the students similarly, “Confidence was interesting to me too, because there were a lot of presentations, but the people that we hand selected all had a lot of confidence in themselves, confidence in what they were presenting, control of the room was interesting as well.” The confidence exhibited by the students can one day be leveraged to help them attempt things others may be reluctant to try, for instance, starting a business.

An academic partner sees the confidence, accomplishment and motivation as well, stating,

So I think accomplishment, you know, when they have those first steps of success, which then builds on a confidence piece, which then builds on more success. Getting over that first hump is crucial, but once they get it and taste that success, that's a good motivator as well.

The continuous loop of success building confidence and more confidence leading to more success is evident at BVCAPS.

*BVCAPS partners find ways to leveraging students’ skills and experience to solve real problems.* Business partners that work with BVCAP realize that in some cases students are more able to find solutions than their adult counterparts. It may be the students’ technical aptitudes,
lack of a “we’ve always done it that way” attitude, or their unique world views. A case in point is highlighted by a financial service partner as follows,

We approach them as a young adults because we know from a social service standpoint we’re providing services to youth all the way up to 60, but most needing services; you have this grouping of young adults that are mainly 16 to 35 that really need substantial services. These students (BVCAPS) can relate to that group better than me, a middle-aged Caucasian man that’s middle or upper middle class. These kids are experts at the application of knowledge, both for communication and for learning and for daily life.

One of the more demanding partners describes a BVCAPS student project and how he leverages the students’ knowledge where he used the students to help design smart cities and cities of the future because as he says, “One was looking at smart cities and technologies, in ten years these students will be in the 25-28 year range and they’ll be looking at apartments or looking at cities and certain infrastructure that they might like to see so they were coming up with lists of suggestions and concepts and white boarding them.” Leveraging what the students already know not only encourages the students to engage in the projects, it just makes good business sense for the partners.

**Students.** The themes identified in response to research question 1 for students are discussed below.

*BV CAPS students adjust and flourish with the freedom provided by the BVCAPS program.* Freedom takes on many forms. Freedom as it relates to a students’ time or schedule. Freedom to make decisions, choose projects and teammates, and freedom to learn what they want to learn. Students learn what they think they will need, not what someone else tells them is important. This freedom must be authentic and encompassing, as one of the students says,
If you need to take the phone call, you can just step out, just handle your own business but do it like a professional, don't just like pick the phone up and talk like in the middle of this but respecting others when the time is there and just understanding how to function properly.

The freedom to move about as needed, to take phone calls, and to choose their working environment are important freedoms to students. The freedom to select passion-driven projects is also important as the selection process is explained by one of the seniors,

But in this innovative class, it's a lot more broad. The options are like endless. And first we spend a week or so picking our industry, then we research it and then we look at problems within the industry and that sort of information and then we come up with a product idea and then there's different phases of the product that we work on.

The flexibility and freedom provided by the BVCAPS program can be seen in the recent scores on the 2017 CAPS professional skills confidence survey results, specifically, BVCAP students reported a 2X improvement (29.2% - 78.3%) in the confident and very confident scores as it related to the question “Ability to positively respond to mistakes or other unexpected circumstances.” The freedoms allowed in the BVCAPS setting is critical to the success of the program.

*BVCAPS students attribute their hard work, dedication and results to being able to follow their passion.* For project-based learning to be the most successful students should be allowed to select their own projects, assuming they meet some minimum standards. The students were more than willing to describe their passions and how that passion for the project motivated their behavior. As one BVCAP student shares, “you are working on stuff you want to work on… I think about the project all the time, it’s never done, we always trying to find ways to move it
forward.” Another student continues the thought, “I was really passionate about it because these were some of my ideas that I'm trying to incorporate and I really liked them and I'm trying to get them out there.” This passion inspired motivation leads to discretionary effort above and beyond a typical traditional school day. One of the more dedicated students portrays that discretionary effort by saying,

You get to do what you're passionate about every day. I think one of the ways you find that out is, you know the bell rings it's time to go home, but there's still so much I want to get done. I still want to keep working on it. It's not just something that you can just let go, move on, come back the next day and pick it up. You want to keep going with that. I think that helps to just keep you driven and motivated.

The BVCAP setting lends itself to teachers learning simultaneously with the students on a variety of subjects. One of the students shares an interesting view of passion as it relates to this bidirectional learning environment saying, “If you're not passionate about what you're learning, how are you going to make me passionate about that you're teaching me.” The passion-driven students willing to put in extra effort and work hard expect the same level of passion from their teachers.

*BVCAPS students experience first-hand the power of collaboration.* The skill of collaboration is advantageous throughout one’s life whether in a work setting or social setting. As one students’ story regarding an interaction with another student in her class highlights the power of collaboration,

Yeah, like I'm interested in making a type of point shoe for a ballet that doesn't die because the shoes are kind of flimsy and they die in about a week. And he just knew, SETH knew of this special material that they use in hockey that's like it's malleable, like
when you move it softly but then when you hit it really hard it's stronger. So he just knew that so he told me about that. So that's how we collaborated.

One the students reminds us that collaboration like other skills can in fact, be learned. She recognizes she is has an issue trusting people to perform at a level she expects and that might be impacting her collaboration. As she learns,

Do all the steps just to get there and also collaboration part of it. I can be a social person, but I also don't like trusting a lot of people to do the work the way I see fit. The whole trust others and just get it done as a group. It's not just about you, it's about other people type of thing, I thought that was really important to learn.

The statistics for last year’s class highlights this learned ability in the 2017 CAPS professional skills confidence survey results BVCAP where students reported a 25% improvement (67.3% - 83.8%) in the confident and very confident scores as it related to the question “Collaborating effectively as part of the project team in order to accomplish team goals.” The BVCAP students are learning the skill of collaboration and overcoming personal obstacles to do so.

**Summary.** BVCAPS teachers attempt to individualize learning for the students as best they can. They allow the students to follow their passions and derive projects that align with these interests. The projects expose students to dealing with ambiguity which can unlock creativity and demonstrate to students how cross functional teams can solve these ambiguous problems.

BVCAPS partners have learned how to leverage students’ experience and knowledge to solve real world problems. The partners also highlight the confidence students gain working with adult professionals and the understanding of business process to bring solutions to reality.
BVCAPS students are energized by the freedoms they are allowed as well as their ability to chase their passions. The projects chosen by the students also allow them to see first-hand, the power of collaboration.

**IowaBig.** The themes identified in response to research question one by each participant group are presented in Table 4.5 and discussed below.

Table 4.5

*Themes identified by group in response to Research Question 1 (IowaBig)*

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<tr>
<th>Teachers</th>
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<tr>
<td></td>
<td>IowaBig teachers believe that allowing students to pursue their passion allows a deeper connection and learning experience.</td>
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<tr>
<td></td>
<td>IowaBig teachers demonstrate that students learn the power of iterative design.</td>
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<tr>
<td>Partners</td>
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<td></td>
<td>IowaBig partners believe students are learning the importance and art of Networking.</td>
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<td></td>
<td>IowaBig partners believe students are provided a safe place to learn from mistakes.</td>
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<td></td>
<td>IowaBig partners witness students demonstrating iterative design processes.</td>
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<td>Students</td>
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<td></td>
<td>IowaBig students develop leadership skills as a result of their IowaBig experience.</td>
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<td></td>
<td>IowaBig students articulate value in collaboration they learn as a result of project-based learning.</td>
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<td></td>
<td>IowaBig students understand entrepreneurial adults and are energized by them.</td>
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**Teachers.** The themes identified in response to research question 1 for teachers are discussed below.

*IowaBig teachers believe that allowing students to pursue their passion allows a deeper connection and learning experience.* An IowaBig teacher demonstrates that it is important for teachers to show students it is important to follow their passion, “And I think that at the core of that whole experience is somebody ... he has somebody telling him that they care about him, and
that they care that he cares about something.” This discovery of a passion leads the students to new experiences as one of the founders and teachers at IowaBig says,

By putting them in a project that they're passionate about, we're increasing the likelihood that they are going to find that thing. Maybe even a discipline, 'cause I've heard so many of our kids say the classic one, ‘I never would have coded in my entire life until I came to IowaBig. I would never have done digital imaging. I would not have done illustrator, 'cause there would have been no reason for it, but now I really like it.’

By following passions, students encounters disciplines, tools, and projects they may never have found had they remained in a traditional educational setting.

A combination of passions and projects lead students to higher levels engagement and effort. IowaBig uses one of the techniques of an agile process known as retrospectives to share learnings. One of the teachers shares an experience from a retrospective that demonstrates students’ on-going project focus,

So I had a student in the retrospective last week say that BIG took him from thinking about you just get work done, to once you get something done what's the next thing to fix? Or the next thing to do? So it's always a process as opposed to, boom done, put it in the bag, it's a constant, there's always something next I gotta take care of with my project.

Passion inspired projects extracts extra effort from the students, creates more engaged students and leads students to experience learnings they may have missed in a more traditional environment.

*IowaBig teachers demonstrate that students learn the power of iterative design.* The concept of iterative design can apply to pieces of a design within a project, or it could apply to
the entire project itself. One of the founders and teachers at IowaBig, describes a multi-year, multi-phase project showing how students iterate on their thoughts,

After that second year of that, JENETTE, who you'll meet today, and BETH, decided they wanted to turn it into a startup accelerator for middle school girls. So they went ahead and partnered with a startup accelerator on an internship and developed this program as they went through it. This is the second iteration of it.

For students at IowaBig, the concept of iteration can even include changing out the partners. As projects grow or change in scope, IowaBig students have found it necessary to recruit new partners. As the founder-teacher explains the students iterate not just on design aspects of projects but on the partners, the participants and other stakeholders,

You just watched that constant process of iterating their product, which now it's a full blown two month program that still ends in that minnow tank. So I think that one captures that whole iterative process that has taken place, what, over three years now? It's had different partners at different times based on what the community was interested in. It started out with girl scouts that had marched into chamber of commerce, engaged in women's empowerment league or whatever that group.

Iteration carries a broad definition at IowaBig and allows the students to continue learning in new and interesting ways.

**Partners.** The themes identified in response to research question 1 for partners are discussed below.

*IowaBig partners believe students are learning the importance and art of networking.* By interacting with local business partners, IowaBig students begin to understand professional
networks. As an IowaBig, CEO partner demonstrates, students even start to see their parents in a different light,

   They starting thinking about their own networks, and seeing their parents in another way. ‘Well, my father owns this kind of business, my father's a dentist, my mom does this and she volunteers at this organization, maybe I can ask her.’

This partner continues the theme, “I have heard some students say, ‘Boy, I have built so many different relationships, and different positions in this community, I would love to come back and work in this community.” This theme of opening the students’ minds to their local community is continued by the CEO partner,

   And so, it's relationship and network driven. It's starting to look at different companies that are in this community and how different careers and jobs might really look that are different than they might have thought traditionally.

   *IowaBig partners believe students are provided a safe place to learn from mistakes.* The IowaBig students enter the program “still optimistic and idealistic, throwing out crazy ideas, and have not had enough bad things happen yet,” says one of IowaBig’s original partners. The partners believe this optimism should not be squashed, but should be tested, as one of the entrepreneurial partners says, “I don't know if that's a bad thing, I don't think people should be crushed, that's not a healthy thing to have happen.” When asked what one of the partners who also happens to be a parent, wanted out of IowaBig for her son, she responded,

   My goal was to start to see how we could infuse real life skills into my kids earlier. So communication, follow through, accountability, leadership, project management, problem-solving, critical thinking, failing and having to get back up and figure it out, and not just dealing with a C, or a D, or an F.
A follow-up question was asked of this partner-parent to see if her expectations of the program especially related to the failure aspect, were being met, she answered,

I watched these students, I mean, they were passionate about this, this was the dream. There were four students, the project was over two years, and they were working diligently on this thing. There was so much time spent hands-on building. I mean this was like this huge dream, that one day resulted in leaving their kayak outside one day that got stolen…Yeah, yeah, yeah, so they started all over.

IowaBig provides a safe place for students to make mistakes, to fail at a chosen path, and learn how to pick themselves up and start over. Parents and partners alike, desire this ability in their students and future potential employees.

*IowaBig partners witness students demonstrating iterative design processes.* Similar to the description of teachers witnessing an iterative approach to solving problems, IowaBig industry partners cite several examples as well. One of resident entrepreneurial partners provides the example of a student demonstrating the practice of iterating a design,

There's a few others, but the one that jumps out for me was EASTON, you know, mentioned on the drone stuff. To me, that was a brand new project and he was looking at iterating very quickly. We watched him before there was a building across the street, over here, taking this foam airplane that was retrofitted with a bunch of technology, go out and fly it. It literally flew for like two seconds, crashed. Then all they did is they gathered round, talked for a little bit, they picked it up. A week later they're flying the plane again, something else happens, it flies for a little bit longer, it does something else. It's just that rapid iteration.
Another way of describing iterative design might be trial and error. In addition to the example provided by this partner, this researcher witnessed several project teams reiterating their project designs.

Admittedly, the trial and error or iterative design approach is not without drawbacks. This CEO partner describes the frustration that can often accompany the process,

They were working on an aquaponics project, so they were building a grow bed from scratch in a shipping container, and there was a lot of trial and error. The pump quit working so all of the fish died, so, "We gotta go buy more fish, we gotta buy more pipes to fix the pump," so it's a lot of that trial and error and problem solving that I think for kids can be really frustrating.

Frustration can go hand in hand with iterating and changing designs based on failures or weaknesses. The joy associated with overcoming those hurdles and iterating to a successful conclusion tend to overcome the frustration.

Even the IowaBig program is in a sense in a continual iterative design cycle. Not only does it continue to improve the program, it helps the students witness adults using the iterative process. The partners witness this iterative design process from the teachers and administrators as one partner says, “It was like they're (teachers and administrators) constantly, just like an entrepreneur would, they're adjusting on the fly to make sure that they're doing what they need to do to be successful. And that's the big challenge right now.” The iteration process is alive and well at IowaBig with students iterating their projects and the teachers and staff iterative the program itself.

Students. The themes identified in response to research question 1 for students are discussed below.
IowaBig students develop leadership skills as a result of their IowaBig experience.

IowaBig students clearly stressed the lessons they have learned being leaders, many of them for the first time. As one student’s story demonstrates, the initial set of emotions when faced with a leadership challenge, and her understanding of her emotions impact on the team,

I will 100% say that that is like being thrown into leading a team when you ... and this contradicting what I've said because I love being a leader and I've never had a passive personality. I'm an aggressive. I want everybody to get something done and feel good about it, type of person. But when you're thrown into a room with ... my team is huge. At the beginning of the year we had like 17 kids in a room. And I was like, "Okay great." I literally, ever imagine this here and everything, like COLTON was in the room and I literally stood right there and I'm like, Okay, great. And I was like, Oh my God, perfect. So then it's like getting it together because it's the same thing as when some predator animals is staring in the face, you can't just look scared. It that type of thing. It's just getting it together when you know times are tough and your team might be drowning but you have to figure it out. You are the team lead and essentially your emotional well-being rubs off on the entire team.

One of the challenges faced by many first time managers when promoted from a group of peers is having to manage friends. For one IowaBig student this phenomena happened when he was only seventeen, not twenty-seven years old, as he shares,

I think another hard thing is having to tell your friends what to do because one of the people on my projects, I've literally known him since fourth grade and he's one of my best friends and now I'm a leader on a project that he's on and I have to tell him what to
do and it is ... I mean I've gotten used to it and it hasn't changed anything between us but it was still weird in the first.

Another valuable lesson leaders learn over the course of time is to adjust their leadership style to the team they are leading. Once again, it can take some people an entire career to learn this valuable lesson. IowaBig is exposing students to leadership situations that greatly accelerate these lessons, as witnessed by one student,

I've learned so much about leadership, more than I ever have or I feel like I ever will. Leading a team is probably one of the hardest but most rewarding things I've ever done. I've learned that being a drill sergeant probably isn't the best way to lead a bunch of teenagers. And that respect of all levels is probably one of the most important things you can know as a leader.

Ultimately, some of the IowaBig students even attempt to teach leadership to younger team members. One student describing her work with middle school girls describes her attempt to demonstrate leadership as follows,

Just empowering them to step in as the leaders, despite not having much else in terms of experience…if they don't get the task done, you try to confront them, you don't to be too teachery because you're not a teacher you're a leader, but then you needed their stuff done and you want them to get what they need to get out of the project.

IowaBig students are learning leadership lessons that take some people full careers to understand and in some cases they never understand. The students are figuring it out at seventeen years old.

IowaBig students articulate value in collaboration they learn as a result of project-based learning. IowaBig students collaborate with each other, with teachers and their industry partners. They can easily articulate the value they see in working together. Whether it’s a
student saying, “I've also learned so much about collaboration and collaborating with anybody isn't that easy, but once you're able to, it makes everything just turn out better, there's no point in just not being able to work with anybody,” or another one expressing the benefits as, “Probably just feeding off each other's ideas, I don't know when you all get in a room together and you spin around ideas, you can usually come out with a golden plan for what to do next,” and he adds, “You share the knowledge.”

IowaBig students understand entrepreneurial adults and are energized by them. IowaBig is physically located within the same building as an entrepreneurial incubator. The students mingle with or work with the entrepreneurs regularly and as one student, being well aware of her surroundings, tells us,

I think that we're around like some of the most entrepreneurial examples in the city, in this building. You go upstairs and they're great and we've been able to work with them for all of our years at Big. They're some of our greatest partners just work right upstairs. Having something like that to look up to and to like work alongside, essentially when I work on a project with some of them, they're the partner on my project. It is my idea and it is my like that and they have all the knowledge and have all this great advice, and so it's like empowering to know that as kids we don't have to be underneath these great people in the community. They are willing to pick us up and give us the power to lead this and they just want to be a part of it.

When asked to describe a role model of entrepreneurial behavior, one of the IowaBig student’s describes one of IowaBig’s administrators as follows,

Whenever he sees a new business or organization or something that's taking off he's like, ‘I want in on that, that sounds cool.’ One of the biggest ones that he was in, he literally
just like met this guy and they were just talking for only about a week and he's like all right I'm going to be your partner on your company or whatever and they set up this whole thing. And they hired people and they had an office building and they were building this company from the ground up and they had it going, and then it flopped and then right after that flopped he got right into a new thing. He just kept on jumping around to all these different things until finally he came here to Big right as it was starting up. Not only do the students recognize the perseverance of entrepreneurs, they value the concept of entrepreneurship to the point they want to teach it to others. One of the senior students mentioned above has gone so far as to begin to teach the concepts of entrepreneurship to middle school girls. As she describes her project,

The whole mission of the project is to empower middle school girls and kind of show them an entrepreneurial mindset. We transformed BIG into an accelerator program, and we are BIG students, which on my team are the mentors for middle school girls.

Not only does is the student able to replicate the behavior she has witnessed from the entrepreneurs, she is capable of using some of the skills the teachers have demonstrated. She combined her entrepreneurial skills, leadership skills and teaching skills she had witnessed as follows,

He caught us doing teacher moves. We kind of have to spin it for them by asking questions and generating their own ideas until they come off of a topic like that. But we are really focused on not telling them that their ideas are bad. We always want them to know that their ideas are good. We just have to spin it off in a different way.

**Summary.** IowaBig teachers, as other stakeholder groups have highlighted, believe a critical component to project-based learning is to allow the students to follow their passion.
IowaBig teachers also believe that the ambiguity provided by real world problems allows students to apply iterative design philosophies to their work.

Like the IowaBig teachers, the partners also see the students demonstrating an ability to iterate on their ideas. The partners also believe that through working with adult, community-based professionals, the students are building lifelong networks. Lastly, the partners see one of the real value of the IowaBig program is providing a safe place for students to fail.

The overwhelming message from the IowaBig students was that the program has taught them more about leadership than anything they have experienced thus far in their lives. The students articulate the value in collaboration demanded by the projects teams. The students are also clearly energized by working with adult entrepreneurs.

**Research Question 2: What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?**

The themes identified in response to this research question by school and then by each group are presented below, first in Table format and then subsequently discussed.

**BVCAPS.** The themes identified in response to research question one by each participant group are presented in Table 4.6 and discussed below.
Table 4.6

*Themes identified by group in response to Research Question 2 (BVCA*PS)*

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<thead>
<tr>
<th>Teachers</th>
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<td>- BVCAPS teachers portray how project based learning re-opens students’ sense of creativity.</td>
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<tr>
<td>- BVCAPS teachers have a mission to provide individualized learning and individualized programs to unlock students’ potential.</td>
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<tr>
<th>Partners</th>
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<tr>
<td>- BVCAPS partners witness the changes that occur when students are not only listened to, but resulting actions are taken.</td>
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<tr>
<td>- BVCAPS partners provide examples of how students have the opportunity to enhance their long term career thinking.</td>
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<th>Students</th>
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<td>- BVCAPS students articulate the power of “real world,” authentic projects to their learning and development.</td>
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<tr>
<td>- BVCAPS students believe they are a step ahead of traditionally educated students for college and jobs.</td>
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**Teachers.** The themes identified in response to research question 2 for teachers are discussed below.

*BVCAPS teachers portray how project based learning re-opens students’ sense of creativity.* The BVCAPS teachers recognize that project based learning can unlock creativity in their students. Two of the teachers talk about how open-ended problem solving challenges the students and brings them back to a former time saying,

I think that our students, especially as juniors and seniors are relearning creativity. And it's something I think we've all talked about at some point but through those soft skills and through this time and this project based learning they’re learned creativity that they were given in kindergarten,
A second teacher builds on the concept of open-ended problems and how by allowing students to select their own projects with no defined end also enhances the students’ creativity as she says,

I really do think that when you give them that freedom to set their own project or to take a problem we present to them and say we have no idea how you're supposed to do this, we have an idea, we say you figure out how to solve this it really makes them be creative like they were back in kindergarten. I think it's good. Yeah it's really good.

A third BVCAPS teacher supports the notion that if teachers can be more creative, they open up more opportunities for the students, “You can try and discover and feel your creativity again so that you're not as driven by the one thing that you do realize the possibilities of this.” The teachers realize the not only do open-ended problems and student-selected projects drive the students’ creativity, but the teachers’ creativity is also rediscovered.

*BVCAPS teachers have a mission to provide individualized learning and individualized programs to unlock students’ potential.* The BVCAP teachers recognize that by understanding what motivates the students to learn will help them individualize the learning for each student and apply learning at the appropriate time. When this researcher asked the teacher focus group somewhat naively about how they thought the BVCAPS students learned, one of the teachers provided a very robust answer,

So it's not are you a visual learner versus an auditory learner versus a kinetic learner which is your traditional how do you learn. It's why do you want to learn what you want to learn? And so the strengths that they have, some of our partnerships allow the students to really figure out what their motivators are. Whether it's content knowledge, whether it's a financial motivation, whether it's a social motivation. And so again whether or not the information is presented visually or whether or not they listen to it through a podcast or
whatever. How they learn it is really not as important as connecting the students with their strengths and helping them with ... they find their problem and then they use their strengths to solve the problem. Not just how do you get your information. So we spend a lot of time connecting, making sure that the students really recognize their strengths and play to those.

As this researcher was corrected, in the BVCAPS environment it is not as important to the teacher how the students learn but why the students want to learn what they want to learn. One of the BVCAPS teachers, also a long time coach suggests that teaching becomes more facilitation saying,

Yeah I would add on, I think but as a traditional instructor it's more telling the student what they should know and in this position is more facilitating the student to understand the things that they want to know so it's the student focused on what they want to learn and facilitating that learning versus you have to know this, I'm gonna teach it to you and two weeks from now there will be a quiz.

Teaching becomes facilitation and rather than a one way stream of information that may or may not be of interest to the students. Another teacher continues the thought and describes his view of how the teaching role changes,

I think one of the other things too to roll off that is we're no longer sages on a stage as far as delivering the information in my class I try and teach them how to get the information and learn themselves, each one learns in a different way instead of me pulling down a screen and saying we're gonna learn how to do this. I'm more of a provider of information for them to learn how to teach themselves how to do things.
Lastly, learning taking place within a project-based environment happens in a different order compared with traditional education. In traditional education programs information is shared with the students and later a method of assessment is applied. In project-base environments students learn as the need is developed, or as the long time educator at BVCAPS says, “it's kind of the just in time learning versus the just in case learning.” In a project-based learning environment teaching becomes facilitation, students learn how to find information themselves, and learning becomes timely.

**Partners.** The themes identified in response to research question 2 for partners are discussed below.

*BVCAPS partners witness the changes that occur when students are not only listened to, but resulting actions are taken.* When students are allowed to work with industry partners several things happen at the same time. First, students see adults on a different level. As the CEO of a local company and BVCAP partner witnesses,

From working with adults; adults don’t have all the answers – even as CEOs, adults deal with setbacks, they see we are not omniscient, we have weaknesses, you have to make decisions on incomplete data – CEOs do it all the time, that asking or being uncertain is ok.

As the students gain confidence and understand their projects, they begin to be treated as equals by the partners. As one of the partners shares, “This is no different than the degreed professionals I have sitting in a board room having meetings, they are doing some of the very same things, I don't even know if they all realize that, but they are.” Then, as the students begin to create positive results, results with a positive impact, the change in the student is even more dramatic. One the long time partners shares the example, “I had one of their VPs say, ‘You
know what? the way you guys transitioned and handed off through this presentation, I can't get my energy teams to do that’ and these kids were just beaming.” When students are treated as equals and recognized for their achievements, positive changes take shape.

The partners believe the students not only being listened to, but having action take place as a result of their ideas is an unusual experience for the students. As one of the partners says, All of a sudden, they have roomfuls of adults sitting forward in their chairs going, "Wait, that was interesting." What? They're not used to that. You talked about building confidence in that circle, they know that. They don't articulate it like that, but they know it.

Several of the students echoed that it was unusual to them initially that adults would listen to them. Then as this partner highlights, it is even more unusual to the students to not only listen but to take action when he shares, “What they’re getting from us is not only someone that listens, but someone who acts on great suggestion.”

**BVCAPS partners provide examples of how students have the opportunity to enhance their long term career thinking.** Because the BVCAP program allows students to experience adults practicing professions the students thought they might be interested in, a clearer picture can be formed. One BVCAP partner provides an example of how real world experience changes direction,

I think the main thing is figuring out that this is actually what you want to do, I've had some kids come in saying, ‘Hey I'm going to go into business’ and get done and go, ‘I think I'm going to do engineering’ and I've had some that were engineers that went ‘Oh gosh no. I'm going to change and do something else,’ but that's the real world experience.
The BVCAPS students’ ability to interact with professions they had an interest in helps them make long term decisions. Another partner shares a story about his discussion with his neighbor and the neighbor’s twin high school students,

I just want to let you know how things are going in the CAPS program because my kids are in engineering." "That's cool. How's Jonah doing?" "Oh, he's going to go to Nebraska and major in engineering. He really wants to do it." I said, "Great, how was Hannah's experience?" He goes, "She hated it, and that's exactly what I want to thank you for, because now she's going off on something different in college. She doesn't know what yet, but it's not engineering." So that experience, two kids, same house. They thought they wanted to follow in dad's footsteps, but found out when they got here that, so it saved them potentially a lot of tears and money and frustration.

Admittedly, not every student is going to make perfect career decisions because of their experience at BVCAP. However, they will be exposed to potentially several profession in their project-based work and many may make more informed decisions than they would have without the experience.

**Students.** The themes identified in response to research question 2 for students are discussed below.

*BVCAPS students articulate the power of “real world,” authentic projects to their learning and development.* Experiencing “real world” problems and “real world” interaction with adult partners has several benefits. As one of the BVCAP seniors tells us,

It's fun because it's real. It's not the teacher saying, ‘Oh I want these things because I say so.’ It's the client saying, ‘We need these things because we need them to actually happen
in the real world,’ and it's a lot more motivating when you know that there's a real need and real project and something that's going to actually be built.

She continues,

It's also empowering to have a project and then see it happen in real life. I think that's the most fun piece. You see the end and you're like, ‘I did that and now I see it.’ I think it's a unique thing that people at home or school are missing out on.

Motivation, empowerment and satisfaction seem to be benefits expressed by the BVCAPS student. Another student shares a similar view of how real projects with real outcomes are beneficial saying “It's not some made up simulation or something that you would get at your traditional high school, this is actual companies that are real and that you've heard of from your area.” The students can compare their traditional simulated projects to “real” projects and are energized by the difference.

One of the junior students shares the concept of lessons to be learned from real projects when he says, “So, probably what I took most was the real life, the real world application of going in to it like a certain field and practicing it and then taking away bigger lessons from there.” Another student discussing his challenge with communication points at the project-based environment as helping him find “Courage to step out of my comfort zone and get in to those real world situations.”

Lastly, one of the female students acknowledges sometimes the real world can be uncomfortable, yet motivating saying,

He started complaining to our teachers and people here, that we hadn't, basically that we weren't doing a good job. We spent a lot of extra time and we actually came back a whole
lot better. We were freaking out and everyone was just telling us, this is the real world, you're going to get yelled at.

The “real world” isn’t always friendly. Fortunately for the BVCAP students they are in an environment where real world problems develop their learning and help them overcome personal challenges.

*BVCAPS students believe they are a step ahead of traditionally educated students for college and jobs.* As the BVCAPS students reflect on their experiences, they can see near term value as they take the next steps in their lives. One student highlights how he believes his experience prepares him for college and job opportunities,

Whereas I think it'll help all of us in college as well if people choose to go to college and apply on campus. Because I feel like CAPS students will be ahead of the curve than everyone because we've had that real world experience and especially in college when you get offered like internships and job opportunities and you make entrance in to the work force.

Another student shares the same sentiment, “I really like the professionalism that you learn from it, just how to interact with a client, how to gain those skills that will help you get a job or internship when you get out of high school, college.” A third student has very similar thoughts, “The more knowledge you gain now before you go to college and the more experience you have puts you above that person who did not do CAPS in my opinion.” The students clearly see and can articulate the benefits they have received as part of the BVCAPS program. They believe they are well positioned to be competitive for college placements and job offers.

**Summary.** The BVCAPS teachers are on a quest to provide individualized learning for each student. They believe, therefore, that it is incumbent upon them to not only understand
each student’s individual passion, but to structure the learning, the projects, and the experiences around those individual passions.

The BVCAPS partners provide several examples of how students’ career paths have been altered or supported by their experience with the project-based BVCAPS program. The partners also describe the excitement exhibited by the students when adults not only listen to them, but take action based on student recommendations or project concepts.

The BVCAPS students articulate several benefits of the authenticity of the projects they work on. They also believe that the authentic projects and exposure to professional adults will put them “ahead of the curve” for future jobs and acceptance into universities.

**IowaBig.** The themes identified in response to research question one by each participant group are presented in Table 4.7 and discussed below.

Table 4.7

*Themes identified by group in response to Research Question 2 (IowaBig)*

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Teachers. The themes identified in response to research question 2 for teachers are discussed below.

IowaBig teachers believe the teaching profession also benefits from project-based learning. Projected-based learning changes the role of the teacher in many ways. The interaction of the teachers with students changes and the interaction with business partners is an added dynamic. One IowaBig teacher describes the interaction as follows, “So the amount of collaboration that you do here as a teacher not only with the other teachers but with the partners and mentors is very unique.” Another teacher provides the comment, “It's funny because I think it elevates the teaching profession and the students.” The students observe the interaction between the teachers and begin to understand that a specific teacher may not be an expert in a given field, but collectively, the teachers share their talents and can help the students as a collective.

IowaBig teachers find that learning is most effective “in context.” The IowaBig teachers and administrators provide compelling cases for why learning must be in a context that is meaningful to students. One of the founding teachers describes why the context setting is important for teenagers,

Well, and just teenagers it's such a powerful time for them. Their brains are learning machines at that age, and then they experience this, most of their day is just blah. It is like Charlie Brown’s teacher and because they cannot connect to it. The value in our seminars is that we directly connect to their lives. Almost every question I have a student write about is, explain this in your own words and connect it to something in your life, because that's how you learn something.
Not only do IowaBig teachers attempt to tie learning to the context of the students’ lives, they also attempt to create leaning in the context of current events or specific projects. One teacher continues on the theme of teenagers and emotions, and provides an example of connecting statistics to real world problems,

Well and the teenage brain ties emotions to memory so much stronger than at any other time in your life. In stats seminar my only goal with her was to find value and efficacy in statistics and now all of the work she's doing in the second semester with her team, which largely focuses on refugees and the refugee crisis and immigration, it's all statistical.

She's found it and she's into it.

Finally, one of the other founders describes the difference between a project-based model and a traditional educational model,

I think this is important so repeat it, we don't talk a lot about what really distinguishes this model from others. We've come to understand that context is definitive. What I'm doing in context and how I know something in context is completely definitive. Content and contest is what traditional school is about.

The IowaBig administrators and teachers believe one of the vital differences between their program and a traditional program is the constant mission to put learning into context. Context as personally as possible and reinforced by the projects students pursue.

As part of context setting, IowaBig teachers incorporate the concept of community in context. IowaBig students can select projects from lists provided by local partners or develop their own concepts. The projects created by students are known as outbound projects, but as one of the teachers highlights, even those require a community link,
Outbound projects are just ideas students have that, they want to build into a project of their own. So It's something they're passionate about, it impacts the community and then they pitch it to us and we essentially decide if it's content dense enough, if it's interdisciplinary enough, and then we'll ask them some additional questions and essentially send them out to find a market fit and do some customer discovery.

Another teacher describes a project with a clear connection to the local community, “It's had different partners at different times based on what the community was interested in, it started out with girl scouts that had marched into chamber of commerce, engaged in women's empowerment league or whatever that group shows interest.”

Lastly one of the founding teachers describes the uncertainty of what students need to know provides a more whimsical view of community involvement, “So, I don't know, this idea that you can even know what kids need to know, is so confusing, it is more like a playground, but all the stuff you have to play on is useful and interesting and the community wants them to play on it.”

**Partners.** The themes identified in response to research question 2 for partners are discussed below.

*IowaBig partners say real business settings, interacting with real adults, provides real results.* When students interact with community partners on actual projects many interesting things occur. One teacher’s description of the interaction highlights several aspects as follows,

And seeing adults in their actual work environment. It's like seeing a lion in the wild instead of in the zoo. It's like, ‘Oh, there's these adults. They're so scary.’ And then you sit at the table, you go to a board meeting. And you're like, ‘Wow! These board members don't know anything about this. I'm the expert about this.’ And so there's some
enthusiasm about feeling grown up, participating with grownups, as there should be.

There's still a little bit of intimidation, but once many of the students get over that, they're excited about the opportunity to participate with real business, to work with something real.

One BVCAPS partner reminds us that the students are in the “wild” with the partners saying, “These kids are out in the community, and they're not just in this building, they're out working on projects, real projects that are solving problems for whatever community partner that they're getting to work with.” The students are not trapped in classrooms, they are experiencing the professions, in the environment of the professional.

BVCAPS partners compare traditional learning with the way a project-based program can create context as well as engaged students. As one teacher draws this comparison and says,

To think of what you can get away with in a traditional setting and how that doesn't connect to the real world is probably the most impressive thing for me. I mean, I'll have a conversation with an adult who's got 20 years of industry experience, I'll have a conversation with a student, and I'm far more comfortable in the conversation with the student.

Dealing with standards and projected-based learning tends to be a challenge, but as another BVCAPS partner points out including standards in real world projects is possible, “So in a classroom standards look more traditional and more maybe linear, and in a project they're starting to understand how these standards really kind of work in the real world, so standards working in a real world.” Project-based programs not only put the learning in context, but can help contextualize the standards themselves.
IowaBig’s mission to keep students in Iowa or to return after their next phase is beginning to pay off. One of the drivers of the creation of IowaBig was to help address the “brain drain” from Iowa in general and Cedar Rapids specifically. As some of the partners describe the program, students, and projects, this goal appears to be coming to fruition. As one of the partners repeats what he has heard students say, says, "I didn't realize how much was going on in Cedar Rapids”, “and he continues his own thought, “And I think that's gonna be true in any community.” Once students are exposed to the partners and the local companies they represent, students begin to develop an appreciation for their home town. As another partner shares the following example of students being exposed to local opportunities,

So having this experience where they're working in the community and saying, 'Wait, if I stay, I can help see this thing become real. I can go to college through this, go work for Shive Hattery, and build this bridge. And make our community a better place,’ and I think people do get excited about that.

There is also an element of network building that is enabled by students working with various industry partners. These networks of relationships also help students understand the power and appeal of their own communities. As one of the IowaBig partners shares a similar story quoting IowaBig students,

I have heard some students say, ‘Boy, I have built so many different relationships, and different positions in this community, I would love to come back and work in this community,’ and so, it's relationship and network driven. It's starting to look at different companies that are in this community and how different careers and jobs might really look that are different than they might have thought traditionally.
**Students.** The themes identified in response to research question 2 for students are discussed below.

*For IowaBig students, it's more than grades.* IowaBig students describe the benefits of a project-based environment in several ways. One student describes the importance of self-achievement, “Achievement to myself is so much more important than everybody else saying I did a good job, it's me believing that my work is good and that I'm confident in my own work and proud of myself.” She continues her discussion about success beyond grades, but points out that even parents may be stuck in old paradigms, “I think for real though, parents are stuck on the traditional school grades, that this is just a crazy idea to them, that we could sit around a conference table and get an A without doing assignments.” IowaBig students look beyond grades and voice that their self-achievement is more important than a letter or a number.

Another student is comparing her projected-based work to the perceived importance of the National Honor Society when she says,

> A blue cord (National Honor Society) when I walk across the stage is nothing compared to what I've actually done, that does not show anything about me except for that I can go to meetings once a month on a Thursday, sit, listen to how you need to do volunteer on hours and then leave, that's literally NHS. You walk in, you sit in a meeting.

Not only do grades begin to matter less to the IowaBig students, but organizations long thought to represent success don’t measure up to what they have accomplished at IowaBig.

*IowaBig students connect ownership of learning to becoming lifelong learners.* Students at IowaBig begin to understand knowledge can be attained from a host of sources. One of the students demonstrates an understanding that teachers are not the only source of learning saying, “It's something that's inherent, it's not necessarily in projects, but in IowaBig, is just this learning
how to do things yourself, it gives you so much more freedom in realizing that you don't need necessarily a teacher for everything.” Another student actually takes the concept one step further when he talks about ownership as follows, “But I think it's good coming to a learning environment and feeling like that you have ownership of your learning and wanting to go professional and know the things you're doing are having an impact.” Finally, we see a student understand the importance of continuous learning. As this student articulates her realization that even though she has worked on the project a long time and is now the leader, she is not done learning,

I would say, I have learned that you never stop learning even though I've been on the project the longest. I am the one that created the project. Everybody can add to it. It's not ... you never stop learning when you become the leader.

The students’ previous perception that at some point learning comes to an end is shattered by the IowaBig experience.

Summary. IowaBig teachers believe that learning must be in context. This context needs to be individualized, tied to projects, and also very importantly, tied to the needs of the community. IowaBig teachers also find that given the challenges of teaching in a project-based program the entire teaching profession is strengthened.

One of IowaBig’s founding principles was to help solve the “brain drain” being felt across Iowa but more importantly in “Crapids” (One of the IowaBig founders). The IowaBig partners have demonstrated with several examples that this part of the mission is seeing positive results. The partners have also provided a list of benefits they believe are a direct result of the authentic projects, including the interaction with adult professionals afforded the students because of the IowaBig program.
The IowaBig students explain that the program has expanded their definition of success. They are no longer motivated by grades or being on the National Honor Society, but by the pride of successfully completing meaningful, impactful projects. The students also begin to understand that learning does not end at the conclusion of a project, a class, or even with their formal education.

Summary of Findings

This study is a multi-case case study involving two innovative, real world, project-based public high schools, BVCAPS and IowaBig. The intent of the study is to understand whether the unique experiential learning programs such as IowaBig and BVCAPS might be highly effective models for increasing the entrepreneurial intention and skills of their students. This researcher facilitated five student focus groups involving twenty-seven students, two teacher and administrator focus groups involving seventeen teachers and administrators, and ten one-on-one face-to-face interviews with industry partners representing both IowaBig and BVCAPS.

The findings, as presented above, highlight the value of authentic, project-based learning to foster and support the development of entrepreneurial intention in students, as well as other developmental benefits as expressed by teachers, partners and students. The themes indicate that authentic projects, linked to community needs in conjunction with adult, professional industry partners yield manifold benefits. Among the common benefits found at both schools and by all three stakeholder groups are students’ development of confidence, creativity, and collaboration. These concepts of passion and potential are measured by the students not in the grades they were previously worried about or by being part of exclusive groups, but by project success and pride in their real world, authentic accomplishments.
Authentic project work exposes students to business processes, leadership roles, teamwork, collaboration, and the value of cross-functional engagement. These outcomes are even more interesting when industry partners find ways to leverage what students already know. The real world projects students are engaged in allow them to deal with ambiguity and uncertainty through the use of iterative design processes, allowing them to succeed rather than fail.

The students are energized by not only working with adults but more importantly by having adults listen to them and take action as a result of the students’ suggestions. By experiencing professionals in their actual setting, students are more informed about career decisions. Not only do the students learn what they like, but sometimes find things they thought they would like, but after hands-on experience, realize they don’t. Students also build solid networks with the industry partners, networks the students realize will have value in future job hunting and acceptance into university programs among other benefits.

Both schools place heavy emphasis on the individual nature of learning and how student learning must be developed in a meaningful context for the student. Students’ interests and passions, community needs and real world projects are all part of ecosystem that drives meaningful student learning resulting in learning about one’s self, one’s opportunities and develop the kinds of competencies and skills valued by employers in the 21st century.
Chapter V: Discussion of the Findings

Revisiting the Problem of Practice

The need for entrepreneurs and those with entrepreneurial skills is on an accelerated rise. The education systems at both the secondary and higher educational levels are responding. The question is, are they responding with the best approaches and programs?

The need for entrepreneurs is highlighted by the World Economic Forum (2009), for as they state “[I]nnovation and entrepreneurship provide a way forward for solving the global challenges of the 21st century, building sustainable development, creating jobs, generating renewed economic growth and advancing human welfare” (p. 7). The response from the education system is witnessed by the following: In 1995 over 400 entrepreneurial courses were being offered in various higher education institutions across the U.S., and by 2003 more than 2,200 courses were being taught at over 1,600 universities and colleges (Albornoz, 2011). The increases in high school programs is similar. Secondary and higher education systems have responded to the demand to supply more students with some level of an entrepreneurial education however, the effectiveness of this education is in question.

After performing his 2017 literature review, Kirkley (2017) harshly criticizes previous attempts to enlighten our youth, saying, “Traditionally, the education system has generally inhibited, and may in fact have prevented, the development of nascent entrepreneurs because it teaches young people to obey, reproduce information and seek employment once completing school” (p. 21). However, as the literature review highlighted, the current state of EE is clearly improving and several researchers such as Canziani et al., (2015), Nabi et al., (2017) and Sirelkhatim et al., (2015) have also begun to provide answers to some of those questions, namely that a central part of EE should be an experiential learning element. Canziani et al. (2015)
clearly state they “believe that by linking entrepreneurial propensity improvements to experiential learning activities involving entrepreneurship experts and partner businesses, we strengthen the potential for strategic partnerships between the academe and the field of practice” (p. 109).

IowaBig and BVCAPS are two such high school programs that are grounded in experiential learning in the real world and industry, placing students’ learning in their communities. This case study focused on answering how the programs are leveraging experiential learning in their communities and how those experiences foster and support students’ entrepreneurial skills and dispositions.

**Review of Methodology**

The purpose of this multi-case research study was to understand how elements of IowaBig and the Blue Valley Center for Advanced Professional Studies (BVCAPS) initiative-, community-, and industry-based experiential learning environments foster and support entrepreneurial intention and entrepreneurial skill development in high school students. The two research questions guiding this study were as follows:

1. How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?

2. What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?

A multi-case study research approach was used to attempt to answer the above research questions. Case study research is well suited to answer “why” or “how” questions as one studies
a particular phenomenon. Normally case studies use a theoretical framework including a literature review to structure the research questions, interview protocols and in some cases to allow for deductive analysis. In this research project, the theoretical frameworks of the theory of planned behavior and Shapero’s Entrepreneurial Event have been described. Case study research methodologies have been well documented by the likes of Yin (2014), Stake (1995), Creswell (2015), and Merriam (1998) and are continuously finding a place in educational research.

The researcher held one teacher focus group, three student focus groups and six one-on-one partner interviews at BVCAPS. Similarly, one teacher focus group, two student focus groups and four one-on-one interviews were conducted at IowaBig. The questions for each of the different groups, teachers, partners, and students were tailored for the difference of the groups although some questions were the same.

The focus groups and interviews were recorded using REV.COM and were subsequently transcribed by the same service. The transcriptions were entered into MaxQDA, grouped and coded. A two-step coding process was employed. The first pass process was based on the In vivo coding method whereby individual words or phrases were highlighted and captured. The In vivo codes allowed for a first pass description of emerging themes. A second pass was also used to flush out additional themes and strengthen and support the first set of themes. The second pass was a deductive view of the data. Starting with Duening’s (2010) five entrepreneurial minds, a list of eleven deductive codes were created. The Duening five minds were mapped to the list of inductive codes that had been captured in the first pass. The inductive codes that were not clearly mapped to Duening’s five minds were combined and classified into an additional six other etic codes for a total of eleven descriptive codes.
The themes were developed under each research question and organized by school and subsequently by group, teacher, partner, and student. Eighteen themes were developed against the first research question while thirteen were developed for the second research question.

Following this introduction, the second section of the chapter will discuss the key findings, the third section will present implications for practice, the fourth section contains the limitations of the findings, the fifth section documents the recommendations for future research, and the final section will conclude the chapter with a summary of chapter highlights.

**Discussion of Major Findings**

After reviewing the themes that emerged from the data collection and contemplating how some of these themes may be interrelated, four major findings were identified as presented in Table 5.1 and discussed below.

Table 5.1

*The Major Findings of the Study*

<table>
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<th>Major Finding</th>
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<td>By allowing students to articulate and follow their passions teachers can unlock creativity and put learning in context leading to more highly motivated, successful students.</td>
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<tr>
<td>Authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs.</td>
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<tr>
<td>In an environment where it is safe to fail, students learn to use iterative thinking and problem solving to deal with ambiguous problems and situations.</td>
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<tr>
<td>Due to the structure of the programs, the project work, and the leadership experiences students develop a level of confidence surpassing their traditionally taught peers.</td>
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Each of these major findings is described in detail below, including supporting data where appropriate.

**By allowing students to articulate and follow their passions teachers can unlock creativity and put learning in context, leading to more highly motivated, successful**
students. The operating models of both BVCAPS and IowaBig allow the students freedoms not available in most traditional high school settings. The students are free to come and go as they need, setting up meetings with partners, teammates, or teachers as the dynamics of their projects demand. Structured times for classes or seminars are the exception not the norm. The students describe these freedoms from things as small as being allowed to walk out to their car to retrieve a forgotten phone to something as large as selecting the projects they work on. This free flowing environment sets the stage for allowing students to follow their passions.

One BVCAPS student, perhaps connects the freedom-based environment to following his passion best,

Another thing is having the freedom to follow your passion, rather than just like, you have to take a certain number of classes to graduate from high school but over here you can really like, cater and tailor your curriculum to how you want it to be and you can follow your passions and learning how to find that and move towards it and then apply it in your life.

Another student helps tie the concept of passion to a specific, individualized learning system when he says, “we can all agree that, when we're allowed to use to our passion primarily, we're more engaged, and we even learn more in a hands-on learning environment.” Tailored curriculum, individualized learning, and passion develop more engaged students.

One of the founders of IowaBig goes beyond the thought of an individualized curriculum to a concept of no curriculum at all. As he instructs us that an individualized learning environment was exactly the mission of IowaBig,

What I would call a learners-centric paradigm where the whole goal of the school is to focus on what each individual learner needs when they need it and so it’s really had
implications for everything we do in school and we don’t have a curriculum and it turns out you don’t need a curriculum.

IowaBig brings just in time seminars to the students as projects require a certain set of knowledge. These seminars too are developed with the individual student in mind, as one IowaBig teacher says, “Trying to individualize the actual content delivery for the class to essentially each kid, so there is no standard curriculum that every kid gets, even within the seminar structure it still pretty individualized.” An environment free of hall passes and doctor’s excuses coupled with helping students find and follow their passion with a mission of individualized learning is a powerful combination. The following three sections will describe how this combination unlocks creativity, puts learning in context and ends with the project-based results.

**Unlocking creativity.** One of BVCAPS’ partners provides his views as to why traditional education struggles to unlock creativity and why a program like BVCAPS is different saying, “In the traditional classroom, they are bound by lack of imagination, I think what this program does for kids, is it gives them permission to imagine and to think.” Opening up imagination is the bedrock of both of these programs.

The teachers at both IowaBig and BVCAPS share a belief that an open operating environment coupled with students pursuing their passions creates a scenario where students express their creativity unlike anything since they were young children. The teachers compared kindergarten and painting trees blue to the creativity they witness in their students. All three constituent groups acknowledged that initially this open, creative space is unusual for students. The students expect to be told what to do, when it has to be done, and what template to use for “turning it in.” As the students become comfortable with problems that have multiple solutions,
teacher that don’t claim to have the answers, and industry partners expecting results, their creativity begins to shine through.

One BVCAPS student referencing his experience on projects explains, “You can do it this way, this way, this way, there's no one right answer, it's always reinforced, I think that's a good thing to reinforce because it allows for creativity to come out.”

Teachers, partners, and students at both schools share the belief that due to their pursuit of individual passions, an abstract problem set, and an environment free from normal encumbrances, students find a new level of creativity. This level of creativity allows them to solve problems they didn’t think possible. This creativity is directly applicable to the skills and traits necessary for successful entrepreneurs.

Learning in context. IowaBig, more so than BVCAP describes a major benefit of project-based learning as being able to put learning in context. Given that students are pursuing projects aligned with their passion, they appear to be more open to learning traditional course material because they can see how it relates to helping them get their projects complete. As one of the IowaBig founders was quoted earlier, “We've come to understand that context is definitive, what I'm doing in context and how I know something in context is completely definitive.” Admittedly project-based learning is not the only mechanism to help provide context but, it certainly allows for a broader definition of context.

IowaBig includes the concept of community as it defines context. Student projects, whether provided by partners or are “outbound” student created, must have an element of community engagement to be considered valid projects. That is not to say they are not necessarily profit motivated, but the students must account for how the project will benefit the community.
IowaBig is physically housed in a facility that is shared by a business incubator. As such, the “community” closely surrounding the IowaBig students contains several entrepreneurs. As stated earlier, this community of entrepreneurs highly energizes the students and opens their minds to the possibilities of entrepreneurship.

IowaBig specifically mentions the importance of putting learning in context. This context setting is further facilitated by passion motivated projects and a community of entrepreneurs.

**Highly motivated, successful students.** The students from both schools consistently spoke enthusiastically about their projects and about the pride they took in completing meaningful projects that make a difference. This enthusiasm stems from the passion they feel towards their subject matter and as one student highlights, “passion isn't really something that you can just learn how to do, how to be motivated and passionate about what you're working on.” Similarly, a student replying to the BVCAPS confidence survey says, “I am glad that CAPS gives me and others the opportunity to follow their passions, allowing me to follow my passion of medicine (And get my CNA! How awesome is that!?).” Indeed it is awesome, the students linking the concept of passion to the completion of something meaningful is exactly the results both programs are hoping to attain. As outlined above, the students also compare their accomplishments with the grades students receive in a traditional setting. The students repeatedly imply that their success is not measured in letter grades but rather in the results of their projects and the impact their projects have on their community. One student really brings this point home,

And you get to learn through literally like what you love. My definition of achievement has definitely changed. I would say, instead of getting an A+ or having my parents say,
‘Oh, your report card was so good. Good job.’ I’m actually proud of my own work now instead of just living up to the expectations of what it's supposed to be.

It is not only students that can articulate the passion inspired results, the partners identify similar behavior. One partner connects his team’s hard work to the attention they receive for producing results saying, “just seeing those girls get the attention that they deserve, seeing them just do a remarkable job, you can tell that means the world to them.” Obviously, one of the challenges for the teachers and administrators is to properly support the students that have found their passion, and work with those that haven’t on a different, individual plan.

One of the other benefits from project-based learning highlighted during the IowaBig teacher focus group was how the teaching profession needs to adjust and in their opinion, improve to be effective in this environment. The teachers’ roles become more about mentoring and making connections than the “sage on the stage.” The teachers have to be cognizant of when students might need a seminar to enhance their project-driven learning. They must comprehend when it is time to bring in a subject matter expert, maybe another teacher, maybe an industry partner to compliment the projects. They must be astute enough to understand how to tie somewhat more abstract learning to the core standards the students need to graduate. Lastly, they must learn to provide feedback in a different, likely more broad way.

**Summary.** This section integrates the concepts of passion, freedom, and putting learning into a context with the results demonstrated by the students and witnessed by the teachers and partners. The freedoms extend beyond freedom to come and go as the students see fit, to freedoms of project selection, problem solving methodology and freedom to pursue their passion. Passion-driven results shared by the students are in line with how one would perceive an entrepreneur to behave, results focused, proud of their accomplishments, and willing to work
hard. Although the primary focus of this project is how the programs help develop entrepreneurial intention and skills, a side benefit of improving teaching methods was also discovered.

**Authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs.** One of the interesting phenomena witnessed by this researcher at BVCAPS was how the business partners matched the demographics of the students with the problem they were trying to solve. In one case the partner was attempting to understand the needs of future building owners and tenants, so they asked the people who are most concerned with the future, the students. In another case, it was obvious to the business partner that their clientele would be able to relate much better to the students than to the typical “white males” they would normal send. One student might be the most pointed about students’ skills when he says, “I guess it taught us, with us knowing social media a lot better than most of the adults that are running these type of businesses, how to give them our input in a professional way.” By leveraging a strength of the students, the students were immediately comfortable with their project and with the problem they were trying to solve.

Both schools’ teachers and partners acknowledged repeatedly that the projects selected had to be “real world,” meaningful, and challenging. The authentic projects created at both schools create very practical experience for the students directly related to entrepreneurship or other future business endeavors pursued by the students. Namely, the students learn project management, leadership, collaboration, and business processes. These skills, critical to entrepreneurs will be detailed in the following sections.
**Project management.** Students at both schools are responsible for all aspects of their projects. One of the first steps is to lay out a project plan. The project plans are like any one would find in any typical business setting. Who will do what? When will it be done? What does person X need from person Y to complete task Z? The project plans are complete with partner reviews, communication plans, and in some cases, hand off plans when the students know they will not be able to complete it within a semester.

Some of the partners hold regular reviews with the project manager to make sure projects are on track and if they are falling behind or taking a potentially unwanted turn, the partner and project leader will discuss additional resource needs or other ways to get the project headed back in the right direction. As described above, these meetings can be tense and expose the students to the implications of not performing as expected.

**Leadership.** The most striking term used repeatedly, primarily by IowaBig students was leadership. Although it is clear that the BVCAPS students had approximately the same amount of project and team leadership as the IowaBig students, they didn’t talk about it nearly as much. This researcher is uncertain as to the reason for the difference.

The IowaBig students discussed the various challenges of leadership, leading people that are your friends, leading people that are older than you, and leading people that don’t necessarily want to be led. They described the stress of not being ready to lead a specific meeting because they were unprepared. They describe how leadership is not being about oneself as one student says, “I read a lot about leading a team and fixing yourself to help accommodate others, you can't just go it alone all the time, you have to think about the rest of the team.” Finally, a BVCAPS student indicates her desire to be a leader and how she sees leadership as an essential part of effectiveness, “As the leader, we don't really have to have one, but personally I always try
to take the leadership in the projects so we can lead it more effectively.” Students’ leadership skills are being honed at both schools, skills critical to being an entrepreneur.

**Collaboration.** Both sets of students articulated the importance of learning how to collaborate through the project-based learning environment. Whether it was collaborating with their teammates, their business partners or viewing their teachers more as facilitators than subject matter experts, they could easily highlight the near term and long term benefits of collaboration.

The students are able to find several benefits of collaboration, some of them beyond the obvious. For instance one senior student can see the difficulties collaboration may pose for someone not as outgoing as her saying, “But being in a class with ten, twelve individuals that you've never met before and having to create relationships and the collaboration… but I can see how that could be difficult for someone who like, isn't really very social.” Another student points out the effectiveness of brainstorming as a result of collaboration saying, “I think especially with architecture, the projects that I've been on, it's very centered around collaboration and a lot of its brainstorming, I guess it's more successful, more meaningful brainstorming session if you're doing it with other people.” Finally, one of the IowaBig parents describing what their child’s reaction to working with other students says, “I know he loves the collaboration that he gets here, which happens on a different level.”

Students define several benefits of collaboration including brainstorming, overcoming trust or social issues and finding better solutions to complicated problems than they would on their own. Teacher and industry partners also witness this collaboration impact and broaden the scope of the impact to include collaboration with other teachers, industry partners, parents and students.
**Business processes.** Students at both schools are introduced to and make use of a variety of business processes. The business processes they use would be found in any well-run business, big or small, new or old. The business processes range from gathering voice of customers, creating marketing plans, creating five year plans, communication plans, and financial planning. One BVCAPS student, talks about the mission of one of her projects, “We were supposed to help them raise awareness so we came up with a social media campaign and then also come up with a marketing plan, like a five year marketing plan.”

BVCAPS partners support this view that students are making use of real world business processes as one partner says, “A general understanding of not only entrepreneurship and international business and marketing and all this, and then creative ways to apply it with advanced technology, gives you an absolute lesson.”

The teachers also see how the projects they help students with are contributing to the students’ understanding of how businesses function. One BVCAPS teacher points out the cross disciplinary aspects of the projects and how that is also typical of a real world problem saying, “How does this fit in the larger scheme of things and so the global business strand they offer lots of opportunities for learning core business concepts that people from all around the building will then come.”

The knowledge and skills related to business processes be it marketing, financial planning, communication planning or an appreciation of the cross functional nature of must efforts within most organizations will serve the students well weather they pursue and entrepreneurial future or become part of an existing organization.

**Summary.** This section described some of the “hard skills” students at both schools are learning that have direct applicability to not only entrepreneurial endeavors, but will help them in
any future organization they may join. The skills of project management, leadership, collaboration and business processes are competencies they will rely on the rest of their lives whether in entrepreneurial startups or through membership in charitable organizations. The project-based learning aspect of both of these innovative programs is developing a set of life skills these students may have waited years to develop.

In an environment where it is safe to fail, students learn to use iterative thinking and problem solving to deal with ambiguous problems and situations. Few people enjoy failing, especially students. The students that attend both BVCAPS and IowaBig learn that not only is failure acceptable, it is one of the best learning tools available. As one BVCAPS partner explains, “You need to have that, like I said, that confidence to fail forward.” As another IowaBig partner stated, “I mean, if you wanted to use the fail fast methodology, then that's when they'd do it, they go, ‘This isn't working, let's jump to something else.’”

The teachers at IowaBig see this learning from failure not only as part of the students’ education, but the teachers’ education as well. Not everything the IowaBig teachers attempt works out, so not only do they learn from it and move on, the students’ watch the teachers’ behavior and learn from it simultaneously. As one IowaBig teacher stated, “Essentially as a staff we typically see the world as a series of problems that can be solved and if you approach problems with that in mind then you never fail at anything.” That distinguishes the entrepreneur, they see problems to solve not solutions to sell.

This fail forward, fail fast environment, when applied in a safe way clearly establishes confidence in the students and helps them understand the power of learning from ones’ failures. One BVCAPS student shares his views and incorporates the term perseverance as he says, “I think you need to have a positive mindset to keep persevering and they just need to know it's
okay to fail and that's something that CAPS teaches us.” Another student shows us the development path she has been on when she says,

I would say the first one is failure. Because I literally used to hate failure. I would beat myself down. I hated failing, but I've learned that failing is not only okay, but it's a good thing sometimes. And to learn from your failures is better than to never fail.

Another student is also able to connect the power of learning through failure to one of the traits necessary to becoming an entrepreneur as she contends, “I would say the hardest part if I would consider myself an entrepreneur with creating this program has been how many times you fail, but you always learn from it.”

The students are demonstrating what the teachers and partners are striving to create, an environment safe for failure where that failure is turned into a lifelong lesson learned and growth towards entrepreneurship.

**Iterative thinking process.** As stated in chapter four, all three sets of constituents at both schools see a benefit of the fail forward, fail fast environment is that students take the next step which is to iterate their thinking and move on to the next thing. It might be that they realize the project itself has failed and they need to move on to a new project or it might be that a particular instance of their design has failed and they need to iterate the design. In either case, these are valuable decisions and decision making processes the students learn. These competencies are directly applicable to those needed by entrepreneurs and business leaders alike. One IowaBig partner provides the “minnow tank” project example as follows, “You just watched that constant process of iterating their product, which now it's a full blown two month program that still ends in that minnow tank.” Another IowaBig partner, describing the project-based process he has witnessed says, “So to me, the ideas' to start something from scratch and then quickly learn as
much as you can from it, then constantly pivot it and navigate through, to me, that's part of the journey.” Partners and teachers at both schools are helping students learn the iterative design process and building their perseverance skills.

Failure is part of life, not necessarily a part most people like or are comfortable with, but these two innovative institutions have created environments where students feel safe to fail. BVCAPS and IowaBig have not only made it safe to fail, they have created mechanisms whereby the students learn from their failures and appreciate the power of fail fast, fail forward. Both programs are able to take the learning process one step further and that is to add the concept of iterative design to the students’ repertoire of tools and skills. Becoming comfortable with failure, learning from the failures and iterating or pivoting as a result of the learning are powerful skills needed by all entrepreneurs.

**Due to the structure of the programs, the project work, and the leadership experiences students develop a level of confidence surpassing their traditionally taught peers.** One of the very first observations made by this researcher in the first BVCAPS student focus group was the level of confidence demonstrated by the students. When they answered questions they made eye contact, they spoke with authority, and they would support their thoughts and positions with examples they had been personally involved with. The CEO BVCAPS partner shared a very similar observation,

Eye contact. The eye contact was there. They weren't shaking or jittery. Confidence.

Confidence was interesting to me too, the people that we hand selected all had a lot of confidence in themselves, confidence in what they were presenting…

This section is divided into three subsections that define the areas of these two innovative programs that this author believes are driving this level of confidence, namely, the structure of
the programs, the project work the students are responsible for, and the leadership roles the students are required to undertake.

**Program structure.** Some of the elements of both programs listed above help contribute to the development of student confidence. The environment of freedom, of being responsible for yourself, to your teammates and to your client partners all help develop self-confidence. The fact that students are basically responsible for their own learning puts pressure on them, but as they find their way, it also contributes to a higher level of self-confidence. The concept of fail fast, fail forward described above which is part of both the IowaBig and BVCAPS environments is perhaps one of the largest contributors to the development of confidence within the students.

One BVCAPS teacher shows how she believes the structure of the program and methods used to provide feedback are elements of building self-confidence, “Like we do stimulation labs for the students… then we do it again and give them that confidence and immediate feedback and I think that's, I've seen that to be really valuable. Another BVCAPS teacher describing how the students develop from the beginning of the program to the end says, “They choose something that means something to them and they carry it through and they look back and think wow I really did make a difference.” Students develop confidence when they realize the results of their work is meaningful.

The environment and overall structure of both programs are allowing students to develop and demonstrate powerful self-confidence. The confidence was obvious to this researcher as well as many of the industry partners.

**Project work.** The project-based work done by the students, including the interaction with the adult, professional partners is one of the major contributors of the development of self-confidence. Students enter both programs as regular teenagers, complete with insecurities and
uncertainty. The exposure to caring, knowledgeable adults begins to change the students’ perception of themselves. One of the partners believes there is an element of timing involved as the partners help develop the students’ confidence when he says, “So for us it's being cognizant that we need to instill that confidence earlier or that understanding that if you don't understand it, it's really better that you say that upfront so that you're not flailing for another two weeks.” Another BVCAPS partner continues the thought, “The motivation I think is big too, and the confidence, seeing those students stand up there and present and not be afraid and be comfortable in front of CEO's and executives.”

The concept of self-confidence witnessed by the teachers and partners helps support the idea that project-based learning is a powerful element to building students’ self-confidence. Even more powerful is to hear the students explain how the projects and the success they feel from the projects helps them see how their future will be improved by this enhanced self-confidence. As one BVCAPS student reports, “And I didn't like thinking you were gonna get too much but then seeing how much we got done and how much we were actually affected the company gave us a lot of confidence.” Another student shares his view of self-confidence, “I think it's really going to help prepare me to work with the real business world and it gives me a lot more confidence because now it's a learning process.” The students tie the confidence they have gained to these project-based learning environments.

Because of the project-based nature of both programs, students develop self-confidence for several other reasons. Learning to collaborate, as described earlier helps students build confidence in expressing their views and thoughts with their teammates, their business partners and their teachers. The projects force them to use business process such as collecting voice of customer data whereby they need to interact with their clients’ customers and develop
confidence in dealing with adult strangers. The students shared the benefits of networking in an earlier section, the networking skills are also responsible for helping them become more confident connecting with adults. Lastly, as some of the industry partners have said, the confidence and enthusiasm shown by students when an adult not only listens to them, but takes action as a result of listening to them is almost incomparable for developing self-confidence.

**Leadership experiences.** One final word on the development of self-confidence within the IowaBig and BVCAPS students. As stated earlier the students acknowledge feeling uncertain, maybe even fear in their initial roles as leaders. However, as they grow through experience and understand how to adjust their leadership styles to different people and different scenarios, they not only overcome the fear, they truly develop confidence in their ability as leaders. This researcher suspects that most of the students that take on leadership roles never expected to be capable of leading others. Especially others that are older, others that are friends, and others that are maybe even smarter or more talented. This is the very real setting of most leaders in most organizational settings, but these students are experiencing it at seventeen years old.

**Section Summary.** This section was focused on how both of the IowaBig and BVCAPS programs develop self-confidence within their respective students. This researcher believes there are three primary reasons these students feel and demonstrate a higher level of confidence than students in a traditional educational setting. The structure of the programs including the freedoms and responsibilities bestowed upon the students, the demanding project work including the frequent interaction with professional adults, and the leadership roles the students are expected to undertake are significant contributors to the development of students’ self-confidence.
Not only do the students feel the importance of self-confidence, but the business partners see it as well. How important is the demonstrated confidence students are developing? As one BVCAPS partner says “I think purpose is the greatest long-term motivator that there is, that goes hand and hand with confidence because once you have confidence, you can do more than you ever thought was possible.” The importance of self-confidence probably cannot be overstated. It is a trait absolutely crucial for the success of an entrepreneur.

**Summary of major findings.** The above section describes the four major findings applicable to both the IowaBig and BVCAPS innovative, project-based learning programs. The major findings include,

1. By allowing students to articulate and follow their passions teachers can align individualized learning leading to more highly motivated, successful students.
2. Authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs.
3. In an environment where it is safe to fail, students learn to use iterative thinking and problem solving to deal with ambiguous problems and situations.
4. Students engaged in project-based learning develop a level of confidence surpassing their traditionally taught peers.

In the preceding sections, these findings were thoroughly described, but in a general sense and where appropriate the findings were related to the research questions, primarily around the area of entrepreneurial skills and intent. The following section will provide more insight into how these findings and others relate to the theoretical framework, the Theory of Planned Behavior and its relationship to entrepreneurial intention.
Discussion of Findings in Relationship to the Theoretical Framework

The primary theoretical framework used to put this project in context is the Theory of Planned Behavior (TPB). The TPB is one of many intentions-based models used to predict human behavior. The following is a brief description of the elements of the TPB, a comparison to other similar paradigms, and rationale for the use of the TPB as a theoretical framework.

Three conceptually independent constructs are defined by the TPB, attitude towards the behavior, subjective norms and perceived behavioral control are purported to provide a determinant of behavior (Ajzen, 1991).

Krueger et al. (2000) demonstrate a strong linkage between intention-based models and entrepreneurship and strong support for why the TPB can be used as a solid theoretical framework for the study of entrepreneurial intention,

Intentions-based models provide practical insight to any planned behavior. This allows us to better encourage the identification of personally-viable, personally-credible opportunities. Teachers, consultants, advisors, and entrepreneurs should benefit from a better general understanding of how intentions are formed, as well as a specific understanding of how founders’ beliefs, perceptions, and motives coalesce into the intent to start a business. (p. 412).

The TPB is a time proven theoretical framework for studying a plethora of human intentions and behaviors. It is not however the only intention based model for studying entrepreneurship and the literature section also described the Shapero Entrepreneurial Event (SEE) paradigm.

The SEE model, similar to the TPB has three antecedent constructs which impact a person’s intentions. In the case of the SEE the intentions in question are specific to the forming
of entrepreneurial endeavors, unlike the TPB which attempts to predict a wide range of intentions.

The SEE also assumes a displacement action or entrepreneurial event is necessary to begin the entrepreneurial intention creation process (Krueger et al., 2000). These actions may be positive impacts like winning the lottery or a graduation or negative impacts such as job loss or a milestone birthday. The displacement event forces a personal behavioral change from among a list of possible choices. It would be possible to consider the participation in a project-based educational program such as BVCAPS or IowaBig as an entrepreneurial event, but this researcher believes that an event as defined by Shapero was much shorter than a semester or multi-semester experience. Therefore, the theoretical framework applied to the findings of this project will be viewed through the lens of the Theory of Planned Behavior, specifically against the three constructs attitude towards the behavior, subjective norms, and perceived behavioral control.

**Attitude towards the behavior.** The first of the three determinants of behavior within the TPB is known as attitude towards the behavior. Attitude towards the behavior is defined as “the degree to which the person has a favorable or unfavorable appraisal of the behavior in question” (Ajzen, 1991, p. 188). Behaviors, for the purposes of TPB need to be observable actions performed by participants that can be captured by the researcher. The attitude towards the behavioral act relies on expectations about personal impacts resulting from the behavior, good or bad.

Much of the following section relies on inference of what the students and in a few cases, the teachers or partners feel about characteristics and traits of entrepreneurs. A specific question asking the students if they had a favorable or unfavorable appraisal of certain entrepreneurial
behaviors was not asked however, several questions were very related to assessing the students’ attitude towards entrepreneurship. As an example one BVCAP student, shares her thoughts on what entrepreneurs do, “I think of creation, like an ideation where you develop a small thing, you may have seen in a dream or just looking out the window you thought of something but making it something big, cool.” Continuing on the concept that entrepreneurship is “cool” another BVCAPS student says, “I think it'd be cool to do something that's all your idea and it's not anything that anyone else wanted you to do …exactly how you want to make your money or change the world or make a product.”

Rather than using the word “cool” one student believes entrepreneurship includes a “wow” factor, “people aren't always going to see your hard work, but in the end when you're up there, and you've got what you wanted, they'll be like, wow.” Another student elevates the feelings of “cool” and “wow” and demonstrates his view of the importance of entrepreneurship as follows, “I think of someone who's starting up an idea they had and trying to make something that's going to affect the world, change it, make their mark on the world.” “Cool,” “wow,” and “making a mark on the world” all seem to indicate very strong positive attitudes towards entrepreneurship.

The students are also able to connect the concept of following ones’ passion to feelings of joy, accomplishment, and fun. The following BVCAPS students share their views on how entrepreneurs have the freedom to follow their passion and thus enjoy their work, saying, “I think kind of the entire thing would be fun about it, because since it's your idea.” Another student follows the thought with, “Yeah, I agree, I think the most fun piece about it, which is you're following your passion, you get to do what you're passionate about every day.”
students can clearly articulate positive aspects and behaviors of entrepreneurs and the tasks they must perform to be successful.

Several IowaBig students, building off of each other’s thoughts about the traits of the entrepreneurs they work with on a periodic basis shared, with positive emotions, the following thoughts, “They love to talk,” “They love to tell you their ideas,” “They love to share and talk and collaborate,” while one student concludes the interchange with an interesting choice of words, “Socially intelligent.” Again, these traits, shared by the students certainly seem to support a strong positive attitudes towards entrepreneurship.

The IowaBig students also witness entrepreneurs as being open minded and adaptable and one student calls them “sponges” and describes entrepreneurs as “They really love feedback, too… I think that they are very open and willing, always constantly having to change your ideas, you just have to be super flexible, but that's just part of being an entrepreneur.” Students see openness to feedback as a positive trait of the entrepreneurs with whom they have interacted.

The students have also been exposed to what might be called drive or perseverance. The students share in their own words what this intrinsic motivation looks like, for instance, one student says, “It's just the mindset of, I don't care what anyone else thinks. I'm going to get this done, I'm going to do it right, I'm going to do it well. I think that's the mindset of a good entrepreneur.” Another student helps summarize this section on intrinsic motivation when he says, “I think entrepreneurs, true entrepreneurs know that end goal and will do anything for that end goal, what it is that they want most in life.” The students clearly see the drive, motivation, and determination of entrepreneurs as a very positive set of traits.

The students are also quick to point out that entrepreneurs face up hill climbs and have to be willing to fail. The students recognize that failure is as much a part of creating something as
success. More importantly, they recognize the characteristic of rebounding after failure is a powerful characteristic. One student provides her views, “They go through all the heart ache or whatever it is, and the idea of failing, which some people do fail, but they get back up on their feet, and they're like, okay, I can do this.” Students even recognize the deeper darker sides of failure as one student highlights, “I can't see how you'd want to tie that to yourself and tie your project success to your personal success, I guarantee you that would be difficult to manage emotionally.”

The students attitude towards the activity of entrepreneurship run the range from “cool” and “wow” to “making a mark on the world.” The students also believe that entrepreneurs are following their passions, which as highlighted in several sections in this study, and is a very important and valuable concept to the students at both schools. An appreciation for how the entrepreneurs seek and value feedback leads to the students calling them “sponges,” another positive trait. The students are not so naïve to believe everything on the path to entrepreneurship is smooth. They know the path is fraught with risk and a high potential of failure, even to the point of using the words, “difficult to manage emotionally” to describe the phenomenon. However, the students also contend that if one has drive, perseverance, and a belief that what one is doing is important, the fear of failure can be overcome. It would seem the students generally have a positive attitude towards entrepreneurship.

**Subjective norms.** Ajzen (1991) defines the second salient construct, subjective norms, as, “the perceived social pressure to perform or not to perform the behavior” (p. 188). Further, Ajzen states that the construct is actually made up of two parts, the strength of the normative belief and the participant’s motivation to comply. Subjective norms deal with how we think others expect us to behave or how we expect to be judged, while our own feelings or attitudes
towards an object are more emotional than cognitive. The set of others may include family and friends but can be expanded to include colleagues and business partners.

Of the three constructs of the TPB, subjective norms is the most difficult to connect with the data gathered during this study. The students are certainly in working relationships with entrepreneurs and other professionals given their proximity and project work, but whether or not these "important others" articulated their expectations specifically as it relates to entrepreneurism or entrepreneurial intent is difficult to assess.

One industry partner and mother of a past student at IowaBig provides the best insight into social norms. When the partner was asked about her expectations of the IowaBig program she responded with,

My goal was to start to see how we could infuse real life skills into my kids earlier. So communication, follow through, accountability, leadership, project management, problem-solving, critical thinking, failing and having to get back up and figure it out, and not just dealing with a C, or a D, or an F… So I was really interested in how do you get more of those real life skills that are needed in life and in the working world infused in the kids sooner.

So when asked whether she believes the program is meeting these expectations both as a mother and an industry partner, she had this to say,

I would say I think we got out of it what we wanted to get out of it… I think that tested some things, but all in all, as you tip the scales there was a lot of learning. People tell me all the time, and part of this is just in my son but, ‘Your kid knows how to talk to adults well. Your kid gets things done, he's a go-to person about certain things’
This example demonstrates that from a mother and industry partner perspective, both “important other” roles obviously, her expectations to a large extent have been met.

Another parent and industry partner at IowaBig shares a similar set of expectations and outcomes. When asked about his expectations for his son’s learning, this partner responded saying, “So the things that I wanted him to be able to learn were responsibility, taking ownership of his time, of where he is in the world, and that has been happening.” The follow-on question regarding the success of attaining this goals elicited the following response,

So yeah, I would say that we're seeing what we wanted to see for our son, because we strongly suspected that when he would put in this particular kind of environment, where he had flexibility, that he would develop the social skills and the communication skills that we wanted him to develop, and organization skills to a certain degree, as well.

Two specific examples of parent/partner people have clearly articulated their expectations and have provided an analysis of the effectiveness of the IowaBig program to meet these expectations. These are the strongest correlates of the design of the programs and the impact on the students with the construct of social norms.

Not all stakeholders are providing expectations of the programs, therefore some of the stakeholders are having no impact on the social norms relative to entrepreneurship.

Three of the students have relatives or family friends that are entrepreneurs. The students have clearly been impacted by these significant others, but it is not clear from the data whether or not these significant others explicitly expressed expectations about entrepreneurship to the students. One student tells us, “For me, when you say the word entrepreneur I think of my dad because I can't think of anyone else who the bigger entrepreneur than him.” A BVCAPS student voices the impact she has felt by observing an entrepreneur she knows,
I have a cousin, he's an architect currently and he ended up leaving his firm to start his own. Just being how passionate he is and how much happier he is now that has his own firm, he can do what he wants, he gets to talk to the clients that he wants. Even just the space to work in is so cool and innovative that it's something I'd love to do with my life too. I feel like I could be happy doing that too.

There is no doubt these students have been directly impacted by studying the characteristics, traits, and daily lives of entrepreneurs. What cannot be said concretely is that these significant others explicitly expressed expectations regarding the students’ entrepreneurial futures.

The construct of social norms has the least impact on entrepreneurial intent as highlighted by the literature. Further, this study finds the weakest link between the two innovative programs and the social norm construct. We can however, see that in at least two cases parent/partners are defining their expectations and the programs are delivering. We can also see that although the expressed expectation by significant others, fathers, relatives and family friends may not be clear from the data, the impact from these significant others on the lives and direction of the students is obvious.

**Perceived behavioral control.** The final antecedent of intention, perceived behavioral control as stated earlier, is the “perceived ease or difficulty of performing the behavior” (Ajzen, 1991, p. 188). Perceived Behavioral Control (PBC) tends to be influenced by the previous two constructs, attitude towards the behavior and subjective norms. Typically favorable attitudes towards an object coupled with a strong belief that the behavior is socially accepted will lead to a higher level of perceived behavioral control (Ajzen, 1991).
As Conner and Armitage (1998) summarize, “Consideration of perceptions of control are important because they extend the applicability of the theory beyond easily performed, volitional behaviors to those complex goals and outcomes which are dependent upon performance of a complex series of other behaviors (e.g. Losing weight)” (p. 1430). Obviously, entrepreneurial activities would also be considered to be a complex series of behaviors, influenced by perceptions of control, so a study of the construct is included here.

The following section gives voice to the students in two ways. First, the researcher asked the students the question, “Why would you be a good entrepreneur? Or would you be a good entrepreneur and why? Secondly, answers to other questions or observations by the researcher may also have provided insight into the students perceived behavioral control as it relates to entrepreneurship. An evaluation of teachers’ perceptions of students’ ability to perform as entrepreneurs is provided at the end of the section.

One BVCAPS believes he has the confidence to be an entrepreneur, but also some of the critical skills such as presentation skills and product design, as he says, “I think I'd be a good entrepreneur because I think of myself as having good presentation skills and being able to show people how my product or my design for a building is the best way to go.” Another student, although feeling like admitting confidence may be a bad thing, believes the thread of confidence is a critical part of an entrepreneur’s composition saying, “I think I'm socially intelligent enough to communicate with adults and network, there are so many factors that go into it, I'd probably say yes, I'm just confident in myself in general, that was a stuck up answer.” The students are able to articulate the confidence they believe would be necessary to be an entrepreneur.
The following three students share the belief that passion must be at the heart of a successful entrepreneur. The first student says, “I feel like anyone can be an entrepreneur if you really set your mind to it and you really have something you want to pursue.” Of course literature might indicate otherwise it is interesting to see her optimism. Another student points out that certain skills can be learned, but not passion when she says, “I would hope that I would be a pretty good entrepreneur because I think I have the passion and the drive to do it… But passion isn't really something that you can just learn how to do.”

The students can clearly tie the concept of passion to being able to be successful entrepreneurs. Whether its confidence, passion, or drive, the students recognize there is more to being a successful entrepreneur than being able to make presentations or create balance sheets. They also realize the IowaBig and BVCAPS programs have enabled them to find their passion and drive.

The following students highlight other aspects of the two programs that have helped them discover a potential career path as entrepreneurs. One student proclaims that being part of the IowaBig program has clearly set the stage for the next phase in her development,

I'm pretty sure I'm going to be a part of the entrepreneurship program at Iowa next year. Simple reason, Iowa BIG. I've learned a lot about entrepreneurship, worked with a lot of entrepreneurs, feel like I have a pretty good base here. I think that I could ... I'd like to continue my work at Iowa. Whether or not it worked out, I could try.

A BVCAPS student finds the value of the community focused nature of the BVCAPS program, to be the impetus for him wanting to become an entrepreneur when he admits, “Knowing that I can help them, in a way, is one of the most rewarding things, which makes me want to become an entrepreneur to help my community in another way.”
Not all of the students necessarily believe they will pursue a path as an entrepreneur. However, what they demonstrate in their answers to the aforementioned questions is that they understand what it takes to become an entrepreneur and whether or not they believe they have the ability or the control. Not wanting to become an entrepreneur because you understand the elements of control is as supportive of the theory of planned behavior as wanting to become one. One student clearly demonstrates an understanding for the necessary attributes of being an entrepreneur and can clearly articulate those she has a command of and those that would need to be developed when she says,

I'd say yes, just because I've learned a lot and I feel like I've had a lot of experience being an entrepreneur and networking with different people. But I think the only setback I have is just not having an idea what to do and create. I lack on the creative side and I feel like if I had an idea I could take it pretty far, but just have to come up with an idea, first.
That's the hardest part.

The students from both innovative high school programs clearly demonstrate by their answers to a variety of questions, their perception of what entrepreneurs need to be good at (control) and whether or not they have these skills, characteristics and motivations. Even when they acknowledge a potential short coming, they still believe they would have a chance of becoming a successful entrepreneur. The analysis of the students’ feedback supports a belief that programs like BVCAPS and IowaBig help students with the construct of perceived behavioral control.

The teachers and partners at BVCAPS and IowaBig can also relate student actions to the concept of perceived behavioral control. When asked to describe a student that demonstrated entrepreneurial skills one teacher responded, “ALVIN, he's an entrepreneur because he's a
dreamer and he has lots of confidence… a confident kid, and one who really wasn't afraid of maybe failing every once in a while, and to see where he wanted to go.” An IowaBig partner describes a student he sees as having entrepreneurial potential when he says,

BETH, who is sitting out there, she's more of the entrepreneur/community organizer. So she has big ideas, which is great. She tries to push forward and make them happen. She's not always the best implementer, but many entrepreneurs aren't. Other things she delegates, which is a super important skill to have if you're gonna be a scalable entrepreneur.

Two of the BVCAPS teachers share the idea of an entrepreneur having the ability to take advantage of opportunities. One teacher provides an example when she says, “describes one of her students as follows, then being exposed to all these other things took advantage of all these opportunities and within that field shifted because she was so good at taking advantage of the opportunities and trying new things which completely changed her path.”

The teachers and partners of both programs also provide observations and behaviors of the students that can be directly linked to the perceived behavior control construct within the TPB.

**Summary.** This section started with a brief description of intention models of human behavior corresponding to their attitude, specifically the theory of planned behavior (TPB). Three conceptually independent constructs are defined by the TPB, attitude towards the behavior, subjective norms and perceived behavioral control were then used as topical headings. Each of the constructs of the TPB were then used as the framework to describe how students at BVCAPS and IowaBig describe their attitude toward entrepreneurship, are impacted by social norms, and the students’ level of students’ perceived behavioral control. In general, an analysis
of the data and themes developed during this study show high support for the first and third construct. The impact on students based on social norms was more weakly understood, primarily from the limited number of examples.

**Discussion of Findings in Relation to the Literature Review**

The following section provides a brief overview of the literature review involving constructivism, its application in the field of Project-Based Learning (PBL) and a state of Entrepreneurial Education (EE) in general.

Tanner’s (2012) description of Piaget’s (1952) concept of constructivism includes parallels to Dewey’s work, for instance “authentic opportunities challenged students,” students should “construct meaning at their own pace through personal experiences,” that “learning should be a social process” and that learning should “take place in the constraints of collaborative groups with peer interaction” (p. 35). Tanner (2012) goes on to summarize the constructivism paradigm,

Proponents of constructivism believe that instruction should begin with content and experiences that are familiar so that students are able to make a connection between the learning experience and the real world and concur that the goal of learning should be that students become autonomous learners. (p. 11)

Krueger and Day (2010) in the context of entrepreneurial learning say, “Constructivism argues for situated learning where students acquire knowledge but also have to develop their own ways of organizing the knowledge (building and changing their own mental models to represent knowledge)” (p. 345). Knowledge acquisition in a constructivist view is personal to the individual learner. Learning is not one size fits all and does not lend itself to large group lectures and transmission of information. Constructivists believe learning needs to be student-centered
and reflect trial and error in a social setting (Bush, 2006; Kurzel & Rath, 2007). Constructivism theories are the basis of much of the work in project-based learning (PBL).

PBL is a clear example of a constructivist learning model incorporating several of the elements of Kolb’s learning cycle theory (Akcay, 2017; Park & Hiver, 2017). Several definitions have been used to describe PBL, Tanner (2012) summarizes the work of others as,

A rigorous teaching method which is organized around an open-ended driving question or challenge. . . creates a need to know essential content and skills. . . requires inquiry to learn and/or create something new. . . requires critical thinking, problem solving, collaboration, and various forms of communication. . . allows some degree of student voice and choice. . . incorporates feedback and revision. . . results in a publicly presented product or performance. (p. 10)

Several authors (Akcay, 2017; BIE, 2005; Chin & Chia, 2004; Park & Hiver, 2017; Tanner, 2012) have attempted to define PBL using a set of five key elements. The elements normally contain the following:

- A real-world, interdisciplinary, embedded driving question raised by the student, not all information to solve the problem is available.
- Student driven inquiry and extensive investigation, no right way of solving the problem exists
- Cooperative learning and meaningful collaboration between the teacher (serving as a facilitator or coach) and students
- Use of resources and technology to aid in the illustration of students’ ideas and as new information is learned the problem definition may change
• Creation of a product, solution, or artifact that represents their learned knowledge, however students will never know for sure if they made the right choices

Zhao (2012) prefers the term product-oriented learning when describing the benefits of experiential learning, especially in the context of entrepreneurial intention,

Product-oriented learning changes the orientation of the learner from the recipient and consumer to the creator and provider. It changes the relationship between the teacher and the learner as well. The teacher no longer serves as the sole source of knowledge or disciplinary authority, but rather as a motivator, a reviewer, a facilitator, and an organizer. The learner becomes owner of their learning and is responsible for seeking and securing the necessary guidance, knowledge, skills, and support to make high-quality products. These changes facilitate the cultivation of creative entrepreneurs. (p. 240)

As noted above many researchers have attempted to define the critical elements of a successful experiential learning program. There is much agreement and overlap with little debate still remaining. A summary of these key elements stated in guidelines for educators can be drawn from Ambrose (2010),

• Connect learning material to students’ interest
• Provide authentic – real world tasks
• Show Relevance to Students’ Current Academic Lives
• Demonstrate the Relevance of Higher - Level Skills to Students’ Future Professional Lives
• Identify and Reward What You Value
• Show Your Own Passion and Enthusiasm for the Discipline (p. 84)
Researchers such as Mwasalwiba, (2010), Pittaway et al. (2009), and Sirelkhatim et al. (2015) have defined three basic types of Entrepreneurial Education (EE), about, for, and through. Teaching “through” entrepreneurship moves beyond simulating businesses and attendant challenges into engaging students in real businesses and real business people. Sirelkhatim et al. (2015) have found that, “While this theme depends heavily on experiential learning and learning by doing, which correlate to entrepreneurial learning suggestions for EE programmes’ best practice, fewer articles discuss the teaching methods explored in this theme” (p. 7).

Canziani et al. (2015) provide encouragement and direction for not only future research but a glimpse of what will be elements of successful EE programs,

With this in mind, we believe that the careful examination and continuous improvement of academic pedagogies in entrepreneurship will yield more and better entrepreneurs and intrapreneurs for the variety of business fields that our students will enter. We also believe that by linking entrepreneurial propensity improvements to experiential learning activities involving entrepreneurship experts and partner businesses, we strengthen the potential for strategic partnerships between the academe and the field of practice. p. 109

Entrepreneurial education research has come a long way and the results of this study support much of the research described above. The following sections will connect the six key elements proposed by Ambrose (2010); connect learning material to students’ interest, provide authentic –real world tasks, show relevance to students’ current academic lives, demonstrate the relevance of higher - level skills to students’ future professional lives, identify and reward what you value, and show your own passion and enthusiasm for the discipline, with the key learnings found during this project.
**Connect learning material to students’ interest.** The major findings section of this study reports on four critical learnings found throughout this study. The first major finding is entitled; by allowing students to articulate and follow their passions teachers can align individualized learning leading to more highly motivated, successful students. This major finding, described the concepts of passion, freedom, and putting learning into a context. The freedoms described extend beyond freedom to come and go as the students see fit, to freedoms of project selection, problem solving methodology and freedom to pursue their passion. Passion-driven results shared by the students are exactly in line with the concept of connecting learning material to students’ interest.

Through heavy use of direct quoting in the major findings section, the students’ voice was heard loud and clear as they described how both programs allowed them to find and follow their passions. The partners and teachers described how they leveraged the students’ passion to create unique projects and learning experiences leading to individualized learning. In this section a focus on the stakeholders’ use of the word “interest” to align with Ambrose thoughts will be described.

An IowaBig founder, when describing IowaBig’s initial goals says, “Number one, kids have to be allowed to follow their passions and interests, because they said we believe that any teacher worth their salt could take about any interest a student might have and show them how their content relates.” The number one founding principle of IowaBig was, and still is to allow students to follow their interests.

The students at both schools were asked a question related to how they selected their projects, the project teams, or the industry partners. Many of the responses a common theme, the selections were based exclusively on students’ interests. As one BVCAPS student says, “Well
basically, we find our industry, which is either something we're interested in or know we can do something in, and then we come up with a product or an idea.” Another student, demonstrates that the students’ interest is discussed before projects are assigned,

   Well most of us have an idea of what we're interested in. She's interested in cosmetics,
   I'm doing something with dance, you guys are doing eCommerce. So we know what we want to do, we just pick that because that's what we're interested in.

Clearly, the students at both schools are invited to find their passion, describe their interests and with the help of teachers and partners create projects to expand their knowledge in the area of their choosing.

   An IowaBig teacher share other examples of trying to find the fit between student interest and projects, saying, “I don't know if we've made clear at all, which is we don't have students pick projects based on the content that they're here for, we have them pick project based on the passion and interest they have.” The IowaBig teachers clearly care about the interests of the students above all else. This same operating principle is persistent at BVCAPS as well.

   This section demonstrates strong alignment between the two innovative programs studied herein and the experiential learning concept of connecting learning material to students’ interest. One of the main findings documented above dealt with the concept of passion, this section provided additional insight, with a focus on the term “interest.”

   **Provide authentic - real world tasks.** The second main finding documented above is labeled, “Authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs.” In the context of experiential, project-based learning the finding is nearly the same. A rewrite of the finding for this section might read, “Authentic, real world projects drive students to practice
project management, leadership, collaboration and business processes, all valuable skills
developed as a result of excellent application of project-based learning.” The above section
described some of the “hard skills” students at both schools are learning that have direct
applicability not only to entrepreneurial endeavors, but to any future organization they may join.
The skills of project management, leadership, collaboration and business processes are
competencies they will rely on the rest of their lives, in entrepreneurial startups through
membership in charitable organizations. The project-based learning aspect of both of these
innovative programs is developing a set of life skills these students may otherwise have waited
years to develop.

Again, the key finding described above was supported with direct quotes from all three
key stakeholders. The following section will provide additional support for the belief that
BVCAPS and IowaBig have implemented project-based learning in alignment with the guidance
provided by Ambrose (2010), provide authentic - real world tasks.

Once again, an IowaBig founder provides a piece of IowaBig’s history when he explains
the second critical goal of the creators of IowaBig,

Number two, the kids have to do something real they’re given fake work to do fake
assignments fake projects fake case studies it’s just all fake… They have to do real
projects, they have to understand that you know doing all these math assignments
decomposition isn’t actually how the world works.

The essence of IowaBig, the number two goal statement is to provide the students with real,
authentic, community-based projects. An IowaBig teacher portrays the abstract nature of these
“real” projects by saying, “students realize that in the real world the answers aren't just given to
you, or even in some cases the work isn't even given to you, you have to figure out what the work is.” The abstractness of the real world is felt by students and teachers alike.

In addition to the many examples above, students at both BVCAPS and IowaBig can not only describe their project as being authentic but in some cases can articulate the benefits of the project-based learning. One student describes it as a completely different feeling saying, “I guess it's just a different feel, it feels like a job, you have stuff to do and a time to get it done by.” Another IowaBig student shares a powerful message about the importance of authentic project work in her life,

I would say getting a real world experience. Last year, I worked directly with the Iowa Fashion company. I think I've never learned anything more in a classroom than I have from that. Learning how to work professionally with somebody from the workforce will never ... nothing will ever compare to that.

The students at both IowaBig and BVCAP can clearly articulate the realities and benefits of the projects they work on. They are excited and grateful that their interest-driven projects are authentic, community-based and include the added benefit of working with local business professionals.

Both of these innovative high school programs have as a cornerstone, authentic project-based learning. Both programs allow the interests of the students drive the composition of the projects. Both program do great job of incorporating the local community of businesses’ needs into the projects not only providing a direct benefit to the businesses, but also giving students the chance to see their results in the everyday setting of their lives. These two schools could serve as models as to how real world, authentic projects are implemented in an experiential learning program.
**Show relevance to students’ current academic lives.** Although the two programs are very similar in operation and orientation, the formality of tying projects to the students’ “academic lives”, is likely the area of the biggest difference. BVCAPS has defined six “strands.” The strands provide focus such that students can more closely align their interests with partners, projects, and curricula. The six strands include, bioscience, accelerator, business technology media, engineering, human service and medicine and healthcare. A complete description of these strands is available in chapter three. The strands include specific courses related to topics within the strand and may include a set of laboratory experiments, again related to the particular strand. The timing of the course or lab work is typically scheduled ahead of time and student plan their project work around the course work. This structure provided by the BVCAPS program helps ensure that State and local standards are met, that the “home schools” are comfortable with the content provided by CAPS and that universities that may review BVCAPS students can better understand what the students have learned. BVCAPS provides a very clear and obvious method of showing relevance to students’ current academic lives.

IowaBig’s treatment of standards, traditional course work and learning integrated into projects is very different. IowaBig has adopted the concept of seminars. An IowaBig teacher provides a very clear descriptions of seminars,

So what we did is we created seminars that spackle in those gaps in the standards. They resemble traditional classrooms, but they're smaller, they're more personal. For the most part kids are very positive about those seminars and they site the things like; ‘it's smaller, feels like a conversation’.

Another teacher continues to describe the seminars, “And then trying to individualize the actual content delivery for the class to essentially each kid, so there is no standard curriculum that every
An IowaBig teacher describes her views of the importance of seminars, “Because we really want students to fall in love with what they're doing instead of worrying about whether they're getting that Econ credit through their project.” Lastly, we hear that not only are the seminars tied to the students current academic lives and projects, but rest of their lives as well, as a teacher says, “Almost every question I have a student write about is, explain this in your own words and connect it to something in your life, because that's how you learn something.” Connecting learning to students’ personal lives is a worthy mission.

Although BVCAPS and IowaBig have different methodologies both programs clearly show relevance to students’ current academic lives. Both programs incorporate some level of “classroom” learning into their programs whether with formal classes within strands at BVCAPS or with seminars aimed at students’ immediate project needs at IowaBig. The literature to date has not suggested a best practice, only that it is important for students’ academic lives to remain relevant in an experiential learning environment. Both of the programs’ methodologies appear to work and both have pros and cons. Clearly the intent of this key element suggested by Ambrose (2010) is met by both IowaBig and BVCAPS.

**Demonstrate the relevance of higher-level skills to students’ future professional lives.** One of the main themes captured in chapter four was, *BVCAPS partners provide examples of how students have the opportunity to enhance their long term career thinking.* Because students in both programs are exposed to a variety of professions and work directly with the adults in those professions, the students develop a much better understanding of what the work entails.
Certainly not always the case, but as one of the partners sees in many BVCAPS students, “They have a clear, defined path to where they're going in life from the moment they graduate this program, which is crazy to me.” This phenomena is not unique to BVCAPS as one of the founders describes his views of how IowaBig prepares students for the college experience,

They’ve already figured out what they are really interested in and passionate about so I think in a lot of cases they’re making better first major choices getting to college with a much better idea of what they really do want to do.

The influence of these programs, some would argue, goes well beyond the students’ college choices. As one IowaBig teacher observes, “You're (the students) going to continue to apply this thinking the whole rest of your life, through your whole career… because so much just like you were saying is like 60% of the jobs today's freshman haven't even been invented yet.” Clearly IowaBig teachers are showing how their program is demonstrating the relevance of higher - level skills to students’ future professional lives.

Partners and teachers of both programs feel they are able to demonstrate the relevance of higher - level skills to students’ future professional lives, a key element of a successful experiential learning program.

The students also share their views of whether or not they are properly being prepared for the next phases of their lives. One student demonstrates the confidence she has in her future, regardless of which path she travels and she attributes this confidence to IowaBig,

I take class at a local college and the teacher has already asked me about my work here.

And I just feel ahead of the class almost already and I'm not even in college yet. And I know when I'm outside of college I know I will have a job. I just ... But I know that what I'm doing with my life after Big right now is if I follow the pathway, I will be fine. And
even if I don't follow the path I'll be fine. If college doesn't work out for me and I can't do it anymore, I'll still be fine because they have this experience.

In a study related to failure as an active agent in the learning process, Estabrooks and Couch (2018) reported one participant in their study reported that because of her leadership experience in a project-based environment, she could do anything. The student quoted above doesn’t appear to be worried about any particular path her career may go, because she has developed skills and confidence to pursue whatever she chooses. Another student has already received job offers as a result of his national speaking engagements as an entrepreneurial educator. He attributes his early success to the experiences he has received as an IowaBig student, “Then also the results that come out of that, when people watch me speak around the nation, like the internships and even the job that I've already gotten right out of high school, that's what's paying off.” This is yet another example of students connecting the aspects of a project-based learning program with their future professional lives.

The three constituents of this study have used a variety of examples and descriptions of the experiences received in both programs to show how the programs fully meet the intent of the fourth key element of successful experiential learning programs, demonstrate the relevance of higher-level skills to students’ future professional lives.

**Identify and reward what you value.** Ambrose (2010) recommends to clearly identify what the educational system they are part of, values. She recommends several methods to communicate the values, describes how to align assessments and course objectives, and strongly suggests that when students exhibit the value, they are rewarded. Ambrose says, “For instance, if you value the quality of group interactions in a project course, you should identify and describe the aspects of such interactions that you value (2010, p. 85).
Of the six key elements described by Ambrose, “identify and reward what you value” is the least studied by this researcher. Although some of the protocol questions elicited related responses, much of this author's understanding of how BVCAPS and IowaBig identify and reward values was gathered based on informal discussions or observations.

During the focus group process with the BVCAPS teachers some explanation of the feedback process was described. This short tenured teacher shared,

I think one of the things that I've learned in being here for two plus years is that it's giving feedback. I don't know in the traditional high school where you have that time to do individual feedback or group feedback and I know TESSA and I we've talked about this. So I've learned how to give feedback and how to receive that information. And so I think it's really important for those students right at the time when they're doing something.

Clearly, this teacher can describe the feedback process as well as the value the process provides. She also indicates that in her previous role as an educator she was not expected to provide this direct group and individual feedback.

Another teacher describes the benefits of real time feedback, explaining to students during or shortly after performing a task, what they did right or wrong, when she shares,

Like we do stimulation labs for the students we create a scenario and then they treat a patient and go through that whole piece and then we debrief at the end and talk about what went well, things to improve on, then we do it again and give them that confidence and immediate feedback and I think that's, I've seen that to be really valuable.

Opportunities like simulations and other project-based activities provide teachers with the opportunity to provide very timely feedback on students’ learning, rather than a traditional testing methodology. Another BVCAP teacher says, “I think the feedback is really helpful in my
classroom we do feedback sessions at least twice a week... soft skill work that they have to learn that they don't necessarily learn in their traditional high school.” Frequent feedback sessions appear to be the norm at BVCAPS, covering the range of groups, individuals, and project teams.

One of the few times a discussion around feedback occurred during the focus groups it was an IowaBig partner saying, “What I think Big is really good about is creating a safe place for mistakes and honest feedback, I believe in direct feedback, and so the students never get offended if there's a lesson to be learned.” An environment for safe honest feedback is a hallmark of the IowaBig program.

Although there are fewer examples of direct quotes to support this author’s view, that doesn’t imply feedback is not discussed nor less important at IowaBig. In fact, the author was allowed to sit in an informal session between teachers as they were discussing strengths and weaknesses of various students. The teacher at IowaBig have gone so far as to record their feedback sessions and email them to the students’ parents. The IowaBig teachers shared that they are trying a few new things regarding feedback this school year and continue to experiment with various types and styles of feedback.

There are strong, positive signs that both IowaBig and BVCAP have processes and practices in place identify and reward what they each value. There is little doubt the students at both schools are receiving more, and more timely feedback than they would in a traditional setting. This author could have done a better job of data collection and subsequent analysis to provide a more robust set of supporting data for this key element.

Show your own passion and enthusiasm for the discipline. In the key findings sections above, one of the benefits of project-based learning highlighted during the IowaBig teacher focus group was how the teaching profession needs to adjust and in their opinion,
improve, to be effective in this environment. The teachers’ roles become more about mentoring and making connections than the “sage on the stage.” The teachers have to be cognizant of when students might need a seminar to enhance their project-driven learning. They must comprehend when it is time to bring in a subject matter expert, maybe another teacher, maybe an industry partner to compliment the projects. They must be astute enough to understand how to tie somewhat more abstract learning to the core standards the students need to graduate. Lastly, they must learn to provide feedback in a different, likely more broad way.

The majority of the following section focuses on what the teachers in both schools have to share as it pertains to their passion and enthusiasm for the teaching profession. However, the first quote is from a BVCAPS student and it provides the most powerful demonstration of the impact passionate teachers can have on students,

My learning is based on aesthetic around me, the mood these people are in, and the mood here is just totally different. Everyone's so much more fun and energetic about the way and they're more passionate about what they're teaching. If you're not passionate about what you're doing, how are you going to make me passionate about what you're teaching me?

This student shows us she has seen passion in her teachers at BVCAPS and she connects their passion directly to her learning.

The teachers from both schools talk at length about the differences in their roles as they fully engage in a project-based learning environment. The role goes from distributor of information to coach, facilitator and someone teaching other how to learn for themselves. One long tenured teacher expands on this role change as follows,
I spent most of my 44 years giving information, have it regurgitated, and training them to be proficient in a certain thing. And our role now is one of a facilitator in authentic activities where you are teaching them how to work as a team, professional skills, and solve problems.

This teacher has spent a great deal of time in a traditional setting, clearly the project-based environment has changed his outlook on the profession and on his specific role.

As described earlier, the students in both programs are given great freedom to follow their passion. These freedoms also enhance the teachers’ experience and provide them a certain set of freedoms as well. As one teacher explains, “I think educational freedom liberated teachers is a big difference… so when you're teaching in this environment when you have more autonomy to go where the students are leading you is a key differentiator from top down.” Because the teachers need to follow the students’ passions, they are afforded a certain sense of “educational freedom” as well.

Project-based learning environments force teachers to build collaborative networks with other teachers, partners, and groups of students. This researcher assumes those collaborative networks enhance the job satisfaction of the teachers.

The following quote is a bit long but, it provides insight in to the demands of teachers teaching in an authentic project-based environment. The assumption made by this researcher is that for teachers to take on the additional aspects demanded by the project-based environment, they are clearly demonstrating a passion for their discipline. As one of IowaBig teacher-founders shares,

When I think about BIG and I think about the amount of work each of us has to put in each day to be interdisciplinary, to get that community integration piece correct to
actually pound a kid's project against the actual market, the market of ideas, the market of time, the market of actual money ... and this is so insulting, but I can't believe my other school district paid me the same amount on the same scale. This job is so much harder. It is literally, sometimes you think to yourself this is not a doable job. These people are going to need psychiatric care because of the number of threads you're maintaining and the number of relationships you're trying to maintain, because now you don't just have students you have their parents, you have the fact that you're running a startup school that people want to go badly or well, and the expectations. You've got all these partner relationships between you and the students and ... and actual communications instead of communications that just wait 12 hours or 24 hours. All that stuff is just so much more wild. I'm not saying that classroom teachers don't have a hard job and it's not ... they're jobs are awesome and super useful for the students that, that model was created for. But trying to develop a school that is nimble enough to respond to the majority of kids instead of a healthy minority of kids that's just an unbelievably different gig.

The interesting thing is how this dialog ended. Another teacher responded saying, “The converse of that is the hardest work you've ever done, the most centered and humanistic learning approach” and the original teacher responded, “It's so attractive.”

The roles of the teachers and their work loads are completely different than a traditional teaching experience. They are pushed beyond lesson planning and test grading to project managers, community relation builders and coaches. They work with students on projects they have no background in or disciplinary skills. Yet, the teachers quoted here, demonstrate a passion for their profession well beyond what it would have been in their traditional teaching roles.
The BVCAPS and IowaBig teachers, beyond a doubt show their own passion and enthusiasm for the discipline, teaching. The show their passion by spending hours of discretionary time to make their students, projects and schools successful. The demonstrate passion by helping students’ find their passion. Finally, they demonstrate their passion by continuously analyzing their programs and attempting to continuously improve the outcomes.

**Section summary.** This section began with a summary of the literature review of this study. The summary discussed the gaps associated with experiential and entrepreneurial education but also highlighted that Entrepreneurial education research has come a long way and the results of this study support much of the research described. The section was set in the context of the six key elements of successful experiential learning programs as proposed by Ambrose (2010); connect learning material to students’ interest, provide authentic –real world tasks, show relevance to students’ current academic lives, demonstrate the relevance of higher -level skills to students’ future professional lives, identify and reward what you value, and show your own passion and enthusiasm for the discipline, with the key learnings found during this project. Strong support was found for five of the key elements with the exception being, “identify and reward what you value.” Although certainly there is evidence that this element is well understood and practiced at both schools, this author takes responsibility for not having a robust enough protocol to capture more compelling data.

**Conclusion**

The purpose of this study was to understand whether the unique experiential learning programs such as IowaBig and BVCAPS might be highly effective models for increasing the entrepreneurial intention and skills of students, helping to identify how other secondary educational institutions, public and private, could contribute to students pursuing
entrepreneurship. A multi-case study research approach was used to attempt to answer the following research questions. The research questions are as follows:

1. How does IowaBig and BVCAPS as community, industry, and experience-based secondary programs impact students’ perceptions of, attitudes towards, and competencies of entrepreneurship, as perceived by administrators, teachers, students and community- and industry-based partners?

2. What do students, administrators, teachers, and community- and industry-based partners consider to be the value of these activities and learning for students?

The researcher held one teacher focus group, three student focus groups and six one-on-one partner interviews at BVCAPS. Similarly, one teacher focus group, two student focus groups and four one-on-one interviews were conducted at IowaBig. The questions for each of the different groups, teachers, partners, and students were tailored for the difference of the groups although some questions were the same.

A two-step coding process was used to analyze the data and eighteen unique themes emerged. The themes were then contemplated in the context of major findings, within the theoretical framework of this research the theory of planned behavior and finally within the context of the literature review, specifically experiential and project-based learning. From this process four major findings emerged. First, by allowing students to articulate and follow their passions teachers can align individualized learning leading to more highly motivated, successful students. Secondly, authentic, real world projects drive students to practice project management, leadership, collaboration and business processes, all essential skills for entrepreneurs. Third, in an environment where it is safe to fail, students learn to use iterative thinking and problem solving to deal with ambiguous problems and situations. Lastly, students engaged in project-
based learning develop a level of confidence surpassing their traditionally taught peers. The details of these findings and a relationship to the theoretical framework and literature review are captured above.

**Significance of Study**

Wiens and Jackson highlight a significant concern, “The rate at which new businesses are opening has been steadily declining until 2014 and because of their out-sized contributions, this decline has troubling implications for economic dynamism and growth if it is not reversed” (2015). The number of jobs created by these newly formed businesses has also declined, from a high of 4.1 million in 1994 to 3 million in 2015 (United States Department of Labor, Bureau of Labor Statistics, 2016).

Dearie (2014) punctuates the significance of the issue, “Given the critical role start-ups play as the principal source of innovation and job creation, this multi-decade decline in business dynamism is nothing short of a national economic emergency”. New businesses are the engine of innovation in the United States and as such tend to be the creator of the majority of net new jobs. This engine is in need of additional fuel in the form of young people with high levels of entrepreneurial intent.

In the past five years of polling, 33% to 35% of high school students indicated that they planned to start their own business, in 2017 the number had fallen to 27% (Buehler, 2017). Although no specific, quantitative measure of entrepreneurial intent was administered to IowaBig or BVCAPS students, this study clearly shows qualitatively that the students at these two innovative high schools grasp and embrace the concept of entrepreneurship. The theory of planned behavior has proven that if a person has a positive attitude towards a specific behavior, subjective norms inform the person of the
goodness of performing the action, and the person perceives they have some level of control of the outcome, the person’s intention to perform the behavior will be greatly increased. The students in both of these high schools are involved in authentic, community-based projects where not only is their business acumen developed, but their passions are ignited, their self-confidence is amplified, and they appreciate collaborative, professional networks. These skills and traits will likely act to enhance the students’ entrepreneurial intent.

Zhao (2012) tells us,

Confident, Curious, and Creative The world needs creators: creators of more jobs, better products, more sensible policies, more effective business models, and more meaningful human services. Creators are curious people, who keep wondering and imagining. Creators are confident people, who are courageous to think and act outside the box. Creators are, well, creative people, who can come up with novel ideas and solutions. Creators cannot be planned, predetermined, or standardized. They must be allowed the freedom and encouraged to wonder and wander, to explore, and to experiment. They must not be judged against others, a standard norm, or external assessment. They need autonomy. (p.239)

IowaBig and BVCAPS programs are creating, creators. The students at both schools are indeed confident, curious and creative. Zhao’s definition of creator does not lock us in to a traditional mindset of starting a new, for profit business. The students at these two programs are not locked in to tradition thinking, traditional measurements, or traditional work. The students are given abstract, “real-world” problems that demand novel ideas and solutions. Both programs strive always for an individualized learning map for each student, as they believe knowledge cannot be planned, predetermined or standardized. The stakeholders of this study overwhelming shared the
benefits of the freedoms all of them are afforded, leading to a more collaborative, creative environment. As Zhao says, “they need autonomy” and these programs are flourishing in their autonomy.

BVCAPS in Overland Park serves approximately 500 students per year. CAPS has expanded its footprint to over thirty-five additional locations across the United States. The impact on the future of creators, innovators, and entrepreneurs will be striking. IowaBig is significantly less mature in its development, but already caters to approximately 150 students. IowaBig, in its short history has expanded to three separate geographical locations across Iowa. These are two very innovative programs impacting hundreds of students per year. Their methods, practices, mission and project-based education are working. The significance their work and reporting on it through this study, were it to be institutionalized across a broader swath of our public schools, could be epidemic.

**Recommendations**

After careful review of the research findings, the researcher offers the following recommendations to public school officials considering the creation of project-based, entrepreneurial focused programs:

1. Create a mission statement, flow it throughout the program and develop a clear communication strategy.
2. Create an environment where failure is celebrated and freedoms abound.
3. Remember, this is a significant change, develop an overall change management plan.
4. Create a process to help students discover their true passions and create individualized learning plans from there.
5. Projects have to be authentic, real-world, and community focused.
6. Feedback and assessment process should be considered and incorporated from the beginning, knowing that a continuous improvement process will be used.

7. Ideally, the program will be housed in its own creative physical space, even more ideally surrounded by practicing entrepreneurs.

Create a mission statement, flow it throughout the program and develop a clear communication strategy. All stakeholders of an educational system should be able to recite and understand the mission of the organization. As these programs will be separate and unique from the rest of the school districts they come from, it will need to be obvious to the stakeholders not only what the differences are, but why the differences exist. Administrators, teachers, students and the industry partners should share the same “elevator speech” highlighting the mission and goals of the learning program. The elevator speeches may have slight differences depending on the perspective of the stakeholder group, but really shouldn’t allow room for individual person differences. When individual perceptions becoming too distant from the core principles envisioned by the creators of the organization, the audience begins to wonder if the organization is being effective.

Both IowaBig and BVCAPS clearly market themselves to the outside world. This marketing is critical for several obvious reasons. The marketing aspects of the program necessitate a communication plan. The messages that go out to potential industry partners, other school districts or the media should be tailored for the individual audiences, but must come from a core set of goals and values. Once again, if different audiences receive substantially different messages some may question the organizational leadership and effectiveness of the program.

Create an environment where failure is celebrated and freedoms abound. Both IowaBig and BVCAPS provide the students with an environment where they are free to schedule
their time to meet their needs. If certain events or classes are required the students incorporate those requirements into their daily schedules. Other than those needs, students schedule project meetings, working groups, meetings with partners, or any other collaborative time the need. This environment of freedom is necessary to unlock creative potential within the students and the teachers as well as demonstrating a high level of trust of the students.

As documented above, all three stakeholders, the teachers, partners and students have expressed the benefits of an atmosphere where failure is viewed as a great learning tool. Allowing students to fail and then showing them the power of iterating on their design or thought process is an excellent model for all project-based learning programs to follow. This scenario is very dependent upon the industry partners and their willingness to take the time necessary to help the students iterate. Therefore, it is important that industry partners not give students projects that are “mission critical.” The pressure of having to succeed may have disastrous effects on the project but more importantly on the confidence of the students’ longer term.

**Remember, this is a significant change, develop an overall change management plan.** Most large organizations public or private, for profit or non-profits when undergoing significant change will create and document a change management plan. The creation of a project-based learning environment within a public school setting should be no different. That is not to say it has or hasn’t happened at BVCAPS or IowaBig, only to say that change is hard, change can be threatening, the teaching profession is not immune from entrenchment, and unfortunately the students may end up suffering of the change is not managed properly. It might behoove a public school district considering the implantation of a project-based learning program to go so far to hire an expert change management consultant to help create the change management plan.
Create a process to help students discover their true passions and create individualized learning plans from there. One of the most impactful aspects of both the IowaBig and BVCAPS programs is the fact there are diligently working towards individualized learning scenarios for each student. This takes an enormous amount of work on behalf of the teachers and administrators but has benefits likely beyond those documented in this study. This individualized learning starts by understanding each students’ passion. This is often not as easy as asking, “What are you passionate about?” Teachers need to find creative ways to draw out a students’ true passion rather than something they are merely interested in. As an example from earlier, one of the IowaBig teachers asked a student, “What makes you really angry?” The student lite up and described one of her inner struggles with how people treat each other and from that a project was born and an entrepreneur may have been created. Teacher and administrators should create plans, tips, and tricks for eliciting students’ real passions.

Once the passions have been found and ignited the rest of the process can follow. Projects that are in alignment with the passion can be found or created. Specific learning modules or “seminars” as they are called at IowaBig can be integrated with the project. The specific standards that must be met can be matrixed with the individual learning to make sure the projects as defined with allow students to meet all necessary requirements. An assessment plan for each student can then be created to insure the learning loop is being closed. Individualized learning is a process, a process that starts first with the students’ real passion and feedback their development process, closing the loop.

Projects have to be authentic, real-world, and community focused. Fake projects, contrived by teachers will not motivate students to perform their best work. Authentic, community based, real world projects with meaningful demonstrable outcomes will change
students’ lives. Teachers, industry partners and students at both schools described over and over the benefits of the real world projects, supported by industry professionals, focused on solving ambiguous challenging problems faced by the local or broader community.

Some researcher would argue that if a project is not derived completely from a student’s own making the learning model is not purely “project-based learning.” After studying these two innovative programs, this researcher believes that drawing a fine line between whether a project was created by an industry partner facing a real world challenge or by a student with a passion for a certain self-created project is somewhat a waste of time. Admittedly, projects created in a vacuum, by teachers or others that are contrived rather than attempting to solve a real issue, is problematic, but neither of these schools nor the recommendation of this author suggest that method. Both IowaBig and BVCAPS have a mixture of student-created and industry partner created projects. IowaBig refers to their student conceived projects as “outbound” and BVCAPS has a strand for student created projects known as the innovation strand. This author believes both industry driven projects and student initiated projects are valuable and should have a place in any project-based learning environment.

Feedback and assessment process should be considered and incorporated from the beginning, knowing that a continuous improvement process will be used. It may be a reflection of this author’s minimal understanding of the feedback and assessment processes used by BVCAPS and IowaBig, but it seems relevant to recommend school districts considering a project-based learning program to understand how they are going to measure students’ performance before the program is launched. The tactical reason for an upfront assessment plan is to insure required standards are being met and students are receiving credit for the work they are doing. A lack of understanding of the assessment process and how universities will judge the
students coming out of these project-based learning environments continues to be an element of uncertainty for parents even today. A clearly defined assessment plan will help all stakeholders understand and manage expectations. That is not to say the plan is cast in concrete and cannot be changed for the duration of the student’s time in the program. An environment of continuous improvement and continuous learning was found at both of the schools studied herein. This continuous improvement culture included how the programs looked at feedback and assessment. Assessment should not be limited to the performance of the students’, rather the entire program including feedback and assessment processes should be continuously challenged.

Ideally, the program will be housed in its own creative physical space, even more ideally surrounded by practicing entrepreneurs. One of the most impressive aspects of both of these schools is their physical space. Just as an aside, the IowaBig space was designed by one of the students. The physical space of both of these program allows the freedoms discussed above to become reality. There are actual classrooms, meeting rooms, maker spaces, café availability, and much more. Admittedly, neither school started out in such a grand fashion. BVCAPS had no physical space of their own initially and had the students working at the partner sites (some of the students still prefer to work at the partner sites). IowaBig initially shared space with an entrepreneurial start-up organization. The process of starting in unidentified unincorporated spaces worked well for both of these organizations and could work for any district attempting to create a project-based program. The recommendation provided here is to have a goal, with financial and schedule considerations at the start of the program. The benefits of the dedicated space was reiterated by teachers and students many times during the data gathering phase of this study. Lastly, IowaBig probably has created utopia. Their physical space is in the same building, one floor below, an entrepreneurial incubator. As mentioned earlier the
day to day interactions between the students and the entrepreneurs is priceless for strengthening the social norm aspect of the theory of planned behavior, and the creation of entrepreneurial intent.

These seven recommendation would serve as a framework for the development of a project-based learning environment for most public school districts. The order was roughly meant to imply priority, but the priorities may differ from application to application. There is no cookbook for how to create a project-based learning environment, only hard work and dedication by the creators and implementers will deliver a working solution.

Validity of Study

The participants of this study were comprised of three critical stakeholders of the two innovative high school program. One-on-one interviews were held with business partners selected by each of the school administrators. Focus groups were held with the teachers and in both cases nearly the entire teaching staffs were participants in the focus groups. Lastly, and most importantly five different student focus groups were conducted. The student participants were selected by the school administrators so this researcher had no ability to bias selections. The only request made by this researcher was that at BVCAPS three of the six different strands were represented by student groups. As this study is focused on entrepreneurship the engineering, global business, and innovation strands were requested and represented.

All protocols including those relevant to protecting of human participants were followed. Direct quotes used in chapters four and five where checked for accuracy and appropriateness with each of the schools.

According to Ely (1991) two of the things that can lend credibility to a study are prolonged exposure in the field and triangulation. This researcher was fortunate to have spent
three full days at each location. Complete access was granted and freedom to meet with whomever the researcher wanted to was allowed. The researcher spent time in classrooms, makerspaces, laboratories, teachers’ offices and even night time First Robotics sessions. Triangulation was achieved via the three sets of stakeholders discussed above. The researcher took the measures outlined in this section to ensure the validity of the data and the findings of the study.

**Limitations of Study**

Several limitations of this study exist and will be described herein. The most obvious limitation is that this study only represented two schools, two cities and two states. These two schools will have student/teacher ratios, facilities, and industry partner participation, to name only a few characteristics unique to their settings. These unique characteristics would make wholesale applicability of the findings across a broad set of schools questionable. A much broader data set and more cases added to the multiple case study approach would certainly create a more robust study.

The second limitation is the socio-economic nature of the participating schools. BVCAPS is in an upper middle class, mostly white part of Overland Park, KS. The students for the most part are able to drive themselves back and forth between their home schools and the BVCAP facility. Although IowaBig draws from three surrounding school districts, some of which are at significantly lower socio-economic status than others, it appears the majority of the participating students are at least middle class. Although IowaBig was somewhat diverse, both schools suffer from a lack of racial diversity. The male – female ratios in both schools seemed to match a traditional school setting.
The third limitation of the study, especially as it relates to entrepreneurial intention, is the fact that this study takes place at one specific point in the lives of the student participants. Several researchers such as Degeorge and Fayolle (2008), Fayolle and Liñán (2014), and Hallam and Zanella (2016), address the temporal questions related to the TPB with varying opinions. What can be said with some certainty is that research has not yet concluded if the time between intention creation and actual behavior is properly accounted for by the TPB. This study is no different, can we say with certainty that these students, demonstrating high levels of entrepreneurial intent will actually become entrepreneurs? The answer based on a great deal of literature is no. However, that limitations is true of all forms of study using intention models as a theoretical framework.

**Future Research Considerations**

In reflecting on the key findings, the limitations and the experience of spending six days of immersion in two innovative high schools, the following thoughts for future research are shared. There are no per se entrance requirements at either BVCAP or IowaBig. The programs are completely voluntary, there are no minimum or maximum grade requirements or any other barriers of entry. Both schools attempt to maintain a male-female balance and other demographics as appropriate, but besides that all students from the partner schools (home schools or “mother ships”) are welcome. So a question of interest to this researcher is; what is are the self-selection characteristics of the students that are enrolled in these programs? A mild attempt was made by the researcher to understand of there was parental push, but a well thought out study on student self-selection might shed light on other characteristics of entrepreneurial intention or potential other constructs of interest.
As stated in the limitations section, both schools struggle with a lack of diversity. Several interesting studies could be conducted at other similar schools and in the case of BVCAPS, the same study could be conducted at a school within the BVCAP network. A setting such as Little Rock, AR would likely be an ideal geography to study potential impacts of demographic and socio-economic differences. Similarly, IowaBig has recently opened a partner school in rural Iowa. The differences between rural students, partners and teachers and how they attempt to implement the concepts of IowaBig into their setting would be interesting as well. Estabrooks and Couch (2018) in a similar study also find, “especially given concerns raised by some researchers on behalf of students from underrepresented backgrounds who may experience failure in ways that are different from other students” (p.11). A similar phenomena may exist with this study and these participants.

Near the end of the discussion regarding learnings relative to the literature review, above, it is noted that one area this researcher could have improved is the key element entitled “identify and reward what you value.” A dedicated study regarding measurement and feedback within experiential, project-based learning would be beneficial. Both schools have taken different approaches to ensuring they and the students are meeting the requisite standards and how they go about providing feedback is also different. A study involving the students, teachers, and maybe the parents might help find best practices for identifying and rewarding what the represented schools value.

As this researcher began the doctoral journey, he had a strong grounding in engineering and all things quantitative. He assumed he would do a quantitative study as part of the dissertation process. Fortunately, a qualitative method, much more fitting to the study was used and a much richer data set and analysis emerged. Having said that, it would still be interesting to
a mixed method study of students in similar settings. There are several valid and reliable quantitative measurement tools for gauging entrepreneurial intention. Adding quantitative results to the rich qualitative analysis might bring to light interesting correlations not available from one or the other method independently.

**Personal Comments**

My personal comments are collected in three subjective disappointment found, highlights of the experience, and finally a section on broader implications.

**Disappointment found.** I’m going to start with the less than positive learnings I had during this study and end on a high note. One cause for concern arose as I was immersed in these two innovative high schools. First my positionality, for several reasons made me a bit envious of the students that were taking these special opportunities to learn in a new and exciting way. Some of the teachers and partners and I would say to each other, “Where was this when I was their age?” My positionality and excitement for both of these programs led to a level of naïveté. I assumed all of the students were putting in full effort and taking full advantage of the power of these programs. I was told by teachers, partner and students alike that some students purposely sign up for both BVCAPS and IowaBig thinking it will be less work than their mother ship and when they find out it’s not, they find ways to “hide.” Needless to say there are likely no organizations of human beings where this is not the case. I just found it personally disappointing.

**Highlights of the experience.** On to better and more positive personal observations. These are two awesome programs. They are similar yet different. They share a passion for learning, for students and for communities. Their facilities are completely geared for project-
based learning, and in IowaBig’s case, sharing space with an entrepreneurial incubator is about as good as it gets.

I have written time and time again about the confidence displayed by the students at both schools. I was fortunate enough to have visited West Point in the past. After a few minutes on the grounds of West Point you realize something is very different. EVERYBODY on the campus, cadets, officers, or city workers look you directly in the eye and says “good morning sir” as you meet them. I told the students at both schools, they left me with that same sense of confidence. During focus groups they looked me in the eye. There was never a quiet time during our discussions, and when I was walking around observing them as they worked on their projects, there was no hesitation to tell me what they were doing. In fact, they were proud to explain their accomplishments. I have developed a strong bond with the thoughts of Zhao’s (2012) experiential and entrepreneurial learning. As I was witnessing the confidence demonstrated by the students, I remember Zhao writing,

While confidence in math may not necessarily be the same as confidence in entrepreneurship, it does indicate how much a country's education system values confidence, happiness, and the general emotional well-being of students. And confidence is a key factor in entrepreneurship, as longtime entrepreneurship educator and executive director of the Canadian Foundation for Economic Education, Gary Rabbior, writes: There is no more important attribute of entrepreneurship than a sense of self-confidence, the belief in oneself and one's own ideas. Entrepreneurs are agents of change, and change is usually resisted. Entrepreneurs will continually confront roadblocks and resistance from individuals who do not support or believe in their ideas…. To confront and
overcome the resistance they will encounter, it is imperative that entrepreneurs have a sense of self-confidence (Rabbior, 1990, p. 61). (Zhao p. 114)

Admittedly, coming into this doctoral program with a heavy engineering focused background I found myself reluctant to accept the validity and value of qualitative methods. This experience, being immersed with some of the most interesting students, teachers and partners I have met, has completely changed my belief system. Just to use the confidence piece one last time, no quantitative tool could have allowed me to witness first hand, the confidence displayed by these young people. Just a great experience.

The most enjoyable part of this journey was spending time with and listening to the students explain their experiences with their respective programs. I was captivated by some of their word choices, “I got teachery,” “they caught us doing teacher moves,” and “I find myself doing code shifts” were among my favorites. However, as one student described the characteristics she sees in entrepreneurs was my favorite quote,

Yep, exactly like Colton was saying I feel like just constantly thinking of new ways to do things and even new ways to think of things because I feel like entrepreneurs have to constantly have that creative edge to them and a different outlook on different things where they can just look behind the wall rather than stare at it.

Let’s all strive to see what is going on behind the wall… and STOP STARING AT IT.

**Broader implications.** Although this study was focused on students’ attitude towards, beliefs about, and skill development of entrepreneurship, the value of project-based learning programs goes well beyond this defined context. As I think back through the themes and key findings within this study several of the benefits described are relative to all students regardless of their future paths. The concept of allowing a student’s passion to drive individualized
learning should be applicable to any learning program. Similarly, the concept that this individualized learning can unlock creativity within the students, creativity perhaps not seen since kindergarten is not a phenomenon reserved for future entrepreneurs. I also think that all programs should attempt to find ways to make the students take ownership for their education. Again, ownership of their learning and a desire to become lifelong learners is important for all students. Finally, the power of putting learning in context cannot be overstated. The project-based learning programs described within this document clearly have defined a goal to put learning into context and again the benefits created as a result are not important only to future entrepreneurs but to all students.

A second set of concepts applicable to all students and subject to significant current literature is the development of twenty-first century skills. As I again think about the broader applicability of the themes and findings concepts like collaboration, leadership, problems solving and iterative development all come to mind as the soft skills most employers are looking for and most educational institutions are attempting to develop. Project-based learning in a team setting by its very nature develops these skills. Likewise the development of networking skills as a result of working with adult professionals is a skill set that naturally develops from programs like BVCAPS and IowaBig and has applicability across all students not just future entrepreneurs. Lastly and I don’t know, maybe most importantly is the confidence these participating students have developed and demonstrated as a result of these two programs. Their confidence will carry them through whatever life throws at them beyond the classroom, beyond the work environment, and beyond their beautiful imaginations.
References


doi: http://dx.doi.org.ezproxy.neu.edu/10.1037/h0034440


doi: http://dx.doi.org.ezproxy.neu.edu/10.1037/0033-2909.84.5.888


doi:10.1080/14792779943000116


Duening, T. N. (2010). Five minds for the entrepreneurial future: Cognitive skills as the


doi:10.1111/jora.12086


doi:10.1080/089856293000000020


doi:http://dx.doi.org.ezproxy.neu.edu/10.1016/S0883-9026(98)00033-0


doi:http://dx.doi.org.ezproxy.neu.edu/10.1016/j.jbusvent.2009.04.003


Miller, T. (October 6, 2015). How NC State starts up. Retrieved from
https://news.engr.ncsu.edu/2015/10/how-nc-state-starts-up/

Moberg, K. (2014). Two approaches to entrepreneurship education: The different effects of
education for and through entrepreneurship at the lower secondary level. The International
doi:http://dx.doi.org.ezproxy.neu.edu/10.1016/j.ijme.2014.05.002

Mwasalwiba, E. S. (2010). Entrepreneurship education: A review of its objectives, teaching methods,
and impact indicators. Education & Training, 52(1), 20-47.

entrepreneurship education in higher education: A systematic review and research agenda.
Academy of Management Learning & Education, 16(2), 277-299.

evidence for the united states from the national establishment time series. The Review of


identity: Predictors and effects within the theory of planned behavior framework. Journal of
Business Psychology, 30, 773-794.

doi:http://dx.doi.org.ezproxy.neu.edu/10.1016/j.jvb.2010.02.008


doi:[http://dx.doi.org.ezproxy.neu.edu/10.1016/j.jebo.2010.02.015](http://dx.doi.org.ezproxy.neu.edu/10.1016/j.jebo.2010.02.015)


Appendix A.

Questions for Student Focus Groups

In the framework of the Theory of Planned Behavior and Shapero’s Entrepreneurial Event paradigm the study is attempting to answer the following two research questions,

1. How do IowaBig and BVCAPS, as public school “initiative-based” programs, impact students’ perceptions of, attitudes towards, and competencies of entrepreneurism, as perceived by administrators, teachers, students and community-based partners?

2. What do students, administrators, teachers, and community-based partners consider to be the value of these activities and learning for students?

Specific questions for student focus groups.

1. Tell me about your typical day at ( )?

2. Tell me what happens when you work on your projects, how do you work in teams?
   
   What do you work on? How do you decide who works on what?

3. Tell me about working with the “industry partner” (ask administrators for correct term), what are you learning from them?

4. Have you heard the term entrepreneur? How have you talked about it in or out of class?

5. Describe an entrepreneur for me, please.

6. What do you think of when you hear the word entrepreneur?

7. Describe an entrepreneur for me.

8. What do you think the hardest part of being an entrepreneur would be and why?

9. What do you think the most fun part of being an entrepreneur would be, and why?

10. Can you describe an entrepreneur that you personally know?

11. Why would you be a good entrepreneur?
12. Describe your favorite part of (IowaBig, BVCAPS).

13. What do you think you have learned so far at ( ) that will be most useful to you for the rest of your life and why?

14. What is the hardest part of going to school at ( )? Why?

15. Assuming you know students that go to other schools, what do you think they are missing by not attending ( )? Why?

16. What characteristics of students that go to school at ( ) make them successful? Why?
Appendix B.

Questions for Teacher and Administrator Focus Groups

In the framework of the Theory of Planned Behavior and Shapero’s Entrepreneurial Event paradigm the study is attempting to answer the following two research questions,

1. How do IowaBig and BVCAPS, as public school “initiative-based” programs, impact students’ perceptions of, attitudes towards, and competencies of entrepreneurism, as perceived by administrators, teachers, students and community-based partners?
2. What do students, administrators, teachers, and community-based partners consider to be the value of these activities and learning for students?

Specific questions for Teacher and Administrator focus groups.

1. What do you think of when you hear the word entrepreneur?
2. Describe a time when a student demonstrated entrepreneurial skills?
3. What aspects of the ( ) program help students understand what entrepreneurship is and why?
4. Describe a student that you think is mostly likely to be an entrepreneur and why.
5. Why do you think a student attending ( ) might be more inclined to become an entrepreneur than one attending a traditional school?
6. What parts of (IowaBig, BVCAPS) do you think students enjoy the most and why?
7. What parts of (IowaBig, BVCAPS) do you think students dislike the most and why?
8. What do you think students find the most challenging at ( )? Why?
9. What do you think students have learned so far at ( ) that will be most useful for the rest of their lives and why?
10. Assuming you know students that go to other schools, what do you think they are missing by not attending ( )? Why?

11. What characteristics of students that attend ( ) make them successful? Why?
Appendix C.

Questions for Industry Partner Interviews

In the framework of the Theory of Planned Behavior and Shapero’s Entrepreneurial Event paradigm the study is attempting to answer the following two research questions,

1. How do IowaBig and BVCAPS, as public school “initiative-based” programs, impact students’ perceptions of, attitudes towards, and competencies of entrepreneurism, as perceived by administrators, teachers, students and community-based partners?
2. What do students, administrators, teachers, and community-based partners consider to be the value of these activities and learning for students?

Specific questions for Industry Partner interviews.

1. What do you think of when you hear the word entrepreneur?
2. What part of the projects the ( ) students work on do you think they find the most difficult and why?
3. Can you please describe how the students react to difficulties on the projects?
4. Can you describe what students get enthusiastic about and how they show enthusiasm?
5. What do you think the biggest benefit the ( ) students get from working with a group of adults and why?
6. What do you think the biggest benefits of this project based education is, given your interaction with the students? And why?
7. Assuming you know students attending other traditional high schools how would you describe the differences between the students at the traditional school and those at ( )?
8. Know what you know about ( ) what do you think the risks of this form of education over something more traditional might be?
9. Please describe a time when one of the ( ) students demonstrated something that you would consider entrepreneurial.

10. Why do you or do you not think the ( ) students are learning more “life skills” than a more traditional school might provide?