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Teaching Innovation and Creativity: Turning Theory into Practice

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Abstract. Innovation and creativity are the lifeblood of organizations. As such, businesses expect college graduates to exhibit the skills necessary to engage in these behaviors. This research explores the concept of innovation, whether it is innate, or if the skill can be taught within the university setting, and how universities are addressing the need for, and teaching innovation. A search of the word “innovation” within educational courses found that most courses are theoretically-oriented or are efforts to cultivate entrepreneurs and/or new inventions, though some appear more practical in nature. A sampling of 50 ACBSP and AACSB accredited universities offering courses in innovation found that approximately half the universities reviewed offered courses in innovation but most courses appeared theoretical. This work contributes to the discussion of business education regarding innovation and the importance of aligning business education with organizational needs.

Keywords: innovation, creativity, entrepreneur, theory, practice, education, university, teaching.

1. Introduction

Most researchers agree that creativity and innovation are key areas that determine the success or failure of an organization (Anderson, Potonik, & Zhou 2014, Bowen, Rostami, & Steel 2010, Friedrich, Mumford, Vessey, Beeler, & Eubanks 2010, Ko 2008, Janssen, Van De Vliert, & West 2004, McDaniel 2005). At the least, the fostering of creativity and innovation is a necessity, not an option, for organizations to respond to advances in technology, changing environment and organizational structures, competitors, evolving customer needs, and global issues and diversity (Egan 2005). Since innovation is a principal source of differentiation and competitive advantage in the increasingly complex and rapidly changing business environment of the 21st century, students need to be better prepared with innovation skills (Lee & Benza 2015). Most research shows a positive innovation–performance relationship, although some indicate the performance implications of innovation in small and medium-sized enterprises is controversial and may be context dependent (Rosenbusch, Brinckmann, & Bausch 2011).

For an organization to be innovative, the organization's leadership must not only embrace innovation (Friedrich *et al.* 2010), and foster an innovation orientation (Rosenbusch, Brinckmann, & Bausch 2011), but fully operationalize innovation in a practical sense (Thursby, Fuller, & Thursby 2009). A recent study by The Center for Creative Leadership reported that leaders rated innovation as one of the top requirements for organizational viability (Friedrich *et al.* 2010). Yet to positively influence organizational performance, a company may need to take action and create conditions to increase innovation in a way that benefits performance (Gong, Zhou, & Change 2013). The organization's goal is not simply to understand innovation, but to *be* innovative in their thinking, processes, and products. Since many future leaders obtain college degrees to prepare themselves for these organizational leadership roles, it seems logical that universities must educate graduates to not just *know* creativity and innovation, but also to *be* creative and innovative.

This research provides the opportunity to examine the extent to which innovation is being taught in business undergraduate and graduate programs. Additionally, this research will propel further empirical investigation into the extent to which teaching innovation can translate to practical applied innovative skills. It also contributes to the discussion of business education as it relates to innovation, the importance of aligning business education with organizational needs, and the extent to which universities can and are teaching innovation. We begin with a discussion of innovation and its definitions. Next we analyze business education and the feasibility of teaching innovation. Distinctions are made between the knowledge of innovation and its application. This research also addresses the disconnect between what is taught in universities and what skills are needed in the workplace, specifically around innovation, an important workplace skill. We conclude with a discussion, implications, and suggestions.

2. Innovation and Creativity: Not Just for Entrepreneurs

The words "innovation" and "innovativeness" have been used interchangeably in research, with varying definitions, likely due to being analyzed and discussed from different perspectives and communities. Many constructs have been used to refer to innovation and innovativeness including: radicalness, newness, uniqueness, and complexity of product, market, or customer (Garcia & Calantone 2002). Garcia and Calantone (2002) describe innovation as identifying a new market or service opportunity for a technology-based invention. They differentiate innovativeness as referring to a product "having a high degree of newness" (p. 112).

Innovations are not all the same and are usually described based on the degree of newness. Some descriptions of innovation categorize the concept using radical and incremental, high and low cost, technological and business, product,

administrative and process, and simple or complex (Dewar and Dutton 1986, Ettlé and Reza 1992, Gopalakrishnan, Bierly, and Kessler 1999). In particular, Dewar & Dutton (1986) categorized innovation into “radical” and “incremental” with the primary difference being the amount of new information and risk.

The most basic definition of innovation is simply, something which is new or different. (dictionary.com). While we often associate innovation with high-tech solutions, computers, or radical change, most definitions of innovation entail the concept of “newness”, often in an effort to improve organizational performance (Bowen *et al.* 2010). It is not uncommon to see the terms innovation and entrepreneur used somewhat interchangeably, but this is incorrect. Mirela (2008) states that, “Innovation is the characteristic tool of the entrepreneur.” (p. 137). While this might lead one to believe that the two go hand-in-hand, the literature suggests otherwise. For example, although Ko (2008) affirms that the sustainability of a firm is dependent on its ability to introduce innovation, he falls short of stating that an entrepreneur must be the creator of innovation. Similarly, Koellinger (2008) affirms that innovation is the primary tool of the entrepreneur, but he too feels that this relationship is not mutually exclusive by asking the question, “Why are some entrepreneurs more innovative than others?” (p. 22). Knudson, Wysocki, Champagne, & Peterson (2004) concluded that, “An innovator is not necessarily an entrepreneur and an entrepreneur is not necessarily an innovator.” (p. 1333). The authors created an entrepreneurial taxonomy that suggests that there is a connection between innovation and entrepreneurship, but that specific categories should be used to better define the relationship between those two traits – recognizing that innovation and entrepreneurship are not always related. There is enough support in the literature to allow us to separate innovation from entrepreneurship and review innovation as a stand-alone concept.

3. Individual Antecedents to Innovation

Since organizations are made up of individuals, it is important to understand factors that contribute to an individual’s innovation. Research has previously examined a variety of factors as important antecedents to individuals’ innovation, such as culture and climate (Khazanchi, Lewis, & Boyer 2007, Tellis, Prabhu, & Chandy 2009), relationship with supervisors (Janssen & Van Yperen, 2004), job characteristics (Oldham & Cummings, 1996), social/group context (Munton & West 1995), and individual differences (Bunce & West 1995).

This paper focuses on influences on an individual’s innovation and the extent to which universities should and can teach it. Ultimately the researchers would like to answer the following questions: How much of an individual’s innovativeness and creativity are due to nature vs. nurture? Can we teach innovation and creativity at the university level to meet organizational needs? To

what extent are these skills currently being taught and what are the best methods/practices? To what extent can you make a person a creative innovator or increase one's likelihood to engage in innovation by providing university courses in innovation?

Creativity

To understand innovation, one may need to understand creativity as a precursor of innovation. As with innovation, the term "creativity" has been defined in the literature in a myriad of ways. Farid, El-Sharkawy, and Austin (1993) suggested that creativity "...results in the generation of new and useful ideas or the combination of existing ideas into new and useful concepts to satisfy a need" (p. 11). Similarly, it has been defined as the production of novel products, ideas, processes and procedures (Amabile 1996, Woodman, Sawyer & Griffin 1993). A differing definition claimed that creativity is a combination of elasticity, originality, and thought sensitivity, which allows the individual to think outside of the box (Brennan & Dooley 2005). Some authors have integrated and built on previous definitions. For example, Anderson, Potocnik, & Zhou (2014) suggested integrating the terms "creativity" and "innovation" for the following definition:

Creativity and innovation at work are the process, outcomes, and products of attempts to develop and introduce new and improved ways of doing things. The creativity stage of this process refers to idea generation, and innovation refers to the subsequent stage of implementing ideas toward better procedures, practices, or products. Creativity and innovation can occur at the level of the individual, work team, organization, or at more than one of these levels combined but will invariably result in identifiable benefits at one or more of these levels of analysis. (p. 1299)

To engage in innovation, one must think of a new idea requiring some level of creativity, be willing to engage risk, and bring the idea to fruition. Koellinger (2008) tried to distinguish between innovation and imitation. He stated that innovation requires novelty where imitation does not. Creativity and innovation are perceived to be so closely connected that the constructs have been used interchangeably (Çokpekin & Knudsen 2012, Georgsdottir & Getz 2004) and creativity has been largely accepted as a critical element of innovation (Amabile 1996, Bharadwaj & Menon 2000, Mumford 2000).

These definitions suggest that to understand innovation, one must also understand creativity. In terms of teaching innovation, one might question whether creativity is determined by "nature" or "nurture". If it is predominantly a function of "nature" (genetic), there may be a limited opportunity to teach and develop skills – or it may require different methods. If it is predominantly a function of "nurture" (beyond the formative years), then one could infer that these skills can most likely be taught. Koellinger (2008) discussed the importance of creativity with the conclusion that education (intelligence) and self-confidence (high) led to high innovative effort, and presumably are a result of a high level of

creativity. But Koellinger fell short of determining whether these traits were learned or inherent to the individual.

Nature vs. Nurture

Creativity has been linked to various brain functions. For example, Vandervert, Schimpf, and Liu (2007) developed a preliminary theory of how creativity and innovation occur through the collaboration of working memory and the cognitive functions of the cerebellum. They posit that working memory, the seat of creativity and innovation, helps acquire new knowledge that aids in problem-solving. Cognitive functions of the cerebellum increase speed, efficiency, and most importantly, the adaptability of original cerebral functions. As tasks are repeated, people do things more quickly, precisely, and in more creative ways. Interestingly, Kéri (2009) reports that the gene neuregulin 1, which has been investigated for involvement in psychosis, has been associated with high levels of creativity in people with high intellectual and academic performance.

Knudson *et al.*'s (2004) taxonomy suggests that our traits (innovative vs. entrepreneurial behaviors) are somewhat stationery and that all categories within the taxonomy are necessary to create a well- rounded organization. He suggests we are born with these characteristics and they are somewhat static. He affirms this belief by stating that entrepreneurs can be made provided they possess the "entrepreneurial DNA" (p. 1332).

According to Knapp (2003), approximately 15% of a person's "entrepreneurial DNA," i.e., creative skills, is inherited. Cultural factors appear to influence this number. For example, Berry (1991) discusses the creative skills of Ashkenazi Jews as evidence for the impact of environmental factors on creativity. He states that Ashkenazi Jews, when raising children, nurture verbal reasoning abilities. With the passing of generations, these cultural practices lead to the formation of genetically transmitted cognitive patterns. As support for this thesis, Berry talks about the disproportionate number of Jews who won a Nobel Prize.

Cultural influences may nurture individual tendencies. A culture's ability to deal with uncertainty may impact creativity. Hofstede (1983) developed an Uncertainty Avoidance Index (UAI) (Hofstede, 1983; Javidan, Dorfman, De Luque, & House, 2006) that reflects a society's ability to deal with novel, unknown, or surprising situations. In low UAI countries (Hofstede 1983), such as the U.S. (a score of 46 vs. a world average of 64) one might expect higher levels of creativity since the culture is better able to deal with novel situations. On the other hand, one might expect low levels of creativity in Guatemala where the UAI score of 101 suggests inherent rigidness. This suggests that those cultures that prefer to avoid uncertainty may be less likely to engage in change.

Another dimension Hofstede (1983) developed is that of "Individualism vs. Collectivism (IDV)", the degree to which individuals group together and express pride, loyalty, and cohesiveness in their organizations or families. Rosenbusch *et*

al. (2011) concluded that the effects of innovation are culturally and contextually dependent, with the strongest positive impact in collectivist cultures, such as in many Asian countries. In contrast, individualistic cultures such as the U.S. indicate a weaker relationship between innovation and performance. One reason for this may be that only half the respondents in the aforementioned study by The Center for Creative Leadership felt their organizations were utilizing their innovative abilities to the full extent (Friedrich *et al.* 2010).

There is evidence that brain function and, hence creativity, can be modified through meditation. Horan (2009) states that mindfulness meditation fosters creative thinking by inducing an open awareness in a state of low cortical arousal. This, in turn, enhances sensitivity and reduces habituation to external stimuli thereby increasing cognitive performance on complex problems. Mindfulness meditation also promotes cognitive flexibility due to its transcendent, detached witnessing effect. Here, strong associative thinking habits are suppressed, allowing for new idea generation. Meditation proves that, in some ways, we can in fact enhance our creative abilities.

4. Business School Effectiveness

Since there is some evidence that both creativity and innovation can be developed and taught, it is worthwhile to examine the relevant practices of business schools. Given that business schools have frequently been accused of failing to provide the type of training that creates functional managers, one might conclude that they have not been successful in teaching students these skills (Birnik & Billsberry 2008, Gupta, Saunders, & Smith 2007, Pfeffer & Fong 2002, Rousseau & McCarthy 2007, Sherman 2009). Although it is not the purpose of this paper to discuss all aspects of the business education debate, an examination of the relationship between business education and innovation/creativity may be fruitful.

According to a May analysis by AACSB, (the Association to Advance Collegiate Schools of Business) involving 733 member schools, 28% include the words “innovate”, “innovation” or “innovative” in their school mission statements (as cited by Korn, 2012). This shows a decline according to the 2007 update by the Graduate Management Admissions Council (as cited in Rubin & Dierdorff 2009). At that time it was indicated that 31% of the 373 schools with MBA programs did not have required coursework in creativity, innovation and strategy, though many CEO’s expressed innovation as critical to corporate success (Dyer, Gregersen, & Christensen 2009, Sawhney, Wolcott, & Arroniz 2006). There may not be a relationship between mission statement and curriculum, as university mission statements are developed with many stakeholders in mind, in accordance with accreditation standards, and potentially serving normative rather than utilitarian needs (Morphew & Hartley (???), Palmer

& Short 2008). Regardless, if the skill is critical in today's business world, it seems that managers who earn an MBA may not learn a core managerial skill desired by industry. It must be acknowledged that the aforementioned study was conducted in 2007, thus some MBA programs may have since changed the required curriculum.

To better understand why creativity and innovation may not be fully integrated into college curricula in a practical manner, it may be helpful to briefly review gaps between academics and practitioners. Management academics have been criticized for studying topics of little interest and relevance to practitioners (Dipboye 2007). For example, Sackett and Larson's (1990) update reports that only 3% of human resources (HR) research addresses real-world problems while 84% focuses on topics from the academic literature. The HR literature has apparently not improved much since the publication of the above-mentioned update because similar findings are reported more recently (Cohen 2007).

This academic-practitioner gap has received considerable attention recently in the academic literature (Aguinis & Cascio 2008, Bartunek 2007, McNatt, Glassman, & Glassman 2010). In April, 2001, an issue of the *Academy of Management Journal* had a special research forum on "Knowledge Transfer between Academics and Practitioners." In 2002, *The British Journal of Management* devoted a special issue to the topic. In 2007, the *Academy of Management Learning and Education Journal* again addressed this topic and most recently again in 2011 (See Vol. 10, Number 1, March 2011).

The recent focus, however, does not mean this academic-practitioner gap is new. In 1949, Merton was also concerned about an academic-practitioner gap and asked social scientists to consider the usefulness of their work (Cetina 1991). Then, thirty years later Susman and Evered (1978) lamented that the sophisticated research techniques of that era were not being used to solve practical problems. Similar concerns still exist today (Hollenbeck, DeRue, & Guzzo 2004, Rynes, Brown, & Colbert 2002, Susman & Evered 1978). Thus, while much has been written about the research-practitioner gap, it appears as though little has changed over the decades. In fact, some believe the gap is widening (Aguinis & Cascio 2008). With this in mind, one must wonder how innovation, a practically-oriented, organizational concept is being effectively taught in universities by research faculty whose agenda may differ from that of the student or practitioner.

Of relevance to innovation education is the concept of effective practice (Broberg & Krull 2010, Mustar 2009, Thursby *et al.* 2009). This concept dictates that a theoretical knowledge of how to be innovative is not enough. Graduates must know how to operationalize innovation in real-world situations. According to Pffefer and Fong (2002), business education is ineffective because of the lack of clinical training or learning by doing, and they further argue that students learn to talk business, not practice business. Rousseau and McCarthy (2007) agree and suggest that the absence of required internships, mentoring programs, and systematic skills development contributes to the problem. One author suggests a

return to pragmatism, a philosophy that addresses the relationship between theory and practice in business education to help solve the problem of relevance (Fendt, Kaminska-Labbé, & Sachs 2008). The pragmatic approach argues that the best test of a theory is the willingness to act on it.

Practical experience may also help close the knowing-doing gap (Pfeffer & Sutton 2013). Also called the performance paradox (Cohen, 1998) or the talking-doing gap (Zeleny 2008), the knowing-doing gap explores reasons why managers may know what to do but fail to do it. Although Pfeffer and Sutton's (1999a) research suggests five key areas that typify action-oriented organizations, one area specifically stands out; "They believe that experience is the best teacher." (p. 141). Bowen Jr., (2007) agrees and suggests that no amount of classroom or conceptual learning can replace real-world action. This research suggests that a traditional theoretical course on innovation might not create students with the ability to operationalize innovation and use it as a tool in an organizational setting.

5. Can Universities Produce Effective Innovators?

Whether or not universities can produce innovators may depend upon how one decides to define "innovation". Based on West and Farr (1990), it can be defined as "the intentional introduction and application within a role, group, or organization of ideas, processes, products, or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, group, organization or society." While some feel that true innovation begins with a significant technological discovery (Rickards 1996), West and Farr do not address technology in their definition. Another definitional issue has to be addressed—whether innovation is seen as a single- or two-stage process. That is, does innovation stop with generation of the creative idea or does it stop when it is (non-creatively) implemented?

A search of publications using the keyword *innovation* produces thousands of articles, either around the level of analysis, (such as individual, organization, and industry) or the type of innovation (product, process, and business model), with innovation sometimes analyzed as a process and other times as an outcome (Crossan & Apaydin 2010). Crosson & Apaydin argue that innovation is both a process and an outcome and that the former precedes the latter.

The indication is that at least some aspects of innovation can be taught, particularly if the learning addresses both process and outcome. As such, universities can play a role by teaching how to bring a creative, innovative project into existence. They can also teach methods of dealing with resistance to change, budgeting, scheduling, goal setting, etc. that will make it more likely that the new idea will be implemented and the firm will accrue a benefit. With respect to generating ideas, universities can have impact. They can teach techniques that can improve creativity. For example, it is well-known that brainstorming can

improve creativity and brainstorming techniques can be taught (Chirumbolo, Mannetti, Pierro, Areni, & Kruglanski 2005).

Given that some degree of creativity and innovation can be taught, it might be worthwhile to see what is currently offered in the university setting. Since the concept of innovation has more recently been viewed as an opportunity for companies to gain a competitive edge, business schools have been adding research centers, classes and entire majors in innovation in an effort to capitalize on the recent interest (Korn 2012). However, the question remains as to whether the concept is being taught merely conceptually, or if students are applying it practically towards strategy and action.

6. Methods

This paper reviewed the definitions of innovation as well as creativity, due to its importance as a foundational skill for innovation, discussing the variety of definitions and the development of these capacities. This was accomplished through a systematic review of the literature. The main research question examines the meaning and influences on innovation and the extent to which it can, should, and is being taught at the university level. The research includes a review of a randomly selected group of universities, both AACSB and ACBSP-accredited. The analysis of courses offered compares course offerings by accreditation, by level (graduate or undergraduate) and by country of origin of the university.

Innovation and creativity are skills that organizations have indicated are critical to success and which may be lacking in college graduates. This research lays the foundation for questions the authors ultimately want to answer, including the extent to which innovation can be taught and developed in the university setting.*¹

The process of identifying relevant research in innovation involved a search of business-related online databases using a broad search with keywords “innovation” and “innovativeness”, including only scholarly, peer-reviewed articles from journals generally regarded at least a “C” level journal in rankings. Care was taken to ensure representation from an interdisciplinary framework, as this concept has been studied in multiple fields. This helped to obtain a broad perspective and decrease potential bias in selecting articles written by authors whose names sounded familiar. Those studies selected were those that, after assessed for quality, were determined to be methodologically sound and informative.

1. The authors acknowledge that universities are engaging in innovation in other ways, however the focus of this paper is on the curriculum and coursework that relates specifically to teaching innovation.

For the university course search, the authors created a random sample of 50 universities that comprised of half AACSB-accredited business schools and half ACBSP-accredited business schools (See Appendix A). The element of accreditation was included to ensure those schools that were reviewed met minimum academic and curriculum standards. 50 universities in total were reviewed, yet the total sample could be considered 98, because both graduate and undergraduate programs were reviewed when both were available. For the former, universities were completely randomly selected from the list appearing on the AACSB website. For the latter, schools were randomly selected from those with “university” in the title, eliminating any referred to as “college.” The purpose of this was to make an attempt at comparing schools at the same level, to the best degree possible, realizing that name does not always indicate level. After selecting the university to research, the authors used search terms such as “course catalog”, “course descriptions”, or “bulletin” in order to locate each university’s available courses. If the university offers a course with the word “innovation” in the title, it was included as a positive finding in the list. Both graduate and undergraduate business courses were analyzed, though some universities do not offer a graduate program in business. While the total population of schools is quite large (770 AACSB and 960 ACBSP schools), this sample provides a window into the presence of innovation within the universities reviewed.

7. Results

The following section highlights some activities in the area of innovation by school, and then we present a summary of a search of courses with the word “innovation” in the title. In the first, broad Google-based search, courses were found to include titles such as “Innovation and Creativity for Entrepreneurs,” and “Managing Creativity and Innovation” and “A Crash Course on Creativity”. Most appear to be theoretically-oriented courses or efforts to cultivate entrepreneurs and/or new inventions. Some appear more practical in nature. For example, Stanford University’s open, free online course is described as highly experiential and participative. The university also offers a certificate in innovation and entrepreneurship.

Stanford University’s Graduate School of Business philosophy is that innovation comes from people being “change agents” and utilizes a mix of leadership, analytical, and management skills, all of which can be learned. When course objectives include terminology such as “process”, “application”, and “evaluation”, students are likely learning to generate and implement new ideas. Application-oriented course activities include experiential exercises, brief lectures, seminar presentations, readings, case analyses, debates, films and videos, student presentations, and extensive discussions.

Another example is Buffalo State University, offering a Master of Science degree in creative studies, a graduate certificate program in creativity and change leadership, and an undergraduate minor in creative studies. Creativity and innovation MOOCs, or Massive Open Online Courses, are now popping up at The University of Minnesota, The Pennsylvania State University, Vanderbilt University, and more. Stated goals of many programs include understanding the role of creativity, innovation, and problem-solving – indicating a somewhat theoretical perspective.

Courses on creativity and innovation are often found cross-listed within different departments. This confirms the findings of Thursby *et al.* (2009), who suggested that the idea is to expose all students to cross-functional teams with all parties involved, bringing innovation to market through cross-discipline understanding. This reflects a way of thinking that creativity is based on societal norms, and thus developing approaches to problem-solving in different ways from an individual's norm will advance his or her creativity and innovation skills.

At MINES Paris Tech, innovation is encouraged along with obtaining real-world experience. Engineers participate in business courses and externships to obtain experience with large, innovative firms. The major thrust of the program is to expose the student to a wide range of knowledge and cross-discipline understanding so the student can better understand holistic innovation. This belief is apparently echoed by City University in London where an MSc is offered in “Innovation, Creativity, & Leadership” and is aimed at those with management experience who want to develop leadership skills.

The Kaos Pilot School of Leadership and Entrepreneurship uses an action-oriented approach to learning and requires students to learn how theory and practice interact. They work on the premise that “in order to grasp something, you have to grab it.” This philosophy is realized through real-life projects involving both private sector and public sector clients so students can see the interface between theory and reality and how they interrelate. This program teaches students how to embrace high levels of ambiguity, deploy creative solutions, and distill information into tangible, actionable items that facilitate problem solving and decision making. Several universities maintain a Center for Innovation and Entrepreneurship, where the idea of innovation is interwoven with entrepreneurship.

In addition to the above, which included a Google search of the words “creativity” and “innovation”, along with either “university”, “course”, or using “.edu” as a limiter, the authors further delineated the investigation of the extent of courses offered in AACSB accredited business schools as compared to non-AACSB accredited schools as well as graduate vs. undergraduate courses. While the following table presents the findings in summary, one must keep in mind that many courses contain the words “innovation” or “creativity” within the course description. Thus, a given course may cover the concept, or embed the concept within its teaching, however, for brevity this review limits the search solely to

courses with the word “innovation” appearing in the title. Of the 50 schools reviewed, 25 are accredited by AACSB and 25 by ACBSP.

Table 1.

Accreditation	# Schools	# Programs	Graduate courses	Undergraduate courses	Total # courses as percentage of programs
AACSB	25	48	15	14	29/48= 60*
ACBSP	25	46	10	10	20/46= 43
Total	50	94	25	24	49/94=52 (mean)

* One AACSB school had 3 courses. This elevates the number/percentage.

Analysis by accreditation. Comparing the findings of this course title search by accreditation indicates that those schools accredited by AACSB have a higher percentage of courses with the word “innovation” in the title than do those accredited by ACBSP. This is an interesting finding considering that AACSB has a faculty research criteria and ACBSP focuses more on teaching excellence and educational outcomes. Of 25 universities with a total of 48 graduate and undergraduate programs, the search indicated 29 courses offered with the word “innovation” in the title. This indicates that 60% of the programs offer a course, however, one of these universities offered three courses. Since we are analyzing the percentage of programs that have courses (not the quantity of courses themselves), we do not want to count three courses for the one AACSB school that had three. Thus, with the removal of two courses, we have 27/48, which is 56%. Of those universities accredited by ACBSP, 20 courses were found out of 46 total programs, resulting in 43% presence of courses with the word “innovation” in the title.

Analysis by level. Graduate and undergraduate programs have approximately equal offerings of courses with the word “innovation” in the title. Of those universities accredited by ACBSP, the researchers found 10 graduate and 10 undergraduate courses with the word “innovation” in the title. Of those accredited by AACSB, there were 15 graduate and 14 undergraduate courses with the word “innovation” in the title.

General analysis. While the first search looked more in depth at programs and the extent to which universities were teaching the theoretical aspects of innovation, as opposed to the practical application of it, this second search examined the frequency of course offerings with the word “innovation” in the title. In all, approximately half the 50 universities randomly selected offered such a course. In a few universities the courses were a required course, but they were mostly offered as electives.

A concurrent finding was that many courses have innovation in the course description if not in the title. This indicates an appreciation of the importance of the concept and skill, at least to some degree. Some universities offer entire programs or certificates in innovation. Incidentally, all three international schools reviewed, accredited by AACSB, offered innovation courses. This may suggest innovation has a larger, global focus and is especially important to developing nations and those with rising economies.

This brief examination into university trends indicates a current interest in tapping into the creative and innovative potential of individuals and organizations. Theoretically-driven courses will create students who have a better academic understanding of innovation and of the creative process, without necessarily being able to generate creative ideas or manage the implementation process. If creativity and innovation are keys to success, and help businesses face rapid change, it is critical to further investigate the best ways to instill these qualities in people and organizations.

8. Discussion

Today, more than ever before, it is critical to be able to be innovative, manage the changing environment, and respond to advances in technology, evolving customer needs, and globalization. Both creativity and innovation are skills that facilitate these abilities. This research provides evidence that courses in innovation are being taught at the university level, and that they can bridge the academic-practitioner gap when focus includes the application of skills. This research also contributes to the discussion of business education as it relates to innovation, the importance of aligning business education with organizational needs, and the extent to which universities can and are teaching innovation.

Whether or not a minimal level of creativity is required to implement the benefits of innovation is still uncertain. One may wonder what level of self-selection bias exists within the degree programs. In other words, do students who already have some foundational creative skills or “innovative DNA” seek out innovation programs because this falls within their interests, and therefore innovation classes simply refine or define existing skill-sets? Or, are they the students who choose the innovation elective? The fact that most of the innovation courses were located in entrepreneurial and marketing majors may naturally create this result.

While some universities have not embraced teaching innovation as a practice (it remains theoretical), those universities that recognize they are developing job-seeking practitioners may be most capable of effectively teaching innovation. Furthermore, courses that balance innovation theory with the practical applications of innovation seem better capable of teaching business students how to be successful. Finally, courses that have a strong, real-life component such as

projects, simulations, and externships, will help students learn innovative practice while still receiving the benefits of the academic environment (e.g., feedback, mentoring, etc.).

Based on a cursory review of different curricula, it seems as though an increasing number of schools are recognizing the importance of blending theory with practice in an occupational context. While we have not seen a complete paradigm shift in academia, the need to create effective practitioners through academic channels is being recognized as evidenced by the increase in the number of practically-oriented degree programs or the addition of practical components to what once were only theoretically based courses. But, to date, neither the ACBSP nor AACSB have required innovation to be a component of a business education. One must wonder if at some point accreditation criteria may drive this change. Prior research has shown that education, while not cited as the most critical factor for successful entrepreneurship, was evaluated highly by people from many different countries (Arthur, Hisrich, & Cabrera 2012). Given the established connection between innovation and entrepreneurship, one could conclude that just as education is critical to successful entrepreneurship, it would extend to successful individual and/or organizational performance as well.

Some limitations to this research do exist. Only courses with the word “innovation” in the title were included in the search. The authors acknowledge that this may have eliminated some courses with innovation components. For example, courses titled “Creativity and Entrepreneurship” would have been excluded, yet the course description likely used the word innovation multiple times. In addition, this research is by no means an exhaustive search or an empirical piece and only serves to stimulate discussion on the importance of developing innovative (and creative) skills in students, for the sake of having those skills and applying them in the workplace; divorced from venture creation and entrepreneurship intentions.

We strive to make the point that there should be a strong relationship between university courses and the needs of the workplace and that universities should offer courses in innovation for all business students. This research calls for further study to address the following questions:

- What specifically is the relationship between university courses in innovation and creativity with individual and organizational success in the workplace?
- What is the relationship between these university courses and organizational performance?
- Are all students equally capable of learning how to be innovative?

- Should some students be steered toward these courses? Should some be discouraged from these courses? Should there be a qualifying examination prior to taking courses?
- Alternatively, should all students be required to take experientially oriented creativity and innovation courses in order to encourage development and performance?
- Does an organization's innovation potential have more to do with its culture or how its workers were educated in creativity and innovation? Or do the two interface?

There appears to be a void in the empirical literature discussing the effectiveness of specific programs and a longitudinal study would be required to determine what type of courses (theoretical, practical, blended) best stimulate innovative activity.

9. Conclusion

University education is changing, due to technology, globalization, and the need for a workforce capable of effective thinking, problem solving, and innovation. Educational practice needs to not only keep up, but be proactive in meeting workforce needs. This research contributes to the discussion on innovation, creativity, and the role of the university in creating effective and successful workers with critical and necessary skills. In addition, this paper provides an argument for the need to blend innovation theory with practice and create experiential, participative courses to ensure that students are prepared for the real-life challenges facing today's globally competitive organizations. Finally, this paper asks the question as to whether or not accreditation bodies should include innovation as a new MBA-like curricular category to add the traditional list of marketing, economics, finance, management, etc. It seems undeniable that innovation is important to organizations and the role of the university is to prepare students for the demands of industry. The question remains; are universities prepared to include innovation as a core construct of a business education to enable our future workforce? This research is presented with the intention of beginning that discussion.

References:

- Aguinis, H. & Cascio, W. F. (2008), "Narrowing the Science-Practice Divide: A Call to Action", *The Industrial-Organizational Psychologist*, 46(2): pp. 27.
- Amabile, T. M. (1996), *Creativity in Context: Update to the Social Psychology of Creativity*, Boulder, CO: Westview Press.
- Amabile, T. M. (1998), *How to Kill Creativity* (pp. 77-87), Harvard Business School Publishing.
- Anderson, N., Potonik, K., & Zhou, J. (2014), "Innovation and Creativity in Organizations A State-of-the-Science Review, Prospective Commentary, and Guiding Framework", *Journal of Management*, 40(5): pp. 1297-1333.
- Arthur, S. J., Hisrich, R. D., & Cabrera, Á. (2012), "The Importance of Education in the Entrepreneurial Process: A World View", *Journal of Small Business and Enterprise Development*, 19(3): pp. 500-514.
- Bartunek, J. M. (2007), "Academic-Practitioner Collaboration Need Not Require Joint or Relevant Research: Toward a Relational Scholarship of Integration", *Academy of Management Journal*, 50(6): pp. 1323-1333.
- Bharadwaj, S. & Menon, A., (2000), "Making Innovation Happen in Organizations: Individual Creativity Mechanisms, Organizational Creativity Mechanisms or Both?" *Journal of Product Innovation Management*, 17(6), pp.424-434.
- Birnik, A. & Billsberry, J. (2008), "Reorienting the Business School Agenda: The Case for Relevance, Rigor, and Righteousness", *Journal of Business Ethics*, 82(4): pp. 985-999. doi:10.1007/s10551-007-9607-x
- Bowen, F. E., Rostami, M., & Steel, P. (2010), "Timing is Everything: A Meta-Analysis of the Relationships Between Organizational Performance and Innovation", *Journal of Business Research*, 63(11): pp. 1179-1185.
- Bowen Jr., J. J. (2007), "Closing the Gap", *Financial Planning*, 37(12): pp. 33-34.
- Brennan, A. & Dooley, L., (2005), "Networked Creativity: A Structured Management Framework for Stimulating Innovation", *Technovation*, 25(12), pp. 1388-1399.
- Broberg, T. & Krull, P. (2010), "Where Creativity and Innovation Go To School", *Journal of Corporate Citizenship*, 39: pp. 57-86.
- Brockner, J., Higgins, E. T. & Low, M. B. (2004), "Regulatory Focus Theory and the Entrepreneurial Process", *Journal of Business Venturing*, 19(2), pp. 203-220.
- Bunce, D. & West, M. A. (1995), "Self-Perceptions and Perceptions of Group Climate as Predictors of Individual Innovation at Work", *Applied Psychology: An International Review*, 44: pp. 199-215.
- Cetina, K. K. (1991), "Merton's Sociology of Science: The First and the Last Sociology of Science", *Contemporary Sociology*, 20(4): pp. 522-526.
- Chirumbolo, A., Mannetti, L., Pierro, A., Areni, A., & Kruglanski, A. W. (2005), "Motivated Closed-Mindedness and Creativity in Small Groups", *Small Group Research*, 36(1): pp. 59-82. doi:10.1177/1046496404268535
- Çokpekin, Ö. and Knudsen, M.P. (2012), "Does Organizing for Creativity Really Lead to Innovation?" *Creativity and Innovation Management*, 21(3): pp. 304-314.
- Cohen, D. J. (2007), "The Very Separate Worlds of Academic and Practitioner Publications in Human Resource Management: Reasons for the Divide and Concrete Solutions for Bridging the Gap", *Academy of Management Journal*, 50(5): pp. 1013-1019.
- Cohen, H. B. (1998), "The Performance Paradox", *Academy of Management Executive*, 12(3): pp. 30-40.
- Crossan, M. M. & Apaydin, M. (2010), "A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature", *Journal of Management Studies*, 47(6): pp. 1154-1191.
- Dewar, R. D. & Dutton, J. E. (1986), "The Adoption of Radical and Incremental Innovations: An Empirical Analysis", *Management Science*, 32 (11): pp. 1422-1433.
- Dipboye, R. L. (2007), "Eight Outrageous Statements about HR Science", *Human Resource Management Review*, 17(2): pp. 96-106.
- Dyer, J. H., Gregersen, H. B., & Christensen, C. M. (2009), "The Innovator's DNA", *Harvard Business Review*, 87(12): pp. 60-67.

- Egan, T. M., (2005), "Factors Influencing Individual Creativity in the Workplace: An Examination of Quantitative Empirical Research", *Advances in Developing Human Resources*, 7(2), pp. 160-181.
- Ettlie, J. E. & E. M. Reza. (1992), "Organizational Integration and Process", *Academy of Management Journal* 35 (4): pp. 795-827.
- Farid, F., El-Sharkawy, A. R. & Austin, L.K., (1993), "Managing for Creativity and Innovation in A/E/C Organizations", *Journal of Management in Engineering*, 9(4), pp. 399-409.
- Fendt, J., Kaminska-Labbé, R., & Sachs, W. M. (2008), "Producing and Socializing Relevant Management Knowledge: Re-Turn to Pragmatism", *European Business Review*, 20(6): pp. 471. doi:10.1108/09555340810913502
- Friedrich, T. L., Mumford, M. D., Vessey, B., Beeler, C. K., & Eubanks, D. L. (2010), "Leading for Innovation: Reevaluating Leader Influences on Innovation with Regard to Innovation Type and Complexity", *International Studies of Management & Organization*, 40(2): pp. 6-29. doi:10.2753/IMO0020-8825400201
- Garcia, R. & Calantone, R. (2002), "A Critical Look at Technological Innovation Typology and Innovativeness Terminology: A Literature Review", *Journal of Product Innovation Management*, 19(2): pp. 110-132.
- Gong, Y., Zhou, J., & Chang, S. (2013), "Core Knowledge Employee Creativity and Firm Performance: The Moderating Role of Riskiness Orientation, Firm Size, and Realized Absorptive Capacity", *Personnel Psychology*, 66(2): pp. 443-482.
- Georgsdottir, A. S. & Getz, I., (2004), "How Flexibility Facilitates Innovation and Ways to Manage It in Organizations", *Creativity and Innovation Management*, 13(3), pp. 166-175.
- Gopalakrishnan, S., P. Bierly, & E. H. Kessler (1999), "A Re-Examination of Product and Process Innovations Using a Knowledge-Based View", *Journal of High Technology Management Research* 10(1): pp. 147-166.
- Gupta, P. B., Saunders, P. M., & Smith, J. (2007), "Traditional Master of Business Administration (MBA) versus the MBA with Specialization: A Disconnection Between What Business Schools Offer and What Employers Seek", *Journal of Education for Business*, 82(6): pp. 307-312.
- Hofstede, G. (1983), "The Cultural Relativity of Organizational Practices and Theories", *Journal of International Business Studies*, 14(2), Special Issue on Cross-Cultural Management, pp. 75-89.
- Hollenbeck, J. R., DeRue, D. S., & Guzzo, R. (2004), "Bridging the Gap Between I/O Research and HR Practice: Improving Team Composition, Team Training, and Team Task Design", *Human Resource Management*, 43(4): pp. 353-366.
- Horan, R. (2009), "The Neuropsychological Connection Between Creativity and Meditation", *Creativity Research Journal*, 21(2), pp. 199-222. doi:10.1080/10400410902858691
- Janssen, O., Van de Vliert, E., & West, M. (2004), "The Bright and Dark Sides of Individual and Group Innovation: A Special Issue Introduction", *Journal of Organizational Behavior*, 25: pp. 129-145.
- Javidan, Dorfman, P., De Luque, M., & House, R. (2006), "In the Eye of the Beholder: Cross Cultural Lessons in Leadership from Project GLOBE", *Academy of Management Perspectives*, 20(1): pp. 67-90.
- Kéri, S. (2009), "Genes for Psychosis and Creativity: A Promoter Polymorphism of the Neuregulin 1 Gene Is Related to Creativity in People with High Intellectual Achievement", *Psychological Science* (Wiley-Blackwell), 20(9): pp. 1070-1073. doi:10.1111/j.1467-9280.2009.02398.
- Khazanchi, S., Lewis, M.W. & Boyer, K.K. (2007), "Innovation-Supportive Culture: The Impact of Organizational Values on Process Innovation", *Journal of Operations Management*, 25(4), pp. 871-884.
- Knapp, A. T. (2003), *Intergenerational Transmission of Creativity: Interrelations of Parent Creativity, Child Creativity, and Home Environment*. (Unpublished Master of Science). University of Georgia, Athens, GA.
- Knudson, W., Wysocki, A., Champagne, J., & Peterson, H. C. (2004), "Entrepreneurship and Innovation In The Agri-Food System", *American Journal of Agricultural Economics*, 86(5): pp. 1330-1336. doi:10.1111/j.0002-9092.2004.00685.x

- Ko, S. (2008), "Do Thinking Styles of Entrepreneurs Matter in Innovation?" *Journal of Global Business & Technology*, 4(2): pp. 24-33.
- Koellinger, P. (2008), "Why Are Some Entrepreneurs More Innovative Than Others?" *Small Business Economics*, 31(1): pp. 21-37. doi:10.1007/s11187-008-9107-0
- Korn, M. (2012, May 23). "Careers: B-Schools' Innovation Rush", *Wall Street Journal*. Retrieved from <http://search.proquest.com.ezproxy.libproxy.db.erau.edu/docview/1015229924?accountid=27203>
- Lee, C. & Benza, R. (2015), "Teaching Innovation Skills: Application of Design Thinking in a Graduate Marketing Course", *Business Education Innovation Journal*, 7(1).
- Li, H. & Atuahene-Gima, K. (2001), "Product Innovation Strategy and the Performance of New Technology Ventures in China", *Academy of Management Journal*, 44(6): pp. 1123-1134.
- Liberman, N., Idson, L. C., Camacho, C. J., & Higgins, E. T. (1999), "Promotion and Prevention Choices Between Stability and Change", *Journal of Personality and Social Psychology*, 77(6): pp. 1135-1145. doi:10.1037/0022-3514.77.6.1135
- McDaniel, B. A. (2005), "A contemporary View of Joseph A. Schumpeter's Theory of the Entrepreneur", *Journal of Economic Issues (Association for Evolutionary Economics)* 39(2): pp. 485-489.
- McNatt, B., Glassman, M., & Glassman, A. (2010), "The Great Academic-Practitioner Divide; A Tale of Two Paradigms", *Global Education Journal*, ?(3): pp. 6-22.
- Mirela, B. (2008), "Innovation - The Characteristic Tool of Entrepreneurs", *Annals of the University of Oradea, Economic Science Series*, 17(4): pp. 135-138.
- Morphew, C. C. & Hartley, M., (2006), "Mission Statements: A Thematic Analysis of Rhetoric Across Institutional Type", *The Journal of Higher Education*, 77(3): pp. 456-471.
- Mumford, M. D. (2000), "Managing Creative People: Strategies and Tactics for innovation", *Human Resource Management Review*, 10(3): pp. 313-351.
- Munton, A. G. & West, M. A. (1995), "Innovations and Personal Change: Patterns of Adjustment to Relocation", *Journal of Organizational Behavior*, 16: pp. 363-375.
- Mustar, P. (2009), "Technology Management Education: Innovation and Entrepreneurship at MINES ParisTech, a Leading French Engineering School", *Academy of Management Learning & Education*, 8(3), pp. 418-425.
- Oldham, G. R. & Cummings, A. (1996), "Employee Creativity: Personal and Contextual Factors at Work", *Academy of Management Journal*, 39: pp. 607-634.
- Palmer, T. B. & Short, J. C. (2008), "Mission Statements in US Colleges of Business: An Empirical Examination of Their Content with Linkages to Configurations and Performance", *Academy of Management Learning & Education*, 7(4), pp. 454-470.
- Pfeffer, J. & Fong, C. T. (2002), "The End of Business Schools? Less Success Than Meets the Eye", *Academy of Management Learning & Education*, 1(1): pp. 78-95.
- Pfeffer, J. & Sutton, R. I. (2013), *The knowing-Doing Gap: How Smart Companies Turn Knowledge into Action*, Harvard Business Press.
- Rickards, T. (1996), "The management of Innovation: Recasting the Role of Creativity", *European Journal of Work and Organizational Psychology*, 5(1): pp. 13-27.
- Robinson, K. (2006), "How Schools Kill Creativity. Ted Talks". Retrieved from: http://www.ted.com/speakers/sir_ken_robinson
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011), "Is Innovation Always Beneficial? A Meta-Analysis of the Relationship Between Innovation and Performance in SMEs", *Journal of Business Venturing*, 26(4): pp. 441-457.
- Rousseau, D. M. & McCarthy, S. (2007), "Educating Managers from an Evidence-Based Perspective", *Academy of Management Learning & Education*, 6(1): pp. 84-101.
- Rubin, R. S. & Dierdorff, E. C. (2009), "How Relevant Is the MBA? Assessing the Alignment of Required Curricula and Required Managerial Competencies", *Academy of Management Learning & Education*, 8(2): pp. 208-224.
- Rynes, S. L., Brown, K. G., & Colbert, A. E. (2002), "Seven Common Misconceptions about Human Resource Practices: Research Findings versus Practitioner Beliefs", *Academy of Management Executive*, 16(3): pp. 92-103.
- Sackett, P. R. & Larson, J. R., Jr. (1990), "Research Strategies and Tactics in Industrial and Organizational Psychology". In L. M. Hough (Ed.), *Handbook of Industrial and*

- Organizational Psychology*, vol. 1 (2nd ed.)(pp. 419-489). Palo Alto, CA US: Consulting Psychologists Press.
- Sawhney, M., Wolcott, R., & Arroniz, I. (2006), "The 12 Different Ways for Companies to Innovate", *MIT Sloan Management Review*, 47(3): p. 75.
- Sherman, H. (2009), "Improving the Relevance of University Business Schools: Refocusing on Providing Professional Business Education", *American Journal of Business*, 24(1): pp. 3-6.
- Susman, G. I. & Evered, R. D. (1978), "An Assessment of the Scientific Merits of Action Research", *Administrative Science Quarterly*, 23(4): pp. 582-603.
- Tellis, G. J., Prabhu, J. C., & Chandy, R. K. (2009), "Radical Innovation Across Nations: The Preeminence of Corporate Culture", *Journal of Marketing*, 73(1): pp. 3-23.
- Thursby, M. C., Fuller, A. W., & Thursby, J. (2009), "An Integrated Approach to Educating Professionals for Careers in Innovation", *Academy of Management Learning & Education*, 8(3): pp. 389-405.
- Vandervert, L. R., Schimpf, P. H., & Liu, H. (2007), "How Working Memory and the Cerebellum Collaborate to Produce Creativity and Innovation", *Creativity Research Journal*, 19(1): pp. 1-18. doi:10.1080/10400410701277043
- West, M. A. & Farr, J. L., (1990), "Innovation and Creativity at Work: Psychology and Organizational Strategies", ???
- Woodman, R. W., Sawyer, J. E. & Griffin, R. W. (1993), "Toward a Theory of Organizational Creativity", *Academy of management review*, 18(2): pp. 293-321.
- Zeleny, M. (2008), "Strategy and Strategic Action in the Global Era: Overcoming the Knowing-Doing Gap", *International Journal of Technology Management*, 43(1-3): pp. 64-75. doi:10.1504/IJTM.2008.019407

Appendix A: List of Schools Reviewed

AACSB	ACBSP
Adelphi University Alfred University American University of Beirut Arizona State University Appalachian State University Auburn University Bowling Green State University Case Western Reserve University Clark University Middle Tennessee State University Indian School of Business INSEAD Ithaca College Kent State University James Madison University Kutztown University Marist College Old Dominion University University of Richmond The University of TN at Knoxville The University of Chicago Vanderbilt University Villanova University Virginia Commonwealth University Washington and Lee University	Alabama State University American Intercontinental University American University of Kuwait Ashford University Athens State University Bethune-Cookman University Brenau University Chicago State University Colorado Technical University Cumberland University Embry-Riddle Aeronautical University – Daytona Beach campus Ferris State University Freed-Hardeman University Kentucky State University Lincoln Memorial University Lee University Lipscomb University Millikin University Neumann University Northern Arizona University Oakwood University Queens University of Charlotte Slippery Rock University The University of West Alabama Walla Walla University