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MOTIVATING FACULTY ENGAGEMENT IN ASSURANCE OF LEARNING USING THE JOB CHARACTERISTICS MODEL

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ABSTRACT

This paper addresses the significant issue of low-level faculty engagement/participation in the assessment process by advocating the employment of self-managed work teams and integrating detailed motivational elements in the design of assurance of learning plans. Specifically, this article illustrates how each of the five motivational components from Hackman & Oldham's Job Characteristics Model (1974) can be utilized in the design/redesign of a college's assurance of learning process and attend to the issue of social loafing. Numerous prescriptive actions illustrating how the authors applied the motivational theory are presented to serve as a reference to other institutions as they too seek to improve the quality of their assurance of learning outcomes.

JEL: I20, I21

KEYWORDS: Assurance of Learning, Faculty Engagement, Job Characteristics Model, Job Redesign, Social Loafing

INTRODUCTION

University faculty often pride themselves on the practical application of theories and concepts discussed in their courses to the "real world." However, at times university faculty also fail to practice what they preach. Furthermore, there can also be found in academia apart from faculty a disconnect between what is professed to students in their classrooms and what is practiced within their own institutions. Yet, the very same theories advocated for use in organizations and the workplace also have utility in academia as colleges and universities wrestle with similar issues of increased quality, productivity, and compliance to standards. Examples of this dichotomy within academia can be seen in the manner that universities respond to the increasing demands of accreditation standards that continue to evolve over time. As universities and their faculty often grapple with multiple accreditation bodies, each with their own expectations and standards, it stands to reason that theories and concepts developed to motivate and lead members of organizations would prove extremely relevant to support them as they navigate through these often complex standards, especially those related to assessment/assurance of learning (AOL) processes. Unfortunately, it is the authors' experience that many university AOL processes to address these detailed accreditation standards often develop on an ad hoc basis with little deliberate planning, and therefore little application of the industrial psychology/organizational behavior theories advocated in their classes.

The evolving expectations and standards of accreditation require increased involvement of faculty. Colleges (and universities in general) are having to obligate their faculty to have broader participation in the diverse activities of the accreditation process, especially those activities related to AOL. These

faculty (particularly those outside of Colleges of Education) now find themselves involved in additional activities that are often foreign/new to them (e.g., developing rubrics, creating assessment instruments, conducting assessments in courses). The task of motivating a skeptical or even resistant faculty to take on these increased AOL responsibilities (or "unfunded mandates") is often difficult when such duties are simply added to teaching, research and existing service requirements (Purinton and Alexander, 2013).

Like many universities, the original assurance of learning process within the authors' college evolved primarily in response to the need to meet accreditation deadlines rather than deliberate design. It was largely a centralized process with decisions made in a top-down manner by a select few faculty who served as members of a college AOL committee. This resulted in the remaining faculty having a small number of relatively tedious tasks (e.g., administering tests in their classes) or having a low involvement in hearing assessment results at college-wide AOL meetings. In addition, the general attitude among faculty was that assessment offered no positive outcomes for students, but was instead something that administrators needed to do in order to check a box and wasted the time of faculty. Despite the efforts of well-intentioned AOL committee members, the process resulted in a disengaged, unmotivated faculty who saw little value in assessment efforts. Resultant frustrations of the administration and the AOL committee members prompted a redesign of the job of assessment.

Faced with the task of fundamentally redesigning the AOL process within their college to meet multiple accreditation agencies' standards, the authors quickly realized the need to motivate their fellow faculty and have them become more actively engaged than they had been previously. When considering how to motivate their colleagues, the authors recalled their organizational behavior educational backgrounds and designed an AOL process that applied the specific five major components of the time-honored and accepted job characteristics model (Hackman and Oldham 1976). The results of this new motivational design were immediately apparent in the quantity and quality levels of participation by the faculty.

Thus it is the hope of the authors that they may share their collective experiences with specific motivational elements of their redesigned and job characteristics model-inspired AOL process. As so many colleges are facing similar participation/engagement challenges of their own, this paper begins with a literature review of the task of job redesign and an overview of the job characteristics model. The paper then highlights the challenges of social loafing and advances numerous prescriptive actions with examples for each of the five major components of the motivational theory to serve as a guide and spur consideration for similar actions in the design of other AOL processes.

LITERATURE REVIEW

The authors realized that any attempt at significantly improving their existing AOL process would involve a comprehensive redesign of not only the assessment process (e.g., how, when and where to assess specific learning goals), but more importantly (for a motivational and engagement perspective) the jobs and tasks to be completed by the faculty. Job design (also task or work design) is the way that tasks are combined to form complete jobs while job redesign focuses on restructuring existing jobs (Robbins, 1998). Numerous studies on job redesign have indicated that it can significantly improve job satisfaction, employee motivation and productivity, and the quality of products (i.e., Ford, 1969; Lawler, 1973; Maher, 1971; Myers, 1970; Vroom 1964, Casey and Robbins, 2010). Wishing to obtain similar results with their AOL process, the authors selected as the basis for their job redesign the most widely cited and influential model in the work design literature, the Job Characteristics Model (JCM) advanced by Hackman and Oldham (1976). Because the JCM focuses on worker behavior or the job itself, it is primarily considered an intrinsic process motivation theory (Leonard, Beauvais and Scholl, 1999). Process theories of motivation are concerned with the cognitive processes individuals use in making decisions and choices about work (Schultz and Schultz, 1998).

The JCM suggests that objective job characteristics are filtered through an employee's perceptions to result in psychological states that determine affective (e.g., internal motivation, job satisfaction) and behavioral (e.g., work effectiveness, work performance) responses or outcomes. In sum, Hackman and Oldham's (1975) model suggests that the overall potential of any job to motivate employees may be determined through the combination of five job characteristics (or dimensions) into a single index.

Meta-analyses (Fried and Ferris, 1987; Humphrey, Nahrgang and Morgeson 2007) seem to strongly support the use of the JCM in job redesign with all five job characteristics from the index found to be strongly related to job satisfaction, internal work motivation, and growth satisfaction. Briefly, the five job characteristics are skill/task variety, task identity, task significance, autonomy, and feedback. Skill/task variety reflects the breadth of skills and talent used to perform a variety of activities found in a job. Task identity of a job is the extent to which a job involves the completion of a whole identifiable piece of work that has a beginning and an end with tangible outcomes. Task significance of a job refers to the degree to which the job is perceived by the individual to be important and has a significant impact on others (either within or outside of the organization). Autonomy is the degree to which the job provides substantial freedom, independence, and discretion to the worker in scheduling work and in determining the procedures to be used. Finally, feedback is the extent to which carrying out the job's required work activities results in the worker receiving direct and clear information about the effectiveness of their performance. The presence and relative strengths of these five job characteristics are thought to trigger critical psychological states (CPS) in workers which are ultimately related to personal and work outcomes such as employee motivation, job satisfaction, and performance (Debnath, Tandon and Pointer, 2007).

The first CPS, experienced meaningfulness of the work, is a result of the first three characteristics from the JCM. Experienced meaningfulness indicates how work can take on personal meaning and/or how the work accomplishes something. Additionally, the individual must experience the work as being generally important, valuable and worthwhile. The second CPS is drawn from the JCM characteristic of autonomy. This CPS promotes the freedom to determine the process and timing of tasks needed to complete the work and personal responsibility for work outcomes. Finally, the JCM feedback dimension contributes to the CPS of knowledge of actual results. This CPS is determined by how well it provides the employee an understanding of their performance effectiveness. The relationships between job characteristics, CPS, and work outcomes put forward by the JCM (see Table 1) have generally been supported by a large number of empirical studies (Treville and Antonakis, 2006; Lee-Ross, 1998, 2002; Johns, Xie and Fang, 1992; Hogan and Martell, 1987; Glick, Jenkins and Gupta, 1986; Loher, Noe, Moeller and Fitzgerald, 1985). Thus, the JCM has been demonstrated to be an effective tool in both planning and implementing changes in the design of work.

Table 1: JCM – Job Characteristics → Critical Psychological States → Work Outcomes

Types of Job Characteristics	Critical Psychological States	Examples of Work Related Outcomes
Skill Variety Task Identity Task Significance	Meaningfulness of Work	Employee Motivation Job Satisfaction Increased Job Performance Reduced Turnover Reduced Absenteeism
Autonomy	Freedom to Determine the Process & Timing of Tasks	
Feedback	Knowledge of Results	

This table illustrates the relationship between the Job Characteristics Model's five elements with the critical psychological states they generate which lead to specific work-related outcomes.

Response to Social Loafing

Before attempting to apply the concepts of the JCM at their institution, the authors realized the need to first address the lack of faculty engagement and performance that was attributed to what is termed "social loafing." Social loafing can be defined as the tendency for individuals to decrease their efforts when they work in groups rather than individually (Latane, Williams and Harkins, 1979) and has been found to occur in a diverse set of locations and activities (Earley, 1989; Harkins, Latane and Williams, 1980). Some individuals engage in social loafing for they feel they can "hide in the crowd" (Latane, Williams and Harkins, 1979) because their contributions are not individually recognized and thus realize that they likely will not be singled out for either credit or blame. Other group members engage in social loafing as a result of the "sucker effect" (Orbell and Dawes, 1981) in which they fear that others in the group may free-ride off of their efforts. Regardless of motive, research suggests that social loafing is more likely to occur the larger the size of the group (Agggarwal and O'Brien, 2008). This description of social loafing provides a reasonable explanation of the effects the structure and size of the assessment committees and college-wide meetings had on low faculty involvement and the need to restructure the AOL process.

The authors' new AOL process first set out to attack social loafing head-on through the development of a new structure based on the concept of self-managed work teams (SMWT). Known by a variety of names (self-maintaining, self-leading, self-regulating work teams), SMWT are defined by Attaran and Nguyen (1999, p. 24) as "groups of employees who are responsible for a complete, self-contained package of responsibilities that relate either to the final product or an ongoing process." Applied to the authors' AOL process, the SMWT were called Discipline Curriculum Teams (DCTs). The DCTs were designed so that the majority of the AOL decisions and tasks were decentralized and undertaken by the college's entire faculty. More specifically, all faculty in one discipline (by discipline and not necessarily by department, e.g., Department of Accounting and Finance) would constitute a Discipline Curriculum Team (DCT), which would be responsible for the majority of the tasks associated with assessing their majors. The resultant AOL plan thus sought to engage the faculty by making them responsible for more of the tasks associated with assessing students enrolled in their programs and for proper design and administration of the AOL process.

Implementation of JCM

The second part of the plan involved changing the AOL process in concert with the newly formed DCTs so that more responsibility and authority over the process would reside with the DCTs. To this end, the Job Characteristics Model (JCM) was used as a framework to guide the development of the tasks and responsibilities. In the sections that follow, the authors provide a brief background on each of the five components to the JCM, the college's specific efforts to redesign the AOL process, and how the new design applied key concepts from the Job Characteristics theory.

Skill or Task Variety

Skill variety is the extent to which a job utilizes and challenges the worker's skills and abilities. In reviewing the empirical results of both experimental and laboratory studies of cognitively based models, it can be argued that skill variety is perhaps the most important of the three characteristics, which comprise the meaningfulness of work CPS (see Figure 1) by having the strongest correlates with a variety of attitudinal outcomes (Dodd and Ganster, 1996). Some suggest this is due to the mediating effects of work engagement on the job design-performance relationship (Shantz, Alfes, Truss and Soane, 2013). Others propose that workers whose required skills and tasks are varied, are more likely to feel challenged by their work, believe that their work is interesting (Morgeson and Humprey, 2006) and motivational (Ryan and Deci, 2000). Furthermore, additional research suggests that to improve worker perceptions of skill/task variety, that jobs must be both enlarged and enriched (Malloney and McFillen, 1995). It is

natural to conclude that by increasing the levels of job enlargement and enrichment, that workers would more likely become more engaged in their jobs. Understanding the importance of skill variety to the JCM and to influencing desirable behavioral outcomes, the authors' revised AOL process deliberately set out to engage the faculty through increased job enlargement and enrichment.

By placing the responsibilities for the generation of all the components of AOL down to each of the DCTs, the skill variety component of the JCM was immediately increased in all the college's faculty. Each DCT was given the individualized task of designing, implementing, and evaluating a discipline-specific AOL process that would be integrated and aggregated into the college's overall plan. Faculty went from simply carrying out trivial tasks and listening to the results of assessments to undertaking all of the more challenging and significant tasks required of developing and executing an AOL plan. Skill/task variety was thus immediately increased as the job was enlarged for all faculty.

Task Identity

Task identity refers to the idea that people will feel a greater sense of meaning in their work if they can participate in and complete an entire process that is part of their job, including seeing the outcome of their work (Hackman and Oldham, 1974). With a greater sense of meaning, people will have an increased motivation to perform the assigned tasks (Choge, Chepkiyeng and Chelimo, 2014). While being able to identify with a task alone has been shown to have a positive effect on the meaningfulness of work, the capability to change or craft a job allows for employees to provide meaningful input to the tasks that they are assigned to do such that the task itself can be altered. As a result, employees have the ability to craft their own work, which has been shown to increase the meaningfulness of work (Wrzesniewki and Dutton, 2001). Additional studies have shown that task identity has a moderating effect on the concentration and enjoyment of employees using computers in the workplace and that job characteristics, including task identity, interact with personality traits to increase the meaningfulness of work (Ghani and Deshpande, 1994; Barrick, Mount and Li, 2013).

While research does indicate benefits for employees who are able to identify with their tasks, this concept was severely lacking in the original design of the AOL process. Faculty that were part of the initial committee had input to the various parts of the process, but there was very little ownership because most of the responsibility of the tasks of the committee fell to the chair of the committee and a select few others. Most other faculty would typically be involved only at college-wide assessment meetings where information about the process as well as results were disseminated. A very limited number of faculty would actually participate in the generation of assessment instruments with only a handful of others conducting the assessments in their AOL-designated classes. In sum, these faculty felt much removed from the overall AOL process. As previously stated, this resulted in a generally unmotivated faculty who saw little value in assessment efforts as well as frustration from the AOL committee members and administration. The much-needed redesign of the original plan had a very positive impact on the overall AOL process outcomes and on the faculty. In the new process, all faculty are responsible for every aspect of their DCT's assessment process. This has allowed faculty to gain a sense of ownership in what is being accomplished. More specifically, all faculty now participate from the determination of learning goals and outcomes to the analyzing of assessment results, including the corrective actions of making curricular or pedagogical actions to improve student learning where needed (i.e., closing the loop). As a result, faculty now participate in the vast majority of the assessment tasks performed in the college and have gained a newfound understanding and identification with the whole AOL process. This has led to many discussions in meetings about the very things that accrediting bodies are seeking for faculty to talk about to enhance student learning. In short, the discussions that now take place are centered on improving the AOL process and increasing student learning whereas before they were centered on doing the minimum in order for faculty to move on to what really mattered to them.

Task Significance

The construct of task significance attempts to capture the extent to which employees believe their work will affect the lives and well-being of others (Hackman and Oldham, 1974). Employees who believe that the work that they do has a meaningful impact on others will have a greater degree of motivation to perform the tasks associated with the job. Conversely, as the authors' encountered in the prior AOL process, employees who don't see where their efforts provide any positive impact on others will be less motivated to perform the tasks associated with their job. Research supports the role task significance plays in employee motivation. In a series of experiments, Grant (2008) found that fundraisers who "received a task significance intervention," raised significantly more funds than those who had not. Additionally, those fundraisers beat their own previous records. Additional research has shown that employees whose job has a high level of task significance are more engaged and perform more organizational citizenship behaviors (Shantz, Alfes, Truss, and Soane, 2013).

The faculty saw little in the original AOL design related to the construct of task significance. First, the assessments were administered in a handful of upper-level "catch-all" classes. These assessments were designed (with some exceptions) and graded by the instructor of record in which the assessments were administered. Second, the results of assessments for all college of business majors were provided in aggregate to faculty in college-wide meetings and emails. Though responsible for analyzing assessment outcomes and making recommendations to close the loop, faculty not directly involved in the courses felt isolated from the assessment and its outcomes. In addition, the assessment results felt impersonal and seemed to treat students as a number. The original AOL design unintentionally created a silo effect, in which the faculty saw little utility or significance in the tasks they were asked to perform.

The redesigned process helped faculty feel a stronger connection to the assessments, the results, and what the results reflected about what the students had learned and/or retained. Though the administration of the assessments remained in only a handful of upper-level classes, through the use of discipline-based smaller teams (the DCTs), groups of faculty were for the first time asked to develop their own assessment instruments that they felt were most reflective of what students should be expected to know upon graduation. Because faculty naturally feel a strong connection to and sense of responsibility for their own students/majors, this redesign greatly enhanced their feelings of the significance of the AOL tasks.

Another element of the redesign impacting task significance was a shift in responsibility for assessing/grading the students' assessments (e.g., evaluating student responses and performances against faculty-designed rubrics). This was similarly delegated to faculty within each discipline. Granted, the faculty were initially not eager to add additional grading/assessing to their list of job duties, they did recognize the value of seeing personally how "their" students performed on the assessment instruments they developed using faculty designed rubrics. Furthermore, because faculty completed this grading task as a team, it stimulated conversations about how each faculty member can reinforce or improve student success on each learning goal, all of which helped faculty feel that the additional work was more significant and worthwhile.

Autonomy

Autonomy refers to the degree to which employees are empowered to use their own discretion in determining how to complete their work and, to some degree, the timing of completion as well. By having the capability to control how, as well as when, a job is completed; employees have a greater sense of empowerment, which results in an increase in their feelings of responsibility for job outcomes and an increase in motivation to be more meaningfully involved in their job (Oldham and Hackman, 2010). This theory is supported by a study of nurses where it was found that those who have a strong desire for

autonomy have more enriching jobs than those who do not, thus a different leadership approach is needed for the different desires for autonomy (Landeweerd and Boumans, 1994).

In the previous AOL process, there was little to no autonomy for general faculty because the locus of control was at the college committee level. The centrality of the authority was designed to provide structure and leadership to meet the immanent accreditation needs of the college while at the same time providing a limited means for faculty to be involved in the process. This limited involvement was hoped to generate a high-quality input from faculty; however, when the general faculty would participate in meetings where they had the capability to interject changes to improve student learning, most chose not to do so. This was partly because of their limited role and lack of being able to provide meaningful input to the process apart from college-wide meetings, just the opposite of the original intentions.

The construct of autonomy was one of the more significant changes in the new AOL process. The new design enhanced the autonomy of faculty in the AOL process by decoupling many of the tasks that were being done by the college-wide committee and instead empowering each DCT with the authority and responsibility to complete these tasks. These tasks involved nearly all aspects of the process development, implementation and evaluation. Furthermore, because each DCT is composed of faculty in a certain discipline, this increase in autonomy allowed these faculty to identify knowledge and skills that were most important for the students that had chosen to major in their field of study. Therefore, faculty members felt less constrained by "general college" knowledge and skills and now had a mechanism that encouraged them to tailor their assessment plans considering their majors/students.

The faculty were empowered through the autonomy of the new DCT structure in a number of areas throughout the AOL process. Two of these areas related to changes leading up to the assessing of students while two areas related to post-assessment changes. One major change leading up to the assessment of students was that the curriculum of each major was "audited" by their DCT rather than a college committee or administrator. Specifically, each DCT was given the task of evaluating their course offerings independently concerning how each course may/may not address any of the college's learning goals. Each DCT was entrusted to determine not only in which courses learning goals were covered, but also whether said coverage was adequate or whether additional measures needed to be taken. Another major change was that faculty were given the discretion to determine the types (e.g., case studies, spread sheet analysis, knowledge exams) and specific designs of instruments (e.g., selecting and writing the test questions, case studies, etc…) to be used to assess their majors and content areas for the college-wide assessments. Thus the faculty teaching the courses in each discipline were given the task of determining the most salient concepts that students should learn and devising the best mechanisms to gauge student retention of said concepts.

Significant post-assessment changes included enabling faculty to assess/grade student responses to the various instruments related to each learning goal. Thus the faculty, who are the most qualified (by discipline) and responsible for students attaining this specific knowledge, were given the autonomy to compare student responses to each learning goal rubric to determine their acceptability. Rather than have a committee or administration report to each discipline student results, the process was reversed by giving the faculty of each discipline the freedom to evaluate and determine how the college's students were retaining course content. Additionally, perhaps the most important task of an AOL process was delegated to the faculty by having each DCT responsible for the determination and implementation of corrective actions to improve student learning. Eschewing the "one size fits all" manner to "closing the loop" that is often mandated at the college-wide level, this process empowered faculty from each discipline to consider the best methods for increasing their students' performance. It is the authors' belief that these actions significantly increased the faculty's "stake in the game" and made them feel more directly responsible for student progress concerning assessment.

Feedback

As explained by Oldham and Hackman (2010), successful feedback provides employees with "direct and clear information about the effectiveness of his or her performance." Through feedback of their performance, employees obtain the critical element of feeling competent in their job, and this is why feedback is considered a strong predictor of motivation and performance (Deci, Koestner and Ryan, 1999). Feedback can also serve to motivate through its effect on employee job satisfaction and intentions to leave (Uruthirapathy and Grant 2015). Further, and perhaps most relevant to this article, feedback has been shown to have a positive impact in the motivation of employees to engage in knowledge sharing behaviors (Foss, Minbaeva, Pedersen and Reinholt, 2009). With the stated goal of increasing the level of faculty involvement and engagement, it would appear that providing feedback would spur more faculty interaction and knowledge sharing and would be critical in the redesign of an AOL process.

Under the previous AOL process, the college committee members became frustrated at the lack of involvement of their peers. The centralized committee structure required the least amount of effort from faculty, and, as a result, the expectation was that faculty would realize this benefit of the structure and provide meaningful input based on the feedback they received. However, just the opposite was experienced, and the quality of faculty input was severely lacking. This lead to frustration on the part of the college assessment committee because they were doing all of the work, from which they received no real reward, while their peers who were not on the committee were able to skirt any responsibility for the process and didn't encounter any negative effects for their lack of involvement. Additionally, faculty often quibbled about the validity of the results and spent much of college-wide meetings debating the appropriateness of the data collection instruments. Consequently, they paid little attention to the assessment results as a source of feedback. To help address this, participation in assessment activities are now included on the college's annual evaluation instrument, which serves to provide faculty with feedback regarding their performance. All faculty are now expected to contribute in some way toward AOL. The AOL data generated as a result of administering assessment instruments and accumulating student performance information provides the primary feedback mechanism for faculty to learn how the process is working and the extent of student learning.

By its nature, assessment should provide feedback to faculty about how they, and their students, are performing. Because of the new DCT structure and the redesign of the AOL processes, faculty receive results in a summarized college-wide form as well as a disaggregated by major form, which provides them greater detail and a perception of greater utility of results. The new process, though not perfect, improved faculty's respect for and understanding of the data. With all faculty an active member of their DCT, in which they created the instruments and graded/assessed the students' responses, all the faculty now see firsthand the performance of their students. Through these better feedback mechanisms, faculty have a more in-depth understanding of each discipline's performance in specific content areas. Armed with these detailed results, the faculty can identify areas of strength and weakness and design effective correction actions to target areas needing improvement.

CONCLUDING COMMENTS

Wanting to "practice what they preach" regarding increasing the motivation of faculty, the authors detailed and advocated the job characteristics model to serve as a basis for the job redesign of assurance of learning processes. Since many accreditation standards require increased levels of faculty involvement in AOL processes, the article detailed how each of the five major components of the JCM are linked to increased motivation and engagement. The authors then demonstrated how they successfully increased the engagement of their faculty at their institution with resulting higher levels of quality and involvement through the redesign of the AOL process. Specifically, the authors' use of discipline-based self-managed work teams (SMWT) was found to successfully implement the five major components of the job

characteristics model. Discipline-based teams motivated faculty by allowing them to focus on the issues of curriculum, assessment instruments, grading, and analyzing the results for those students who have chosen to major in their particular subject area. These discipline-based SMWT were found to contribute to each motivational component of the JCM. First, the newly designed SMWT increased the skill or task variety of the process by having faculty take responsibility for more activities related to their disciplines. Second, the faculty's view of the meaningfulness of work was elevated by having them participate in the entire assessment process. Third, by focusing their efforts on their discipline's students, the faculty found the results of their tasks to have greater significance. Fourth, given greater levels of autonomy for all aspects of the AOL process for their discipline greatly empowered the faculty to make decisions on how their students should best be assessed and for corrective actions to be implemented. Finally, the SMWT's provided multiple methods for faculty to receive detailed and meaningful assessment-related feedback on their students.

A limitation of this paper is that the motivational results found based on these activities at one institution may not be generalizable or appropriate for others. However, the authors would suggest that in order to increase faculty engagement in AOL, institutions redesign their processes based upon the JCM or other accepted theories of motivation. By replicating the use of SMWTs along with the elements of the JCM or other motivational theories, the authors hope that other institutions' faculty will report their results and suggestions for improving the motivation of their faculty in the AOL process.

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HIGH-IMPACT PRACTICES: AN ANALYSIS OF SELECT UNIVERSITY AND BUSINESS SCHOOL PROGRAMS

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ABSTRACT

Colleges and universities are finding new ways to enhance the academic environment with high-impact programs such as student-based research, internships and international study abroad programs. Research has shown that students learn most when they are more engaged in the experience rather than passive participants. This exploratory study examines high-impact opportunities for undergraduate university students in the U.S. Web sites and other materials from 90 randomly selected AACSB and ACBSP member schools were reviewed to determine how each incorporates high-impact educational practices into their overall university programs and in their business school programs. Three high-impact programs were examined: undergraduate research, internships and global learning opportunities. Recommendations for future high-impact educational practices are discussed. High Impact (HI) programs are prevalent in U.S. colleges and universities. There is a significant positive relationship between high-impact activities and graduation rates. Institutions that have healthier high impact practices have better graduation rates. Larger schools and schools with AACSB accreditation also have stronger high impact practices devoted specifically to business schools. Doctoral granting institutions scored higher in all three practices analyzed in this study. Undergraduate research is the area in which high-impact ratings were the lowest.

JEL: A29**,** M19

KEYWORDS: High Impact Programs, Undergraduate Research, Internships, Global Learning

INTRODUCTION

University education has become more complex than the lecture and test format from years past. In today's highly competitive higher education marketplace, the administration and faculty in colleges and universities are looking for ways to enhance student success and to improve retention and graduation rates. Student success and retention are important to the financial and reputational well-being of the university. Institutions continue to seek new ways to enhance the academic environment with programs such as student-based research, internships and international study abroad programs. Research has shown that students learn most when they are more engaged in the experience rather than as passive participants. High-impact activities that foster deep learning, general gains, personal gains and/or practical gains have been outlined by George Kuh (2008), the founding director of the National Survey of Student Engagement (NSSE). He recommends that all institutions should seek to have all students participate in at least two high-impact activities over the course of their undergraduate experience, ideally with one in the student's first year and another in the context of their major (NSSE, 2007). His findings identify ten high-impact educational practices for undergraduate college students' success. They are: 1.) First-year seminars and experiences, 2.) Common intellectual experiences, 3.) Learning communities, 4.) Writing intensive courses, 5.) Collaborative assignments and projects, 6.) Undergraduate research, 7.) Diversity and global learning, 8.) Service learning, community-based learning, 9.) Internships, and 10.) Capstone courses and projects.

In order for a high impact experience (HIP) to be effective, Kuh (2008) identifies six key elements that must be present during the activity. First, the experience should be effortful. Students should devote considerable time to purposeful tasks. Second, the high impact activity should help the student build substantive relationships over extended periods of time. Third, students must experience diversity in some form during the high impact activity. Fourth, the experience should provide students with rich feedback. Fifth, a high impact experience should help students apply what they are learning in the classroom in new situations. Finally, sixth, the experience should build in time for students to reflect on who they are becoming as individuals. High-Impact practices (HIP) are becoming commonplace across university programs. Through its Liberal Education and America's Promise (LEAP) initiative, the Association of American Colleges and Universities (AAC&U) has sought to work with faculty in a variety of institutions and disciplines to bring HIPs more broadly and intentionally into the undergraduate experience. Further, colleges and universities must be both intentional and innovative in their design of these programs (McNair & Albertine, 2012). The authors have identified three high impact practices that are particularly important for business students' success and with which the authors have had first-hand experience: internships, undergraduate research opportunities and international experiences. Through these experiences, undergraduate business students will be better equipped to handle the challenges of their first post-graduate career opportunities. Further, compared to other high-impact programs such as living/learning communities, writing intensive, or first year seminars, business school faculty and administration tend to have more in-house autonomy over the selected HIP experiences. Furthermore, the authors have had first-hand experience with faculty-led study abroad, student research, and supervision of internship programs.
The paper is organized as follows. It will review literature concerning the three high impact practices highlighted in this paper. It will also provide an overview of how high impact practices are incorporated into accreditation standards for AACSB and ACBSP. Next, it will present the methodology, including data collection and results. Finally, it will provide a discussion of results and conclusions.

LITERATURE REVIEW

Internships

An important consideration for higher education is transfer of knowledge between academia and practice. Internships provide this opportunity for students. An internship can be broadly defined as a "term length placement of a student in an organization (with or without pay) with a faculty supervisor, a company supervisor and some academic credit earned toward a degree" (Narayanan, Olk, & Fukami, 2010). Based on Kuh's (2008) six elements described earlier, O'Neill (2010) posits that an internship is more likely be "high-impact" for students when it is intentionally organized as an activity that leads to particular learning outcomes; when students apply what they have learned in courses to work experiences, reflect on these experiences, and receive feedback that helps them to improve; when students build mentoring relationships with supervisors, faculty, and peers; when students are exposed to differences across people and in ways of thinking; and when students are asked to use their experiences to clarify their values, interests, and personal goals—including, in this case, their values, interests, and goals related to careers. Ward and Yates (2013) found that recruiters value internships more than a student's participation in either athletics or leadership in campus clubs. Projects demonstrating application of content knowledge were also preferred to leadership roles in clubs and ongoing volunteer activities. Further, Updike (2013) describes how a four year business education incorporating career events, mentoring and multiple internships leads to a high placement rate in the job market. Additional issues to consider are whether the school handles placement, whether the school has an internship coordinator, whether internships are for academic credit and/or whether internships are paid (Maskooki, Rama & Raghunandan, 1998).

While internships for undergraduate business students don't follow a "one size fits all" model, most researchers agree that students benefit from their experiences. Students who participate in internships perform better in future courses on cases and projects than students who have not completed an internship

(Green & Farazmand, 2012). Internships are more likely to be successful when both students and employers actively participate in the process, when there are clear expectations, when prerequisites are appropriate and when mentoring is part of the program (Knouse & Fontenot, 2008). Reding and O'Bryan (2013) note that internships are most impactful when employers treat interns as entry level employees, rather than just observers in their organizations. Students also come back into the classroom with valuable experiences that make their education more meaningful (Reding & O'Bryan, p.47). Narayanan, Olk, and Fukami (2010) proposed an internship model with antecedents, processes, and outcomes where three primary actors contribute to the success of internship programs: the student, the university, and the company. In their study of 130 students in a Portuguese business school internship program, it was found that student satisfaction was the result of three process constructs: project progress feedback from the employer, the faculty advisor role, and the students' learning (Narayanan et al., p. 74). A subsequent study of an internship program's effectiveness supports this model as well. In a survey of 209 participating interns and 110 participating employers over three years, it was found that the style of supervision (faculty–students–employers) that was followed during the entire internship program placement demonstrated that a close, working oversight by faculty was beneficial to students (Papadimitriou & Mardas, 2012).

Finally, Rothman (2007) suggests that internships work best when the university and employer work closely together to provide the richest experience possible for interns. In a study of 345 interns participating in a for-credit business school internship class that requested specific suggestions for how their employer could improve the experience for future interns, the significant additions that students suggested were respectful treatment, mentoring, ongoing feedback, clarification of tasks, clear expectations surrounding challenging assignments, exposure to other parts of the business and communication. Internships provide the type of high impact experiences to students that have the impact that Kuh (2008) identifies as paramount to their success. Through internships students will build substantive relationships, apply their classroom learning in real-life situations and gain rich feedback for their personal growth.

Undergraduate Research

Undergraduate research gives students the opportunity to produce innovative work that can be published or become part of a job portfolio. The Boyer Commission brought undergraduate research into the spotlight, urging faculty to make research-based learning the standard (1998, p 15-18). Hakim (1998) outlined four key elements: mentorship, originality, acceptability and dissemination. This high-impact practice provides students a 1:1 working relationship with a faculty member, in which the student plays a key role in conducting original research, using current practices in the discipline. The work is then put forth for critique by others, perhaps through public presentation or by submitting a final paper for peer review and publication. The undergraduate research experience gets at the heart of improving desired workforce skills such as communication, collaboration, critical thinking, and problem solving. With careful guidance by a mentor faculty member into the inquiry methods of a discipline, undergraduate research is acknowledged as one way for students to feel more connected to their educational experience (Kinkead, 2003). After completing a project, students have higher ratings of their own skills in understanding contemporary concepts, orally communicating results, relating results to the "bigger picture," statistically analyzing data, and the like (Kardash, 2000). Fechheimer, Webber, and Kleiber (2011) found that participation is positively correlated with cumulative GPA, holding constant student SAT scores. Another benefit is that undergraduate research programs improve retention, especially among racial and ethnic groups that otherwise have lower retention rates (Nadga, Gregerman, Jonides, von Hippel, & Lerner, 1998).

Mabrouk and Peters (2000), Spronken-Smith, Mirosa, and Darrou (2014) and Salsman, Dulaney, Chinta, Zascavage, and Joshi (2013) all surveyed students on undergraduate research experiences. They find students report positive experiences with research. They also find that the research experience is affected by the interaction and commitment of the faculty research mentor. Undergraduate research programs go beyond the work students do as part of normally required courses, offering extended opportunities during

an academic year or summer term. However, even at research universities, only around 10 percent of students have the opportunity to assist faculty in research for pay and just 12 percent of students have assisted faculty in research as a volunteer (Douglass & Zhao, 2013). Many of the students who work on a research project fail to finish a "capstone" activity, such as presenting at a symposium (Fechheimer et al., 2011). Hu, Kuh, and Gayles (2007) find that research activities at all types of institutions has increased from the mid 1990's to 2004; however, students at research universities were not more likely to participate in research activities than students at other types of institutions. Selective liberal arts colleges provided more research experiences than research universities.

Undergraduate research seems more prominent among the sciences and humanities than in business schools. For example, the Council on Undergraduate Research lists twelve divisions with which individual faculty members may affiliate. Business disciplines fall into the at-large group (Council on Undergraduate Research, 2014). Results from the 2014 National Survey of Student Engagement (NSSE) show that senior business majors are the least likely of all majors to have participated in undergraduate research with a faculty member. Only 13 percent of business majors surveyed reported working on a research project, compared to a high of 47 percent of seniors in biological science (NSSE, 2015). While business students aren't reaping the full benefits of participating in undergraduate research, their classmates in the humanities and sciences are gaining important outcomes from their undergraduate research projects. The impact that participating in a research project has for students fulfils Kuh's (2008) suggestions that experiences must be effortful with considerable time spent doing the high impact activity. Clearly completing a research project provides this opportunity for students.

Global Learning

Today's students who aspire to become tomorrow's institutional leaders must increase their awareness of cultural differences and understanding of global affairs if they hope to work *within*, let alone to manage *across,* multiple cultures. Trompenaars and Hampden-Turner (2012) laid out a pedagogical path to bring students toward this cultural self-understanding by 1) helping students reach "a better understanding of cultural differences, in general," and 2) dispelling "the notion that there is 'one best way' of managing and organizing" that is applicable world-wide. To this end, students can participate in a variety of global learning opportunities to increase their global awareness.

Kuh (2008) has identified Diversity and Global Learning as one of ten high-impact learning experiences. Accreditation agencies such as AACSB and ACBSP emphasize global learning throughout their standards for business school accreditation. These experiences can be both curricular and co-curricular. Kuh (2008) suggests that intercultural studies can be supplemented by experiential learning which might include service in a local diverse community or participation in a long or short term study abroad program. According to the Institute of International Education (IIE)'s *Open Doors* report (2013), over 283,000 U.S. students studied abroad for credit in 2011-2012; that is a 3.4% increase over that prior year. Study abroad participation by U.S. students has more than tripled in the past decade. There is a growing trend toward short term study abroad opportunities, international internships and global service. The American Council on Education (ACE)'s *At Home in the World* asserts,

addressing the commonalities between multicultural education and internationalization strengthens instruction and student learning by enabling students to undertake more complex thinking and analysis (Olson, Evans, & Shoenberg, 2007).

According to Orahood, Kruze & Pearson (2004), business students who have studied abroad are more open to internationalizing their careers. After acquiring new and unique skill sets abroad that they would not have had an opportunity to develop domestically, these students are highly sought after by employers who have international assignments, or domestic assignments that require a degree of cross-cultural competency.

Clearly a global learning experience provides students with the opportunity to experience diverse and changing situations over a considerable period of time. Students who study abroad must increase their awareness of the world around them thereby spending important time reflecting on their experiences. According to Kuh (2008) these are indications that high impact activities are meaningful for students.

Accreditation Standards—High-Impact Learning

Both AACSB and ACBSP business school accreditation standards emphasize the importance of "active" and "experiential" learning. Collaborative faculty and student opportunities can include faculty-led study abroad and faculty-student research. Each of the accreditation standards documents place emphasis on student internships and/or co-op experiences. In addition, the National Survey of Student Engagement (NSSE), measures high-impact undergraduate opportunities due to their "positive associations with student learning and retention" (NSSE, 2014). Each year, NSSE collects student participation data from hundreds of four-year colleges and universities that identify educational programs and activities that foster student learning and personal development. Senior undergraduates are asked about their experiences with high-impact programs such as learning communities, service learning, research with faculty, internships, study abroad and culminating experiences.

In the 2013 standards preamble, AACSB emphasizes that "quality business education cannot be achieved when either academic or professional engagement is absent, or when they do not intersect in meaningful ways" (AACSB, p. 3). The standards identify how business schools must provide evidence of how they are "making a difference and having impact." (AACSB, p. 5). Showing "impact" for AACSB accreditation includes the following: 1.) Hiring/placement of students, 2.) Career success of graduates beyond initial placement, 3.) Placement of students in research-based graduate programs and 4.) Research-based learning projects with companies, institutions, and/or non-profit organizations.

AACSB Standard 10 highlights the importance of student-faculty interactions in curricula and extracurricular situations for instruction. This can include faculty-student research and faculty-led study abroad experiences (AACSB, p. 32). In addition, Standard 13 emphasizes student academic and professional engagement where students are actively involved in both academic and professional settings. Experiential learning activities, including study abroad and internships, can be curricular or co-curricular and should provide exposure to the student in both local and global settings (AACSB, p. 36). Based on their standards, it can be posited that AACSB is aligned with the idea of business schools providing what we define as "high-impact" practices which set students up for achieving this kind of success after their college experience is complete (AACSB, p. 48).

In their 2014 accreditation standards, ACBSP emphasizes "active learning." They define active learning as, "interactive instructional techniques that engage students in such higher-order thinking tasks as analysis, synthesis, and evaluation" (ACBSP, pg. 62). Examples of active learning are "projects, presentations, experiments, simulations, internships, practicums, independent study projects, peer teaching, role playing, or written documents." Active learning includes high-impact opportunities such as internships, co-op and faculty-student research. Evidence must show how the business curriculum focuses on students' active learning and how active learning enables the "development of problem solving skills, intellectual curiosity, and capacity for creative and independent thought and action" (ACBSP, pg. 51). Standard #6 emphasizes global learning in the context of a global workplace and the student's place in a global society. The standard reveals that students "must be encouraged to study global topics" to enable them to adapt to societal changes (ACBSP, pg. 43). While ACBSP standards do not explicitly recommend study abroad, they clearly underscore the necessity of global learning, be it embedded inside or outside of the formal classroom curriculum. For example, students can participate in local international festivals or a professor could partner with and international colleague for team teaching and student research opportunities. Both AACSB and ACBSP value high-impact and active learning such that the standards require member Schools and Colleges

to both incorporate these concepts into the business school curriculum and demonstrate positive learning outcomes. Each agency explicitly included global learning, internships and independent study (student research) within the Standards documents. This study focuses on the use of three specific high impact practices: internships, study abroad and undergraduate research in institutions of higher education. It will specifically identify how these three high impact practices are integrated at a variety of institutions and business schools. It will look at the difference in high impact practices across these institutions and it will identify the relationship between high impact practices and graduation rates.

METHODOLOGY

The Sample

Ninety institutions were included in the study, 44 accredited by ACBSP and 46 accredited by AACSB. To further delineate variations in business schools, the Carnegie Classification system provides categories that can help compare like institutions. By using the Carnegie Classification system, researchers have a way to represent and control for institutional differences, and a way to design research studies to ensure adequate representation of sampled institutions, students, or faculty (n.d., Retrieved March 6, 2015 from Carnegie Classification of Institutions of Higher Learning). As such, we sampled 30 doctoral institutions, 30 master's institutions, and 30 baccalaureate institutions. The institutions were randomly selected from lists of accredited schools, as posted on each agency's website. Member institutions without accreditation were excluded; community colleges accredited by ACBSP were also excluded. An Excel macro was written to randomly order the schools; the first 30 in each Carnegie category were selected. The selection of 30 institutions for each category was to ensure a sufficient data pool for statistical testing. Multiple web sites were reviewed during mid-2014 and early 2015 to collect basic information about each institution and to evaluate high-impact practices. To collect demographic information and graduation rates for each institution, the National Center for Education Statistics was used (www.nces.ed.gov). To gather institution specific data, each institution's website was accessed both at the university level and the business school level. Characteristics of the overall sample can be seen in Table 1. A wide range of institutions are represented. The median number of undergraduates is 4,384 with faculty size of 465.

Table 1: Characteristics of Sample Institutions

	Mean	Standard Deviation	Minimum	Maximum	Median
6 Year Graduation Rate	53	19	10	98	54
Number of Faculty at Institution	670	591	80	2,630	465
Adjuncts as a Percent of Faculty	39	20	1	92	39
Number of Undergraduate Students	8,541	9,283	744	51,269	4,384
SAT Math Score of Incoming Students	546	71	375	716	539
SAT Reading Score of Incoming Students	533	62	363	662	536

Note: A wide range of institutions are represented. The median number of undergraduates is 4,384 with faculty size of 465. N= 90 total. However, not all data (namely SAT scores) were reported for all schools.

Characteristics of the sub-samples are reported in Table 2. In general, AACSB schools have a larger number of students and faculty than the ACBSP schools, and doctoral institutions also have more students and faculty than the other classifications of institutions. In addition, the AACSB and doctoral schools have higher SAT scores than the other sub-samples.

Table 2: Means by Institution Categories

	All	AACSB Institutions	ACBSP Institutions	Doctoral Institutions	Master's Institutions	Baccalaureate Institutions
6 Year Graduation Rate	53	62	45	66	47	48
Number of Faculty	670	1,000	357	1,224	544	237
Adjuncts as a Percent of Faculty	39	30%	50%	32%	45%	43%
Number of Undergraduate Students	8,541	13,549	3,702	15,598	7,760	2,726
SAT Math Score of Incoming Students	546	575	512	583	509	534
SAT Reading Score of Incoming Students	533	553	511	564	503	525
Number of Institutions	90	44	46	30	30	30

Notes: N = 90 institutions total. AACSB schools tend to have larger numbers of faculty and students. AACSB schools also have students with higher incoming SAT scores.

High Impact Practices

To assess high-impact practices, rating scores from 1 to 4 were given based on the information found on the university and school of business web pages. The ratings were assigned by the researchers using the descriptions (developed by the authors) provided as a guideline. See Table 3 for descriptions of the rating system used in the paper. The high-impact activities were rated for both the institution as a whole and for the school of business. A total high-impact score was calculated by adding the individual high-impact scores.

Table 3: The Rating System

Numeric Rating	Academic Institution	School of Business
Undergraduate Research		
1	No information available on institution's website	No information available on Business School's website
2	Some majors offer undergraduate research programs.	Business School has informal undergraduate research opportunities.
3	Institution has formal programs for undergraduate research such as symposium, conference, journal or paid stipends for research.	Business School has formal programs for undergraduate research such as symposium, conference, journal or paid stipends for research.
4	Required individual research or senior thesis for all students.	Required individual research or senior thesis for Business students.
Internships		
1	No information available on institution's website	No information available on Business School's website
2	Institution has Career Services office; Primary resource for students are website links to internship sites	Shared Career Services office; Primary resource for students, including business students, are website links to internship sites
3	Institution has specific co-op opportunities available, internships strongly encouraged, credit offered for internships across majors.	Business School has specific co-op opportunities available, internships strongly encouraged, credit offered for internships for Business students.
4	Required internship for all students.	Required internship for Business students.
International Study		
1	No information available on institution's website	No information available on Business School's website
2	Institution has Study Abroad office; Study programs offered through 3rd party partnerships.	Institution has Study Abroad office; Study programs offered through 3rd party partnerships.
3	International/study abroad programs offered for a variety of majors. University offers faculty led short programs and semester study-abroad programs.	International/study abroad programs targeted toward business. Business School offers faculty led short programs and semester study-abroad programs.
4	Required study abroad for all students.	Required study abroad for Business students.

Note: Each institution and school of business was assigned a numerical score for undergraduate research, internships and international study using the rating system described here.

A summary of the scores can be seen in Table 4. The highest average impact score for the overall institution is international study programs and for business schools is internships. Undergraduate research has the lowest average impact score for both the overall institution and business schools.

Table 4: Descriptive Statistics for Ratings

Institutional Rating	Mean	Standard Deviation	Minimum	Maximum
Institution Total	6.9	1.9	0	10
Institution Undergraduate Research	2.2	0.8	1	4
Institution Internship	2.3	0.6	1	3
Institution Study Abroad	2.5	0.7	1	4
School of Business Rating				
School of Business Total	6.0	1.6	3	9
School of Business Undergraduate Research	1.6	0.8	1	4
School of Business Internship	2.3	0.8	1	4
School of Business Study Abroad	2.1	0.9	1	3

Note: N = 90 institutions. The maximum possible total rating is 12.

RESULTS

A more detailed distribution of scores can be found in Table 5. Seventy-four percent of institutions have some level of undergraduate research mentioned on their web page. When looking specifically at schools of business, 45 percent mention undergraduate research. Internships are mentioned on 94 percent of institutional web pages and 89 percent of school of business web pages. Most institutions have internship offices and encourage internships; however, few require internships to graduate. Study abroad programs are mentioned on 87 percent of institution web pages. Most (58 percent) have a variety of study abroad opportunities, including faculty led programs. Schools of business are not as good at promoting study abroad, as 32 percent of them do not mention study abroad on the school web pages.

Table 5: Frequency of Ratings

High Impact Practice	Rating	Institution Level, Percentage of Sample	School of Business Level, Percentage of Sample
Undergraduate Research	1	23%	56%
	2	33%	27%
	3	40%	17%
	4	1%	1%
Internships	1	6%	11%
	2	54%	54%
	3	38%	28%
	4	0%	7%
Study Abroad	1	13%	32%
	2	24%	22%
	3	59%	46%
	4	1%	0%

Notes: 74% of institutions mention undergraduate research, but only 45% of business schools do. Internships are discussed on almost all websites. Student abroad programs are mentioned more often on institution level websites than by schools of business

To understand the relationship between high-impact (HI) activities and characteristics of the institutions, correlations were computed using the Total HI score, which sums the scores of all HI activities, and HI scores for the three individual areas: faculty-student research, internship experiences, and study abroad (Table 6). There is a significant ($p<.01$, $r=0.27$) and positive correlation between total HI score and six year graduation rate of the institution. When looking at individual HI activities, institutions with higher internship ($p<.05$, $r=0.240$) and international study scores ($p<.01$, $r=0.454$) have significantly higher six year graduation rates. These results support the hypothesis that HI activities improve student success, as measured by graduation rates.

Table 6: Correlations between High Impact Practices and Institution Characteristics

	Total High Impact Score	Undergraduate Research	Internships	International Study
Correlations at Institution Level				
6 year Graduation Rate	0.271***	0.181	0.240**	0.454***
Undergraduate Enrollment	0.273**	0.024	0.326***	0.253**
Number of Faculty	0.257**	-0.022	0.323***	0.258**
Adjuncts as Percentage of Faculty	-0.190	-0.073	-0.019	-0.128
Correlations at School of Business Level				
6 year Graduation Rate	0.341***	0.257**	0.029	0.401***
Undergraduate Enrollment	0.153	0.247**	-0.165	0.321***
Number of Faculty	0.282***	0.293***	-0.128	0.412***
Adjuncts as Percentage of Faculty	-0.051	-0.187	0.302***	-0.189

*Notes: At the institution level, total HI score is positively correlated with undergraduate enrollment and number of faculty. Internships and International study are also positively correlated with undergraduate enrollment for some, indicating that larger schools utilize more resources to support HI activities. At the school of business level, the institution's 6 year graduation rate is significantly related to total HI score, undergraduate research and international study. The significant positive correlation between adjunct faculty and internships is perhaps due to use of professionally qualified faculty. *** Correlation is significant at the 1% level; ** Correlation is significant at the 5% level.*

At the institution level, total HI score is positively correlated with undergraduate enrollment ($p<0.05$, $r=0.273$) and number of faculty ($p<0.05$, $r=0.257$). Internships and international study are also positively correlated with undergraduate enrollment ($p<0.01$, $r=0.326$ for internships; $p<0.05$, $r=0.253$ for international study) and number of faculty ($p<0.01$, $r=0.323$ for internships; $p<0.05$, $r=0.258$ for international study). This indicates that larger schools utilize more resources to support these activities. At the school of business level, the institution's six year graduation rate is significantly related to total HI score ($p< 0.01$, $r=0.341$), undergraduate research ($p< 0.05$, $r= 0.257$) and international study ($p< 0.01$, $r=0.401$). The significant positive correlation between adjunct faculty and internships ($p<0.01$, $r =0.302$) is unexpected. Perhaps business schools that hire a large number of part-time faculty, based on professional qualifications, are focused on their students obtaining professional experience. Adjuncts who are employed or retired professionals are valued for the practical experience and networking opportunities that they can bring to the table. One question is whether there are differences in high impact practices connected to accreditation type or Carnegie class.

Differences in ratings are investigated for AACSB schools compared to ACBSP schools, and investigated for doctoral institutions compared to masters and baccalaureate ones. As reported in Table 7, ACBSP schools tend to have higher institution level ratings for internship and study abroad, while AACSB business schools have higher ratings for total HI score and undergraduate research. Perhaps ACBSP schools rely on campus-wide resources while AACSB business schools use their own resources. Doctoral institutions have significantly higher total HI scores ($p<0.05$) and study abroad scores ($p<0.05$) than baccalaureate institutions (see Table 8). When comparing business schools, doctoral granting institutions have significantly higher total HI scores than both master's ($p<0.05$) and baccalaureate institutions ($p<0.01$). They also have significantly higher international study program scores than do both other types of institutions ($p<0.01$ for doctoral v. master's; $p<0.01$ for doctoral v. baccalaureate). Additionally, doctoral institutions have significantly higher undergraduate scores than baccalaureate schools ($p<0.01$). Overall, the larger doctoral institutions are doing better with high impact practices than the smaller schools, especially baccalaureate schools.

Table 7: Differences in High Impact Practices between AACSB & ACBSP Schools

Panel A: Differences in Institutions by Accreditation Type			
	Accreditation Type	***Mean Rating***	***Standard Deviation***
Institution Total HI Score	ACBSP	6.5	1.9
	AACSB	7.2	1.8
Institution Undergraduate Research	ACBSP	2.2	0.8
	AACSB	2.2	0.9
Institution Internship	ACBSP	2.2**	0.6
	AACSB	2.5	0.6
Institution Study Abroad	ACBSP	2.3***	0.8
	AACSB	2.7	0.6
Panel B: Differences In Business Schools By Accreditation Type			
	Accreditation Type	***Mean Rating***	***Standard Deviation***
Business School Total HI Score	ACBSP	5.6***	1.6
	AACSB	6.6	1.5
Business School Undergraduate Research	ACBSP	1.4***	0.7
	AACSB	1.9	0.8
Business School Internship	ACBSP	2.4	0.9
	AACSB	2.2	0.6
Business School Study Abroad	ACBSP	1.8***	0.9
	AACSB	2.5	0.8

*Notes: ACBSP institutions tend to have higher institution ratings, while AACSB ones have higher business school ratings. N = 90 schools; ** indicates mean ratings have significance difference at the 5% level; *** at 1% level. Standard t-tests were used to assess differences.*

Table 8: Differences in High Impact Practices across Carnegie Classifications

Panel A: Differences in Institutions by Carnegie Class						
	Carnegie Classification	***Mean Rating***	***Standard Deviation***	***Doctoral Vs Master's***	***Master's Vs Bacc.***	***Doctoral Vs Bacc***
Institution Total HI Score	Doctoral	7.3	1.4			**
	Master's	7.2	1.7			
	Baccalaureate	6.1	2.3			
Institution Undergraduate Research	Doctoral	2.1	0.9			
	Master's	2.4	0.8			
	Baccalaureate	2.1	0.7			
Institution Internship	Doctoral	2.5	0.5			**
	Master's	2.3	0.6			
	Baccalaureate	2.2	0.6			
Institution Study Abroad	Doctoral	2.6	0.6			
	Master's	2.5	0.8			
	Baccalaureate	2.3	0.9			
Panel B: Differences in Business Schools by Carnegie Class						
	Carnegie Classification	Mean Rating	Standard Deviation	Doctoral Vs Master's	Master's Vs Bacc.	Doctoral Vs Bacc
Business School Total HI Score	Doctoral	6.8	1.5	**		***
	Master's	5.8	1.8			
	Baccalaureate	5.6	1.4			
Business School Undergraduate Research	Doctoral	1.9	0.8			***
	Master's	1.7	0.9			
	Baccalaureate	1.3	0.5			
Business School Internship	Doctoral	2.3	0.7			
	Master's	2.2	0.9			
	Baccalaureate	2.4	0.8			
Business School Study Abroad	Doctoral	2.6	0.7	***		***
	Master's	1.9	0.9			
	Baccalaureate	1.9	0.8			

*Notes: Overall, the larger doctoral institutions are doing better with high impact practices than the smaller schools, especially baccalaureate schools. N = 90 schools; ** indicates mean ratings have significance difference at the 5% level; *** at 1% level. Standard t-tests were used to assess differences.*

DISCUSSION

There are a number of significant findings in this study. First and foremost, there is a significant positive relationship between high-impact activities and graduation rates. Institutions that have healthier high impact

practices have better graduation rates. While high-impact programs may not cause higher graduation rates, institutions with strong high-impact programs also have higher graduation rates. Additionally, stronger high-impact practices are significantly (positively) related to undergraduate enrollment and number of faculty. This may indicate that larger schools have more resources to devote to these types of programs. It is interesting to note that larger schools and schools with AACSB accreditation have stronger high impact practices devoted specifically to business schools. Programs at the business school level are positively correlated with graduation rates for the whole institution. This implies that these programs should be continually funded and expanded. We note that smaller schools should find ways to provide more targeted high impact programs tailored specifically for business students. This might help increase graduation rates.

As institutions consider expanding their degree offerings, it is interesting to note that doctoral granting institutions scored higher in all three practices analyzed in this study. It is possible that doctoral granting institutions are more aware of the positive impact of high impact practices. It may also possible that doctoral granting institutions are better funded. Undergraduate research is the area in which the high-impact ratings were the lowest. Institutions and business schools (of all sizes and degree granting status) alike are more invested in internships and international study. Colleges and universities should consider expanding undergraduate research programs as this is an area that may generate positive returns from additional resources. The McNair Scholars Program, a funding program for undergraduate research opportunities for underrepresented students, could serve as a resource for universities that want to enhance their undergraduate research programs. Limitations and Future Research Based on the results, institutions and business schools alike are providing high-impact opportunities for their undergraduate students. While experiences vary significantly by institution, these opportunities have tangible benefits as evidenced by increased graduation rates. There are several opportunities for future research.

First, the measure of graduation rates comes into question. While the six year graduation rate is commonly used and considered the "gold standard" by university analysts, there might be a better measure of student success. Based on the 1990 Student Right to Know Act, the six-year graduation rate is required to be reported by all institutions of higher education. The six year graduation rate, however, does not take into account students who may have started as part time and transfer students. A better measure that tracks students individually (a unit-record system) has been suggested but has been met with political opposition (Glenn, 2010). Researchers doing this type of research should monitor progress in this area and use a better measure if one becomes available. Second, while high-impact practices are correlated positively to the six-year graduation rate, it would be beneficial to test other factors through multiple linear regression or factor modeling to determine what other factors explain institution's variation in six-year graduation rates. Future research could also be conducted to determine which factors best predict the HI score.

Additional information to collect might include staff support for high-impact programs, budget allocations, availability of other high-impact programs, availability of internships and entry level jobs in the surrounding community, etc. Third, the scales used to rate each program could be updated and possibly modified. At both the institution and the business school level, only a small percentage of schools had the highest rating (see Table 4). Additionally, for the purposes of this study, we reviewed each selected college's websites, which might not contain information about all of the high-impact programs offered. A questionnaire could be developed and sent to both AACSP and ACBSP to create a more accurate accounting of each program. Fourth, while it is beyond the scope of our study, all of Kuh's (2008) high impact practices should be analyzed for their success in increasing graduation rates and other indicators of student success. Each of the seven practices not included in this study (first year seminars and experiences, common intellectual experiences, writing intensive courses, learning communities, collaborative assignments and projects, service learning/community based learning, and capstone courses and projects) could be researched and analyzed using similar methods that were employed in this study. Finally, future studies should also include feedback from students who have participated in one or more experiential learning opportunities to analyze effectiveness of each practice. While institutional measures are good indicators of overall program success,

hearing directly from participants in high-impact practices would add another richer dimension that would benefit researchers and schools in the assessment and planning of future high-impact practices.

CONCLUDING COMMENTS

This study was designed to research how universities incorporate high impact practices into their curriculum. High-impact activities provide ways for students to better engage in their academic pursuits. Past research has shown the benefits of participating in these activities. Three of these high-impact practices are especially important to business students: internships, study abroad programs and undergraduate research. This study explores how universities and schools of business are utilizing these three specific high-impact practices. Data was collected from randomly selected university web pages. The results show that institutions as a whole are creating these HIP opportunities for their students. The majority of institutions studied show at least some level of participation. When looking at the school of business level, there is still active involvement in these practices, but the level of engagement drops. International studies have the highest average level of engagement for institutions with 87 percent having at least some type of international study program available for students. Internships are strongest high impact activity for business schools with 89 percent of schools having at least an internship office or coordinator available for students. The data analyzed in this paper indicate a significant, positive relationship between the use of three high-impact activities and an institution's six-year graduation rate.

However, not all institutions and schools of business are equally engaged. Small institutions seem to allocate resources for HIPs campus-wide, while at larger institutions the schools of business are more actively providing high-impact practices. Both AACSB and ACBSP indicate in their accreditation standards that various forms of high-impact programs are necessary to achieve or retain accreditation. Both place value on "experiential" or "active" learning. The value of internships/co-ops and global/multicultural learning were also emphasized by both organizations. Faculty-student research was also valued as experiential/active learning, but was not explicitly outlined in the accreditation standards as were the other two HIPs that were evaluated in this study. While HIPs such as study abroad, faculty-student research and external business experience such as internship and co-op opportunities require more human and financial resources, this study shows that there is a direct correlation between institutions that provide HIP opportunities to their students and positive graduation rates. Institutions of higher learning, particularly Schools of Business, should be mindful of the importance of HIPs to student success and persistence when it comes time to evaluate their resource utilization. If the institution is not committed to providing HIP experience to their students, Schools of Business need to find a way to provide those opportunities separate from the larger institution in which they reside.

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SYSTEMIC CHALLENGES TO IMPLEMENTING AN ACTIVE LEARNING STRATEGY IN AN INTRODUCTORY MARKETING CLASS

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ABSTRACT

Employers have increasingly questioned the gap between theory and practice in marketing education as it has a large effect on graduating students in the employment market. This problem is especially acute in Egypt, where the education system has not emphasized the development of critical thinking ability among students. This study investigates the effectiveness of an active learning approach in teaching introductory marketing to undergraduates. The course was taught at a major public university in Egypt, with an extremely large class size (over 1000). Results showed some encouraging signs and also highlighted some of the systemic challenges to implementation of active learning strategies. We discuss the problems encountered in the classroom and implications for university education in Egypt.

JEL: I2

KEYWORDS: Marketing Education, Active Learning, Critical Thinking, Large Classes, Developing Countries, Egypt, Systemic Challenges

INTRODUCTION

Critical thinking skills are essential in a professional workplace, and employers typically complain that graduating students lack these skills. This perceived lack of skills poses a challenge to professors in all the business disciplines, including marketing. Küster & Vila (2006) argue that the increasing number of students attracted to the discipline of marketing puts pressure on the marketing academics in delivering relevant learning effectively through improved methods. The field of marketing has seen rapid changes in recent times, including greater international trade, rapidly changing technology, and shorter product life-cycles and an avid customer that is always seeking something new and different (Hill, McGinnis & Cromartie, 2007; Seligman, 2012). Lack of preparedness for critical thinking is an even bigger issue outside the western world. In Egypt, the gap between what the students learn and what the market demands continues to widen (El Sabai, 2006).

Academics have responded to the need for teaching students to think critically through various active learning strategies. These strategies include debates (Roy & Macchiette, 2005), experiential learning (Celly, 2007), service learning (Mottner, 2010), the use of technology (Karakaya, Ainscough, & Chopoorian, 2001), structured cases (Klebba & Hamilton, 2007), and guided problem-based learning (Nargundkar, Samaddar & Mukhopadhyay, 2014), as well as other pedagogical approaches. Most research studies that involve some type of active learning experience in the classroom are carried out and published in the United States, with class sizes generally under 100 students. Even in studies comparing small and large class sizes, the large class size is usually under 200 students (Hill, 1998; Karakaya et al., 2001). In this study, we used the guided problem-based learning (Guided PBL) approach with a reversed text (Nargundkar et al., 2014) to teach an introductory marketing class in Egypt, and compared student

performance and perceptions in that section with those of similar students in a section taught via traditional lectures. The purpose was to test whether such an active learning strategy could be effectively implemented in vastly larger face-to-face class sizes than had been tried before. Further, the cultural expectations of students in Egypt posed an additional challenge, unused as they were to being asked to participate actively in a classroom. We measured student performance overall, as well as on critical thinking questions, and surveyed them to gauge their perceptions to evaluate the success of this effort. The rest of the paper is organized as follows. We review the literature regarding critical thinking and the pedagogical approaches in achieving it, including issues of class size, as well as a focus on education in Egypt. We then outline the methodology for data collection and analysis, report the results, and discuss the implications.

LITERATURE REVIEW

Need for Critical Thinking in Marketing

Real life experiences in the business world can be messy, with problems that go across subject matter domains, require people to work in teams that do not always get along, and the ability to analyze, communicate, negotiate, and make decisions with incomplete information. Graduates from universities often find themselves unable to apply what they have learned in the classroom because they have not learned to think beyond highly structured problem solving. Paul (2004) cites various studies to show that while instructors aspire to improve students' thinking skills, little thinking actually happens in most classrooms. The dynamic nature of dealing with customers makes the ability to adapt and think critically especially important in marketing.

Researchers have echoed the idea that there is a gap internationally between the skills students get in a classroom and the skills they need in the workplace. Bruce & Schoenfeld (2006) discuss what they call the thinking-doing divide, identifying the disconnect between marketing education and practice. A study of accounting graduates in China (He, Craig & Wen, 2013), as well as a study of marketing education and marketing practice in the UK (Stringfellow, Ennis, Brennan & Harper, 2006) suggest the existence of a similar gap. Students tended to agree with employers in that they believed they should be learning the skills needed for the job. Faculty members often argue that learning should be broad, and not necessarily applicable to a job immediately. However, these broad skills that faculty members espouse are not necessarily learned by students.

Cunningham (2008) argues that strategic thinkers and successful entrepreneurs have the ability to meta-think, while educational processes compartmentalize knowledge and provide little opportunity to think about thinking. Others decry the trend towards overly specialized skill building in education instead of overall professional development (Maines & Naughton, 2010). The need for critical thinking is universal, not restricted merely to business students. Researchers have documented the need for critical thinking in various fields including business, economics, basic sciences, mathematics, psychology and English (Roy & Macchiette, 2005). The AACSB (Association to Advance Collegiate Schools Of Business) recognizes the importance of critical thinking in education and expects colleges and universities to assess their programs and courses to improve higher level learning among students (Reinstein & Bayou, 1997).Rapid changes in the world and the field of marketing can make specific concepts and skills obsolete. What is, therefore, important is the continuous development of thinking ability.

Defining Critical Thinking

Various definitions of critical thinking are found in the literature. Critical thinking can be traced to over2500 years ago when Socrates drafted his first chapter on critical thinking (Ayad, 2010). Reinstein & Bayou (1997) refer to the American Heritage Dictionary definition, which states that critical thinking is

characterized by careful and exact evaluation and judgment. They suggest that the difficulty in discussing critical thinking results from two characteristics of critical thinking itself. First, critical thinking results less from practicing skills than from adopting persistence, open–mindedness, thoroughness, and flexibility. Second, thinking is not a single process, but rather a family of processes that support each other. Lai (2011), in a survey of the relevant literature, summarized the definitions of critical thinking as rooted in philosophy or psychology. The philosophical definitions are descriptions of the ideal of thinking, such as disciplined, self-directed thinking (Paul, 1992). Psychologists define critical thinking in terms of skills and behaviors that a critical thinker engages in, such as seeing both sides of an issue, being open to new evidence that disconfirms your ideas, evaluating assumptions, and so on. From a pedagogical standpoint, Bloom's taxonomy is a convenient way to operationalize the construct based on the kinds of activities or behaviors consistent with critical thinking. The original levels of learning proposed by Bloom et al. (1956), were ordered in a hierarchy from less complex to more complex (Huitt, 2011) - *Knowledge, Comprehension, Application, Analysis, Synthesis,* and *Evaluation*. In a recent revision of Bloom's taxonomy, Krathwohl (2002) proposes the following six levels instead – *Remembering, Understanding, Applying, Analyzing, Evaluating,* and *Creating*.

While the original Bloom's taxonomy had a single dimension with six levels, the revised version is two-dimensional, with the second dimension explicitly discussing the types of knowledge as factual, conceptual, procedural, and metacognitive (Airasian & Miranda, 2002). The original version discussed the first three, while the revision contained the added dimension of metacognitive knowledge. Metacognitive Knowledge involves knowledge about cognition and awareness of one's own cognition. This is an important aspect of critical thinking since thinking can only be improved when one is conscious of one's modes of thinking and accepts that they may be susceptible to flaws (Paul, 2004). Pintrich(2002) discussed the metacognitive knowledge category and its implications for learning and teaching. Metacognition includes knowledge of general strategies that might be used for different tasks, the conditions under which these strategies are used, to what extent these strategies are effective and the knowledge of self. The difference then, between learning facts or concepts or procedures and thinking critically, is the ability to ask questions about what is being learned, why it needs to be learned and how it is being learned. Also, one must question whether the learning is, in fact, true, and what its implications are to other aspects of life, including the thinking process itself.

Teaching Methods for Critical Thinking

The key difficulty in incorporating critical thinking into one's teaching, according to Paul (2004) is threefold – most faculty members lack a substantive concept of what critical thinking is, they do not realize this lack within themselves, and straight lecture and short-term study habits like mostly memorization form the core of instruction and learning. Content and thinking about the content, he argues, should not be separated, but often are. Students learn mathematics or history or business, but not how to think about mathematics or history or business. Tests that emphasize recall rather than thought further reinforce this weakness. Teaching methods must, therefore, to successfully get students to think critically, weave thinking about the subject into the instruction, rather than focus on regurgitating facts that will be forgotten days after the semester is done, and will more than likely be useless in the long run even if remembered. In recent times, several active learning strategies have been used in various fields to engage students in thinking. Balan & Metcalf (2012) refer to several methods in their study, including team-based learning, student presentations, and the use of guest speakers. Patel (2003) examined the *Holistic Approach to Learning and Teaching Interaction* (HALTI) as a learning method for developing critical learners. Although this approach's roots are in the computing field, Patel (2003) argued that it can be generalized to all disciplines in higher education to foster critical thinking, confidence & independence. Raths (2002) argues for alignment of objectives, activities, and assessments to improve instruction. Küster & Vila (2006) compared marketing education methods in Europe and North America. They found three teaching and learning methods most commonly used in both environments: practical

exercises, case studies, and lectures. Geissler, Edison & Wayland (2012) used the six thinking hats approach proposed by DeBono (1999) in marketing classes to facilitate discussion. Experiential learning and case studies have been shown to improve critical thinking ability among marketing students (Celly, 2007; Klebba & Hamilton, 2007). Hill & McGinnis (2007) argue that in general, there needs to be a reversal in teaching methods where the questions take center stage, rather than "correct" answers.

Nargundkar et al (2014) summarize teaching methods for critical thinking into three schools of thought. The first (direct method) assumes that critical thinking stands alone and should be taught separately from any specific subject (Van Gelder, 2005). The second approach (indirect method) argues that it should be taught through immersion in thinking about a particular subject (Case, 2005), and the third approach (mixed method) combines the two approaches, with some explicit instruction about thinking along with thinking about a subject (Paul, 1992).

Challenge of Large Classes

While active learning strategies have been shown to be effective in improving critical thinking ability, no study has attempted this in classes as large as the ones attempted in this study. Class sizes vary tremendously depending on the class and the university, ranging from fewer than ten students in a class to several hundred. The literature shows mixed results regarding the effect of class size on learning. Jensen & Segovia (2003) suggest that is possible to mitigate the effect of class size through a variety of teaching techniques. Several studies define large classes as those containing 100 or more students. However, the definition of large has ranged from over 50 students in some studies to over 300 students in others. Karakaya et al. (2001) found that technology helped mitigate the effects in a large (109 students) classroom. Hill (1998) found that large class size did not affect the perception of instructor effectiveness, but reduced student attendance. Still, the larger class outperformed the smaller one. Morris & Scott (2014) found no relationship between class size and performance. In general, large classes do pose a greater challenge to the instructor in achieving student-teacher interaction.

Education in Egypt

Factors unique to the education system in a given country can also have an impact on one's ability to implement active learning strategies. In his report on education reform in Egypt, sponsored by USAID, Robert Kozma (2004) suggests that since education at all levels in Egypt is centralized, controlled by the ministry of education, partial solutions do not work very well. For instance, simply buying computers for schools is of no use with demoralized, underpaid, poorly trained teachers. Large class sizes, rote learning, and assessments that emphasize rote learning are the norm, from grade school all the way to university education. The gap between what students learn and what employers want is much worse than in western countries, with employers in Egypt saying that about 70% of the graduates do not have the basic skills of creativity, problem-solving, and teamwork they considered essential in the 21st century (El Nashar, 2012). Students were also quite aware of their lack of preparation for a job, recognizing that their education was more a symbol of status than real ability. To Egypt's credit, there have been efforts underway in conjunction with USAID to overhaul education, to move from an instructor-centered to a learner-centered pedagogy (Ginsburg & Megahed, 2008).

Research Objective

In this research, we study the effect of implementing a learner-centered method of teaching in a large (more than 1000 students) class in Egypt on introductory marketing, in a section taught in Arabic. For introductory courses, where students have little prior knowledge of the subject, Nargundkar et al (2014) proposed an approach called guided problem-based learning (Guided PBL), which seemed suitable for our study. Their approach used a custom textbook created for this purpose, dubbed the *reversed* textbook,

which presented problems or conceptual questions first with empty spaces for students to attempt to solve or answer. The concepts and theories needed to understand and solve the problems come through guided discussion in class amongst students and between students and the instructor. Their study results indicated that this approach motivated learning and significantly improved student performance overall as well as on critical thinking tasks. A similar textbook was created for the marketing course for this study, and a similar approach used in teaching it. The objective of the study is to see if such an active learning approach is more effective in helping students think about marketing and in applying the concepts than traditional lectures. Our goal is to help higher education institutions in developing countries to improve their teaching methods and decrease the gap between theory and practice. The challenge is greater in Egypt, in that class sizes in Egypt tend to be far greater than reported in any research - around 1500 students to a section. Also, students are acculturated to expecting a straight lecture and memorizing. To get them to participate in active learning will require a shift in thinking about education.

METHODOLOGY

The Classroom Approach

The teaching method used for the treatment group, as mentioned before, was the Guided Problem Based Learning approach with a reversed book as detailed in Nargundkar et al. (2014). A similar book was created for this course and implemented in teaching, to encourage students to think about marketing issues and problems before teaching them any theory. They were asked to work on the exercises from the book in small groups, and then the instructor would lead a broader discussion to bring out the theory and implications. For example, instead of a lecture on pricing strategies followed by questions about it, the process is reversed. Students are asked to analyze the pricing strategies of some competing products – restaurants they are familiar with, for instance. Students do this without knowing the marketing terminology. A discussion on why consumers are willing to pay different prices for similar products permits the instructor to then introduce the terminology like skim pricing, competitive pricing, product differentiation, and so on. Guidelines for instructors to use an approach similar to that used in this study are shown in Appendix A.

Data and Analysis

Since this is an exploratory study of whether active learning could work effectively in a different culture and with class sizes of over 1000 students, formal hypotheses were not developed. While active learning literature would lead us to expect improvements in learning through the use of these methods, it was unclear how that would play out under these circumstances. This study uses a quasi-experimental approach commonly used in the social sciences (Gribbons & Herman, 1997; Steward, Martin, Burns & Bush, 2010). Two sections of an introductory marketing class taught by the same instructor (the lead author of this study) at a large university in Egypt were chosen for the study. One section served as a control group, where students were taught as they had been in the past, with a straight lecture approach. The other section was the treatment group, where the new pedagogical approach was used to teach the course. A concern in quasi-experiments is that the two groups may not be equal in some key metric to start with. In this case, as with many pedagogical intervention studies, student performance is a key outcome measure. Therefore, one must ensure that student ability among the two groups is not significantly different before the intervention. At this university, students are not assigned to sections based on ability. The section that students end up in is a nearly random process. Further, the class sizes are very large. The control group, in this case, had 1,376 students, while the treatment group had 1,525 students enrolled. The large sample size reduces the likelihood of any systematic differences between the groups before the intervention. The fact that both sections were taught by the same instructor controls for differences due to instructor characteristics. The timing of the two classes was different, of course, and could have a small effect on the results.

Table 1: Below Shows Some Statistics Regarding the Distribution of Students in the Two Sections

	Group A Treatment Group		**Group B Control Group**	
Sample Size	1524		1375	
Age	19		19	
Gender Distribution	48.3% male		27.3% male	
Credits Completed	1 year of college coursework, or the equivalent of about 30 credits in the US system		1 year of college coursework, or the equivalent of about 30 credits in the US system	
Grade Distribution	Number of Students		Number of Students	
Over 90%	4	(0.3%)	2	(0.1%)
80-89%	165	(10.8%)	172	(12.5%)
70-79%	487	(32.0%)	461	(33.5%)
60-69%	564	(37.0%)	494	(35.9%)
Under 60%	304	(19.9%)	246	(17.9%)

The table above shows some basic information about the students in the sample, in both the treatment group and the control group. In general, the table shows that both sections are quite similar in their composition. All the students are traditional age college students in their sophomore year. They take this marketing course in the first semester of their second year.

Two-sample t-tests were performed to compare the average score of the treatment group against the average score of the control group on the final exam. The comparisons were made on the overall scores as well as separately on the critical thinking questions only. The questions on the exam were designed based on Bloom's taxonomy to represent rote level, comprehension level, and critical thinking questions. Another two-sample t-test was performed to compare the average attendance of the two groups over the 20 class meetings throughout the semester. The attendance numbers were compared as a percentage of class size since the class sizes for the two groups were different.

Survey of Students

In addition to comparing their exam scores, students in both groups were surveyed at the beginning of the semester to get some insight into their expectations regarding the level of learning they would achieve in the course. The survey was repeated at the end of the semester with a minor change in wording to gauge their perception of what they learned. The questions on the survey were essentially the six levels of learning from Krathwohl's (2002) revision of Bloom's taxonomy, shown in Table 2.

Table 2: Survey of Student Learning Expectations

Statements	**SD**	**D**	**N**	**A**	**SA**
After the end of this semester, do you expect that you will be able to:					
Remembering: recall or remember the information.	1	2	3	4	5
Understanding: explain ideas or concepts in your own words.	1	2	3	4	5
Applying: use the concepts learned in a new way.	1	2	3	4	5
Analyzing: analyze marketing related cases.	1	2	3	4	5
Evaluating: evaluate marketing issues to justify a stand or decision.	1	2	3	4	5
Creating: create something new that is marketing related.	1	2	3	4	5

The table shows the questions asked of the students, based on the six levels of learning. The purpose was to student perceptions of what they expected to learn at the beginning of the semester, and compare that with their perception of what they actually thought they learned at the end of the semester.

During the semester, the instructor communicated with students on Facebook and occasionally did informal surveys to get some feedback about the class. Responses on Facebook were limited to small

numbers of students, so it may not be statistically valid to generalize those to the entire class, but served to get some feedback and involvement from students.

RESULTS

Table 3 below shows the overall scores for the two sections. There was no significant in the means of the overall examination scores for the two groups.

Table 3: Overall Scores (Percentage)

	A (Treatment)	B (Control)
Mean	67.51	68.05
Stdev	9.82	10.07
Sample Size	1525.00	1376.00

The table shows the results of the final examination. Group A (Treatment) refers to the section taught using the active learning strategy, and Group B (Control) refers to the section taught with the traditional lecture method. The difference in means was not significant even at the 10% level.

Table 4 below shows the scores for the two groups on the critical thinking questions alone. While the difference was small (roughly 1.2 percentage points), the mean score for the treatment group was significantly greater than for the control group.

Table 4: Scores on CT Questions Only (Percentage)

	A (Treatment)	B (Control)	
Mean	60.41	59.20	***
Stdev	13.25	13.28	
Sample Size	1525	1376	

*This table shows the scores on the critical thinking questions on the final examination. The mean score for the treatment group was 60.41, and the mean for the control group was 59.20. *** indicates that this difference in means was significant at the 1% level.*

Table 5 below shows the attendance for each group over the 20 sessions in the semester. Overall attendance for the entire semester is shown at the top of the table. Attendance for the control group was in fact significantly higher than for the treatment group.

Table 5: Attendance for the Two Groups Over the Semester (Percent of Class Attending)

Lecture	Group A	Group B	Lecture	Group A	Group B
1	42.20	41.00	11	27.20	28.20
2	35.90	40.00	12	26.20	31.00
3	37.50		13	27.30	17.80
4	27.50	34.80	14	24.80	28.50
5	26.90		15	31.50	28.00
6	25.20	31.80	16	24.50	25.60
7	27.70	28.00	17	20.40	20.60
8	25.00	33.00	18	24.80	27.50
9	25.60	27.30	19	22.00	21.00
10	26.50	32.60	20	25.10	45.00
Mean	27.69%	30.09%***			
Stdev	5.28%	7.09%			

*The table above shows the attendance numbers for both Group A (Treatment) and Group B (Control) for each of the 20 lecture meetings throughout the semester. The overall means and standard deviations are shown at the top of the table. *** indicates that the attendance for the control group was significantly higher than the control group, at the 1% level.*

Table 6 below shows the student responses to the survey from the beginning of the semester, asking them about their perception of the various levels of learning they believed they would achieve, and at the end of the semester, asking them what they thought they achieved.

Table 6: Percent of Students That Agreed or Strongly Agreed with the Statement

	Semester Start		Semester End	
Do you think that you will be able to:	**Group A**	**Group B**	**Group A**	**Group B**
[Remembering] Recall or remember the information.	60.8%	48.8%	71.4%	41.6%
[Understanding] Explain ideas or concepts in your own words.	57.4%	63.4%	55.4%	56.5%
[Applying] Use the information in a new way.	65.9%	58.7%	63.2%	60.3%
[Analyzing] Analyze marketing related cases.	61.1%	62.8%	75.4%	60.8%
[Evaluating] Evaluate issues to justify a stand or decision.	66.3%	59.2%	68.1%	56.3%
[Creating] Create something new that is marketing related.	73.1%	70.4%	62.3%	57.4%
	n=358	**n=303**	**n=119**	**n=209**

This table shows the results for the treatment group (A) and the control group (B) on the survey of student perceptions before and after the semester. For example, 60.8% of the students in the treatment group believed that they would be able to remember the information learned in the course at the beginning. This number went up to 71.4% for the same group at the end of the semester. Most numbers for Group A went up, while for Group B they declined. This indicates that at least among the respondents, the active learning method was perceived as more useful in learning.

The results show that for both groups, roughly 60-70% of the students started the semester either agreeing or strongly agreeing with the statement that they would be able to think critically (apply, analyze, evaluate, create). At the end of the semester, the percentages in some of the categories moved up and down – notably, a big increase in the percent of the treatment group that said they were able to analyze marketing cases. However, this is tempered by the fact that the sample sizes were small relative to the class size. The samples sizes at the beginning of the semester were roughly 20% of the class size, and these further dropped by the end of the semester. Still, among the respondents, most numbers for group A went up, while they went down for group B. This indicates that students that responded did find the active learning method more useful.

DISCUSSION

The overall performance of the treatment group was not significantly different from the control group. However, the treatment group did better on CT related questions than the control group. Combining the two results implies that while the treatment group performed CT tasks a little better, their scores on the remaining questions actually dropped. Also, while the increase in CT scores was significant, the mean difference in scores (roughly 1.2 percentage points) was small. However, given that the attendance was usually around 25% of the class, this difference may be more meaningful than it seems. The average for the entire group was influenced in a positive way by the effect on roughly a quarter of the students that actually attended and got the benefits of the active learning. While the literature in the US generally shows improved learning overall and improved CT skills using various active learning strategies, the results here raise some important questions about why a method so successful in the US was less successful in Egypt. One obvious possible reason is that with any active learning strategy, the implementation depends on the professor's ability. It is worth mentioning that the professor that adapted these techniques in the classroom here received training on teaching methods both in the US and in Egypt (from a US professor). The second reason for the weak results could be the class size in which the active learning method was implemented. With a class size of about 1500, it was possibly the largest class in which such a method has been attempted. Unlike in a typical US classroom with about 50 students (or a large class with 100 to 200 students, typically), the size does present significant difficulties. While students can be asked to form groups in class and discuss amongst themselves, the instructor cannot really

walk around the room to monitor what is going on and keep students on task. Some of the class participation involved students moving to the instructor's desk to use the microphone to answer questions since the sheer size of the auditorium for such a class size required the use of a microphone. This took a lot more time given the size of the room and the movement involved. A shortage of wireless microphones and technical support occasionally added to the difficulty of managing discussions.

Low attendance is a third reason for the lack of success in implementing this method. Active learning by definition requires student participation, and with attendance roughly around 25% of the class size, even stellar performance improvements in that group are unlikely to show results when evaluating results for the entire class. The roughly 25% that do attend a given class are also not necessarily the same students throughout the semester. The low attendance may be the most important direct reason for the lack of improvement seen. The section used as the treatment group was the last one in the day, while the control group section was the first. Since students go from one class to another with very little break in between, so exhaustion and hunger may have contributed to both low attendance and the inability to focus enough in class for those that did attend. However, another explanation for the results is a broader, systemic issue. Many cultural and educational policies in Egypt serve as barriers to the implementation of any new learning method. Lack of attendance among students, evidenced in this study, is merely a symptom of some of these issues. As reported in the Reviews of National Policies for Higher Education in Egypt (2010), the only criterion for student access to higher education is their grade on secondary school examinations. The students have little option to choose a course of study they want, based on some other test of aptitude or simply personal interest beyond that. The system puts them in a program based on the grades. Attendance in classes is optional, so there is little extrinsic motivation for attending classes.

The students' resistance to change is palpable, as they learn from an early age to be passive receivers of knowledge, rather than active seekers. The literature on education in Egypt suggests very strongly that students are primarily expected to memorize concepts and little else throughout their schooling. Infrastructure and training for teachers are lacking. The expectation set in schooling means that by the time a student arrives at the university, he or she has had few occasions where they had to actively think in a classroom and no experience with business outside of it. Thus, even simple exercises that ask them, for instance, to think about the application of a theory to practical business can be stressful. Students are generally concerned with knowing answers that they believe the instructors want to hear/read, and have not had any experience in intellectually challenging ideas in the classroom. Student responses to the informal survey via Facebook emphasize the above fact. Asked why they did not attend classes more often, the treatment group respondents mentioned the difficulty of the teaching approach. From the treatment group, 35.3% out of 51 respondents said this was the most important reason, while in the control group, only 2% of the 50 respondents had a problem with the teaching method. When asked to elaborate further,50% of them clarify that they found the new approach was difficult because they are used to learning by the traditional lecture method for 12 years and that all other courses that semester used the traditional method except for this one. Making the adjustment for just this section was more effort than they were willing to put in. The second most important reason cited by the students in the treatment group (21.6%), and the most important one for the control group (40%) was a general attitude among students regarding some courses. The following statement (translated from Arabic) by a student sums up this attitude: "Courses in the Social Sciences in general, especially conceptual courses (ones without mathematics, like Introductory Marketing) are so simple in comparison with quantitative courses (Accounting, Finance) that attendance is not needed to succeed."

Students are acutely aware that their education does not provide them with the practical skills necessary, as they hear from others in the job market. This awareness reduces their incentive to attend classes, knowing that in a class of over a thousand students, they can get no personal attention, and what they need to memorize for an exam is in some book anyhow. Further, the final grade in the Egyptian system depends entirely on the final examination (100% of the overall grade is based on one final examination).

There is, therefore, little reason to attend classes regularly. All one has to do to succeed is study hard two weeks before a final exam. The results bear this out. The control group showed an attendance of 30% on average throughout the semester. In other words, fewer than 1 in 3 students attend class regularly. With the treatment group, attendance actually went down significantly. Students were told on the first day that this would be a different approach to learning that required their participation. The reduced attendance shows the students' discomfort with being asked to participate in class discussions. Other reasons cited by students include work schedule and unsuitable class time. On a positive note, some students, after overcoming the initial resistance to change, appreciated the new method and provided positive feedback about the method helping them to think more critically. Part of the initial resistance was their belief that the new way of learning would actually hurt their final examination scores. Some of them provided similar comments almost a year after the experiment.

CONCLUSION

While most pedagogical studies show unqualified success in adopting some teaching innovation or other, it is important for researchers to know the limitations of such methods, and some of the barriers to success. A key contribution of the study was to identify the difficulties in adopting such methods in places like Egypt, where there are some systemic and cultural barriers to new teaching methods. This research showed that an active learning strategy was known to be successful in relatively smaller class sizes in the US is hampered by these barriers when attempted in a large class in Egypt.

Implications for Education in Egypt

There are a few things that are worth considering for the education system in Egypt as a whole. First, the change must occur at an early age so that university students are not jaded by the system before they enter the university to believe that classes are useless in general. This means investment in training and infrastructure at the primary and secondary school levels. Entry into universities is another question that needs to be addressed. Rather than push students into programs they are not interested in or not ready for, and creating class sizes that are unmanageable, a better system for students to choose a path based on aptitude is needed. Instructors at the University level also need training and incentives to try to improve methods of teaching. While there are a few isolated attempts, this study shows that such attempts can, in fact, backfire if tried in isolation, going against all traditional expectations. Student behavior is based on what they perceive to be important for the final grade. The system needs to change to give professor more control over the grading scheme used in the class, with the grades based on a variety of activities including tests, projects, case analyses, etc. throughout the semester. The literature on learning indicates that learning in small chunks is more effective than attempting to do too much at the end of a semester. This would automatically improve attendance. However, doing this would be near-impossible with class sizes being what they are now. The instructors would have no way of evaluating 1500 students multiple times in a semester. The use of technology may help in this regard. However, technology will only help if used with appropriate pedagogical strategies in mind.

Future Research

While pedagogical literature is rich in the US, there is an opportunity to study methods that will work in other cultural environments like Egypt. Active learning strategies can be tried in early childhood education or in secondary schools to gauge the impact. It seems unlikely that students who have explicitly been discouraged from independent thought in the classroom from early childhood would suddenly thrive when asked to do so in a university course. At the university level, active learning strategies can be tried in smaller class sizes, to separate the impact of class size and cultural/systemic issues. Also, active learning strategies can be attempted in other business courses.

APPENDIX

Appendix A: Suggestions for instructors in using the teaching approach used in this study (some of these are specific to conditions in classrooms in Egypt)

1		**Preparations before the Semester Begins**
	a	Prepare an accurate and detailed syllabus and make available to the students. They should be aware of the schedule of topics for the semester, as well as key learning objectives. This practice is not common in the large Arabic sections in Egypt. The syllabus also should contain some information about the new pedagogical method, with both student and instructors roles explained.
	b	Any resources used through the semester, including online material, cases, and books (reversed book created in this case) should also be available from the beginning of the semester.
	c	Find or create mini cases in writing or on video for class discussion.
2		**At the beginning of the semester:**
	a	At the beginning of the semester, let students know that a new method of teaching will be used, so that they are mentally prepared for class discussion and problem solving rather than taking notes only.
	b	Create a Facebook page for each group for interaction online.
	c	Take a picture of the class each time to serve as attendance document.
	d	Ask students to prepare questions based on the case for discussion in class.
3		**Managing a class session:**
	a	Keep the key objectives for the class session in mind.
	b	Ask students to make groups of 5 or 6.
	c	Have them work on questions related to the topic, from easy to difficult, by using the reversed textbook, or from an assigned case.
	d	Manage a discussion without using any unfamiliar terminology to begin with. When students understand a concept, the terminology can be introduced as something they already understand.
	e	Encourage the students to participate, to overcome their fear of speaking in front of a large group. The small group activity can help reduce that fear by getting them started in a discussion among their peers.
	f	Avoid statements like "That is wrong" or anything that discourages participation. The instructor can invite other students to challenge incorrect statements made by someone.
	g	Guide the discussion so that the key learning objectives are met through this process. This process is not an addition to standard lectures, but a substitute for them.
4		**Designing the final exam:**
	a	The exam should be designed to match the detailed course objectives in the syllabus, with questions at various levels of learning included.

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PROJECT MANAGEMENT AS A POSITIVE FORCE FOR CHANGE IN UNDERSERVED COMMUNITIES

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ABSTRACT

This paper discusses the development of a project management course at a high school in an underserved community in the United States. This course was part of the Thrivals® initiative, which strives to be a positive force in the African American community. Our research goal was to assess whether high school students could acquire and demonstrate knowledge of the Project Management Body of Knowledge (PMBOK) at a proficiency level equivalent to the level of university students. We compared the performance of the pilot class at the high school to that of a university level class and found no statistically significant difference in high school students' learning compared to that of the university students.

JEL: L3, M53, O22

KEYWORDS: Project Management Education; High School Learning; PMP Community Outreach

INTRODUCTION

Project management tools and techniques have the ability to help anyone tackle complex, real-life problems. Using project management processes, tools, and techniques could be the difference between success and failure when an individual is solving a problem. However, often business professionals do not learn the recognized body of knowledge from the Project Management Institute until asked to work on a project at their employer. Assignment to a project team and the necessity of understanding project management processes are likely to occur early in an employee's career.

High school students also could learn and benefit from knowing the project management body of knowledge (PMBOK) from the Project Management Institute. Although projects could exist as part of a professional job, projects also could involve community improvement programs, major initiatives people face in their personal lives, and a myriad of other applications. Our goal was to provide high school students exposure to the concepts and techniques of project management at the level of rigor that they could expect from a university course. The University of Louisville mission statement includes as part of its mission, "an effort to improve education, health care, social services and economic opportunity in a traditionally underserved area in west Louisville" (Dr. James Ramsey University President). To support this mission, we developed and piloted a project management course at Central High School in Louisville, Kentucky. This school is located in an underserved area in west Louisville. We wanted to give these high school students the knowledge, tools, and confidence to be able to make an impact in their communities. We used the PMBOK framework to structure a project management course, and the pilot instructor was a university professor who is Project Management Professional (PMP) certified with more than 20 years of experience in managing projects. All instructors in this analysis of high school and university-level project management training were PMP-certified from the Project Management Institute. The instruction took place at a high school during normal school times in Spring Semester, 2014, and the pilot class was well-received by all parties. A year after the pilot class, another PMP-certified instructor taught a second class using the same

course materials. Our intention is to roll this course out to other high schools, which have already contacted the authors regarding offering this course to their students.

The remainder of this paper is organized as follows. The next section describes the literature related to project management education. After that, we discuss the methodology used in the study. Next, the results are discussed in the following section. The last section includes conclusions.

LITERATURE REVIEW

In this section, we review the literature related to project management education. Relevant concepts and outcomes to include in project management education are discussed next. As Berggren and Söderlund (2008) suggested, education in project management is increasingly important for educators to teach leadership. They proposed six learning modes for project management training: (1) Reflection reports to summarize individual lessons learned and their implications, (2) Learning contracts to set learning targets and individual objectives, (3) Roundtable examinations for participants to share knowledge and reflections, (4) Live cases to foster group-level quasi-experience, (5) Thesis work for which participants solve important problems in their organizations, and (6) Knowledge theatres held annually to discuss lessons learned. Four of these learning modes—refection reports, learning contracts, roundtable examinations, and live cases—were used in this study. The learning contracts, used only in the high school class, were a key element in recruiting motivated students. Hartman (2008) integrated three levels of learning in a test course at the University of Calgary: (1) Grounding in basic project management, business, technical, and social skills, (2) Appropriate levels of trust, communication, and expectations management, and (3) Maximizing the wisdom that a person is capable of developing. The first level increases competence in project management tools and procedures and the ability to lead a project. The second level increases integrity: trusting one's intuition and recognizing biases in one's decision making, eliminating that bias, and avoiding the tendency to underestimate project risks and uncertainties. The third level fosters the development of intuitive skills to recognize patterns and to make connections between different aspects of project management. As outlined below, our project management course addressed each of these three areas by focusing on the PMBOK framework, which includes a basic grounding in project management principles, techniques for estimating risk and uncertainty, and linkages between different stages of the project management lifecycle. Mengel (2008) designed an undergraduate project management course to have students focus on two project management learning outcomes: (1) Ability to initiate and plan a project, and (2) Ability to execute, control, and close a project. Mengel, however, designed his course to focus on student community projects and basic project management skills rather than on the PMBOK on which we focused in our project management course.

Other factors related to pedagogy in project management courses are discussed next. As noted by Crawford, Morris, Thomas, and Winter (2006), different generations (e.g., Baby Boomers, Generations X and Y) display different work ethics, which need to be considered when developing a project management course. Given that the high school students and undergraduate students in our study were close in age, this was not a concern in our study. In addition, Bobrowski and Kumar (1992) noted that more class time could give better insight into planning, but not address the other seven areas that they identified as the most common problems faced by project managers. Therefore, they proposed an internship to close this gap. We agree that a follow-on internship after a basic project management course would be ideal, and we have made initial contact with members of the local Project Management Institute chapter who expressed an interest in mentoring interns after the conclusion of the high school class. Cobo-Benita, Ordieres-Mere, Ortiz-Marcos, and Pacios-Alvarez (2010) discussed the limitations of traditional lecture-based courses and advocated for student learning by doing instead, by having engineering students manage a real-life project. As an another example of learning by doing, Brown (2000) had her MBA students conduct project work on low-income senior citizens homes in a predominately African-American central area. Therefore, as part of our study, we required students to work on mock projects. Conversely, Poston and Richardson (2011)

discussed the difficulty of finding student projects that could be used over multiple semesters. Instead, they argued for an approach of bringing in professionals from a local Project Management Institute chapter to share real-life experience with students. We added this dimension to our course by having instructors share their real-life project management experience during class time. Zhang, Zhao, Zhou, and Nunamaker (2004) stated that some students are intimidated or bored when using a computer for e-learning. Therefore, delivery of the course (face-to-face vs. online) was an important issue to address as well. We addressed this issue by structuring the course to include only face-to-face instruction, which was critical for the PMP-certified instructors to share their project management experience and to mentor students during class time for the high school course.

METHODOLOGY

Background

Projects are an integral part of business operations. Learning how to plan and manage these endeavors is important, yet surprisingly not every university has project management courses at the undergraduate or the graduate level. The College of Business at the University of Louisville, in Louisville, Kentucky, offers both a graduate (MBA) and an undergraduate course in project management. The undergraduate course is part of a management minor and is required for accounting majors in the College of Business also. Typically, students are juniors or seniors when they take this course.

As the course lead for the undergraduate project management course, one of the authors was presenting to department faculty about changes made in the project management curriculum to enhance student learning of the PMBOK. This commonly accepted framework gives any project manager, sponsor, or team member the language and tools to work with others on a complex project. At the end of the presentation, the Executive in Residence of the College of Business exclaimed, "These are skills that everyone needs, not just at the college level." Nat Irvin II, the Executive in Residence, serves as a liaison between businesses and the regional community. He started the Thrivals® Ideas Festival as an opportunity to be a powerful force to affect the black community positively. Thrivals® brings together thought leaders and artists to present to high school students to inspire those students. Similarly, he believed that concepts from the undergraduate project management course could give young people a set of skills that would set them on the path to success in life. Thus, the Thrivals Project Management Academy was born.

Curriculum Design

To develop the curriculum for this pilot, we started with a review of the existing materials of materials from the Project Management Institute Educational Foundation website (http://pmief.org/). A partial list of resources that we reviewed from that website includes:

Careers in Project Management
Building Project Management Skills for the 21st Century (Program Development)
Building Project Management Skills for the 21st Century (Curriculum for Secondary Schools)
Building Project Management Skills for the 21st Century (Planning and Implementation Guide)
Building Project Management Skills for the 21st Century (A Student's Guide to Leadership)

Throughout the design process, we also consulted with various partners: donors, local businesses interested in project management, and high school administration. The design of the curriculum was shaped by the lead professor and input from these partners. We took into account the level of maturity and business acumen of the target students as advised by Crawford et al. (2006). In addition, we decided to offer the course face-to-face given the concerns with online instruction addressed by Zhang et al. (2004). Our course

was designed to expose students to the PMBOK framework in the context of serving their local communities.

Through contacts at the university, we approached Central High School to be the site for the pilot class. Central High School had a pre-existing relationship with the university because university professors there taught a law class. Furthermore, the high school teacher with whom we collaborated for the pilot class had worked as an adjunct professor at the university. Thus, the players knew each other already. Similar to Brown (2000), we wanted to empower these predominately African-American high school students to lead future projects in their underserved neighborhoods.

Central High School has a long and distinguished history (Central High School History). In 1870, leaders among the black citizens asked the Louisville Board of Education to provide free schools for their children, and the Board of Education opened two new buildings. From its beginning, Central High School offered a college curriculum. On an interesting note, Cassius Clay (Muhammed Ali) graduated from Central High School in 1960. We observed his picture displayed with pride in the hallway adjacent to the principal's office. This high school specializes in preparing students for professional careers by offering many magnet programs. As an all-magnet school, Central High School has no home district per se; instead, it brings in students from throughout the Jefferson County Public School System in Louisville, Kentucky. The mission statement of Central High School is, "Our goal is to develop leaders for today, tomorrow, and the future. We will nurture every student in an environment that promotes high academic achievement, respect, and civic responsibility.

We will provide a career-focused magnet program and meaningful experiences through corporate and educational partnerships to help all students reach their full potential" (Mission Statement).
We were able to find a local business owner to donate money to purchase each high school student a copy of the text for the pilot class—CAPM in Depth: Certified Associate in Project Management Study Guide for the CAPM Exam (Sanghera, 2010). This made the cost of participating free for each high school student, given that instructors volunteered their time as well. In addition, large businesses expressed an interest to be involved with the Thrivals Project Management Academy and our students in the future. Additionally, as we neared the pilot kickoff, other high schools expressed strong interest to be next in line to participate in this program.

This project management course closely follows the framework outlined by the Project Management Institute's PMBOK 5th edition (Project Management Institute, 2013). Students learned about the five categories known as Project Management Process Groups: initiating, planning, executing, monitoring & controlling, and closing. Within each of these five process groups (listed as column headings), there are nine knowledge areas (listed as row labels) as shown in Table 1. In each process group, the major activities and deliverables are shown at a high level in this table (clearly, the details are what turn this simple overview grid into a full course!). Students learned the major process groups, knowledge areas, and techniques in the course via lectures and exercises. Homework assignments and a final exam were used to assess students' understanding of course concepts.

Table 1: Process Groups, Knowledge Areas, Activities, & Deliverables from PMI's PMBOK

	Initiating	**Planning**	**Executing**	**Monitoring & Controlling**	**Closing**
Project Integration Management	Develop project charter, develop preliminary project scope	Develop project management plan	Direct and manage project execution	Monitor and control work, integrated change control	Close project
Project Scope Management		Scope planning, scope definition, create WBS		Scope verification, scope control	
Project Time Management		Activity definition, activity sequencing, activity resource estimating, activity duration estimating, schedule development		Schedule control	
Project Cost Management		Cost estimating, cost budgeting		Cost control	
Project HR Management		Human resource planning	Acquire project team, develop project team	Manage project team	
Project Communications Management		Communications planning	Information distribution	Performance reporting, manage stakeholders	
Project Quality Management		Quality planning	Perform quality assurance	Perform quality control	
Project Risk Management		Risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning		Risk monitoring and control	
Project Procurement Management		Plan purchases and acquisitions, plan contracting	Request seller responses, select seller	Contract administration	Contract closure

This table lists process groups as columns and knowledge areas as rows. At the intersection of a row and a column, major activities and deliverables are identified.

RESULTS AND DISCUSSIONS

Conducting the Pilot

After designing the course curriculum for the pilot class, we needed to find students to enroll. We created an application for students that was quite involved. Given that this course would count as an honors program at the high school, we wanted only serious, motivated students to apply. This application served as the learning contract between the high school students and the instructors. All applicants had to apply and to answer questions addressing how they perceived project management being part of their future career and what dream projects they would advocate to help their community. The application process acted as a filter to dissuade any young people who would not dedicate the requisite time to this rigorous program. High school seniors were given preference because juniors would have an opportunity to take the course the following year. Students also needed to obtain letters of recommendation from both academic and community sources. All of the students easily obtained recommendations from teachers, but forcing them to approach people in their communities for letters initiated the connection between the Thrivals Project Management Academy and the local community. We wanted to inspire young people and to give them the knowledge and tools to make a difference in their communities by becoming positive role models for their peers and neighbors, while improving the overall community through future improvement projects that they would initiate.

We limited the seats available to twenty-five to ensure sufficient instructor availability to student teams as they worked through exercises and mock project planning during class times. To stimulate student interest in future projects for their communities, we had them plan either a playground cleanup mock project or a recycling and/or compost mock project. Mock projects such as these should allow high school students to apply sustainability concepts that they learned in other courses. We originally had scheduled two other project management instructors to assist the main instructor, but one had a conflict. Therefore, we ended up with two instructors to teach the pilot class. The main instructor was the professor from the University of Louisville's College of Business. This instructor presented the content in front of the class. The second instructor was a PMP-certified business professional who helped with grading, administration, and assisting teams during in-class exercises at the high school class. Having a PMP-certified business professional assisting in the course helped to spread the workload and to provide students more exposure to PMP expertise. Having two professionally dressed, PMP-certified instructors (one a faculty member at the nearby university) definitely set the tone of the rigor of this course. We took this program seriously and expected students to give us 100% effort and attention.

Model

To assess the learning of the Thrivals Project Management Academy high school students upon completion of the course, z-tests of means were conducted between the pilot class and an equivalent university level project management class taught by the same main instructor during Spring Semester, 2014. The Executive in Residence of the College of Business (Nat Irvin II) believed that the high school students could master the course concepts at a level equivalent to that of the undergraduate students. Therefore, we assessed whether students' mean homework scores during the class differed between the high school and the university students and if the mean final exam scores for these two groups differed. The null and alternative hypotheses were:

$$h_0\colon \mu_1 - \mu_2 = 0 \quad (1)$$

$$h_1\colon \mu_1 - \mu_2 \neq 0 \quad (2)$$

Comprehension was assessed via a variety of methods, including assessment of in-class discussions and quantitative aspects, e.g., homework assignments and a final exam. Homework assignments and the final exam were identical in both the high school class and the undergraduate class. The ten homework assignments included multiple-choice questions covering PMBOK concepts and basic project management problems (PERT calculations, critical path determination, and updates of project budgets and schedules). The final exam employed a multiple-choice format as well and was similar to the homework assignments. Note that due to unanticipated student conflicts, the final class size of the high school class was twenty-two, while the university class had fifty-four left after one student dropped out mid-semester due to an urgent family matter. As Table 2 shows, we failed to reject the null hypothesis for both tests. Therefore, we did not find a statistically significant difference between the mean homework scores of the high school students and the college students (p = 0.6795). In addition, we did not find a statistically significant difference between the mean final exam scores of the two groups (p = 0.1229). Our research goal was satisfied. Given that the results of our statistical tests did not allow us to reject the null hypotheses, we concluded that high school students taught by a PMP-certified instructor could learn and demonstrate PMBOK knowledge on a level equivalent to that of university students.

CONCLUSIONS

Given the prevalence of projects, understanding of tools, processes, and nomenclature of project management is critical. The Project Management Institute's PMBOK is a comprehensive knowledge base for project managers. We had been teaching university students about project management for many years. Only recently did we consider reaching out to a local high school to offer those students an opportunity to

gain unique skills in the area of project management. We developed a project management course and then conducted a pilot class at the high school with positive outcomes. Further, given the results of our statistical tests, the results of the high school students are not just good in the context of peer high school students—the results are comparable to the results of university students at a nationally ranked business school. As project management professionals, we can teach motivated students what we know, and they will learn it—whether they are high school or university students.

Lessons Learned

1) Need for serious students. Ensure that the students are serious about the course and view it as a privilege to be selected. The rigorous application process and requirement of letters of recommendation helped to filter out less serious students. However, we had three students who submitted the initial homework assignments late. That was a bad sign, and in retrospect, we should have asked them to leave the pilot class. They demonstrated this lack of professionalism throughout the entire semester. This lackadaisical attitude was disruptive to the educational environment for other students. In a second, follow-up class that we offered at the high school (one year later), students who demonstrated a lack of desire for learning project management in the first week were given stern warnings.

Table 2: *z*-Tests for Comparing Student Performance Results

Table 2a: Homework Scores

	High School	University
Mean	84.500	85.426
Known Variance	60	124
Observations	22	54
Hypothesized Mean Difference	0	
Z	-0.413	
P(Z<=z) one-tail	0.3398	
z Critical one-tail	1.645	
P(Z<=z) two-tail	0.6795*	
z Critical two-tail	1.960	

Table 2b: Final Exam Scores

	High School	**University**
Mean	84.545	88.222
Known Variance	48	189
Observations	22	54
Hypothesized Mean Difference	0	
Z	-1.542	
P(Z<=z) one-tail	0.0615	
z Critical one-tail	1.645	
P(Z<=z) two-tail	0.1230*	
z Critical two-tail	1.960	

*Table 2 shows the z-test results for the null hypotheses that "High School" (high school class) had the same mean student scores for homework assignments and the final exam as the "University" (university class). Note: ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. Even with using a significance level as high as 10% (0.10), we could not reject the null hypothesis that the mean homework scores were equal or that the mean exam scores were equal.*

2) Small class size. To provide students the individual attention and help for complex project planning, the student to teacher ratio should be 12:1 or less (we had hoped for 8:1, but our third instructor had a last minute schedule conflict).

3) Firm schedules. Any instructors or facilitators teaching this course need to set firm schedules for when they will provide the classes for the high school students. Given that teachers are donating their time and expertise, professional courtesy suggests ensuring that they are able to plan around their other work-related activities. Students and school administrators also need set schedules. We had several instances where high school administrators canceled or rescheduled our project management class (due to ACT prep workshops or other unknown events at the high school level). This caused disruption and confusion among the students.

4) Face-to-face time. With the maturity and educational background difference, a little more time is required to cover material with high school students than with college students. The college level course is offered at a junior/senior level, so high school seniors are four years earlier in their knowledge base.

5) Planned subsequent projects and mentors. The handoff from class to field project management with mentors needs to be established. In our pilot, the subsequent mentoring program was not established by the end of the pilot, and the mentoring by local companies did not occur. The mentors typically work for corporations and need set schedules to work with students on a volunteer basis. If there is a delay between the end of class and the project work with mentors, momentum (and PMBOK knowledge) may be lost.

6) CAPM incentive. Emphasizing CAPM is important, but given that the certification is offered by a third party (the Project Management Institute), the grade in the high school or the university class cannot be based on CAPM exam performance due to accreditation reasons. The CAPM certification is recognized by the business world and would look good on a college application. The textbook we used for the class was a CAPM study guide. For future classes, we believe that obtaining donations to cover student Project Management Institute membership and CAPM exam fees (for the top students) would be ideal.

7) Nice to have requirement. Having a strong role model with whom students could identify should be considered. For the largely African American student body at the high school, having at least one professor who was a successful African American PMP was inspiring to the students.

8) Soft skills. Enough time needs to be dedicated to teaching soft skills given that these could be regarded as essential for managing any project (Ingason and Jónasson, 2009). Learning the hard skills is straightforward and mechanical but serves as a necessary, but not sufficient, skill base for project managers to be successful managing projects. Pant and Baroudi (2008) also found a general lack of human soft skills in university-level project management courses.

Future Directions

The project management pilot class was considered a great success. The limitation that we face is securing instructors to conduct additional classes. Many other high schools (public and private) have contacted us in the region and across the USA wanting to have this course offered at their schools. However, finding instructors experienced in both education and project management (with PMP certification) is quite difficult. Typically, a PMP-certified professional is a project manager, but does not have training or experience in teaching. In addition, instructors with no project management experience and lacking PMP certification would not do the program justice. It is important to have experienced instructors available to give students the best learning environment possible. Further, the design of the course should give students the transferable skills that they desire. Ojiako, Ashleigh, Chipulu, and Maguire (2011) found from their student survey that there were different participant perceptions of the value of key skills. The course should strive specifically to target transferable skills desired by the target population. Additionally, the course should be aligned to the learning styles of participants, as matched cognitive styles allow project information to be processed effectively (Sense, 2007). We hope that other PMP-certified instructors will become inspired to follow our lead and to offer high school courses similar to the project management

course that we designed and conducted. It is important for project management professionals to share their knowledge with young people, especially in underserved areas. We can give high school students the tools to be a positive force for change in their communities.

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INFLUENCE OF COMPUTING COMPETENCE ON LECTURERS' PREPAREDNESS FOR E-LEARNING AT THE UNIVERSITYOF NAIROBI, KENYA

Nicholas K. Ochogo, University of Nairobi
Charles M. Rambo, University of Nairobi
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ABSTRACT

The objective of this study was to determine the influence of lecturers' computing competence and preparedness for electronic learning (eLearning), focusing on word processing, spreadsheets, presentation, statistical analysis, internet browsing and e-mailing software packages. We applied a cross-sectional survey design with both quantitative and qualitative approaches to source data from 212 lecturers and 108 administrative staff in May 2011. The results show that participants whose competence in applying word processing packages was above average had about 5.7 the odds of being prepared for eLearning as those whose competence was below average. Those whose competence in applying spreadsheets was above average were about 2.2 times as likely to be prepared for eLearning as those whose competence was below average. Participants whose competence in presentation packages was above average had about 5.1 times the odds of being prepared for eLearning as those whose competence was below average. Structuring the training program and harmonizing its schedules with academic semesters, making the University training program continuous, initiating a program for change management are some of the measures that the University should consider to improve lecturers' preparedness to function in an eLearning setting.

JEL: I230

KEYWORDS: Computing Competence, E-Learning, Preparedness, Software Packages, Training, Change Management

INTRODUCTION

The unprecedented improvement of Information and Communication Technology (ICT) and the Internet after the Second World War has significantly influenced the delivery of university education, both in developing and developed countries (Naidu, 2006; Datuk & Ali, 2008). Over the past two decades, many institutions of higher learning have increasingly integrated ICT to support course delivery. The need to expand access to university education, particularly for corporate sector workers by creating a flexible mode that results to minimal inconveniences to their work schedule necessitated the interest in ICT (Naidu, 2006). Electronic Learning (eLearning) is the application of ICT and internet to support course delivery (Farahani, 2003; Omwenga, 2004). Industry practitioners often use various terminologies in place of eLearning, for instance, *online learning*, *virtual learning*, *distributed learning*, *network,* or *web-based learning*. Whatever the terminology used, the primary connotation is the application of ICT packages, including the Internet, Intranet, satellite broadcast, audio or video tapes, interactive television or CD-ROMs (Trombley & Lee, 2002; Tavangarian, Leypold, Nölting & Röser, 2004). Over the past two decades, eLearning has been gaining momentum in developed and developing countries alike, especially in response to technological revolution, including the advancement of internet as a medium of communication (Farahani, 2003; Omwenga, 2004; Selim, 2007). As such, eLearning has

attracted the interest of academic institutions, lecturers, learners and the corporate sector. Statistical projections indicate that enrolment for university education through eLearning was expected to grow consistently from about 900,000 in 2003 to about 15.2 million learners by the end of 2012 (MENON Network, 2007). As universities infuse eLearning in their systems, the roles of lecturers are bound to change significantly, particularly in terms of course development, facilitation, moderation and evaluation of learners (Bangkok, 2004; Omwenga, 2004). This makes it necessary for lecturers to learn new skills to facilitate their operation within an eLearning setting (Farahani, 2003; Lu, Liu & Liao, 2005). However, inadequate computing competence among lecturers remains a key factor undermining institutional preparedness for eLearning in most institutions of higher learning as noted by various studies, including Farahani (2003), Sime and Priestley (2005) and Koo (2008), among others. The key message contained in the findings of these studies is that the level of computing competence among lecturers significantly correlates with institutional preparedness for eLearning.

The relationship between infrastructural facilities, lecturers' computing competence, and institutional preparedness for eLearning has been a subject of empirical investigation in many countries. However, very little documentation of the subject has occurred in African countries, especially in Kenya; thus, leading to a dearth of academic literature to inform policy processes and programming. Gakuu (2006) reported that although the application of ICT-based instructional modes was limited at the University of Nairobi, lecturers were positive about integration of eLearning. However, the study did not establish the linkage between infrastructural facilities, lecturers' ICT competence, and preparedness for eLearning. By documenting information on skill gaps and training needs, this study provides useful baseline information that should stimulate investment in skill development among lecturers at the University of Nairobi. The article comprises of four sections, including literature review, data and methodology, results as well as discussions and conclusions.

LITERATURE REVIEW

The relationship between computing competence among lecturers or teachers and preparedness for eLearning has been a subject of empirical investigation in many countries. A review of empirical literature reveals two sets. The first set comprises of literature that details lecturers' competence in general while the second set focuses on lecturers' competence in specific software packages including word processing, spreadsheets, database, presentations, statistical analysis, Internet and e-mailing packages. Highlighted in the subsequent paragraphs are key findings of selected studies. In Malaysia, for instance, Luan, Aziz, Yunus, Sidek, and Bakar (2005) investigated gender differences in ICT competencies among the academic staff at the Universiti Putra Malaysia in terms of eight software packages, including word processing, spreadsheets, databases, presentations, electronic mail, World Wide Web, multimedia and virtual class applications. The study found that female lecturers were more competent in the application of most packages than were their male counterparts. For instance, in the application of word processing packages, up to 85% of the female lecturers against 64% of their male colleagues rated themselves as 'excellent' in the insertions and editing of texts in word processing. Again, a higher proportion of women than men (96% and 87%, respectively) rated their competence in the application of e-mailing packages as 'excellent'. Overall, 64% of the lecturers were above average in terms of computing competence (Luan, Aziz, Yunus, Sidek & Bakar, 2005).

In the United States, Marcinkiewicz (1994) found that the level of computing competence significantly associated with computer use among public university lecturers. Berner (2003) also found that self-perceived ICT competence was the key determinant of computer use by lecturers, especially to support teaching activities. The studies concluded that developing ICT competence among lecturers remains crucial for enhancing institutional preparedness for eLearning. In another study, Sime and Priestley (2005), found a positive correlation between computing competence and computer use frequency among Argentine middle-level college instructors. The study further reported that computing competence

accounted for up to 7.2% of variance in the preparedness for eLearning and was the third most important factor after access to computers at the workplace and internet reliability.

Again, in Malaysia, Koo (2008) reported that up to 85% of lecturers in public universities were limited in terms of computing skills, which in turn, affected their application of computers in their teaching. The functionality of such lecturers was significantly constrained by skill limitations in computing, which delayed the adoption of eLearning by more than half of public Malay universities. Still in Malaysia, a study conducted by Selim (2007) noted that due to inadequacy of computing skills, more than 80% of Malay lecturers in public universities lacked confidence in computer use. In Bahrain, Al-Ammari and Hamad (2007) found that the perceived usefulness of computers and the perceived ease of use were significantly associated with lecturers' intention to integrate ICT in their teaching activities. The study also found that computer self-efficacy positively influenced lecturers' intention to use computers in their work. The perceived usefulness, perceived ease of use and self-efficacy regarding computer use among lecturers are critical elements of institutional preparedness for eLearning.

Still in Asia, Lu, Liu, and Liao (2005) found that the intention to use eLearning websites among university lecturers in Taiwan significantly associated with lecturers' competence in using computers. The study further noted that competent lecturers were more regular in visiting eLearning websites than those lacking computing skills. The study emphasised the role of universal training for academic staff to facilitate transition to an era of technology-aided university education. Nanayakkara and Whiddett (2008) noted that the decision of lecturers to embrace eLearning significantly correlated with the level of computing skills in online content design. In relation to this finding, the study revealed that about two-thirds of lecturers at the Bay of Plenty Polytechnic in New Zealand reported a low level of computing skills. Yet again, participants identified ICT training as the most crucial avenue through which institutions of higher learning could improve computing skills among their academic staff.

In the United Kingdom, Thomas and Stratton (2006) revealed a strong positive relationship between ICT training, computing competence and computer use. Lecturers who had had some training in ICT applications were more competent than were those lacking training. Besides, up to 70% of trained lecturers were of the opinion that the manipulation of ICT packages was easy. In this regard, the frequency of computer use was higher among those who perceived the manipulation of ICT packages to be easy. The study also found that trained lecturers were consistently using computers to support course delivery than those who were yet to undergo such training. In relation to institutional preparedness for eLearning, the study reported a strong relationship between the proportion of ICT competent lecturers and the number of departments that had integrated eLearning.

In Africa, studies relating computing competence and institutional preparedness for eLearning remain scarce. The few existing documentations are concentrated in the south and western parts of the continent. For instance, Thurab-Nkhosi, Lee and Gachago (2005) found that inadequate computing competence among lecturers was one of the key constraints to eLearning at the University of Botswana (UBeL initiative). In this regard, the study revealed that only 20% of the surveyed participants rated their computing proficiency as excellent, the majority expressed discomfort with computers.

In Namibia, Mpofu (2004) reported that more than two-thirds of lecturers were not using computers to facilitate course delivery, despite the motivational support provided by the universities, which included ICT training, universal access to computers at the workplace and higher allowances for trained lecturers. Low computing competence significantly associated with negative attitudes towards ICT, which affected the level of computer use. In Nigeria, Tella (2007) found that low level of computing skills was the key factor influencing the confidence to utilize ICT equipment and software packages to support course delivery. The study found a significant relationship between computing skills and fear regarding computer use. In this regard, teachers lacking computing skills expressed a low level of confidence in

computer use. Kenya is one of the countries experiencing a dearth of academic literature on lecturers' computing competence and preparedness for eLearning. However, a study conducted by Gakuu (2006) revealed that the use of ICT-based instructional modes was limited at the University of Nairobi; however, lecturers expressed a positive attitude towards computer use and eLearning. Moreover, lecturers' attitude towards computers and eLearning was not significantly different across University colleges. Key deficiencies noted in Gakuu's study included inadequate linkage between infrastructural facilities, lecturers' computing competence, and preparedness for eLearning. Besides, the study did not bring out the extent of ICT training needs among lecturers at the University.

DATA AND METHODOLOGY

This study builds on the positivist philosophy of social research, holding that in social sciences, information that humans derive from sensory experience is the exclusive source of all authoritative knowledge. Besides, the world is external and objective; and that the observer is independent of phenomena under observation. The positivist thought assumes that valid knowledge can arise from scientific knowledge (Ashley & Orenstein, 2005). Based on the positivistic thinking, the study applied a cross-sectional survey design with both quantitative and qualitative approaches to guide the research process (Babbie, 1973; Fowler, 1993). Whereas, the quantitative approach elicited information for descriptive and inferential purposes using self-administered questionnaires, the qualitative approach obtained in-depth information through key informant interviews. We collected primary data in May 2011 from lecturers and administrative staff at the University of Nairobi. Although the study focused on lecturers' preparedness for eLearning, the inclusion of administrative staff was due to their crucial role in policy formulation, implementation and enforcement, which influence the work environment in which lecturers operate. Their inclusion in the study enabled the study to identify policy gaps regarding ICT strategies, plans, budgetary allocations and ICT development, which are likely to influence lecturers' preparedness to function in an eLearning environment.

With a finite population of lecturers, we applied one of Fisher's formulae for sample size determination to obtain a sample size of 213 participants. We sampled lecturers using a stratified random sampling process based on colleges, gender and cadre. This ensured proportionate representation of all colleges; male and female lecturers; as well as assistant lecturers, lecturers, senior lecturers, associate professors and professors. We obtained proportionate samples from each stratum by first, calculating the sampling fraction, as a quotient of the sample size (n_i) and the population (N_i). Table 1 shows the proportionate sample sizes of lecturers from each college and for various cadres of administrative staff. From each stratum, we applied simple random sampling to select respondents. In addition, we applied purposive sampling procedure to select administrative staff, based on their availability and accessibility at the time of the study. The sample included 6 principals, 6 deputy principals, 6 registrars, 21 assistant registrars, 20 deans and directors, 13 associate deans and deputy directors, as well as 36 administrative assistants. We used three sets of instruments, including a self-administered survey questionnaire for lecturers, a key informant interview schedule for administrators and an observation schedule to source the data. We pre-tested the instruments on 20 lecturers and 10 administrators. We obtained data by issuing questionnaires to lecturers, which we collected after two weeks; and interviewed administrators at their places of work. The response rate was 99.5% for lecturers and 84.4% for administrators.

Table 1: Proportionate Samples of Lecturers and Administrators

Respondent Type	College/Cadre	Population	Sample Size	Actual	Percent
Lecturers	Humanities and Social Sciences	412	92	92	100.0
	Biological and Physical Sciences	170	38	38	100.0
	Health Sciences	52	12	11	91.7
	Education and External Studies	125	28	28	100.0
	Agriculture and Veterinary Sciences	94	21	20	95.2
	Architecture and Engineering	105	23	23	100.0
	Total	958	213	212	99.5
Administrators	Principals	6	6	6	100.0
	Deputy principals	6	6	6	100.0
	Registrars	6	6	6	100.0
	Assistant registrars	21	21	16	76.2
	Deans and directors	20	20	16	80.0
	Associate deans & Deputy directors	13	13	9	69.2
	Departmental chairpersons	20	20	15	75.0
	Administrative assistants	36	36	34	94.4
	Total	128	128	108	84.4

This Table shows that the study targeted samples of 213 lecturers and 128 administrative staff. However, 212 lecturers successfully completed and returned questionnaires, which represents a response rate of 99.5%. Besides, of the 128 administrative staff, we successfully engaged 108 in key informant interviews, which show a coverage rate of 84.4%.

In addition, we applied both quantitative and qualitative techniques to process and analyze. We analyzed quantitative data at three levels, namely univariate, bivariate and multivariate. Univariate analysis yielded frequency distributions and percentages; bivariate analysis obtained cross tabulations with Chi-square (χ^2) tests; while multivariate applied binary logistic regression to obtain beta co-efficients and odds ratios. We performed all the quantitative analyses using the Statistical Package for Social Sciences (SPSS) and Ms-Excel packages. In addition, we processed and analyzed qualitative data by organizing and summarizing transcripts in line with thematic areas; followed by thematic analysis. Details about the methods that we applied in this study are in various publications, including Babbie (1973), Fowler (1993), Aldrich and Nelson (1984), Nachmias and Nachmias (1996), Mugenda and Mugenda (1999), Wuensch (2006), as well as Best and Khan (2004).

RESULTS

The study covered 212 lecturers from all colleges of the University of Nairobi, including 92 (43.4%) from the College of Humanities and Social Sciences; 38 (17.9%) from the College of Biological and Physical Sciences; 11 (5.2%) from the College of Health Sciences and 28 (13.2%) from the College of Education and External Studies. Those from the College of Agriculture and Veterinary Sciences were 20 (9.4%), while 23 (10.8%) lecturers were in the College of Architecture and Engineering. In addition, the study involved 108 administrative staff, including 6 (5.6%) principals, 6 (5.6%) deputy principals, 6 (5.6%) registrars, and 16 (14.8%) assistant registrars. Other participants included 16 (14.8%) deans and directors, 9 (8.3%) associate deans and deputy directors, 15 (13.9%) departmental chairpersons and 34 (31.5%) administrative assistants. We measured lecturers' preparedness for eLearning in terms of self-perceived computing competence, referring to the ability to execute commands and manipulate a range of software applications for various purposes. In this regard, we requested participants to rate their competence on each of the following computing software packages on a scale of 0 to 10: word processing, spreadsheets, presentation, statistical analysis, internet browsing and e-mailing. We summed up participants' ratings for each software tool and determined mean scores. We then rated resultant quotients on a scale of 0-49% and 50-100%. We considered participants whose mean scores were less than 50% to be below average; thus, were unprepared to function in an eLearning environment. Conversely, we considered those whose mean scores were above 50% to above average, and prepared for eLearning. Based on the principle, out of 212 participants, 103 (48.6%) had a mean score of 50% or higher; while 109 (51.4%) scored less than 50%; suggesting that slightly more than one-half of the lecturers were below average in terms of computing competence.

Table 2 presents cross-tabulation results between lecturers' preparedness for eLearning and various background attributes including age, gender, education level and average monthly income. Regarding age, the results show that of the 212 participants, 97 (45.8%) were in the 40 to 49 years age bracket; 4 (25.5%) were aged between 50 and 59 years, while 22 (10.8%) were in the 30 to 39 years bracket. Besides, another 22 (10.8%) reported to be 60 years or higher, while 8 (3.9%) were aged below 30 years. Table 2 further shows that the proportion of participants unprepared for eLearning in the 50 and above age category was more than the proportion of those prepared in the same age category. Conversely, among those aged below 40 years, the proportion that was prepared for eLearning was higher than the proportion of those unprepared. The pattern suggests that younger lecturers were likely to be more competent in working with software packages; hence, were likely to be better prepared for eLearning than their relatively older colleagues.

Based on this, bivariate analysis obtained a computed χ^2 value of 18.026, with 4 degrees of freedom and a ρ-value of 0.001, which is significant at 1% level; suggesting up to 99% chance that lecturers' preparedness for eLearning significantly associated with age. Similar findings regarding the relationship between lecturers' computing competence and age emerged in the study of Venkatesh and Morris (2000), who assessed the role of gender and social influence on technology acceptance behaviour among academic staff of Indian public universities. The study found that younger lecturers were more receptive to new technologies than were their older counterparts. In Jordan, Abbad, Morris and Nahlik (2009) found a negative correlation between lecturers' age and eLearning delivery methods.

Table 2: Background Profile and Preparedness for E-Learning

Background Attributes	Prepared Frequency	Percent	Unprepared Frequency	Percent	Total Frequency	Percent
Age						
<30 yrs	8	8.3	0	0.0	8	3.9
30-39 yrs	12	12.5	10	9.3	22	10.8
40-49 yrs	45	46.9	52	48.6	97	47.8
50-59 yrs	23	24.0	31	29.0	54	26.7
60+ yrs	8	8.3	14	13.1	22	10.8
Total	96	100.0	107	100.0	203	100.0
Gender						
Male	69	67.0	77	70.6	146	68.9
Female	34	33.0	32	29.4	66	31.1
Total	103	100.0	109	100.0	212	100.0
Education level						
Bachelors	1	1.0	4	3.7	5	2.4
Masters	36	35.0	20	18.3	56	26.4
Doctorate	66	64.0	85	78.0	151	71.2
Total	103	100.0	109	100.0	212	100.0
Average monthly income						
<KES 50,000	4	3.9	0	0.0	4	1.8
KES 50,000-59,000	0	0.0	3	2.8	3	1.4
KES 60,000-69,000	7	6.8	4	3.7	11	5.2
KES 70,000-79,000	10	9.7	7	6.5	17	8.1
KES 80,000-89,000	9	8.7	12	11.1	21	10.0
KES 90,000+	73	70.9	82	75.9	155	73.5
Total	103	100.0	108	100.0	211	100.0

This Table shows cross-tabulation results between lecturers' preparedness for eLearning and background attributes including age, gender, education level and average monthly income. The results suggests the lecturer's preparedness for eLearning significantly associated with age (ρ-value = 0.001), education level (ρ-value = 0.004) and average income (ρ-value = 0.039).

Regarding gender, the results in Table 2 further show that 146 (68.9%) participants were men and 66 (31.1%) were women. Besides, the proportion of women lecturers prepared for eLearning 34 (33.0%) was marginally higher than the proportion of those unprepared 32 (29.4%). However, the proportion of men prepared for eLearning 69 (67.0%) was lower than the proportion of those unprepared 77 (70.6%). However, the analysis did not find a significant relationship between lecturers' preparedness for

eLearning and gender (χ^2 = 1.039, df = 1 & ρ-value = 0.243). This suggests that no gender was more competent in computing than was the other; hence, none was likely to be more prepared for eLearning than was the other. This is however, inconsistent with the findings of Luan, Aziz, Yunus, Sidek and Bakar (2005), who investigated gender differences in ICT competence among academicians at the Universiti Putra Malaysia. The study reported that female and male academicians were significantly different in the application of software packages such as word processing, spreadsheets and presentation packages. However, in Egypt, Houtz and Gupta (2001) found that male lecturers were more confident and had a greater usage of computers compared to their female counterparts, while Venkatesh and Morris (2000) noted that male lecturers were more likely to accept new technological innovation than were their female colleagues. Concerning education level, up to 151 (71.2%) participants reported holding doctorate degrees, 56 (26.4%) held masters certificates, while 5 (2.4%) had bachelor's degree qualifications. Besides, the results summarized in Table 2 show that the proportion of doctorate degree holders unprepared for eLearning was higher than the proportion of those prepared.

Conversely, the proportion of masters' degree holders prepared for eLearning was higher than the proportion of those unprepared. Based on this pattern, the analysis obtained a χ^2 value of 11.031, with 2 degrees of freedom and ρ-value of 0.004, which is significant at 1% level; suggesting up to 99% chance that lecturers' preparedness for eLearning significantly associated with educational attainment. Thus, masters' degree holders, being relatively younger people, were likely to be more competent in computing; hence, better prepared for eLearning than doctorate degree holders. These findings are consistent with those that Roberts, Hutchinson and Little (2003) reported in their study, which assessed barriers to the use of technology for teaching in Dutch universities. The study noted that professors and associate professors were less likely to use ICT packages in their teaching than were junior lecturers.

The results in Table 2 further indicate that most participants, 155 (73.1%), were earning Kenya Shillings (KES) 90,000 or more; 21 (9.9%) were in the KES 80,000 to 89,000 bracket; 17 (8.0%) averaged at between KES 70,000 and 79,000, while 11 (5.2%) reported an income of KES 60,000 to 69,000. In addition, the proportion of lecturers unprepared for eLearning in the top income bracket was higher than the proportion of those prepared. Contrastingly, the proportion prepared for eLearning in the category of less than KES 60,000 was higher than were those unprepared. The analysis yielded a computed χ^2 value of 11.707, with 5 degrees of freedom and ρ-value of 0.039, which is significant at 5% level; suggesting up to 95% chance that preparedness for eLearning varied significantly across the income categories. More specifically, top earners were relatively less competent in computing than low earners. Similarly, Venkatesh and Morris (2000) found a positive correlation between the frequency of computer use and lecturers' average income. The study noted that although lecturers in higher income brackets had a greater access to personal computers than those in lower income scales, more than one-half did not use computers consistently to support their work due to limited ICT skills.

Computing competence is the ability to handle a wide range of computer software packages for word processing, spreadsheets, presentation, statistical analysis, as well as internet browsing and e-mailing to perform various tasks (van Braak, 2004). This study focused on lecturers' training in software packages, training duration, funding sources for training, competence in using software packages and challenges associated with computing competence. Table 3 shows the cross-tabulation results between lecturers' preparedness for eLearning and training in various software packages. In this regard, the results show that out of 212 participants, 156 (73.6%) had accessed training in word processing packages; 119 (56.1%) had trained in spreadsheets; while 135 (63.7%) reported training in presentation packages. The results further show that 102 (48.1%) had trained in statistical analysis packages; 127 (59.9%) had trained in internet browsing packages; while 107 (50.5%) indicated training on the use of e-mailing packages. In addition, Table 3 shows that among participants who had accessed training in all the software packages, the proportion that was prepared for eLearning was higher than the proportion of those unprepared. The study found that most participants, 156 (73.6%) were trained in word processing packages, followed by

presentation packages, 135 (63.7%), internet browsing, 127 (59.9%) and spreadsheets, 119 (56.1%). In addition, 107 (50.5%) and 102 (48.1%) participants had accessed training in e-mailing and statistical analysis packages, respectively.

The results summarized in Table 3 show that lecturers' preparedness for eLearning significantly associated with training in various packages including word processing (ρ-value = 0.000), presentation (ρ-value = 0.011), internet browsing (ρ-value = 0.014), spreadsheets (ρ-value = 0.033) and statistical analysis (ρ-value = 0.056). The results suggest that training in all the software packages, except e-mailing was likely to have a significant influence on lecturers' preparedness for eLearning. Notably, e-mailing packages served as important means of communication for personal and academic purposes, which had become more important than paper mail. This explains why there was no significant relationship between lecturers' preparedness for eLearning and competence in working with e-mailing packages. The results amplify the importance of training in software packages. In this regard, participants who reported having some training were more ready for eLearning than those who had not trained. Son, Robb and Sangyo (2007) obtained similar findings, where teachers who had some prior training in software packages were using computers in classrooms more often than were their colleagues who had not undergone such training. The study further noted that among factors influencing teachers' computing skills, previous training was the most important, accounting for up to 80% of variance in computing competence.

Table 3: Proportion of Participants Trained on Software Packages

Software Packages	**Prepared**		**Unprepared**		**Total**		**Chi Square (X^2) Results**		
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**	**χ^2**	**df**	**p-value**
Word processing									
Yes	88	85.4	68	62.4	156	73.6	13.316	1	0.000***
No	15	14.6	41	37.6	56	26.4			
Total	103	100.0	109	100.0	212	100.0			
Spread sheets									
Yes	66	64.1	53	48.6	119	56.1	4.528	1	0.033**
No	37	35.9	56	51.4	93	43.9			
Total	103	100.0	109	100.0	212	100.0			
Presentation									
Yes	75	72.8	60	55.0	135	63.7	6.482	1	0.011**
No	28	27.2	49	45.0	77	36.3			
Total	103	100.0	109	100.0	212	100.0			
Statistical analysis									
Yes	57	55.3	45	41.3	102	48.1	3.647	1	0.056*
No	46	44.7	64	58.7	110	51.9			
Total	103	100.0	109	100.0	212	100.0			
Internet									
Yes	71	68.9	56	51.4	127	59.9	6.084	1	0.014**
No	32	31.1	53	48.6	85	40.1			
Total	103	100.0	109	100.0	212	100.0			
E-mailing									
Yes	58	56.3	49	45.0	107	50.5	2.297	1	0.130
No	45	43.7	60	55.0	105	49.5			
Total	103	100.0	109	100.0	212	100.0			

*This Table presents cross-tabulation results between lecturers' preparedness for eLearning and training in various software packages, including word processing, spreadsheets, presentations, statistical analyses, internet browsing and e-mailing. Notably, lecturers' preparedness for eLearning significantly associated with training in word processing (ρ-value = 0.000), presentation (ρ-value = 0.011), internet browsing (ρ-value = 0.014), spreadsheets (ρ-value = 0.033) and statistical analysis (ρ-value = 0.056). ***, ** and * show significance at 1%, 5% and 10% levels, respectively.*

The duration of training is also a critical factor likely to influence computing competence and preparedness for eLearning, the longer the duration, the better the competence and vice versa. For this matter, we requested those who had trained in various software packages to indicate the duration for which training, which they received. The results show that the duration of training for word processing packages averaged at 3.3 weeks (95% CI 2.3-4.4); presentation packages averaged at 2.0 weeks (95% CI 1.1-2.9); while the training for internet browsing averaged at 1.7 weeks (95% CI 0.9-2.5). More still,

mean duration of training for spreadsheets packages was 2.4 weeks (95% CI 1.2-3.6); statistical analysis packages was 2.2 weeks (95% CI 0.5-4.0); and e-mailing, 2.04 weeks (95% CI 0.9-3.2). The results show that mean duration of training in word processing packages was the longest at 3.3 weeks, while the shortest training duration was in internet browsing at 1.7 weeks. Although there was no significant variation in the duration of training across the software packages, the outstanding fact is that the training durations were too short for beginners; and barely matched the scope of software programs such as Microsoft Word, Microsoft Excel and statistical analysis packages such as *SPSS*, *Epi info*, *SAS* or *CSpro*.

Compared to the guidelines provided by the Computer Society of Kenya (CSK), the reported durations of training are way below the recommended standards. For instance, training in word processing packages should take between 4-6 weeks; suggesting that participants who had accessed training in word processing packages will require further training to cover the curriculum effectively. We performed one-way Analysis of Variance to determine the significance of variation in the duration of training between participants that were prepared for eLearning and those that were unprepared. The results revealed lack of significant variation in the training duration for all the software packages, suggesting that training duration was standard for all participants, regardless of the level of prepared for eLearning. Key informant interviews revealed that participants obtained training for most software packages from commercial colleges, whose curricula suited commercial interests.

However, reduction of course contents to 2 rather than 6 weeks, means that trainees with little or no prior computing experience were disadvantaged. Table 4 shows cross-tabulation results between lecturers' preparedness for eLearning and sponsorship for training in various software packages. The results show that 108 (69.2%) participants sponsored themselves for training in word processing packages; only 40 (25.6%) were sponsored by the employer (University of Nairobi). Among those who sponsored themselves, the proportion that was unprepared for eLearning (76.5%) was relatively higher than the proportion that was prepared (63.6). however, among those who were sponsored by the employer, the proportion that was prepared for eLearning (29.5%) was relatively higher than that which was unprepared (20.6%). For spreadsheet packages, 84 (70.6%) participants sponsored themselves, while 29 (24.4%) were sponsored by the employer. Among those who indicated self-sponsorship, the proportion that was unprepared for eLearning (79.2%) was relatively higher than the proportion that was prepared (63.6%). However, among those sponsored by the employer, the proportion that was prepared (27.3%) was relatively higher than that which was unprepared (20.8%).

In the case of presentation packages, 102 (75.6%) participants sponsored themselves, while 28 (20.7%) were facilitated by the employer. Among the participants who indicated self-sponsorship, the proportion that was unprepared for eLearning (83.3%) was relatively higher than the proportion that was prepared (69.3%). Contrastingly, among those who indicated sponsorship from the employer, the proportion that was prepared for eLearning (25.3%) was relatively higher than that which was unprepared (15.0%). For statistical analysis packages, 63 (61.8%) sponsored themselves in training, while 33 (32.4%) were facilitated by the employer. Among those who sponsored their own training, the proportion that was prepared for eLearning (57.9%) was relatively lower than that which was unprepared (66.7%). Among those whose training was sponsored by the employer, the proportion that was prepared for eLearning 33.3%) was relatively higher than that which was unprepared (31.1%). The situation was similar for training in internet and e-mailing packages. The results suggest that training facilitated by the employer was more likely to influence preparedness for eLearning than training acquired through self-sponsorship. However, given that only about one-third of the participants had benefited from employer-sponsored training, key informant interviews revealed that the University training program for academic staff was underperforming, particularly due to financing constraints.

Table 4: Sponsorship for Training in Software Packages

Software Packages	Prepared		Unprepared		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Word processing						
Self	56	63.6	52	76.5	108	69.2
Employer	26	29.5	14	20.6	40	25.6
Others	6	6.8	2	2.9	8	5.1
Total	88	100.0	68	100.0	156	100.0
Spread sheets						
Self	42	63.6	42	79.2	84	70.6
Employer	18	27.3	11	20.8	29	24.4
Others	6	9.1	0	0.0	6	5.0
Total	66	100.0	53	100.0	119	100.0
Presentation						
Self	52	69.3	50	83.3	102	75.6
Employer	19	25.3	9	15.0	28	20.7
Others	4	5.3	1	1.7	5	3.7
Total	75	100.0	60	100.0	135	100.0
Statistical analysis						
Self	33	57.9	30	66.7	63	61.8
Employer	19	33.3	14	31.1	33	32.4
Others	5	8.8	1	2.2	6	5.9
Total	57	100.0	45	100.0	102	100.0

This Table indicates cross-tabulation results between lecturers' preparedness for eLearning and sponsorship for training in various software packages. For each package, the results show that the proportion of participants prepared for eLearning was relatively lower among those who indicated self-sponsorship; but relatively higher among those whose training was sponsored by the employer (University of Nairobi).

Based on the level of training and experience, participants were requested to rate their competence in applying each of the software packages on a scale of 0 to 10, which was them transformed into a scale of <50% and 50% or more. We considered those whose scores for all the packages averaged below 50% to be incompetent and unprepared for eLearning, while those whose scores averaged at 50% or more were competent and prepared for eLearning. Table 5 presents cross-tabulation results between lecturers' preparedness for eLearning and competence in applying various software packages. More specifically, up to 139 (65.6%) participants were below average in applying word processing packages, while 73 (34.4%) were above average. Among those who were above average in working with word processing packages, the proportion that was prepared for eLearning, (84.5%) was higher than the proportion that was unprepared (47.7%). Based on this, bivariate analysis obtained a χ^2 value of 30.089 with 1 degree of freedom and a ρ-value of 0.000, which was significant at 1% level. The results suggest up to 99% chance that lecturers' preparedness for eLearning significantly associated with their competence in working with word processing packages. In view of this, participants whose competence in working with word processing packages was above average were likely to be more ready for eLearning than those whose competence was below average. This led to rejection of the null hypothesis *($H_0$1),* stating that *lecturers' competence in word processing has no significant relationship with their preparedness for eLearning,* for not holding true to empirical evidence.

In the case of spreadsheets, 121 (57.1%) participants were below average, while 91 (42.9%) indicated scores that were above average. Among those who were below average, up to 50 (48.5%) participants were prepared for eLearning, while 71 (65.1%) were unprepared. The analysis obtained a computed χ^2 value of 5.294, with 1 degree of freedom and a ρ-value of 0.021. The result was significant at 5% level, which suggested up to 95% chance that lecturer's preparedness for eLearning significantly related to competence in applying spreadsheet packages. Consequently, we rejected that null hypothesis *($H_0$2),* stating that *there is no significant relationship between lecturers' competence in spreadsheet packages and their preparedness for eLearning*.

Table 5: Competence in Software Packages

Software Packages	Prepared		Unprepared		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Word processing						
Below average	16	15.5	57	52.3	73	34.4
Above average	87	84.5	52	47.7	139	65.6
Total	103	100.0	109	100.0	212	100.0
Spread sheets						
Below average	50	48.5	71	65.1	121	57.1
Above average	53	51.5	38	34.9	91	42.9
Total	103	100.0	109	100.0	212	100.0
Presentation						
Below average	48	46.6	74	67.9	122	57.5
Above average	55	53.4	35	32.1	90	42.5
Total	103	100.0	109	100.0	212	100.0
Statistical analysis						
Below average	67	65.0	92	84.4	159	75.0
Above average	36	35.0	17	15.6	53	25.0
Total	103	100.0	109	100.0	212	100.0
Internet						
Below average	17	16.5	27	24.8	44	20.8
Above average	86	83.5	82	75.2	168	79.2
Total	103	100.0	109	100.0	212	100.0
E-mailing						
Below average	19	18.4	26	23.9	45	21.2
Above average	84	81.6	83	76.1	167	78.8
Total	103	100.0	109	100.0	212	100.0

This Table presents cross-tabulation results between lecturers' preparedness for eLearning and competence in applying various software packages. The results suggest that lecturers' preparedness for eLearning significantly associated with their competence in working with word processing, spreadsheet, presentation, statistical analysis packages. However, there was no significance between preparedness for eLearning and competence in internet and e-mailing packages.

For presentation packages, those below average were 122 (57.5%), while 90 (42.5%) were above average. The results further show that those who below average included 48 (46.6%) participants who were prepared for eLearning and 74 (67.9%) who were unprepared. The analysis obtained a computed χ^2 value of 8.971, with 1 degree of freedom and a ρ-value of 0.003, which was significant at 1% level; suggesting up to 99% chance that lecturers' preparedness for eLearning significantly related to their competence in applying packages. This led to rejection of the null hypothesis *($H_0$3)* stating that *lecturer's competence in using presentation packages has no significant relationship with their preparedness for eLearning*.

In statistical analysis packages, those above average were 53 (25.0%), while the majority, 159 (75.0%) were below average. Those who were below average in applying statistical analysis packages consisted of 67 (65.0%) participants who were prepared for eLearning and 92 (84.4%) who were unprepared. Here, bivariate analysis obtained a χ^2 value of 9.574, with 1 degree of freedom and a ρ-value of 0.002, which was significant at 1% level. This suggests up to 99% chance that competence in working with statistical analysis packages was one of the factors likely to influence lecturer's preparedness to function in an eLearning environment. This led to rejection of the null hypothesis *($H_0$4),* which stated that *there is no significant relationship between lecturers' competence in using statistical analysis packages and their preparedness for eLearning.* In addition, the results in Table 5 show that 168 (79.2%) were above average in working with internet browsing packages, while 44 (20.8%) were below average. Software packages most applied by participants included *Mozilla Firefox* and *Google Chrome,* as well as e-mailing packages such as *Yahoo mail, Gmail, Eudora* and *Microsoft Outlook*. More specifically, of the 168 (79.2%) participants who were above average in applying internet browsing packages, included 86 (83.5%) who were prepared for eLearning and 82 (75.2%) who were unprepared. Bivariate analysis yielded a χ^2 value of 1.726, with 1 degree of freedom and a ρ-value of 0.189, which was not significant. Consequently, we rejected the null hypothesis *($H_0$5)* stating that *the relationship between lecturers' competence in using*

internet packages and their preparedness to apply eLearning is not statistically significant, due to insufficiency of empirical evidence.

Regarding e-mailing, those above average were 167 (78.8%), while 45 (21.2%) were below average. Among those who were above average, 84 (81.6%) were prepared for eLearning, while 83 (76.1%) were unprepared. Based on this, bivariate analysis obtained a χ^2 value of 0.631, with 1 degree of freedom and a ρ-value of 0.427, which was also not significant. Consequently, those prepared and those unprepared for eLearning were not significantly different in terms of competence in using e-mailing packages. This implies that competence in using e-mailing packages was less likely to influence lecturer's preparedness for eLearning. Through key informant interviews, the study revealed that lack of formal training, as well as inadequacy of time and financial resources influenced computing competence and preparedness for eLearning. The ineffectiveness of ICT training program targeting academic staff at the University of Nairobi also influenced computing competence among lecturers, particularly due to underfunding and lack of clear selection criteria. Consequently, even those had benefitted from the training program were in need of refresher sessions to catch with technological changes. For instance, those who trained in *Microsoft DOS* could not affectively work with packages based on new operating systems such as *Windows 7*, *Windows 8,* or *Linux,* among others.

In addition, lecturers' involvement in administrative duties influenced computing competence by consuming time for improving ICT skills. Mass enrolment in regular and self-sponsored academic programs exacerbated the resultant workload. Participants argued that work-related pressure and desire to make extra income from teaching self-sponsored students were gradually skewing the lecturers' interest from developing ICT skills. The available time was utilised for teaching various groups of students, marking and performing administrative duties. Participants also linked lack of opportunity for enhancing computing competence to uncertainty, anxiety and fear of transition to an eLearning mode. Consequently, lecturers perceived some software packages to be too complicated, prompting some lecturers to stick to traditional modes of delivery, such as pen-paper or chalk-black wall. Similarly, some lecturers perceive transition to eLearning as threat to their careers, while some informants linked fear and anxiety to lack of consistent post-training technical support, particularly at departmental levels.

Shortage of modern and efficient computers at workplaces was also a key factor impeding lecturers' computing competence. Participants argued that obsolete machines were not only time wasting but also reinforcing fear and anxiety about their ability to cope with challenges that would come with eLearning. To cope with shortage of computers, some staff members used their personal computers to undertake University work. Still on infrastructure, unreliable internet connectivity impeded computing competence and preparedness for eLearning; and so was lack of ICT centres at departmental levels, where academic staff could go for quick consultation. The latter was particularly necessary due to shortage of technical staffing, which made it difficult for lecturers to access timely technical support. In addition, lack or inadequacy of eLearning resources affected lecturers' computing competence and preparedness for eLearning. Also critical was shortage of specialized eLearning facilities, particularly online learning management systems (LMS) such as Blackboard*, WebCT, FirstClass, Moodle* and *Lotus Learning Space*, among others. Notably, LMS had the potential to save costs, time and could help to improve the effectiveness of learning processes. Participants also noted that computing competence among lecturers was constrained by lack of specialized libraries as well as videoconferencing facilities.

CONCLUSIONS

The purpose of this study was to determine the influence of computing competence in various software packages on lecturers' preparedness for eLearning. The study found that participants whose competence in working with word processing packages was above average were better prepared for eLearning than those whose competence was below average (χ^2=30.089, df=1 & ρ-value=0.000). Multivariate analysis

indicated that participants whose competence in word processing packages was above average had about 5.7 the odds of being prepared for eLearning as those whose competence was below average. Preparedness for eLearning significantly related to competence in applying spreadsheet packages (χ^2=5.294, df=1 & ρ-value=0.02). Participants whose competence on spreadsheets was above average were about 2.2 times as likely to be ready for eLearning as those whose competence was below average.

Lecturers' preparedness for eLearning significantly associated with competence in working with presentation packages (χ^2=8.971, df=1 & ρ-value=0.003). In this regard, those whose competence was above average had about 5.1 times the odds of being prepared for eLearning as those whose competence was below average. Competence in working with statistical analysis packages was one of the factors influencing lecturer's preparedness for eLearning (χ^2=9.574, df=1 & ρ-value=0.002). In this regard, participants whose competence in statistical analysis packages was above average were about 1.7 times as likely to be ready for eLearning, as those whose competence was below average. Finally, lecturer's preparedness for eLearning and competence in Internet browsing packages was not significant (χ^2=1.726, df=1 & ρ-value=0.189). Training in computing skills is essential for lecturers' preparedness for eLearning. Although up to 73.5% of the participants had accessed training in various software packages, more than two-thirds had not benefitted from training provided by the University ICT training program for academic staff. Most participants financed their own training in commercial colleges, most of which barely met minimum threshold for curriculum delivery. Consequently, even those who had trained were still not competent enough to function in an eLearning setting. At the University of Nairobi, the School of Computing and Informatics provided training for enhancing computing competence. However, most lecturers were yet to benefit from the initiative, because of issues such as funding constraints, lack of awareness, as well as preoccupation with academic and administrative duties.

Lack of time to undergo training is a reality that requires administrative and planning considerations to make compulsory and possible for lecturers to access training as necessary. This is particularly critical for departments experiencing over-enrolment in self-sponsored programs, such as sociology, education, and business administration, among others. Structuring the training program and harmonizing its schedules with academic semesters is one of the critical measures that the University administration should consider to enable lecturers gain necessary skills for eLearning. Equally important considerations, include the need to make University training program continuous to take care of refresher needs as well as staff attrition. The effort to prepare academic staff to function in an eLearning setting should consider issues such as uncertainty and anxiety of going the transition process from traditional modes of delivery to the eLearning mode. The fear of trying out new ideas and technological changes often perpetuated anxiety, which in turn, precipitated reluctance and resistance towards eLearning. Anxiety is also likely to prevent lecturers from accepting training, as well as negatively influence perceptions regarding the ease of using technology in teaching and learning processes. This calls for effective methods to manage the change process to help lecturers adjust accordingly in favor eLearning.

Undoubtedly, change is a fearful process that also manifests through anxiety. People fear that change may bring new challenges or deprive them certain opportunities or privileges. To ensure that all lecturers share the vision of eLearning and walk along with the change process, sustained sensitization and education is an indispensable pre-requisite. Sustained sensitization is particularly necessary because changing mindset takes time. Besides academic staff, the change process should target top leaders of the University. In fact, change can be realized faster when leaders at all levels become good role models. They should undergo training in computing and eLearning processes to inspire their junior colleagues. Considering the requirements for an effective eLearning system, there is no doubt that it is a costly initiative, particularly in resource-poor countries. However, eLearning remains important for lecturers and learners to develop competencies necessary for tackling social and economic development challenges experienced in the 21st century. In other words, eLearning has the potential to enhance digital literacy

skills and create knowledge-based economies required for socio-economic development as envisaged in international and national development blueprints.

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IDENTIFICATION AND ANALYSIS OF STUDENT'S TALENTS AT THE SCHOOL OF PUBLIC ACCOUNTING AT THE BENEMERITA UNIVERSIDAD AUTONOMA DE PUEBLA

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ABSTRACT

This research identifies and analyzes the talents School of Public Accounting students at the Benemérita Universidad Autónoma de Puebla (BUAP). Specifically, we examine students studying the subject of innovation and entrepreneurial talent. The study is exploratory, descriptive and explanatory. The design of the research work is non-experimental. This is cross-section research. In order to carry out the data collection, 50 talent-recognition tests were applied. These tests consist of 180 items of a non-probabilistic intentional type sample. The study also presents an impact analysis of the subject of Innovation and Entrepreneurial Talent as a strategic tool to demonstrate creativity and innovation. Finally, we not that developing the competence of Learning to Undertake is a challenge for teachers, such that entrepreneurship becomes a pillar in modern education.

JEL: L26, M13, M53

KEY WORDS: Strategy, Innovation, Talents, Foresight and Analysis

INTRODUCTION

As part of the restructuring and innovation of educational processes, we examine the essential task of identifying and strengthening talent in our students. This research seeks to identify and analyze student talents at the School of Public Accounting (FCP) at the Benemérita Universidad Autónoma de Puebla (BUAP). Specifically, we examine students who are studying the subject of Innovation and Entrepreneurial Talent (ITE). In the 2015-2016 edition of the Global Competitiveness Index (IGC) of the World Economic Forum (WEF), Mexico advanced four positions to move from place 61 to 57. This was mainly due to improvements in the efficiency of financial markets, the sophistication of business and the impulse of innovation. The labor market continues to be scarcely flexible. Public and private institutions are weakened and deteriorated, which reflects the perception of high levels of corruption and the obstacle that this represents for the implementation of business. This index analyzes the 140 countries that comprise 98.3% of the Global Gross Domestic Product and the policies that these governments have deployed to promote the competitive development of their economies. Launching of the report comes at a crucial time for the global economy. On the one side are the high rates of unemployment, low growth of productivity and retracted economic growth. On the other side is the so-called Fourth Industrial Revolution and the new types of consumption that could produce a wave of innovation and growth (Mexican Institute of Competitiveness [IMCO], 2016).

The aforementioned report underscores the fact that Latin American and Caribbean regions must develop greater resilience against external economic crises and develop the infrastructure, skills and innovation (areas in which relatively negative results are recorded), which require strengthening.

Chile (position 35) remains the most competitive country in the region. Mexico (57) and Colombia (61) have risen four and five positions, respectively (WEF, 2015-2016). The salient findings of the WEF (2015-2016) are: (a) the need to promote more long-term structural reforms to boost productivity and release entrepreneurial talent. This affects the ability of the world economy to raise living standards, to resolve the persistence of high unemployment and generate adequate resilience against future economic recessions and (b) there is a close link between competitiveness and an economy's capacity to generate, attract, leverage and support talent. The countries in higher places on the index obtain better results in these aspects. But, in many countries there are very few who have access to high quality education and training, and labor markets have insufficient flexibility.

As a result of the global competitiveness report by the WEF (2015-2016), Mexico was in 57th place in the overall ranking. Mexico's position in higher education and training, public institutions and capacity for innovation is 87th, 115th and 66th respectively. Therefore, it is urgent to implement actions to achieve greater competitiveness at all levels. Hence, education must be an engine to increase the efficiency of collaborators and foster the development of new ideas. These efficiencies and ideas will become creative, useful products and services in the future which will be useful to compete economically at national and international levels. This research is organized in the following way: in the literary review section talent is conceptualized, a model is chosen that addresses the components of talent as a referent in this research and its relationship with education. Finally, an analysis of the talents identified in students who are studying the subject of Innovation of Entrepreneurial Talent is shown, and results and conclusions are presented.

LITERATURE REVIEW

Conceptualization of Talent

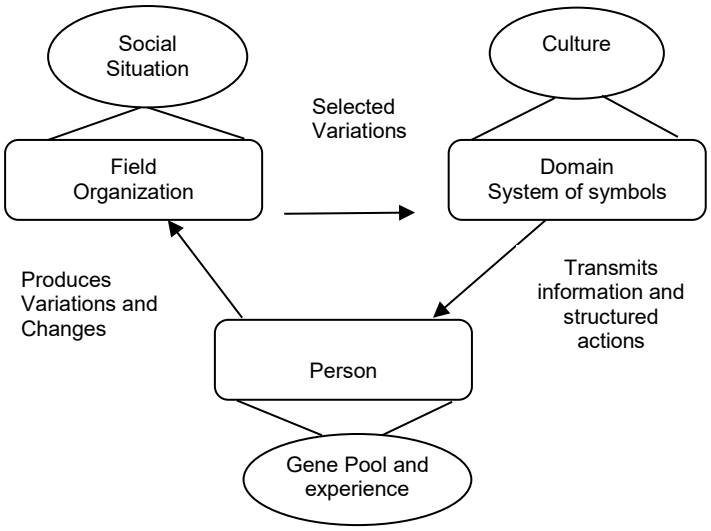
The word talent comes from the Latin "talentum" which was the name of an ancient Greek coin. In the figurative and familial sense, it means a natural aptitude for doing something, understanding or intelligence. At present, many words are used as synonyms for this word, among them: excellence, exceptional, gifted, rapid learning, superior, bright, talented, exceptional, most gifted, superiorly gifted (Lorenzo, 2006). On the other hand Sandra Berger (1997) noted that many authors use the term general talent or general intellectual skill to refer to individuals who have high scores on intelligence tests. These skills or tallents are due to information provided by teachers and parents, in response to the high level of vocabulary, memory, knowledge of words and abstract reasoning. Specific talents or specific academic aptitude refers to those who stand out in performance or have high performance on the aptitude test in a specific area such as math or art. An example of specific talent is the talent or ability for leadership which is defined as the ability to direct individuals or groups toward a decision or common action. These subjects use a group of skills, negotiate in difficult situations, have a high level of self-confidence, responsibility, cooperation, tendency to dominate, and ability to adapt to new situations (Sisk, 1993).

Lorenzo (2006) states that there are various models that incorporate multiple complex ingredients. These multiple models are evidence of little consensus in the field. But the various models do coincide on the presence of a cognitive component they generally call "skills". Additionally, non-cognitive components are included, but in this case there is no unification of criteria as they are different denominations. Having examined the literature, we agreed to address this research based on the model proposed by Cslkzentmlhalyi, which considers the interaction of three components: the domain, the person and the field.

M. Cslkzentmlhalyi's Model

The Cslkzentmlhalyi theory poses that creativity cannot be studied at the individual level, without analyzing them in relation to their work in the social context in which their actions occur (Cslkzentmlhalyi, 1984), Therefore, the author holds that creativity results from the interaction of three main forces: the domain, the person and the field. In the words of Lorenzo (2006), the arrows point from the domain to the person, then to the field and then back to describe an upward spiral. This occurs from the epistemological point of view, because any new piece of information added to the domain becomes an "input" for the new generations.

Figure 1: M. Cslkzentmlhalyi's Model



In Figure 1 the author shows the interrelationship of three systems that contribute to the idea, action or creative object. The individual takes information that provides culture and transforms it. If the change is accepted by society, it will be included in the domain and will be transmitted to the new generations. The actions of the three systems are important for creativity. Source: Cslkzentmlhalyi, 1988.

Cslkzentmlhalyi's (1984) theory of creativity points to a stable cultural domain that preserves and transmits new ideas or manners that have been selected for new generations by the people who integrate the field. The term "domain" refers to a discipline or area of knowledge and culture in which innovation is possible. Cslkzentmlhalyi's model (1986) is a pattern of cultural opportunities for action that requires a set of sensory-motor and cognitive skills. In summary, it is a symbolic system much like music, mathematics and athletics. The domain is shaped by cultural system symbols and language, and the specific notation for that area. A person who does not have access to information on the domain will not be able to make creative contributions. According to the domain structure, it can be easier or more difficult for a person to innovate because there are two basic issues involved. First, the different manners in which the information can be chronicled and transmitted to other generations, and second, the way in which the structuring of the data of a domain can affect creativity. In other words, it is how past creativity, which had been accumulated in the domain, or accumulated knowledge is available to most people in order to facilitate creativity in the future.

The manner of transmission of information should motivate people to get involved in a particular domain. The development of intrinsic motivation is based on the inherent attraction of the manner in which the information is presented. If this is boring, the domain will not be interesting and will not provide creative contributions. The person is the source of changes in the domain for which the change must be considered creative. The individual produces the variation in information. The source of that variation may be in inherited or acquired cognitive flexibility and may occur in a tenacious motivation or a rare event in the life of the individual. With regard to the field, talented people are immune to the social pressures that the positions and social roles are not important in their case. However, the change in expectations makes them

different. States of progress within a field can result in some talented people who are not held as such and others who flourish that condition (Cslkzentmlhalyi, 1986). However, changes in expectation makes can cause some talented people not be maintained and others to prosper that condition (Cslkzentmlhalyi, 1986).

This theory is a reference to sensitize teachers and the responsibility that they assume as facilitators to develop student talents. Many texts talk about talent management. Some authors comment on the talent war and the emergence of the headhunter companies (Crainer and Des, 2000). Perez, Gonzalez and Diaz (2005), argue that conceptualization of talent or exceptional intellectual in the education field is possible. They recognize and refer to two concepts: First, the idea of talent based on models of cognitive components and those based on performance. "Talent" is translated into "Academic Talent", perceived as superior academic performance of a student group with regard to their academic peers (García-Cepero et al., 2012).

The other meaning is supported on the sociocultural models and those based on capabilities. This refers to the idea of "multiplicity of areas of intellectual exceptionality" in which an individual may be skilled and competent, proposing the integration of cognitive abilities in these other domains of performance. For example consider: skills for action in the social space (Lopéz 2007), emotional inter and intrapersonal interaction (Fernández and Extremera, 2005; Gardner, 2001;2005), body-kinesthetic, musical, spatial and naturalists skills (Gardner, 2001;2005; Hernández-Torrano, Ferrándiz, Ferrando, Prieto and Fernández, 2014).

Following this order of ideas, the School of Public Accounting at the BUAP, through the course of ITE has a goal to "develop in the student the proactive and self-esteem attitudes to overcome the obstacles presented to him, through the possibility of being a generator of employment through the implementation of innovative and productive projects" (FCP BUAP, 2013). The construction of the program contributes to the graduate profile as shown in Table 1.

Table 1: Graduate Profile

Unit	Knowledge	Skills	Attitudes and values
1. Developing entrepreneurial talents	Talent, innovation, entrepreneurship	To be aware of their own talents	Moderation, optimism, initiative
2. Innovation and teamwork	Forming teams, working on teams, projects to be undertaken	Tolerance for work, stress and performance under pressure	Assertiveness, innovation, productivity
3. Undertaking of an innovative project	Undertake, innovative project, business project	Ability to translate innovative ideas into a project	Entrepreneurship, human responsibility, at work, ecological.

Table 1 shows, that the ITE course's program seeks to develop talents and entrepreneurial attitudes and to permeate knowledge in professional practice. Source: FCP BUAP, 2013.

METHODOLOGY

To carry out this research, we compiled information from books, scientific articles and specialized journals. The study is exploratory, descriptive and explanatory. The design of the research is non-experimental. This research is cross-sectional. To carry out the collection of data, 50 tests for the identification of talent were applied. These tests consist of 180 items prepared by the Electoral Institute of the State of Puebla We developed an intentional non-probabilistic sample consisting of 50 students enrolled in the undergraduate program in Public Accounting at BUAP who studied the ITE course. The general average of the group is 9.5. The sample was collected on 5 July 2015 during the Summer Course that took place from May 18 to July 10, 2015, at the School of Public Accounting of BUAP. The sample represents 50 per cent of the students enrolled in the ITE course during that period. The applicable variables of the present investigation are described shown in Table 2.

Table 2: Operational Definition of Research Variables

Variables	Definition	Item	Unit of Measurement
Dependent	Identification of talents in students of the School of Public Accounting at BUAP	Number of predominant variables in the students.	Instrument designed on the basis of 180 items
Independent	Low creativity and innovation rates in students of the School of Public Accounting at BUAP	Analysis and identification of talents.	

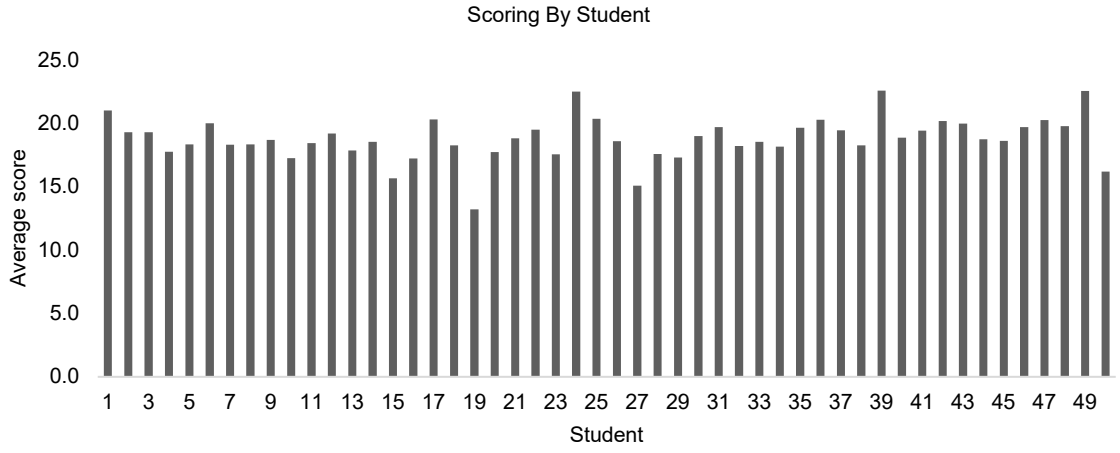
Talent, without a doubt, can be approached from different perspectives. In education it is becoming increasingly important how talent is conceptualized, understood, materialized and enhanced in the different areas of knowledge. We believe that identification of talent is important as a cross-cutting factor in the vocational training of student of public accounting at the Benemerita Universidad Autónoma de Puebla, We consider the impact the course on Innovation of Entrepreneurial Talent can have in the face of social academic and professional innovation, considering the talents identified in the students and the work carried out by the academy to support these talents. Source: Own study

RESULTS

According to Sternberg (1997), to succeed in a certain area of life, it is not necessary to have a high IQ, above a certain limit (there is still no agreement about what it is and probably differs from one job to another). At some point, other issues begin to be important. To have informal knowledge and to use it creatively are two of those issues. Therefore, the results of the identification of talent in students are described as follows.

As shown in Figure 2, no students reached 21 points average score. This figure is considered appropriate in the model for the development of entrepreneurial talent. Only 4 of 50 students have developed the skill to be an entrepreneur representing only 8 per cent of the total studied. This is a worrying situation. A report from the World Economic Forum that recommends countries such as Mexico stimulate productivity and release entrepreneurial talent. Doing so influences the capability of the economy. Entrepreneurship seeks to raise the standards of life, resolve the persistence of high unemployment and generate adequate resilience against future economic recessions (WEF, 2016).

Figure 2: Predominant Talents in Students of the ITE Course



The results show weak development of talents. A level of 21 indicates a developed rating. Source: Own study.

Figure 3 shows the lack talent development related to entrepreneurship. In this country, the development of entrepreneurship is incipient and its results have an impact on the social environment of the country. However, the University has tried to implement the development of entrepreneurial talent as an integral part of its programs to assist the development of the society where students live. According to a report by

the WEF "… there is a close link between competitiveness and the capacity of an economy to generate, attract, leverage and support talent (WEF, 2016). In general terms, countries that occupy the first places on the competitiveness index, have access to high quality education and training, including the development of entrepreneurial talent. They have labor markets with sufficient flexibility to recover from economic crisis, which as we can see is not the case of Mexico. Therefore, it is important to contribute to the development of talent within the classroom, even more so than obtaining skills.

Figure 3: Results Identified by Talent

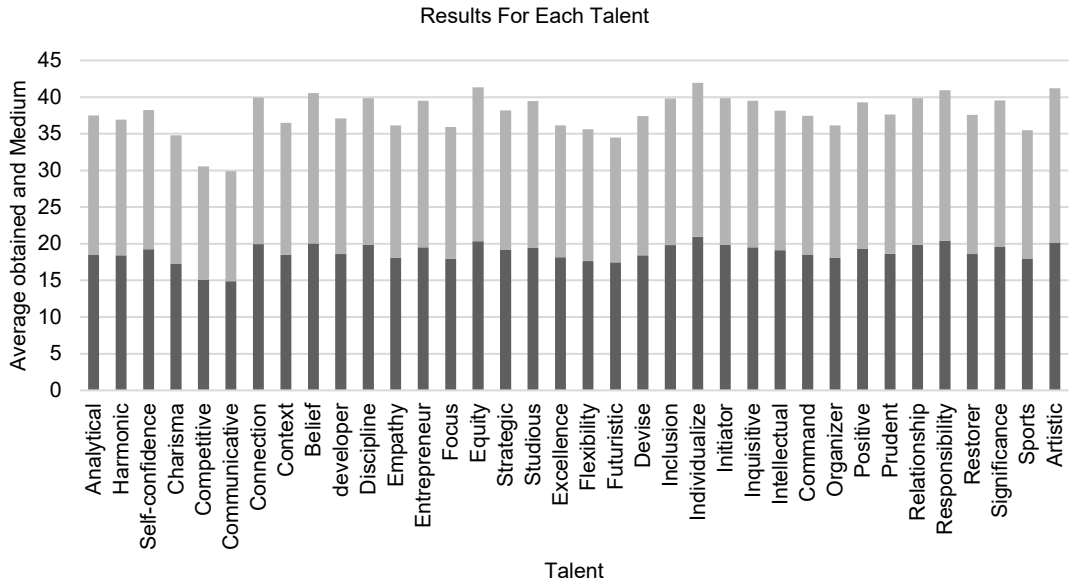


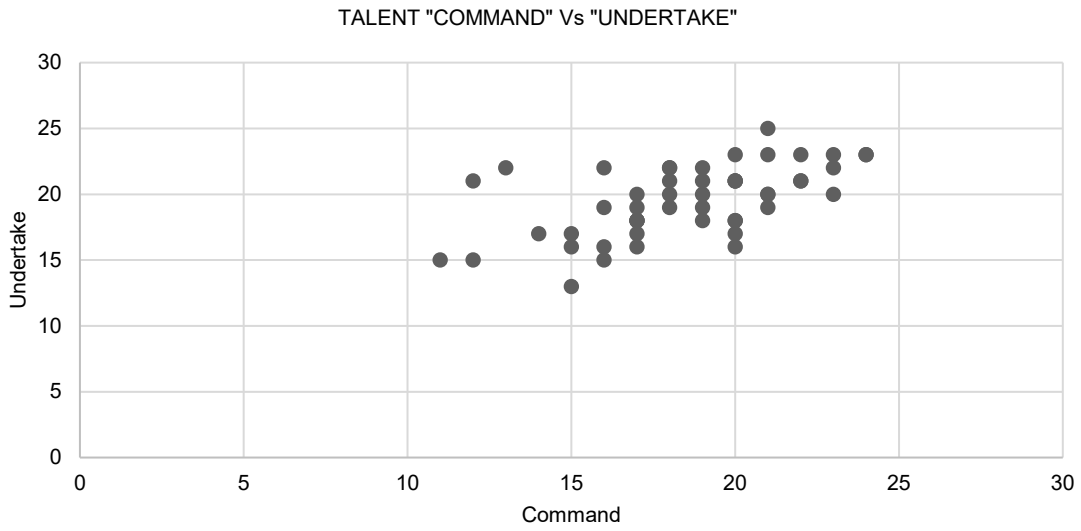
Figure 3 shows that only the equity, individualization and sports talents are within the average to be considered developed talents. However, they represent 8.1% of the talent that the test seeks to identify .Source: Own study.

The results in Figure 4 suggest that a relatively low development of talent. On average, significantly higher skills are not identified in relation to their peers. So the majority of the group is in the "developing phase", which requires more work by the students, more work by the academy, as well as more work by the educational institution itself. The Cslkzentmlhalyi model argues that creativity is the result of the interaction of three major forces: ownership, person and field. The relationship is relevant due to the fact that it shows more "leadership" and more "entrepreneurship". The general average qualification of the group is 9.5 points. In the general point average (GPA) of the Mexican system 10 points corresponds to excellent. In other words, it is an outstanding average. However, the results show that dominating talents "studious and disciplined" are to be developed. This result is due to the motivation of the group during the course. Motivation must be an essential feature in the class to arouse the interest of the group and become involved in the topic. However, it may also be inferred that an outstanding average does not imply that a group of students have developed entrepreneurial talents.

The Cslkzentmlhalyi model states that a student may or may not generate creative ideas, depending on the manner in which the information is transmitted. It occurs in such a way that would motivate the student to engage in proficiency of the topic. A person who does not have access to the information on the topic will not be able to make creative contributions. Therefore, a student of the undergraduate program in Public Accounting enrolled at BUAP, may finalize the program with an outstanding average, but at the same time might not be able to innovate in his area of work. This occurs despite possessing the knowledge and being proficient in the field.

The foregoing suggests that the work of teachers represents an even more important role going beyond transmitting technical information. It also consists of motivating students to discover, create and reinvent within their area of work. It emphasizes that a course seeking to develop innovative talent within the curricular program is not enough. It is necessary for the institution to design and implement a holistic strategy that will allow the student to have comprehensive training and promote the development of entrepreneurial, social and research skills. Figure 5 shows that talents with higher scores were "Individualize" and "Responsibility." This reflect circumstances of the cultural situation of the students themselves both in the social environment and in students who are normally considered excellent. This is likely due to the rigorous selection carried out by the institution during the admission process.

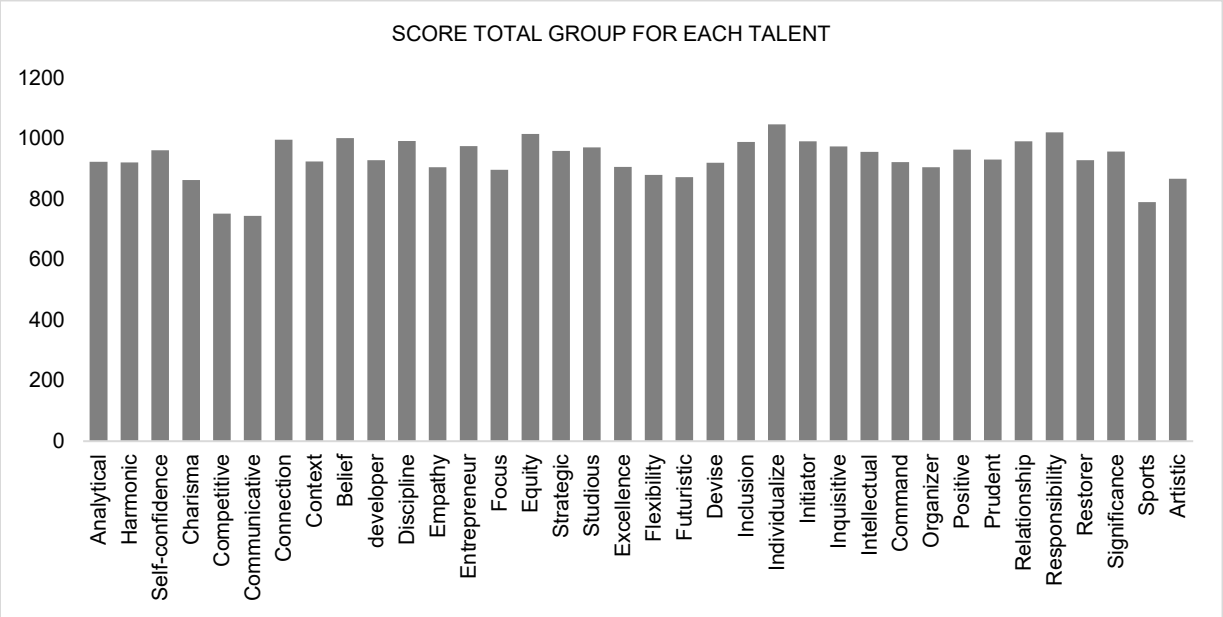
Figure 4: Leadership Talent vs. Entrepreneurial Talent



In Figure 4, the positive relationship between leadership and entrepreneurship, is perceived. In other words, the development of leadership positively affects entrepreneurship. Source: Own study.

We note that "Individualizing" has a high and slightly greater mean average. The way in which the students are locked in their own ideas is deeply rooted, and work that can provide synergy on a team is difficult to take advantage of for the benefit the team. The characteristics detected can set the stage for construction of a model that can be applied in the FCP to optimize the student exploitation of the course. Talents with lower scores were "communicative" and "competitive." This implies that these talents must be worked on to obtain the necessary skills to be an entrepreneur. The results are presented in Figure 5. The results allow us to infer that an outstanding average does not mean the student has developed innovative features. It is necessary to work on a comprehensive education that will allow us to deepen the educational content and to promote the development of talent. Similarly, "positive" and "prudent" are talents necessary to cope successfully with failures that may occur. They must experience failure without fear of falling into depression due to the fact that the process of entrepreneurship has frustrations that must be overcome. This research is important even though talent has been studied along with ways of strengthening it. Its development can respond to different factors, for example from one place to another, from one context to another, even from one institution to another. From the statement above, it is clear that this research is only the first approach to the study of talent at the School of Public Accounting of the BUAP. Therefore, it opens a new line of research to suggest actions to strengthen educational programs, mainly in the ITE field. This research should generate a positive impact on the development of talent.

Figure 5: Scores Per Talent in the Group



The scores obtained are mostly of a personal nature. Source: Own study.

CONCLUSIONS

Innovation is an essential aspect of the subsistence of organizations. Educational institutions are not the exception. Innovation must be an engine for growth and development. Hence, the importance of beginning an action plan to identify and enhance talent in educational institutions. Recognizing student talent and undertaking the corresponding analyses, allows you to apply better tools in the teaching and learning process. The purpose of the students is to truly permeate talents in the four substantive areas of accounting. The purpose is to make entrepreneurship a natural process of student training in public accounting and to integrate it as an ongoing process. It is contemplated in the "Minerva" University Model of the institution itself (BUAP, 2009). Professors who teach the subject should be aware, so that they can teach the subject on the basis of student talents.

In general the results show weak development of entrepreneurial talents and therefore it is also necessary to recognize and analyze the talents of the teachers who teach entrepreneurship. It is also important for other subjects. Teachers are the other part of the teaching and learning process. So there needs to be a tie-in to optimize the results. The performance of professors at the BUAP School of Accounting plays a crucial role in student motivation and their knowledge of the thematic areas. This occurs not only in the case of the field of ITE, but in a general manner in the curricular mapping that allows them to achieve graduate profile. "Graduates will be competent and capable of designing, evaluating and following-up on the processes that support decision-making in any organization through teamwork that generates an entrepreneurial spirit, always acting with ethics sense, critical, creative, creative, aesthetic, multicultural and humanist in a continuous process of self-improvement" (BUAP, Admissions 2016). Students identify their talents and at the same time motivate and implement teaching strategies that help to empower them.

The way in which the objectives of the ITE subject can be achieved, have to do with student processes and products which may have an impact on society. It is part of the graduation profile of students which considers that the graduates will have "… a professional exercise with multipurpose skills, with a reflective, critical, scientific and creative thinking, which will enable them to adapt to the changing working and living conditions, with an entrepreneurial, innovative and enterprising spirit…" (BUAP, 2009). There is still much

to be done in this regard. Finally, the model considered for this paper poses that creativity is linked to the social context in which the actions occur (Cslkzentmlhalyi, 1984). Structured actions occur based on the recognition of talent during the teaching and learning process and their subsequent development throughout the different basic subjects in accounting.

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INTRODUCING ENTREPRENEURSHIP INTO AN UNDERGRADUATE SOFTWARE DEVELOPMENT COURSE

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ABSTRACT

During the past decade, undergraduate computer science students have become progressively more interested in pursuing less traditional paths of employment after graduation. While most still choose to work for established businesses, others are choosing to start businesses of their own. For students in computer science, developing novel software products is one viable approach to this end. To address our students' growing interest in entrepreneurship, during the last three years, we have modified the content of our Software Development course to introduce the Lean Startup philosophy and simulate the process students starting their own businesses would take to do so. The class begins with students "pitching" their ideas to other students in the class, then choosing the project(s) they will work on, interviewing clients and potential customers to determine the requirements for the product, and finally, developing the product. Four software products have been developed in this period, including one that received second place in an innovation competition and attracted the attention of a venture capitalist. In this paper, we will further describe details of the course, the products developed, and student attitudes both during and after the class is over.

JEL: L26, O3

KEYWORDS: Entrepreneurship, Technologies

INTRODUCTION

At Stetson University, the Joseph C. Prince Entrepreneurship Program provides courses and a minor in entrepreneurship for students in any major. Through a grant from the Coleman Foundation, the program is working with faculty in Music and the Arts & Sciences to infuse entrepreneurship into courses in different majors and departments. As part of this initiative, the Department of Mathematics and Computer Science has revamped its Software Development II (SDII) course to not only include a component on entrepreneurship, it has done so by attempting to simulate the process students would undertake should they choose to develop a software product as part of a new business venture. The course does not attempt to be complete in teaching all aspects and models of entrepreneurship. Rather, it only focuses on the Lean Startup philosophy, as the primary objective of the course is for students to develop a substantial project for clients rather than be an authoritative course on entrepreneurship. Students in the course learn the five principles of the lean startup philosophy, examine case studies of real startups that required substantial software development projects, and apply the concepts to a project of their choosing. In the following sections, a brief literature review will be provided, followed by the methods, processes, and tools used in the course. Finally, results for the course are provided, along with concluding comments.

LITERATURE REVIEW

During the past decade, there has been a discernable increase in the number of entrepreneurship programs and educators offering courses and degrees in entrepreneurship (Duval-Couetil and Long, 2014; Katz, 2003; Kuratko, 2005; Torrance, 2013). However, while over 2,100 colleges and universities have introduced entrepreneurship into curricula by 2011 (Baum and Ma, 2011), over half of the students taking such courses have indicated that they do not feel adequately prepared to start their own businesses (Bureau of Labor Statistics, 2012). Also the success of present entrepreneurship programs in actually getting students to start companies is still less than clear (Schramm, 2014). Winkler and Case (2014) explain that this may partially be due to the methodological diversity and scale of academic programs being offered, with some students taking only a single course while others obtain a more immersive curriculum with entrepreneurship comprising a substantial component of their educational. It is also the case that the most desired dependent variable for measuring the success of an entrepreneurial education, namely the actual starting of a business, is often completely ignored in metrics for success, mostly because few students of entrepreneurship actually begin a business either while in or immediately following their education (Winkler and Case, 2014). For example, Reynolds and Curtin (2008) find that the formation of a new business most often occurs among those more than ten years out of college. Winkler, Troudt, Schweikert, and Schulman (2015) also find greater self-efficacy as well as higher levels of entrepreneurial intentions in older students, potentially because of prior life experiences. Yet, as noted by Pryor and Reedy (2009), there is considerable interest in understanding the drivers for entrepreneurship, especially with popular culture displaying such highly visible success stories of young and successful entrepreneurs as Bill Gates, Mark Zuckerberg, Sergei Brin, and Elon Musk.

While predicting future interest in entrepreneurship for Millennials and future generations is difficult, some interesting traits may play a role in their deciding employment paths. For example, more so than previous generations, Millennials expect a strong work-life balance, with three out of four stating that it drives their career choices (Twenge, Campbell, Hoffman, and Lance, 2010), potentially preferring the flexibility of self-employment. At the same time, for the first time in American history, student loan debt exceeds credit card debt (Demos, 2011). Two-thirds predict they will perform in the top 20% of their adult jobs, but the physical impossibility of this has led to increased signs of anxiety, stress, and depression, as well as lower scores in self-reliance (Twenge, 2009). How these conflicting traits will impact student choices in starting businesses is yet to be determined.

Because the actual starting of a new business venture is so often delayed, longitudinal research frameworks are often used (Winkler and Case, 2014). For example, intention models (Bird, 1992; Boyd and Vozikis, 1994; Shapero and Sokol, 1982) were developed to measure links between interest and action as intentions are the best single indicator of future behavior (Bagozzi, Baumgartner and Yi, 1989.) Winkler and Case propose "entrepreneurial self-efficacy as a self-motivational construct that explains entrepreneurial actions based on self-reflection and associated self-regulatory feedback cycles." The results of their study is consistent with previous studies relating entrepreneurial intent and self-efficacy.

While not specifically an assessment of entrepreneurial tendencies, some progress in understanding the interests of college students towards business careers are provided by Pryor and Reedy (2009). In their work, they analyze data obtained through the Cooperative Institutional Research Program (CIRP) surveys of first-year college students on their interests in business careers. The data only tangentially relates to entrepreneurship, and the authors caution that the data should be viewed more broadly as student interest in business versus actually beginning a business venture. However, as the data has been collected over a period of over forty years, patterns within various demographic groups are culled. Coupled to the previously mentioned research on self-efficacy and intention models as predictors, value may be obtained from the wealth of data provided by the CIRP data.

Clearly, the greatest possibility of success for students who enroll in entrepreneurship courses will be enhanced if students acquire a strong working knowledge of the various aspects of starting a business, leading to enhanced self-efficacy and hopefully qualifications. For computer science students in particular, learning how to effectively use their skills and knowledge of computer science to develop software products coupled with principles of entrepreneurship to apply that knowledge to starting a new venture should lead to greater success. Daimi and Rayess (2008) describe the rational, description, outcomes and assessment of a course they planned on introducing in Software Entrepreneurship. Assessment in their course includes a combination of exams, case studies, projects, a research paper, and reports. Doboli, Kamberova, Impagliazzo, Fu, and Currie (2010) have introduced a model of entrepreneurship education that involves the inclusion of add-on modules to the computer science and computer engineering disciplines at Hofstra University and Qatar University. With their model, work is broken into breadth and depth components. They assess interest in entrepreneurship via a survey provided to the class, and found that more than half of student expressed an interest in further pursuing entrepreneurship. Winkler, Troudt, Schweikert, and Schulman (2015) use an experiential model, presenting a case study in which they infuse entrepreneurship to creating a virtual e-business. As will be described below, our paper describes a depth model focused on applying entrepreneurship to developing an actual product.

METHODOLOGY

General Structure

At Stetson University, all computer science (CS) and computer information systems (CIS) majors are required to complete a two-semester software development course sequence. The first of these courses introduces students to the software development lifecycle, with students developing software products in teams, utilizing version control, issue tracking, and pair programming. The second course, Software Development II (SDII), is completely comprised of two group projects: one maintenance project, and one full development project. The maintenance project introduces students to the complexities of working with code developed by others, with that code often poorly designed, developed, and documented. The second project is typically a student-chosen project on essentially anything the students are interested in. Historically, a popular project choice was the development of a game of some sort. Larger projects are typically segmented into parts where each is completed by smaller teams of two to four students. One important aspect of this work is that a large final project requires that all components interoperate as a commercial software product require, so each smaller team must successfully complete their portion for the final project to be successful. For nearly two decades now, the major goal of the SDII course has been to simulate the environment students will face in developing software in practice upon graduating.

During the last three years, however, the SDII course has been modified to include an additional dimension, namely entrepreneurship and how software development proceeds when done in support of a new venture. In addition, for the last two years, support for this project has been provided by the Coleman Foundation, with Stetson being chosen as one of only nineteen universities receiving these grants nationwide. While a number of possible approaches or theories for entrepreneurship exist, the goal of the course is not to teach a survey of entrepreneurship per se, but rather, to introduce one approach and have students apply it to one major project. As one very successful model for entrepreneurship for technology startups has been the Lean Startup (Ries, 2011), this approach has been adopted for the course. One motivation for the Lean Startup philosophy is the work of Steven Blank and his work on determining the successful strategies for developing products that succeed (Blank, 2013). Blank points out the amazing fact that nine out of ten attempts to launch new products fail, with the waste of billions of dollars to develop products that essentially nobody is waiting to buy. The Lean Startup works to mitigate this path to failure by focusing intentionally on develop products people want.

The approach in this course differs from that of Doboli, Kamberova, Impagliazzo, Fu, and Currie (2010), who include both depth and breadth add-on modules to the computer science and computer engineering courses. As any new venture will ultimately adopt some approach and apply it in depth, rather than utilizing all approaches at one time, we have chosen depth over breadth in introducing entrepreneurship into the SDII course. Also, it should be noted that the two professors who have taught this course for the last fifteen years have a combined total of over 30 years of professional software development experience in addition to being academics, both having experience consulting with start ups.

Course Process

In pursuit of the goal of promoting entrepreneurship, very early in the course the Director of the Joseph C. Prince Entrepreneurship Program at Stetson, as a guest lecturer, conducts a dialog with students about entrepreneurship, the challenges faced by being an entrepreneur and what sorts of personality characteristics fit well with being an entrepreneur. The Director also introduces the students to the basic steps an entrepreneur takes from inception to delivery of a software product as part of a new technical venture. The class is then introduced to the lean startup philosophy, along with its five principles (Ries, 2011; Lean Startup, 2016). Discussions begin centered around the central tenet of determining more quickly what works in developing a product and discarding what does not, alluding to how the class will achieve success in implementing such a strategy in product development. A number of case studies are viewed from Lean Startup (2016), and discussions of what successful companies practiced and observed during their own launches continue.

Concurrent with the above discussions on entrepreneurship and case studies, students are asked to generate a list of possible software products they would like to develop, and each student is asked to make a pitch to the class about their ideas. The professor and students also solicit suggestions from various administrative departments on products they use, problems faced with these products, and ideas for better or new products. Students then conduct market research pertaining to the viability of their ideas, including talking to potential clients who would be in the market for their proposed product, and with this new information, pitching to the class once more. After discussion on the ideas presented, students decide on the project or projects they will develop throughout the course. As a typical size for the class ranges between 5 and 20 students, the decision on project(s) selection is based on the size and scope of the projects proposed and student interest. If two projects are chosen, two rounds of voting by the students are used to select the two projects that have been pitched.

For a single project, only one round of voting is required. Retaining the requirement of a maintenance project for the course, the selection of the maintenance project has been modified to build student proficiency with the language and tools that will be used for the core project. For example, if the final project is to be a web application, students may break into smaller teams, with one group working on Android mobile development, one on iPhone development, one on web front end development, and one on back end and database development. All students participate in the core design and interfaces, but development takes place separately, conforming to the agreed-upon interfaces. Each smaller team then works on a separate maintenance project appropriate for their component of the product, typically chosen from online open source projects. The maintenance phase generally lasts for three weeks, at which point students move on to the final project.

For the final project, students are required to submit their code to online repositories (e.g. Github or Bitbucket) so that other students may instantly access other groups' codes in their development. Students develop test cases to test their code, perform code reviews, and provide in-class weekly updates on progress, and must set and meet short- and long-term milestones. Ideally (though success varies), students develop iteratively such that they may present updates to clients for the project (e.g. the administrative department suggesting the product, or if their own idea with no clear client, the professor

for the course.) Following the lean startup approach, pivoting to adjust to client needs is critical for limiting wasted time developing a product that differs from what clients actually want. More frequent meetings with clients is the best means for keeping the project on track. The course ends with the final product being presented to the Department and any clients or groups involved with the process.

RESULTS AND DISCUSSION

Four projects have been completed over the last three years. A brief description of each is provided below.

Xeres (2013)

The Xeres project originated from a need presented to the class by Stetson's IT department. After eight months evaluating different product reservation systems to track loaned out equipment, IT found all to be either too complex and expensive or very affordable but inflexible. Serving as the clients for the class, IT worked closely with the class as a reservation system was developed. By the end of the semester, Xeres was installed and continues to be used by IT. In its original form, the product allowed items to be reserved, loaned, and tracked. The system was both calendar and menu driven with a very easy to use interface, flexible product entry and modification, and dynamic property generation. Three students continued debugging, developing and updating the program after the semester was over, developing more flexibility into the product to morph it form a reservation system for equipment to one that could be used for multiple other uses, such as reserving rooms or tickets for sporting events. The students presented the project at the 2015 Cairnes Foundation Innovation Competition and received the $5,000 second place award (Park, 2015) and the interest of a venture capitalist to fully fund their company upon graduation. Unfortunately, disagreements between the students on stock distribution stymied incorporation efforts.

MobileBlueLight (2014)

In collaboration with Stetson's Public Safety department, students developed a mobile blue light application for iPhones and Android phones. Students in the class noted that fixed blue lights for making emergency calls, especially for students walking alone at night, were few and far apart. Certain areas of campus, such as fraternity row, had none. The mobile apps developed by the students allowed ready access to Public Safety with the swipe of their finger on the app-ready phone. One group in the class developed the back end program to drive the product, while a different team developed the web application that would run on Public Safety's monitoring desktop. Through interviews with Public Safety, students developed a means to reduce false positive alerts, rank alerts in priority, and make the application web-based so that no software needed to be installed on monitoring computers. By the end of the semester, a fully operational prototype was working on both types of phones, the desktop, and back end servers. While initially, students displayed an interest in continuing work on the application, interest dropped when classes began again the following semester due to time constraints.

TutorMe (2015)

In 2015, two projects were completed. Both projects were web-based applications. *TutorMe* was targeted at Colleges, Universities and Schools, and was an application that could be used by students to schedule tutoring appointments, allow tutors to manage their schedules, allow students to rate tutors, allow tutors to log problem students, and provide analytics to instructors and persons managing a tutoring service so as to be able to assess the service and students' use of the service. Students in the class contacted different schools using existing products to determine short-comings and features that would be desirable. Based on the feedback received as well as other on-line market research, the product developed contained features that were found to be needed, and not present in existing products. Most of the features were

completed by the end of the semester. Four members of the team that worked on the project decided to continue and work on making the product commercial. After consulting with the professor and Director of entrepreneurship, the students continued to draw up legal documents required to work together. Progress has been slow, but work continues.

OddJob (2015)

The second 2015 project, *OddJob*, was designed to be an "Uber for Odd Jobs" that need completing and individuals who provide services to accomplish those jobs. It was designed to allow the posting of the odd jobs, posting of resumes and skills by providers, contractual agreements to perform work, searchability for jobs and providers based on type of job and geographic location, and rating of providers and customers. While a fair number of the features were completed, a fair amount of work remained by the end of the class to make the product viable. Two of the students from the team who worked on this agreed to continue working on the project to bring it to market, though efforts have stalled.

CONCLUDING COMMENTS

A depth model for including entrepreneurship into a sophomore-level software development class was presented in this paper. The Lean Startup approach (Ries, 2011; Lean Startup, 2016) was introduced into the class over three consecutive years, with four software products developed. For two of the products, a group of students in each class continued work and development with the intention of taking the product to market. For one product, student entered and received second place in an innovation competition and attracted serious attention from a venture capitalist interested in fully funding the product, though in the end, stock distribution disagreements doomed the venture. While none of the four projects led to a successful new venture, students received valuable experience in entrepreneurship as applied to new technical start up efforts. Students received guidance from the Director of Stetson's entrepreneurship programs at various stages of work, most importantly at the beginning of the course by way of introduction, and at the end of the course and beyond, when interested students required help in continuing work towards incorporating and moving ahead with the venture.

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STUDENT DIVERSITY AND HOW IT RELATES TO STUDENT SUCCESS

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ABSTRACT

Encouraging contact among students from different economic, social and racial or ethnic backgrounds could help provide the support students deem necessary to succeed at college. Evaluation of a 2011 Community College Survey of Student Engagement (CCSSE) dataset reveals an intriguing relationship between student diversity and students' feelings of support they need to succeed at college. Analysis of data implies that improving students' understanding of people of other racial and ethnic backgrounds could help encourage contact among students from different economic, social, and racial or ethnic backgrounds, and this in turn could help university and college students succeed in their studies. Logistic regression analysis shows the strongest predictor of support needed to help students succeed at college is "Encouraging contact among students from different economic, social and racial or ethnic backgrounds". Consequently, increasing student diversity, for example, may be an appropriate university or college strategy to help students understand people of other backgrounds. Greater awareness of people from different racial and ethnic backgrounds could promote contact among students with different backgrounds and this could improve the sense of support students think a college could provide them to succeed at school and in the job market.

JEL: I21, I22, I23, I24, O15

KEYWORDS: Student Engagement, Diversity, CCSSE, Support for Learners, Educational Intervention

INTRODUCTION

As reported by Junco, Heiberger, & Loken (2011), Astin (1984) defined student engagement as "the amount of physical and psychological energy that the student devotes to the academic experience" (p. 297). He later defines involvement in a similar fashion (Astin, 1985). Therefore, a student's engagement is their involvement at university or college. The Community College Survey of Student Engagement (CCSSE) has provided assessment tools and improvement strategies since 2001. CCSSE's survey instrument, the Community College Student Report, emphases institutional practices and student behaviors that encourage student engagement. Good educational practices have been shown to be directly related to retention and other desired student outcomes (CCSSE, 2012a). Among the things the CCSSE survey asks students is their college experiences and how the college supports their learning. Findings show student engagement —involvement, integration, and quality of effort in social and academic collegiate experiences — is significantly related to student learning, persistence, and academic achievement. Hence, student engagement is undeniably linked to student success and it is an appropriate and useful proxy for desired outcomes of students' collegiate experience (CCSSE, 2012a).

This study attempts to understand factors that affect engagement levels which may result in more accurately measuring and promoting student engagement. The focus is on student diversity and students' feelings of support they need to succeed at university or college. The argument made is that support for learners and diversity among students are important contributors to student engagement. What follows in this research paper is a review of literature outlining the notion of support for learners, integration of experiences, and

student diversity. After this is the data and methodology, results of logistic regression analysis of key support variables, discussion of recommendations on institutional engagement initiatives for administrators, and conclusions.

LITERATURE REVIEW

The topic of student engagement is important because engaged students tend to be good students and continue to become better students over time (Tison, Bateman & Culver, 2011). Student engagement has become a much-studied topic in higher education because engagement is highly correlated with learning and personal development (Astin, 1993). Such studies show that students actively engaged with university or college faculty and staff, other students, and with the subject matter are more likely to learn, persist with their studies, and to attain their academic goals. Findings from the CCSSE concluded that student learning, persistence, and academic attainment is significantly related to student engagement, involvement, integration, and quality of effort in social and academic collegiate experiences (CCSSE, 2012b). Engagement has been shown to be highly correlated with learning and personal development (Astin, 1993). Elffers, Oort, & Karsten (2011) revealed that experiencing an academic connection is central to emotional engagement. Students connect with human beings and also with the very school and education itself. These researchers also restate that emotional engagement with school is an essential prerequisite for student effort, achievement, and persistence in school. Their results show that such engagement is closely related to school experiences. Such experiences help students perceive a sense of belonging and provide positive attitudes towards education so they value their education.

Kuh (2001a) suggested that a measure of institutional quality is reflected in student engagement. Therefore, better institutions are identified as those where students are more engaged. In addition, the level of educationally purposeful activities such as active and collaborative learning, and student–faculty interaction has been identified as an alternative measure of collegiate quality (Kuh, 2003). Engagement research can help direct college and university policy development; institutions may use student engagement results to help design interventions to create more effective learning environments (Hu and Kuh, 2002). However, Tison, Bateman & Culver (2011) report that the success of such initiatives depends on identifying and targeting those particular groups of students who will benefit most since the same learning environments are not equally effective for all people. Thus, to help improve the success of engagement initiatives and increase academic excellence, an institution should identify and target those student groups who will most benefit from the initiative.

Student engagement affects success. A study of Student Behaviors, Activities, and Experiences Associated with Student Success in 2007, states that assuming a student is adequately prepared through high school; the best predictor of university or college success is student engagement, or the extent to which they take part in educationally effective practices. Chickering & Gamson (1987) listed several categories of effective educational practices that directly influence student learning and the quality of their educational experiences. As students engage in these kinds of activities they learn more and they are more likely to persist and graduate from college. The 2007 study of Student Behaviors, Activities, and Experiences echoes that student engagement represents two critical components. The first is the amount of time and effort students put into their studies and other educationally purposeful activities. The second component of student engagement is how the institution organizes the curriculum, other learning opportunities and support services, and deploys its resources to encourage students' participation in activities that lead to the experiences and desired outcomes such as satisfaction, learning, persistence, and eventual graduation (Kuh, 2001a). Thus, it could be argued that the effectiveness of any educational practice is gauged by its ability to increase student engagement.

Student satisfaction with university or college ultimately influences engagement. An analysis of the NSSE data reveals that the single best predictor of student satisfaction with college is the extent to which students

perceive the institutional environment to be supportive of their academic and social needs (Student Behaviors, Activities, and Experiences Associated with Student Success, 2007). The way students feel about their school does not necessarily directly influence how much they learn. Nonetheless, their perceptions directly affect student satisfaction and how much effort they will spend on educationally purposeful activities, which subsequently have direct impacts on their learning and personal development (Hu and Kuh, 2002, Kuh 2001a, 2001b).

The study of Student Behaviors, Activities, and Experiences Associated with Student Success in 2007 reiterates that student satisfaction is derived when the student feels he or she belongs at, and is loyal to, the institution (Tinto, 1988), and is highly correlated with engagement (National Survey of Student Engagement, 2005), persistence (Tinto, 1988), and academic performance (Bean and Vesper, 1994). Furthermore, the student's degree of satisfaction with the university or college experience is prone to influence from the college environment (Astin, 1993). Generally, the more interaction students have with their peers and with faculty, the more satisfied they are overall with the post-secondary experience (Astin, 1993; Kuh, 2003; National Survey of Student Engagement, 2005).

Significance of Support

In a similar fashion to the CCSSE, the National Survey of Student Engagement (NSSE) instrument assesses engagement in effective educational practices within benchmarks that include: 1) level of academic challenge, 2) student interactions with faculty, 3) active and collaborative learning, 4) enriching educational experiences, and 5) supportive campus environments (Kuh, 2001a). The NSSE measures outcomes of engagement as general gains in communication, intellectual and interpersonal skills, and self-reported grades. Engagement is only one factor that contributes to these outcomes (Chambers, 2010). Moreover, students' perceptions of their college and assessments of advising and counseling services provided have a significant impact on persistence (CCSSE, 2012b). Both the CCSSE and the NSSE include the notion of support for learners as a key component of the student engagement construct and this becomes the focus of this study. This research paper argues that support for learners, and diversity among students are important contributors to student engagement.

Significance of Integration of Experiences

Pike & Kuh (2005) developed a conceptual model that stresses two aspects of the college experience: integration of experiences and student engagement. What's meant by integration is the extent to which students were able to incorporate information from their courses and other learning activities in their conversations with peers and others. Chickering (1974) reasoned that learning requires both active participation in a range of social and academic activities and integration of these varied experiences into a meaningful whole. Numerous researchers have established the positive impact that student engagement in educationally purposeful activities has on learning (Astin, 1993; Terenzini & Pascarella, 1990). Pike & Kuh's model demonstrated the relationships among the engagement variables, perceptions of the college environment, integration of diverse experiences, learning, and improvements in intellectual development. Gains in student learning were directly associated with perceptions of the college environment and integration of diverse experiences. In contrast, academic and social engagement were indirectly related to gains in learning through their effects on integration.

Student Diversity

With regards to student diversity and student engagement, Kuh (2003) reports that students develop a valued set of skills and competencies when they understand and learn how to work effectively with people from different backgrounds. The NSSE asks four questions about students' exposure to and experiences with diversity. Kuh revealed that students who indicate more experience with diversity are more involved

in other effective educational practices. Also, with more exposure to diversity, students are more likely to be involved in active and collaborative learning and are more satisfied with their university or college experience. Pike, Kuh & Gonyea (2007) make the point that NSSE's survey indicates student-body diversity was indirectly related to gains in understanding people of diverse backgrounds. Their study showed that greater diversity in the student population is associated with higher levels of interaction among students from different backgrounds. More intercultural awareness and appreciation is welcomed in higher education and campus activities can make a contribution (Klak and Martin, 2003). Intercultural understanding plays an important role as organizations operate globally where cross-cultural relationships and understanding are needed (Crose, 2011). Therefore, Crose points out the role faculty play in establishing a classroom environment that fosters intercultural learning so that both international students and host students would benefit. Appreciation and awareness of cultural differences will help all students prepare for jobs and careers as the world becomes more globalized and interactions between cultures increases.

DATA AND METHODOLOGY

Hundreds of colleges across North America choose to participate in the CCSSE from year to year. This study made use of a 2011 CCSSE dataset featuring a local institution, Okanagan College where over 700 students completed the survey. Among the dozens of questions on the survey, respondents were asked a variety of related questions about their impression of the support for learners provided by their institution. The question posed was "How much does this college emphasize each of the following?" Five items measuring support for learners immediately followed this question. These were: 1) variable ENVSUPRT - "Providing the support you need to help you succeed at this college", 2) variable ENVDIVRS - "Encouraging contact among students from different economic, social, and racial or ethnic backgrounds", 3) variable ENVNACAD – "Helping you cope with your non-academic responsibilities (work, family, etc.)", 4) variable ENVSOCAL - "Providing the support you need to thrive socially", 5) variable FINSUPP – "Providing the financial support you need to afford your education." Four levels or categories of response were used in each of the items, 1= very little, 2 = some, 3 = quite a bit, and 4 = very much.

This researcher's opinion was that the variable ENVSUPRT was quite broad and all-encompassing and as a result the thought occurred to determine whether the other more specific items listed above influenced this variable in any way. Logistic regression was used examine this relationship; it is a suitable regression approach when dealing with categorical variables. To test this would mean converting ENVSUPRT into a dependent variable. Furthermore, logistic regression requires a dichotomous response variable. Of the 717 survey responses to the question ENVSUPRT, 34 respondents selected category 1, 180 chose 2, 323 marked option 3 and 172 selected 4. There were 8 respondents who didn't indicate a choice. Creating a dichotomous variable involved recoding response categories 1 and 2 to dummy code 0, and categories 3 and 4 to dummy code 1. Therefore, a dichotomous response variable was created having two variables consisting of 214 values with a 0 and 495 with a value of 1. The variable having a value of 0 would be deemed to indicate having no support for learners and a value of 1 would indicate providing support. Thus, the variable ENVSUPRT was used to create dichotomous variables 0 and 1 and these were assigned as the response or outcome variables for the purposes of the study.

Variables ENVDIVRS, ENVNACAD, ENVSOCAL, and FINSUPP were designated as independent or predictor variables in the study. Multivariate normality was not evident with the predictor variables but this is not needed for logistic regression analysis. One category of the variable ENVNACAD was merged due to the low number of responses in that category. Merging categories is sometimes done to more evenly distribute data so that it reflects a meaningful distinction between categories in practical terms. Categories in the other variables were unchanged. Univariate logistic regression tests using a level of significance of 0.05 were performed to determine if each of the independent variables were significantly related to the outcome variable ENVSUPRT. Lastly, a model predicting support for learners was built, using a stepwise

method with a level of significance of 0.05, and selecting predictor variables as listed above for multivariable analysis. The model building process involved determining which variables best predict support for learners with ENVSUPRT designated as the response variable.

RESULTS AND DISCUSSION

Logistic regression uses a maximum likelihood method which maximizes the probability of getting the observed results given the fitted regression coefficients. Univariate logistic regression tests were first performed on each predictor to determine if each of the independent variables were useful in predicting the response variable ENVSUPRT. All of the variables were good predictors and were kept primarily based on the likelihood test. Results could be seen in Table 1.

Table 1: Univariate Logistic Regression Tests of Predictor Variables

Variable	Keep/Drop	LR chi2	Prob > chi2	Log likelihood
ENVDIVRS	Keep	68.84	0.0000	-388.99
ENVNACAD	Keep	67.47	0.0000	-393.51
ENVSOCAL	Keep	62.94	0.0000	-395.06
FINSUPP	Keep	38.80	0.0000	-404.01

This table shows the decision to keep predictor variables made primarily based on the likelihood test.

Stepwise ordinal logistic regression was then performed to assess the impact of factors namely ENVDIVRS, ENVNACAD, ENVSOCAL, and FINSUPP on the likelihood that respondents would feel their college emphasized providing the support they need to succeed. The full model containing all predictors was statistically significant, $\chi 2$ (11, N=677) = 113.15, $p<0.001$, indicating that the model was able to distinguish between respondents who felt the college emphasized the support they need to succeed and those who did not. The predictors accounted for about 14% of the variability in the outcome variable. As shown in Table 2, all predictors make a uniquely statistically significant contribution to the model. The strongest predictor of support for learners – ENVSUPRT was "Encouraging contact among students from different economic, social, and racial or ethnic backgrounds" – ENVDIVRS, recording odd ratios of 1.68, 2.66 and 4.75.

Also, the p-values and odds ratios of variable ENVDIVRS relative to the other predictors make it arguably the strongest predictor. With categorical variables Stata creates k indicator variable sets. The procedure is to omit the first group of variables so it acts as a baseline for other categories to help understand their odds ratios. For example, in Table 2, the odds ratio for 'envdivrs_2' is 1.68. With relations to the response variable ENVSUPRT, it is the odds that their university or college provides some emphasis on "Encouraging contact among students from different backgrounds" divided by the odds their college provides very little emphasis on "Encouraging contact among students from different backgrounds". The variable very little is the omitted category used as a baseline. Interpreting odds ratios among categories of such predictor variables implies that when a respondent believes their university or college encourages contact among students from different economic, social, and racial or ethnic backgrounds there is a greater probability the student feels the college is providing the support they need to help them succeed at this college. As Hilbe (2009) indicates, the proportional odds model assumes equality of slopes among response levels or categories. The same interpretation applies to other predictor variables of ENVNACAD, ENVSOCAL, and FINSUPP. The importance of each variable included in the model was verified through an examination of the Wald test statistic. The model yields the largest Log likelihood and largest R-squared value of all other models that didn't include all predictors.

Table 2: Best Fitting Model for Response Variable ENVSUPRT

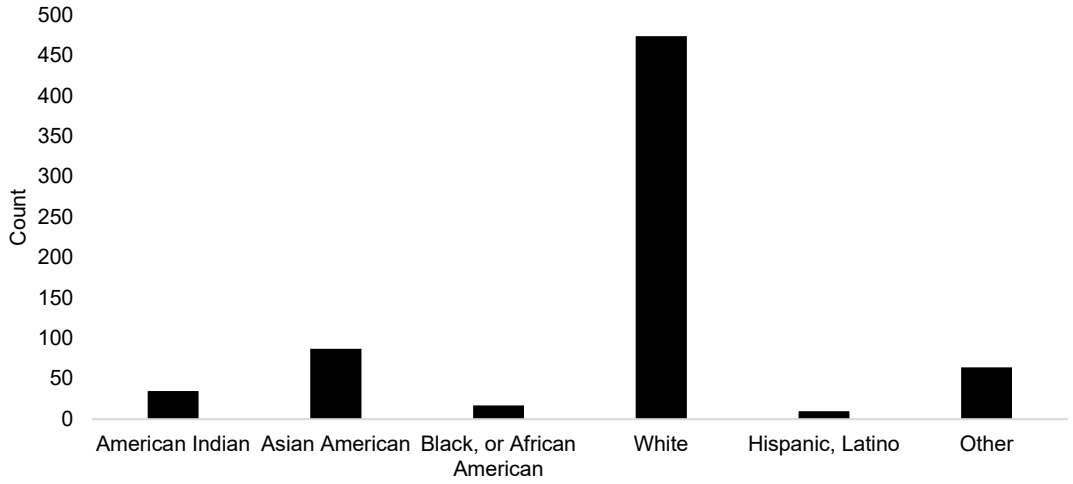
Envsuprt	Odds Ratio	Std. Err.	Z	P>|Z|	[95% Conf. Interval]**	
envdivrs_2	1.686	0.3942	2.24	0.025	1.066	2.666
envdivrs_3	2.666	0.7140	3.66	0	1.577	4.506
envdivrs_4	4.756	1.828	4.06	0	2.238	10.103
envnacad_2	1.581	0.3504	2.07	0.039	1.024	2.441
envnacad_3	3.098	1.293	2.71	0.007	1.367	7.021
envsocal_2	1.097	0.2312	0.44	0.659	0.7261	1.658
envsocal_3	2.310	0.8529	2.27	0.023	1.120	4.763
envsocal_4	5.668	6.091	1.61	0.106	0.6900	46.571
finsupp_2	1.658	0.3432	2.45	0.014	1.105	2.488
finsupp_3	1.667	0.5026	1.7	0.09	0.9234	3.010
finsupp_4	0.8866	0.4540	-0.23	0.814	0.3249	2.419
/cut1 |	0.4799	0.1998			0.0882	0.8717

This table shows response variable ENVSUPRT and predictors ENVDIVRS, ENVNACAD, ENVSOCAL and FINSUPP. Most p-values of the predictor variables are below 0.05 indicating a good fit. The importance of each variable included in the model was verified through an examination of the Wald test statistic for each variable following ML, and a comparison of each estimated coefficient with the coefficient from the model containing only that variable. Interpreting odds ratios among categories of predictor variables implies that when a respondent believes their college encourages contact among students from different economic, social, and racial or ethnic backgrounds there is a greater probability the student feels the college is providing the support they need to help them succeed at this college. Ordered logistic regression. Number of obs = 677, LR chi2(11) = 113.15, Prob > chi2 = 0.0000, Log likelihood = -355.18, Pseudo R2 = 0.1374.

Since the strongest predictor is ENVDIVRS – "Encouraging contact among students from different economic, social and racial or ethnic backgrounds," increasing student diversity, for example, may be an appropriate university or college strategy to help students understand people of other racial and ethnic backgrounds. Greater awareness of people from different racial and ethnic backgrounds could promote contact among students with different backgrounds and this could improve the sense of support students think a college could provide them to succeed at school. In the CCSSE dataset there was no question dealing specifically with economic and social background, but encouraging students' understanding of people with diverse backgrounds of this type could presumably improve the sense of support students think a college could provide them to succeed at school as well.

Key findings on the overall dataset of all member colleges that chose to participate in the CCSSE shows the majority of students feel that their colleges emphasize providing the support they need to help them succeed, i.e. they provide support for learners. Nearly three-quarters (73%) of students say that their college puts quite a bit or very much emphasis on providing the support they need to help them succeed. Half (51%) say that their college puts quite a bit or very much emphasis on encouraging contact among student from different economic, social, and racial or ethnic backgrounds (CCSSE, 2012c). On a related note, Figure 1 shows the racial identification indicated by Okanagan College student respondents on the CCSSE survey. White Non-Hispanics comprised the largest group by far. Clearly there is little diversity in racial or ethnic backgrounds. Given the sparse distribution of people from other racial and ethnic backgrounds, the College could undertake efforts to enable students to make positive connections with those of other backgrounds. This is imperative since students seem to be indicating that this will provide the support they need to help them succeed at college, and by extension, the job marketplace.

Figure 1: Distribution of Racial Identification



This figure shows the racial identification indicated by Okanagan College respondents on the CCSSE survey. White Non-Hispanic students comprised the largest group and there is little diversity in racial or ethnic backgrounds.

The implications of increasing student engagement by addressing student diversity initiatives reaffirm Bowman and Denson's (2011) conclusions. University or college faculty, and student affairs practitioners understanding the role of emotion in promoting student growth, should promote interracial emotional connections in their courses, workshops, and programming. They point out numerous ways of accomplishing this. Small changes can be easily implemented. Such small-scale interventions could be opportunities for meaningful interactions among diverse students through assigning students into small-group discussions and group projects, allowing students to share their experiences and feelings with one another in ice-breaker activities, and hosting events that allow for important dialogue. Crose (2011) points to other techniques and strategies faculty may use to create an inviting classroom for diverse student groups including using limiting time spent lecturing, providing outlines of lectures, creating pairs of international students and host students, or other cross-cultural groups.

In addition, Bowman and Denson explain how large-scale, university-wide efforts could be undertaken but they require substantial effort with institutional support and commitment. Widespread university-level interventions could be fashioned after Michigan State University's Multi-Racial Unity Living Experience (MRULE). MRULE builds an integrated, multiracial community of students by way of community service, community building trips, round table discussions, and monthly socials (Multi-Racial Unity Living Experience, n.d.). MRULE provides students from all backgrounds a unique forum to come together through open and frank discussions on controversial issues, informative presentations, interactive exercises and a variety of experiences. This allows them to become familiar with one another through positive connections that help remove barriers that often impede multiracial unity.

Chickering and Gamson (1987) suggested seven principles for institutional improvement based on years of evidence on educational effectiveness. The realization of these principles depends largely on the management of campus environments by educators and administrators. Besides, the authors upheld that the seven principles, when combined, activate six powerful forces in education: activity, expectations, cooperation, interaction, diversity, and responsibility. Pontius & Harper (2006) state these seven principles act as guidelines for defining institutional effectiveness and have influenced the creation of good practice principles in areas such as student affairs. Lastly, universities and colleges could design institutional engagement initiatives to identify student groups needing more support such as students from low-income families and first-generation students (Pascarella, Pierson, Wolniak, & Terenzini, 2004). The impact of support can help students from low-income families and students who lack strong academic skills to

succeed (Hoffman, 2010). Admissions officers could design presentations for first-generation students that highlight the behaviors common to successful first-generation students who have graduated from college.

CONCLUSION

Student engagement is a product of a number of elements including: level of academic challenge, student effort, involvement in co-curricular activities, student interactions with faculty and peers, active and collaborative learning, enriching educational experiences, support for learners and supportive campus environments. Researchers such as Kuh (2009) conceptualize student engagement as the time and effort students invest in educational activities that are linked to desired university or college outcomes. Outcomes of engagement include improvements in communication, and development of intellectual and interpersonal skills. Research on student engagement is important because students who are engaged in their studies tend to be good students. Moreover, some would argue that the effectiveness of any educational intervention is directly related to its ability to increase student engagement.

This research attempts to understand factors that affect engagement levels which may result in more accurately measuring and promoting student engagement. The focus is on student diversity and students' feelings of support they need to succeed at university or college. The argument made is that support for learners and diversity among students appear to be important contributors to student engagement. In this study when four variables measuring support for learners were examined as predictors and ENVSUPRT is set as dichotomous response variables, the one variable that appears to be the strongest predictor is ENVDIVRS – "Encouraging contact among students from different economic, social and racial or ethnic backgrounds. Greater awareness of people from different racial and ethnic backgrounds helps encourage contact among students with different backgrounds and this could improve the sense of support students think a university or college could provide them to succeed at school. Moreover, as students become more aware of cultural differences and learn to appreciate them, they will be better prepared for jobs and careers in an increasingly globalized marketplace.

Institutions may use the findings of student engagement research to design interventions that enhance support for learners and create more effective learning environments. Interventions could range from faculty members promoting interracial connections among students in their courses, to administrators building an integrated, multiracial community of students so students could understand each other. Limitations in the study are that the 2011 CCSSE dataset featured a local institution, Okanagan College and about 700 students who completed the survey. Results may not necessarily reflect student sentiments at other institutions. Also, students at the College are undergraduates only and it is possible that graduate and post-graduate students at other institutions have different feelings about the notion of support. Future research could include making linkages between student diversity at College with workplace diversity, innovation, competitive advantage, and improved bottom line results in the business world. It could examine whether student diversity in an academic setting not only helps students prepare for a diverse workplace but if businesses with a diverse workforce experience greater levels of innovation. Lastly, research could refine the measurement of student engagement and develop a critique of student engagement in policy, research, and administration.

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CHOOSING A BACHELOR-LEVEL BUSINESS PROGRAM: FACTORS IMPACTING THE DECISION

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ABSTRACT

In the increasingly competitive environment in which colleges and universities are striving to attract students, understanding why and how prospective students make their choices is becoming more critical. Understanding the choices of programs within a college or university is also increasingly important. The review of the literature revealed that most studies were about choosing undergraduate business programs in on-site environments, not a mix of on-site and online. At a major private, non-profit university's business school, questions were raised about prospective students choosing among three bachelor-level business programs. What led them to choose their particular program? Which sources of information were most influential in their choices? What role did Advisers play in their choices? In a sample of 182 out of 1985 students enrolled in the three programs, study participants were asked about the purpose of their enrollment, their enrollment process, and their perceptions of the similarities and differences in the programs. Possibly because the participants in this study were mid-career students, the results had great alignment to the studies in the literature examining choosing graduate schools. Participants were seeking the keys to better opportunities for promotion, a sense of accomplishment, and better ability to change careers.

JEL: I210, M00, M3

KEYWORDS: Business Education, Consumer Behavior, Student Choice

INTRODUCTION

The environment for business schools in the United States is rapidly changing. It is becoming more competitive as colleges and universities seek out students to fill their classrooms, often by entering markets that are new to them. For those schools already in these markets, defending their market share becomes a critical challenge. From a strategic perspective, it is vital that these schools look at both their competitive advantages and disadvantages in their niche educational market place. One critical aspect of this process is looking more closely at current customers, the students. Advantages in niche markets come from knowing and serving customers better than new entries. In order to meet, even exceed expectations, those expectations must be known in a systematic manner. National University is the second-largest private, non-profit university in California and the 12th largest in the United States. Since its founding in 1971, the University has focused on serving mid-career students; the average age of Bachelor level students is 32. Since its inception, the University has operated on an academic calendar that is a compressed schedule of one semester's work completed in one month. In the last 20 years, the University has been a pioneer providing higher education in an online environment; two-thirds of students are now taking their classes online. This niche of older students who wish to receive their education online is now targeted by both private and public universities. National is challenged to defend its position in this niche, even expand its presence. The School of Business and Management is the third largest school in National University. In January 2016, 1736 students were in class in 115 different classes. Of these students, 952

were undergraduate students and 784 were graduate students. The School offers a full range of programs and courses. The three largest bachelor level programs are the Bachelor of Arts in Management (BAM), Bachelor of Business Administration (BBA), and the Bachelor of Science in Organizational Leadership (BSOL). During 2015, faculty in the School of Business and Management were concerned with fluctuations in enrollments that were not easily explained. Total enrollments were changing up-and-down as well as relative enrollments among the BAM, BBA, and BSOL. Anecdotal evidence raised questions about how student chose their programs, as well students' understanding of the differences among the programs. It was clear that the School did not sufficiently understand its customers' perceptions of the programs, their priorities and how they made their purchase decision. The balance of this paper is organized as follows: The second section presents a review of the related literature, the third section describes the methodology used in the research, the fourth section presents the results and discussion, and the final section offers concluding comments.

REVIEW OF LITERATURE

Why do students choose their academic degree program? Specifically, what are the factors that influence degree choice? The present review of the literature explores factors that influence student choice in college majors. Choosing a major is an important decision in the life of a student as it impacts study continuity, success or failure, satisfaction or dissatisfaction, financial return, and student social status. Beggs, Bantham, and Taylor (2008) define a "good" major choice as the major best capable of helping the student to achieve their educational and post-educational goals. They add that matching students' abilities and interests with the abilities required for the major is important in the selection process by undergraduate students. Additionally, with the increasingly competitive landscape in higher education, colleges and universities are constantly seeking to expand their market share by staying ahead of the curve with knowledge about the wide range of variables that influence student choice.

The literature highlights the fact that students use a wide range of criteria when choosing a degree program. Babad (2001) presents the category of educational elements including learning material, previous courses attended, assignments, perceived difficulty, and teacher's characteristics. Entry requirements, including specific criteria utilized by admissions to determine acceptance into a program, is yet another category discussed by Briggs (2006). With regard to the job market, opportunity to gain practical experience, ease of finding a job, salary of job after graduation, and skills achieved are the subject of the work presented by Deuren and Santeman (2012). Also noted in their findings are personal attributes including interest in the subject, expectation to learn something new and fit with personal capabilities.

There have been a number of studies focused on exploring the wide range of factors related to student choice of college degree and major. Gordon (1995) notes that approximately 20 to 50 percent of students enter college as undecided. Further, an estimated 75 percent of students change their major at least once before graduation. According to a College Student Journal survey of more than 800 students (Beggs et al (2008)), factors that played a role included family and peer influence; assumptions about introductory courses and characteristics about the major. Beggs et al assert that while these variables may be valid factors, students base their choice on assumption rather than through an understanding of their own personal goals and values. One of the more comprehensive studies on degree choice is presented in the research of Maringe (2006), pointing to four broad categories, each of which are influential in a student's degree program choice. The first category is information-gathering sources. Included in this category are the guidance provided by parents, friends, faculty members, and advisers. The second category is perception about specializations. This includes student views about the content of the program and level of difficulty of the program. The third category is summarized as important criteria for selecting the right specialization. The opportunity to gain practical experience and ease of finding a job are central within this category. The fourth category focuses on the format and timing of the degree offering. This includes the option to enroll in onsite, online, or other modalities.

E. St. John (2000) asserts that there is no college decision that is more thought-provoking, gut wrenching, and rest-of-your-life oriented, than the choice of a major. First year students, many times, are working to understand their own identity. For the majority of their lives, they lived under someone else's guidance and may not yet be able to come to legitimate conclusions about themselves. This raises the question without knowing one's self, how can one effectively choose a major? According to Perry's student development stages, students in their first year will experience dualism, in which the world around them is made up of dichotomies (good vs. bad, right, vs. wrong, and yes vs. no.) Students in this stage believe there is one right answer to everything, including the choice of major (Evans, Forney, Guido, Patton, & Renn 2010). Dualistic students tend to look to others for the answers (adviser, parents, peers, and faculty) rather than draw conclusions based on their own research, personal goals, and self-reflection. The study by Evans et al (2010) highlights the importance of student development theory and important role that enrollment counselors play within each student's degree choice process. Bloom (2008) discusses the importance of positive advising techniques including appreciative advising, which is asking positive, open-ended questions when helping students consider goals, passion, and interests. Given that many of the previous studies have focused on traditional learning environments, future research is needed, including the present study, to determine if the same variables that affect student program choice in those settings affect adult learners in fast paced learning environments.

METHODOLOGY

Research Approach

This research has been designed to gather information from current students of the Bachelor of Arts in Management, Bachelor of Business Administration, and Bachelor of Science in Organizational Leadership. The information sought related to student priorities when enrolling, as well as their experience of the enrollment process, especially when choosing their academic program. Additionally, the research was seeking student perceptions of the differences among the three programs and how well their program has met their expectations. This inquiry was summarized in the following research questions: 1) What led them to choose their particular program? 2) How do they see the programs as different and similar? 3) Which sources of information were most influential in their choices? 4) What role did Advisers play in their choices?

Research Instrument Development and Implementation

A new survey instrument was created for this research. The instrument development process was in three stages. First, the researchers generated open-ended questions that addressed the areas of the inquiry. Second, the initial instrument was piloted in a class that included students from all three programs. The purpose of this pilot was to test the instrument and to generate a selection of answers to each of the questions in order to provide closed-ended questions for the larger survey.

Instrument

The instrument was administered utilizing the research capability of National University, Office of Educational Effectiveness and Accreditation (OEEA), to identify students currently enrolled in the three programs, a total of 1985 students. Invitation emails were sent to all such students. These emails explained the research and provided a link to the online survey instrument on Qualtrex. Once on the Qualtrex survey page, students had the opportunity to provide informed consent prior to beginning the survey. The National University OEEA had the capability to identify those who had not yet completed the survey, so several reminder emails were sent. Since the survey was administered from mid-December until mid-January, these reminders were helpful in boosting the response rate. A total of 177 students completed the survey, a response rate of 9%. At the close of the survey, OEEA produced a basic report plus a file of the raw data.

No identifiers were included in this information. This data was analyzed by the researchers to produce the findings in this paper.

RESULTS AND DISCUSSION

This research sought to answer the research questions about how students perceive the three bachelor level business programs, what contributed to their choice of program, and what contributes to their evaluation of their program choice. The data was collected between December 1, 2015 and January 15, 2016. Of the 1985 current students invited to participate, 195 engaged in the online survey instrument. Of these, 107 identified that they were enrolled in the BBA, 40 in the BAM, and 35 in the BSOL. 13 students appeared to not realize that the NU system had them as enrolled in one of the three programs. These surveys were excluded from further analysis.

Making Their Choice

At the core of the study is the question, *What led them to choose their particular program?* This question was specifically intended to address the circumstances under which a perspective student makes a decision about enrollment. Participants were asked how clear they were about which choice they would be making. 37% of all participants knew their choice at the time of enrollment, 28% had a preference, and 29% were unsure. Eventual enrollees in the three programs had similar clarity, except for BBA students who were more unsure at the time they engaged in the enrollment process. This data is presented in Table 1.

Table 1: At the Time You Enrolled, How Clear Were You About Which Program to Choose?

	BAM		BBA		BSOL		Total	
1 Knew	15	38%	38	37%	13	36%	66	37%
2 Had preference	14	36%	22	21%	13	36%	49	28%
3 Unsure	7	18%	37	36%	8	22%	52	29%
4 Other	3	8%	6	6%	2	6%	11	6%
	39		103		36		178	

In this table, participants indicated their clarity regarding in which program to enroll. The participants were separated based on the program in which they did enroll. These programs are the Bachelor of Arts in Management (BAM), Bachelor of Business Administration (BBA), and the Bachelor of Science in Organizational Leadership (BSOL).

For what purposes are students enrolling in these programs? Purpose tends to be a complex issue, especially with prospective students experiencing multiple purposes for taking such action. Participants were asked to rank their possible purposes for enrolling in the programs. Looking at the responses by program, it is striking the similarity of the rankings. Students in all three programs chose "Better opportunities for promotion" as the highest ranking choice of purpose for enrolling. BAM and BBA students' second highest ranked purpose was "Sense of accomplishment." BSOL students' second highest ranked choice was "Better credentials." This information is presented in Table 2.

Table 2: What Was Your Purpose for Enrolling in Your Chosen Program? (Rank Responses from 1 To 6.)

	BAM					
	High		**Medium**		**Low**	
1 Better opportunity for promotion	18	27%	11	17%	4	6%
2 Better credentials	10	15%	14	21%	9	14%
3 Better capability	8	12%	17	26%	8	12%
4 Sense of accomplishment	17	26%	12	18%	4	6%
5 Change career	10	15%	12	18%	11	17%
6 Other	3	5%	0	0%	30	45%

	BBA					
	High		**Medium**		**Low**	
1 Better opportunity for promotion	55	32%	23	13%	9	5%
2 Better credentials	19	11%	44	25%	24	14%
3 Better capability	16	9%	47	27%	24	14%
4 Sense of accomplishment	41	24%	33	19%	13	7%
5 Change career	33	19%	25	14%	29	17%
6 Other	10	6%	2	1%	75	43%

	BSOL					
	High		**Med**		**Low**	
1 Better opportunity for promotion	16	27%	8	13%	6	10%
2 Better credentials	14	23%	9	15%	7	12%
3 Better capability	7	12%	19	32%	4	7%
4 Sense of accomplishment	11	18%	13	22%	6	10%
5 Change career	9	15%	10	17%	11	18%
6 Other	3	5%	1	2%	26	43%

	Total					
	High		**Med**		**Low**	
1 Better opportunity for promotion	89	30%	42	14%	19	6%
2 Better credentials	43	14%	67	22%	40	13%
3 Better capability	31	10%	83	28%	36	12%
4 Sense of accomplishment	69	23%	58	19%	23	8%
5 Change career	52	17%	47	16%	51	17%
6 Other	16	5%	3	1%	131	44%

In this table the responses to the question about the purpose for enrolling in their chosen program are displayed by program. Participants ranked the purposes from 1 to 6. In this table the purposes ranked 1 and 2 were displayed together as High rank. Those ranked 3 and 4 were displayed as Medium. Finally, those ranked 5 and 6 were ranked Low.

Of great interest is who potential students talk with as they consider their program choices. All students talked with University Advisers, either in person, by phone, or by email. This depended on their distance from one of the University facilities. These participants were most likely to have consulted with current students. Many consulted faculty. Others consulted friends, family, employers, as well as gathered information on the Internet. 13% consulted no one else. This data is presented in Table 3.

Table 3: Besides the Adviser, Who Else Did You Consult About the Specifics of the Programs Before Making Your Choice? (Mark All That Apply)

	BAM		**BBA**		**BSOL**		**Total**	
1 Past students	0	0%	1	1%	0	0%	1	1%
2 Current students	10	43%	21	28%	7	30%	38	31%
3 Faculty	6	26%	20	26%	6	26%	32	26%
4 Other	3	13%	25	33%	7	30%	35	29%
No One	4	17%	9	12%	3	13%	16	13%
	23		76		23		122	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, who they consulted prior to making that decision.

Assistance in Making Choice

University advisers were expected to have played an influential role in the choices made by prospective students as they complete the enrollment process. Overall, 65% of respondents reported that the advisers had been Very Influential or Influential. The BAM enrollees reported higher levels of being influenced, 71% and the BBA enrollees reported the lowest levels of being influenced by the advisers, 61%. This data is presented in Table 4.

Table 4: Rate How Influential Your Adviser Was on Which Program You Chose

	BAM		BBA		BSOL		Total	
1 Very influential	10	26%	19	19%	10	29%	39	23%
2 Influential	17	45%	42	42%	14	40%	73	42%
3 Not influential	7	18%	23	23%	9	26%	39	23%
4 Insignificant	4	11%	16	16%	2	6%	22	13%
	38		100		35		173	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, the degree to which they felt the Advisers influenced their decisions.

Looking more specifically at those interactions with advisers, what questions were asked by the advisers? Most often, these questions were about career goals and current life situation. Questions about career goals were more often asked of prospective students who would enroll in the BAM, 50% were asked. Only 44% of BBA students were asked this question. It is important to note that many students were not asked questions. Of these 63% were students who arrived at the enrollment process having already decided which program in which they wished to enroll. This data is presented in Table 5.

Table 5: Before Making a Recommendation About Which Program Would Work Best For Me, My Adviser Asked … (Mark All That Apply.)

	BAM		BBA		BSOL		Total	
1 My current life	16	28%	39	25%	12	21%	67	25%
2 My career goals	29	50%	68	44%	26	46%	123	46%
3 Other questions	6	10%	21	14%	10	18%	37	14%
4 No questions	7	12%	25	16%	8	14%	40	15%
	58		153		56		267	
Of no questions, who had already decided	5	71%	12	48%	8	100%	25	63%

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, the questions asked by their Adviser prior to making a recommendation about program choices.

In this discussion about what has contributed to the program choice, it is important to look at which types of information provided by the Adviser was most helpful to that choosing process. For BAM students, the "Class schedule" was most frequently cited. For these students, the second choice was "Length of the program." BBA students were almost even in choosing "concentration (major) options," "Classes within the program," and "Length of the program." BSOL students were most likely to cite "Length of program," followed closely by "Availability online" and then "Class schedule." The identification of "Length of program," although identified by all three groups of students, is not a differentiator among the programs since they are each bound by the University's requirement of 180 quarter hours. This data is presented in Table 6.

Table 6: What Information Did You Receive from Your Adviser That Was Most Helpful in Your Making Your Decision About Which Program to Choose? (Mark Up to 3 Responses)

	BAM		BBA		BSOL		Total	
1 Career benefits	13	9%	20	6%	8	7%	41	7%
2 Learn from program	14	10%	15	5%	7	6%	36	6%
3 Courses of interest	10	7%	32	10%	12	11%	54	10%
4 Concentration options	14	10%	43	14%	8	7%	65	12%
5 Classes with program	14	10%	44	14%	11	10%	69	12%
6 Class schedule	20	15%	42	13%	15	14%	77	14%
7 Length of program	17	12%	43	14%	18	17%	78	14%
8 Availability of online?	11	8%	25	8%	16	15%	52	9%
9 Made recommendation	8	6%	13	4%	5	5%	26	5%
10 Transition program	1	1%	1	0%	0	0%	2	0%
11 Already knew program choice	14	10%	33	10%	7	6%	54	10%
12 Other	1	1%	6	2%	1	1%	8	1%
	137		317		108		562	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, their top three types of information that they considered being most helpful in making their decision about their program choice.

Perceptions of the Programs

Prospective students were often comparing the three programs prior to making their choice. Prospective students who enrolled in the BAM were most likely to have also considered the BBA (60%) before making their choice. BSOL prospects were also most likely to have also considered the BBA (46%). 34% of those who ultimately chose the BBA, also considered the BAM. This data is presented in Table 7.

Table 7: Which Programs Did You Consider Before Making Your Choice? (Mark All That Apply)

	BAM		BBA		BSOL	
1 BAM			12	34%	10	29%
2 BBA	18	60%			16	46%
3 BSOL	7	23%	9	26%		
4 Other	5	17%	10	29%	9	26%
None	0	0%	4	11%	0	0%
	30		35		35	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, which programs they considered for enrollment, in addition to their ultimate choice.

Participants considered the three programs and a number of other programs. In this process, they identified attributes for each of the programs that they used to differentiate their options. Of those who enrolled in the BAM, 21% identified managing people as the primary difference for the BAM. BBA enrollees identified their program's primary differentiators as running all aspects of the business and opening more opportunities. Those who enrolled in the BSOL reported that the interest in leadership of that program was the primary difference from the other programs. This data is presented in Table 8.

Table 8: What Do You See As the Major Differences Among These Programs? (Choose As Many As Apply.)

	BAM		BBA		BSOL		Total	
1 BAM-Manage people	22	21%	16	8%	11	15%	49	13%
2 BAM-Manage business	16	15%	24	11%	5	7%	45	12%
3 BAM-Specific info on management	13	12%	21	10%	2	3%	36	9%
4 BAM-Be a senior executive	7	7%	8	4%	3	4%	18	5%
5 BBA-Run all aspects of business	11	10%	43	20%	7	9%	61	16%
6 BBA-More recognized	11	10%	31	15%	7	9%	49	13%
7 BBA-Opens more opportunities	10	9%	42	20%	7	9%	59	15%
8 BSOL-Interest in leadership	9	8%	14	7%	20	27%	43	11%
9 BSOL-Want a specific degree	5	5%	10	5%	5	7%	20	5%
10 Other differences	1	1%	0	0%	0	0%	1	0%
11 No differences	1	1%	2	1%	7	9%	10	3%
	106		211		74		391	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, their thoughts about the attributes of each of the three programs that differentiated them from the others.

Contrasting the participants' thoughts on the differences among the three programs, they also reported the ways in which they viewed the programs as similar. Those who enrolled in both the BAM (23%) and the BBA (23%) were most likely to agree that the three programs all operate in a business environment. Eventual BSOL participants were most likely (23%) to say that all of the programs include both management and leadership. For all respondents, they reported "all in business environment" (22%), "all deal with business problems" (19%), "all study business" (18%), and "all include leadership and management" (18%). This data is presented in Table 9.

Table 9: What Do You See As the Major Similarities Among These Programs? (Choose as Many as Apply)

	BAM		BBA		BSOL		Total	
1 All in business environment	28	23%	59	23%	20	18%	107	22%
2 All deal with business problems	22	18%	48	18%	22	19%	92	19%
3 All study business	21	17%	46	18%	20	18%	87	18%
4 All include leadership & management	18	15%	43	16%	26	23%	87	18%
5 Include many same courses	18	15%	27	10%	6	5%	51	10%
6 Each focuses those who know what they want	3	2%	6	2%	3	3%	12	2%
7 Each focuses on those who are set on their careers	1	1%	6	2%	3	3%	10	2%
8 Each focuses-want opportunities	12	10%	15	6%	10	9%	37	7%
9 Other similarities	0	0%	2	1%	2	2%	4	1%
10 No similarities	0	0%	9	3%	1	1%	10	2%
	123		261		113		497	

In this table, participants indicated, by the programs (BAM, BBA, and BSOL) in which they would enroll, their perceptions of the similarities among the three programs.

CONCLUDING COMMENTS

Conclusions

The data from this study both confirmed some expectations of the researchers and surprised in other ways. One surprise, consistently across all three programs, was that 37% of the respondents already had their choice of program clear before they first interacted with a University Adviser about enrollment. Another 28% had a preference before that first encounter. The combination of these two groups results in nearly two-thirds of the participants having either made up their minds or had a definite preference prior to talking with a University Adviser. It appears that adult students are more focused than traditional students that were discussed in the literature review. In terms of influential sources in addition to advisors, the data supported that a main source of influence for potential students were former and/or current students. These

sources were followed by faculty and family/friends. Family or friends had been expected to be more influential; and that faculty would be a more valuable expert source used by potential students. This was not the case and it was consistent with the anecdotal information received from students. These findings were consistent with the literature that peer influence is significant for program choice.

Participants from all three programs consistently indicated their reasons for enrolling. These may be loosely grouped into two categories of answers: degree will open doors and a difference it will make for them personally. The most often cited reason for enrolling was a better opportunity for promotion, a reason consistent with the fact our study group corresponds to adult learners that are full time working while taking their degree of choice. Changing careers and better credentials were also in this group. A sense of accomplishment, one of the main factors mentioned in the literature review, appeared only in the second group in this study, followed by better capability. Programs are designed to fulfill what the program creators consider to be a unique need. The results of the survey affirmed the key differences in the programs, as perceived by those who enrolled in those programs. The BAM was designed to primarily focus on the management of people and organizations. Managing people was the top descriptor chosen by those who enrolled in the BAM. The BBA was designed to provide a well-rounded exploration of running a business. The respondents who enrolled in the BBA were most likely to choose the descriptor of "run all aspects of a business." Those who enrolled in the BSOL had the highest percentage of choosing "Interest in leadership," which is the core emphasis of that program. These results are indicative that the programs are having success in communicating their core focuses to enrollees.

Since all respondents had enrolled in a program in a school of business, it was not surprising that the respondents consistently reported the programs being similar in terms of all being in a business environment, dealing with business problems, include the study of business, and include leadership and management. Many respondents noted that the programs included many of the same courses. Given this overlap in the experiences of these participants, more specific questions might have engendered more useful The researchers assumed that most prospective students did not make their enrollment choice solely by themselves, they had assistance. What did surprise the researchers was that over one-third of enrollees had already decided on their program prior to talking with an Adviser. The data indicated that these respondents were most likely talking with current and/or past students. Some talked with faculty while others talked with family or friends. A few gathered information online. The most consistently influential person in choosing a program was the Adviser. Nearly two-thirds of all respondents rated the Adviser as Very Influential or Influential in their choice. This confirms an assumption that the Advisers, through the questions they ask and the recommendations they make, guide many of the program choices made.

Follow-Up Research

The data generated in this research leads directly to a set of follow-up questions that could be explored with this same population. Much was learned about the respondent's purpose for enrolling, who they talked with, and what information was most helpful. This knowledge draws the researchers to the situations the prospective enrollees find themselves in as they begin to contemplate going back to school. What are the critical aspects of these situations that lead them to particular programs? How might the information about the University and its business programs be modified to help the prospects begin making their choices? How might the programs be changed to better meet their needs?

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