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# **ACADEMY OF EDUCATIONAL LEADERSHIP JOURNAL**

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## LETTER FROM THE EDITORS

Welcome to the *Academy of Educational Leadership Journal*. The editorial content of this journal is under the control of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The mission of the *AELJ* is to publish theoretical, empirical, practical or pedagogic manuscripts in education. Its objective is to expand the boundaries of the literature by supporting the exchange of ideas and insights which further the understanding of education.

The articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

We intend to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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Michael Shurden  
and  
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Editors





# **ADDRESSING THE SHORTAGE OF ACCOUNTING FACULTY: USING NON-TENURE-TRACK POSITIONS**

**Gary P. Schneider, Quinnipiac University**  
**Aamer Sheikh, Quinnipiac University**

## **ABSTRACT**

*A serious imbalance between the supply of and demand for doctorally-qualified accounting faculty exists in the United States. Recent research shows that this shortage is likely to become more severe in the next five to ten years if no new action is taken. This paper outlines factors that have led to the accounting faculty shortage, then examines the likelihood that those factors will change or that schools of business will be able to respond to those factors or their effects in the near future. The paper identifies one strategy that business schools might use to alleviate the shortage, the use of non-tenure-track (NTT) faculty, and then reports the results of two studies that assess the extent to which that strategy is being undertaken by business schools that have doctoral programs in accounting. The paper includes commentary on how business schools, individually or collectively through organizations such as the Association to Advance Collegiate Schools of Business (AACSB), might cope with this accounting faculty shortage. The paper concludes with a discussion of our studies' limitations and offers suggestions for future research.*

## **INTRODUCTION**

An increasing shortage of doctorally qualified accounting faculty has been documented in recent years. This shortage is due to both supply and demand issues; specifically, the supply of PhDs in accounting is near an all time low, while the demand is near an all time high. On the supply side, fewer and fewer students are graduating with doctoral degrees in accounting. On the demand side, a significant number of tenured accounting faculty are nearing retirement. At the same time, the professional demand for graduates in accounting is growing, which increases the demand for accounting faculty. This leaves an increasing number of faculty openings in accounting at universities across the United States at the time when demand for professional accountants is also rising.

Accrediting agencies such as the AACSB have standards for the mix of academically qualified (AQ) and professionally qualified (PQ) faculty that business schools should use to meet their objectives. The ability of business schools to meet these standards is reduced by a shortage

of accounting faculty, especially a shortage of doctorally-trained accounting faculty. The ability of business schools to meet AACSB accreditation standards proxies for a larger issue: the ability of business schools to maintain or improve the quality of the education they offer. A persistent quality impairment could threaten not only accounting education, but business education as a whole because accounting principles courses make up a significant part of the core curriculum at most schools of business.

In the research reported here, we establish the existence of the accounting faculty shortage, outline the AACSB guidelines that restrict the range of solutions to the shortage by hiring faculty from pools other than the traditional source, accounting doctoral programs, and examine how some business schools have attempted to reduce the impact of the shortage on their operations by hiring NTT faculty. In the empirical part of the research, we conduct one study of archival data on faculty employment published in the Hasselback (1988, 2006) directories and a second study of archival data published by universities on their Web sites.

Our analysis of these data show that some business schools; in particular, those with doctoral programs in accounting; have responded to the increasing shortage of doctorally qualified accounting faculty by hiring more NTT faculty. We then discuss the implications of these results for AACSB accreditation as well as the quality of accounting education in the United States.

## **THE SHORTAGE OF DOCTORALLY-QUALIFIED ACCOUNTING FACULTY**

The shortage of accounting faculty, like all such conditions in a market, results from an imbalance of demand and supply. In the market for accounting faculty, the demand is driven by the number of students majoring in accounting in business schools and, to a lesser extent, by the number of students enrolled in other business school majors (most business schools require all majors to take one or two courses in introductory accounting). Most of the supply is provided by doctorate-granting accounting programs (Ruff, et al., 2009). In the U.S. market, most faculty hired are graduates of U.S. doctoral programs.

### **The Demand for Doctorally-Qualified Accounting Faculty**

Professional services firms are increasing their demand for accounting graduates. The passage of the Sarbanes-Oxley Act of 2002 increased demand for accountants to new highs (Reigle, et al. , 2008). This growth in accounting jobs continued through the start of the economic downturn in 2008.

Since then, accounting employment has suffered along with the rest of the economy, but prospects for new accounting degree holders remain stronger than any other business degree holders (VanderMey, 2009). Accounting job recruitment firm Robert Half (2008) predicted a 3.4 percent salary increase for accountants in 2009 and notes that professionals who can help

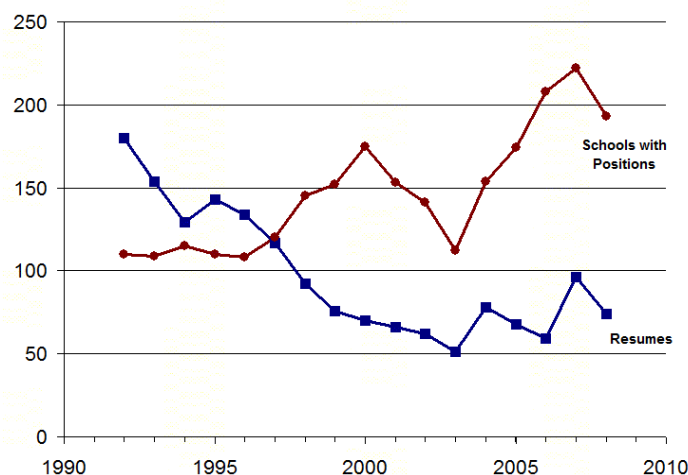
companies reduce inefficiencies and increase profits continue to be in demand. Apparently, companies in trouble need accountants, even after they enter bankruptcy. And regulatory agencies could well require more accountants over the next few years to help monitor government stimulus spending and money given to financial institutions. This continued strong demand for persons trained in accounting should continue to drive a consistent demand for faculty members who can teach in accounting programs.

### The Supply of Doctorally-Qualified Accounting Faculty

The American Accounting Association (AAA) is the primary professional organization that sponsors job placement activities for U.S. faculty positions in accounting. In recent years, the job placement area at annual AAA meetings has been a place where frustrated faculty members hoping to recruit faculty are mixed with the few bright faces of doctoral students nearing their dissertation defenses. The recruiters are frustrated by the dearth of candidates and the candidates are excited by their prospects for negotiating excellent salary and benefit offers.

The AAA has posted data regarding its placement activities in the job placement area in recent years. Data posted at the 2008 annual meeting includes the number of schools who had positions available and the number of candidates who submitted a resume to the placement center in advance of the meeting. These data show a fairly steady increase in the demand for accounting faculty over the 17 years from 1992 through 2008. Figure 1 shows the growing disparity between the supply of accounting faculty as approximated by the number of resumes posted by candidates to the AAA Placement Center and the demand for accounting faculty approximated by the number of schools with positions listed in the AAA Placement Center.

**Figure 1. AAA Placement Center Data, 1992-2008**



These data present a bleak picture of a serious faculty shortage that has grown larger consistently over the past decade. As bleak as the data shown in Figure 1 are, it is likely that they actually understate the problem. The data on schools with positions lists each school just once, even if the school has multiple positions. Some schools have listed three or four positions in recent years. The data on candidates is also not completely accurate, since some doctoral program advisors recommend that their students not post resumes in the AAA Placement Center. These schools prefer to assist their students with placement by having their faculty write recommendation letters that they send to specific schools. It is, however, very likely that any understatement of the number of positions in these data is far greater than any understatement of the number of candidates applying for these open positions.

According to the 2008-2009 edition of the *Accounting Faculty Directory* (Hasselback, 2008), only 123 persons earned a doctorate in accounting in 2006 (the most recent number reported) and average numbers for the most recent five years (2002-2006) and ten years (1997-2006) of 117.6 and 124.6, respectively. These moving average calculations, especially when compared to the average of 156.6 for the 19 years of individually reported totals (1988-2006) suggest that doctoral accounting graduate production is decreasing over the long term. Hasselback (2008) reports 90 active doctoral programs in the United States with a total of 722 students currently enrolled. This enrollment number might be cause for optimism, however, most doctoral programs have an average completion time of four to five years and experience dropout rates of 20 to 40 percent. Using a 30 percent dropout rate and a completion time of 4.5 years, those 722 doctoral students turn into faculty members at an annual rate of 112.3, which is not a very encouraging number.

Other sources report significant concerns regarding the imbalance between supply and demand for accounting faculty. Leslie (2008) notes that the steady state production level of new doctorates in accounting is about 140 per year, yet retirements are expected at a rate of about 500 per year. If these numbers are correct, the accounting faculty shortage is likely to increase over the next ten years, with a cumulative effect as open accounting faculty positions fail to be filled each year. Behn, et al. (2008) estimate an expected annual production of between 100-200 new doctorates per year and compare that production with expected retirements of 1500 during the eight year period 2006-2014 and conclude that even if no new positions were created due to demand flattening or trending down (both unlikely prospects) the shortage would continue well into the future. Hasselback (2007) presents some statistics that are truly concerning, including: more than half of all accounting faculty are 55 or older, that their modal age is over 60, and that there are more accounting professors in their seventies than in their thirties.

Plumlee et al. (2006) conclude that less than half of the demand for new doctorates in accounting will be met, with acute shortages occurring in the areas of auditing and tax. Nelson, et al. (2008) document that fewer and fewer students are choosing to enter doctoral programs in accounting. Both Plumlee et al. (2006) and Leslie (2008) report that an increasing number of doctorates (as many as 50 percent) in accounting are being earned by non-U.S. citizens, many of

whom are likely to return to their native countries upon graduation, further exacerbating the faculty shortage in the United States.

### **CONSEQUENCES OF THE FACULTY SHORTAGE**

The shortage has already had a significant impact on starting salaries for accounting faculty. Leslie (2008) reports that between 1993 and 2004, base salary as well as total annual compensation has more than doubled for doctorally qualified faculty younger than 45. According to the *2007-2008 U.S. Salary Survey Report* conducted by the AACSB (2007), the average starting nine-month salary for new doctorates in accounting was \$124,600. The AACSB (2007) reports that this starting salary is increasing at approximately ten percent every year. At this rate, nine-month salaries for new doctorates are projected to climb above \$165,000 for new faculty starting in Fall 2010.

This rapid rise in starting salaries for new doctorates is leading to salary compression at many business schools and is leading to salary inversion in some cases. New Assistant Professors often earn significantly more than more experienced faculty at Associate Professor and Professor ranks (Samavati, et al., 2007). Leslie (2008) reports that accounting faculty members under the age of 41 earn, on average, higher pay than faculty over the age of 41.

### **Summer Research and Reduced Teaching Loads**

Nine-month salary numbers are only part of the compensation issue. Many business schools attempt to attract top newly minted doctorate-holding candidates to join their faculty by offering substantial amounts of summer research funding and reduced teaching loads for multiple years (Hermanson, 2008; Leslie, 2008).

Research-oriented programs frequently offer summer research funding in amounts that range between one and two months of the nine-month salary. Thus, average total compensation for new accounting doctorates in accounting in Fall, 2007 might have ranged from \$138,400 to \$152,300 when the additional summer funding is added to AACSB (2007) nine-month salary numbers.

Teaching loads at a research-oriented school for a new faculty member are often minimized. A school might offer a teaching load that includes two or three sections of the same course during one semester a year. In some schools, new faculty teach one graduate course during an eight-week period once each year.

Even schools that place less emphasis on research find themselves competing in a tight market for good candidates and must offer similar inducements to hire quality faculty. In many such cases, senior faculty must pick up the teaching burden. This can impair collegiality as more experienced faculty find themselves working more to subsidize the lighter teaching loads of new faculty who might well be earning more than they earn.

Eaton (2007) and Hermanson (2008) voice concerns that this increased emphasis on research (in both quality and quantity) over teaching or service in faculty compensation, tenure, and promotion decisions will lead fewer accounting faculty to focus their efforts on improving their teaching or undertaking important service activities (Bailey, 2008).

### **Faculty Workload Concerns**

The impact of the shortage is not limited to the strain it is placing on the budgets of business schools. Longer term, there are serious consequences for accounting as an academic discipline (Demski, 2007; Fellingham, 2007). Faculty members who are stretched thin because they are doing more work in accounting departments affected by the shortage could tend to do less research. They are already working more hours than other business faculty. Leslie (2008) reports survey results that show that accounting faculty average a 52-hour work week and have higher teaching loads and higher productivity than faculty in other areas of business.

This kind of workload excess is not sustainable in the long run (Blau, 1994; Dilts, et al., 1994). The potential for a decrease in the quantity and quality of research is significant. Since most business schools impose productivity standards that encourage faculty members to produce a certain level of research in specific quantities, other areas of research activity are likely to suffer first. One such research activity is the amount of time and effort faculty at doctorate-granting schools spend with their doctoral students. This activity is hard for deans and department chairs to measure and, therefore, subject to reduction.

A reduction in the effort and time devoted to doctoral students could lead to a downward spiral in which fewer doctoral students get less mentoring, fewer doctoral students succeed and go on to be mentors of doctoral students, which leads to an intensification of the reduction in research effort and quality, which then leads to more of the same. In the long run, a faculty shortage could be very harmful to the future of academic accounting as a whole (Bailey, 2008).

### **POSSIBLE SOLUTIONS TO THE SHORTAGE**

Two options exist for alleviating a shortage in any market. First, the demand can be reduced. Second, the supply can be increased. Since demand is exogenous to the business school in this market, the only alternative is for business schools, acting either individually or collectively, to increase the supply. To reverse the current downward trend in supply will require a significant effort. In approximate terms, the goal would be to go from producing 100-150 doctorates in accounting each year to something on the order of 200-300, and to do so rather quickly. Every year in which the supply is not increased adds a degree of cumulative shortage to the problem.

## **Increasing the Number of Doctoral Students**

One possibility is to increase admissions to existing doctoral programs or to increase the retention rates in those programs. Most doctoral programs are small by design and would need changes in their structures to double their enrollments. And retention alone will not produce sufficient numbers of new doctoral graduates. Dropout rates are estimated to be between 20 and 40 percent; if every single one of those students were retained, their numbers would provide less than half of the increase needed.

Another possibility is to add new doctoral programs at business schools that do not currently offer them. Doctoral programs are very expensive to operate and require a high level of commitment from the school's faculty. Of the 101 U.S. doctoral programs listed in Hasselback (2008), 11 are currently listed as "inactive." Although accounting departments suspend or close doctoral programs for many reasons, it appears that resource constraints are affecting at least some of these inactive programs. Given that the faculty shortage has been in place for a number of years, we could be witnessing an increase in the number of inactive programs as an early sign of the downward spiral mentioned earlier in this paper. A spontaneous reversal of this downward trend is unlikely.

Recently, a group of some 80 accounting firms agreed to provide \$15 million in funding to support up to 120 new doctoral students (AAA, 2008), with 30 students to start each year beginning in Fall, 2009. Although efforts such as these are truly commendable and certainly welcome, an additional 30 students a year will be insufficient to resolve the shortage problem.

## **Retraining Faculty in Other Disciplines**

In 2007, the AACSB introduced an initiative that will prepare doctoral faculty from academic disciplines outside of business to qualify for faculty positions in business disciplines, including accounting (Ruff, et al., 2009). This initiative, called the Post-Doctoral Bridge to Business, began in 2008 at five business schools around the world. The idea behind this program is that a doctoral education imparts a set of broad abilities and that those abilities can be transferred from one domain to another (Marshall, et al., 2006). Only two of these schools are in the United States and have active doctoral programs in accounting (the University of Florida and the Virginia Polytechnic Institute and State University).

The two most popular transitions in these programs to date are psychology professors becoming qualified to hold management or marketing positions and economics professors becoming finance professors. Given the limited number of schools who offer these bridge programs and the nature of academic accounting inquiry, which often requires mastery of significant domain-specific knowledge, it is unlikely that these programs will develop more than a few faculty candidates for accounting positions.

## **Opportunity Costs of a Doctoral Education in Accounting**

After reviewing solutions that are designed to increase the supply of doctoral students, we concluded that none of them exhibit a high likelihood of being successful, either alone or in combination. The difficulty of attracting good candidates into doctoral programs and keeping them in these programs for the five or six years (Deloitte, 2007) needed to complete a degree is exacerbated by the conditions under which potential candidates make their decisions. The opportunity costs are significant.

Although doctoral program candidates have all manner of backgrounds, let us consider one example. A person who holds a masters degree in business or accounting, has passed the CPA exam, and has a few years of progressively more responsible experience in public accounting or industry. Such a person would be well qualified to undertake doctoral study in accounting and could well be earning an annual salary in the range of \$75,000 to \$125,000 (Robert Half, 2008) in her current position. To develop an estimate of the opportunity costs of a doctoral program in accounting for this individual, let us assume that she will need to give up an annual income of \$100,000 during the four to six years she will be enrolled in a doctoral program. Some might argue it is not realistic to ask young persons to give up a half million dollars for a 70 percent chance at having a 50 percent increase in salary to begin five years later.

One accounting doctoral program director that we interviewed said, "In most cases, if you are smart enough to be a good doctoral student, you are smart enough not to become a doctoral student at all!" In years past, one could argue that the lifestyle of a college professor was an attraction. With today's average 52-hour work week, we are not certain that the lifestyle argument remains compelling.

## **Hiring Faculty Who Do Not Hold a Doctoral Degree**

We have identified one possible solution to the shortage that does not require an increase in doctorate-holding faculty. That solution is for accounting departments to employ more NTT faculty. NTT faculty typically do not hold a doctoral degree. They might not even hold a masters degree.

In years past, many accounting departments relied on instructors who did not hold advanced degrees or conduct research. The practitioner-teacher model was dominant. A baccalaureate degree and a professional certification was deemed sufficient to enter the classroom and teach undergraduate accounting courses. Many of these faculty members had tenure and were included as valued members of accounting departments during the shift from the practitioner-teacher faculty model to the teacher-scholar model that was adopted throughout the 1960s and 1970s at most business schools. As these old stalwarts of academic accounting retired, they were replaced with doctorally-qualified faculty members.



A number of schools continue to hire practitioner-teacher faculty to instruct in principles courses or to handle specific curriculum needs with which practitioners often have more expertise than teacher-scholars. Examples of these areas of expertise include forensic accounting, advanced tax accounting, accounting information systems, internal auditing, and governmental accounting. In many cases, these NTT faculty teach part time, but others hold full-time appointments.

NTT faculty have a wide range of backgrounds, but can include local practitioners who run a small accounting firm, accountants working for local businesses, not-for-profit organizations, or governmental agencies, and accountants who hold law degrees and maintain legal practices. In 2007, PricewaterhouseCoopers (PwC) began a program called PwC Teaches that commits 20 of the firm's senior partners to teach courses at business schools each year (Madison, 2007). Few, if any, of these partners hold doctoral degrees, but one would expect all of them to draw on a wealth of practical experience when they enter the classroom that will benefit accounting students.

### **CONSTRAINTS ON USE OF NTT FACULTY**

Although the use of NTT faculty offers a potential solution to the faculty shortage problem, there are constraints on the use of such faculty in most business schools. All schools must comply with the guidelines of their geographic accrediting agency. In addition, many business schools voluntarily submit to the guidelines of a business program accrediting body. Although a significant number of business schools hold accreditations from the Association of Collegiate Business Schools and Programs (ACBSP) or the International Assembly for Collegiate Business Education (IACBE), the AACSB is the oldest and best-established organization that accredits business programs. Thus, we will outline here the constraints that the AACSB guidelines place on the use of faculty who do not hold doctoral degrees or who do not hold full-time appointments. Although the AACSB guidelines do not address specifically the issue of deploying NTT faculty, most NTT faculty do not hold a doctoral degree, do not hold a full-time appointment, or both. The other two major business program accreditors have guidelines similar in general effect to those of the AACSB.

#### **Academically Qualified Faculty and Professionally Qualified Faculty**

AACSB accreditation standards specify that business school faculty consists of "Academically Qualified (AQ)" and "Professionally Qualified (PQ)" faculty. AQ faculty typically hold a doctoral degree, while PQ faculty typically do not. AQ faculty must engage in research that results in publication at levels that have steadily increased in recent years (Arlinghaus, 2002, 2008). PQ faculty typically do not engage in research that leads to publication, although some PQ faculty do so.

AACSB guidelines provide that at least 50 percent of all teaching must be done by AQ faculty. If the school offers graduate programs, a higher percentage than 50 percent must be done by AQ faculty (AACSB, 2006, p. 9). The specific number is not specified, but it is generally understood that as the proportion of graduate courses increases, the proportion of teaching done by AQ faculty must also increase. There is an additional requirement that 90 percent of all teaching must be done by faculty that are either AQ or PQ.

AACSB Standard 9 on faculty sufficiency states that all students must be taught by “appropriately qualified faculty” and that “participating faculty” must provide at least 70 percent of overall teaching and at least 60 percent of the teaching effort in “each discipline, each academic program, and each location” (AACSB, 2008, p. 38). Participating faculty are any faculty that participate in running the affairs of the business school “beyond direct teaching responsibilities... include[ing] policy decisions, educational directions, advising, research, and service commitments” (AACSB, 2008, p. 37). Participating faculty can include both tenure-track (TT) faculty, who are generally AQ, and NTT faculty, who might be PQ. Gooding, et al. (2007) provide an example that demonstrates the proper classification of participating faculty as AQ or PQ. Koys (2008) presents a points-based system for classifying faculty members according to the AACSB guidelines.

### **Accounting Practitioners and PQ Status**

Under current AACSB standards, many accounting practitioners who might be good candidates for NTT faculty positions would not be PQ because they do not hold a masters degree in accounting. The masters degree is required unless the faculty member has significant professional experience, which is generally interpreted as experience at the senior partner level or its equivalent. The CPA or similar professional license or certification is explicitly defined as not equivalent to a masters degree and thus not sufficient to establish the minimum academic credential for PQ status (AACSB, 2006).

As more practitioners become licensed CPAs under 150-hour rules, there will be fewer potential NTT faculty candidates who lack this minimum PQ academic credential since most of them will have obtained a masters degree to qualify for their professional license. But in many states, the AACSB’s refusal to consider a professional license to be the equivalent of a masters degree will prevent many potential NTT faculty from being considered PQ.

### **Hypotheses**

Despite the constraints on the use of NTT faculty, it is reasonable to expect that business schools could be using such faculty to compensate for the full-time tenure-track (TT) faculty that they are unable to hire. Given the increasing level of the shortage we have documented earlier in

this paper, we expected to find evidence that accounting departments hire NTT faculty and that they have increased the use of NTT faculty in recent years.

Generally stated, our hypothesis was that accounting departments have increasingly used NTT faculty that are PQ to the extent they can and still remain within the guidelines for the use of PQ faculty established by the AACSB and similar accrediting bodies. We further expected that the results would be more dramatic for public schools than for private schools since public schools should be relatively more willing to make tradeoffs to improve or maintain their research capabilities than private schools, which must deliver a high quality education to students who are paying high tuition. Public schools are frequently faced with arbitrary budget cuts that are not mapped well to their objectives and are, therefore, expected to turn more readily to the use of NTT faculty as a budget compliance measure (Ehrenberg and Zhang, 2005; Liu and Zhang, 2007; Hermanson, 2008). Thus, we expected to find a greater increase in public schools' use of NTT faculty, although we expected to see increases in both public and private schools.

### **USE OF NTT FACULTY IN ACCOUNTING: THE FIRST STUDY**

In our first study, we set out to determine whether the use of NTT faculty has increased over a relatively long time frame. We examined Hasselback (2006) to identify the percentage of accounting faculty that were employed as NTT faculty at the 94 doctorate-granting schools listed. We restricted the data set to doctorate-granting schools because they would be AACSB accredited and would be schools with a mission that led them to hire as many AQ status faculty as they could.

#### **Method**

We classified faculty holding the rank of assistant professor, associate professor, or professor as TT faculty. We included chaired faculty but did not include emeritus faculty or faculty members holding dean or other administrative positions. We classified faculty not holding doctoral degrees, faculty with the rank of instructor, or faculty with titles including the word "clinical" as NTT faculty. These classifications are approximations since it is possible for instructors to be on a tenure track or for assistant professors or others not to be on tenure track. We believe that any misclassifications would tend to balance out over such a large set of data.

We compared the percentage calculated for the 2006-2007 data (Hasselback, 2006) to the same percentage for the same schools calculated for 1988 (Hasselback, 1988) to determine the long run change in this percentage. We expected a statistically significant increase.

## Results

Our classification procedure yielded information on 1,630 faculty, which we categorized as TT ( $n=1,448$ ) and NTT ( $n=182$ ) for the year 1988. For the 2006-2007 year, we identified a total of 1,495 faculty, which we categorized as TT ( $n=1,245$ ) and NTT ( $n=250$ ). We find that the mean percentage of NTT accounting faculty employed at doctoral granting institutions increased from 10.6 percent in 1988 to 14.8 percent in 2006-2007. Using a paired  $t$ -test on the means indicates that the increase in the percentage was significant ( $t=2.52$ ,  $p=0.013$ ). This result is consistent with Fogarty and Markarian (2007) who found that doctoral granting accounting programs increased their use of NTT faculty from 13.3 percent in 1982 to 17.5 percent in 2002.

When divided into private and public schools, we see that the overall result is driven by a steep rise in the use of NTT faculty at public doctoral-granting schools. NTT faculty were 10.6 percent of total faculty in 1988 at these schools, but the proportion rose to 17.2 percent by 2006-2007. Again using a paired  $t$ -test, we found that the increase in the proportion was highly significant ( $t=3.56$ ,  $p=0.0007$ ). The private schools' NTT faculty percentage did not increase in this time period, going from 10.7 to 10.1 percent, but the decrease we observed was not significant ( $t=0.19$ ,  $p=0.848$ ).

## Summary of First Study

To summarize the results of this first study, there has been a significant increase from 1988 to 2006-2007 in the use of NTT faculty at doctoral-granting U.S. schools. The effect is more pronounced for public schools and there has not been a significant change in the use of NTT faculty at private schools. Our estimate of the percentage of faculty at these doctoral-granting schools that is NTT faculty in 2006-2007 is 14.8 percent, with private schools at 10.1 percent and public schools at 17.2 percent.

## Motivation for the Second Study

The way we gathered data in the first study could be biased against finding NTT faculty because it is possible that schools do not submit information about their NTT faculty to the Hasselback Directory. This bias could cause our estimates to be understated, which would bias against the increase we identified and might have caused us to conclude erroneously that there was no significant increase in the use of NTT faculty at private schools. We undertook a second study to confirm the results we observed in this first study. This second study is described in the next section of the paper.

## USE OF NTT FACULTY IN ACCOUNTING: THE SECOND STUDY

In this study, we wanted to avoid some of the bias inherent in the first study. Instead of gathering the faculty data from the Hasselback Directory, we turned to the Web sites of the schools.

### Method

In the second study we gathered data from the Web sites of schools listed as having active doctoral programs in accounting in Hasselback (2008). In this study, we did not use the faculty listings in the Hasselback Directory to identify faculty as TT and NTT, but instead read pages on the schools' Web sites to determine faculty members' status. We reviewed these Web sites over a two-month period in late 2008, expecting that the data would reflect the schools' faculty complement for the academic year 2008-2009.

### Results

Our sampling identified 93 schools and yielded 1,820 faculty profiles, which we categorized as TT ( $n=1,297$ ) and NTT ( $n=522$ ). The overall percentage of NTT faculty was 28.7 percent, with public schools averaging 30.7 percent NTT faculty and private schools averaging 22.8 percent NTT faculty. The difference between these proportions for public and private schools was significant ( $t=3.01$ ,  $p=0.0017$ ).

Although some of the school Web sites were difficult to navigate and some did not provide full information for each faculty member, we were able to clear up major ambiguities with a few phone calls. We believe this second study includes information that is more accurate than could be gathered using any other technique, since it uses the schools' Web sites. We assume that each school desires to disclose accurate information about the qualifications of its faculty. Further, doctorate-granting institutions should have a very high standard for disclosing information related to the quality of their programs; doctoral programs are expensive to operate and provide benefits in the form of enhanced reputation. A school that undertakes a doctoral program would be highly likely to exert considerable effort to ensure that faculty information on its Web site was accurate since its reputation depends, at least in part, on the reputation of its faculty.

### Summary of Second Study

The use of NTT faculty in this second study was consistent with the results obtained in our first study, but the magnitude of the use of NTT faculty was considerably larger than the use identified in the first study. Part of this finding could be a result of the use of slightly later data in

the second study (use of 2008-2009 data instead of 2006-2007 data), however, it is more likely that the higher percentages identified is a result of the greater accuracy of the data in the second study.

## DISCUSSION AND CONCLUSIONS

We undertook these two studies to determine whether accounting programs were using NTT faculty in any substantial way to cope with the shortage of accounting faculty. We concluded that there is significant use of NTT faculty by doctorate-granting accounting programs. This use has increased overall since 1988 and the use of NTT faculty is consistently greater by accounting doctoral programs at public schools than it is by programs at private schools.

Our finding that, overall, 28.7 percent of the faculty at these prestigious accounting programs were NTT faculty suggests that the shortage has had a serious impact on the quality of education at even the best schools. Having almost one-third of a school's faculty not tenured or on a tenure track suggests that some schools have adopted a two-tier model for faculty appointments. If this is an intentional strategy, there might be arguments that could support such a strategy, but if it is a result forced by the tight market for accounting faculty, then the effect on faculty sufficiency is cause for concern.

The AACSB includes guidelines for faculty sufficiency in its accreditation review policies. Since most NTT faculty are not AQ, and the AACSB (2008) mandates that the percentage of non-AQ faculty be between zero and 50 percent (depending on the mission of the university), a NTT faculty component of 28.7 percent might be cause for serious concern. This is especially true for the schools in our sample. By virtue of having doctoral and other substantial masters programs, the likely interpretation of the AACSB rule on faculty sufficiency would be closer to zero than 50 percent. Given our results, many of these schools might be in an uncomfortable situation during their next AACSB accreditation review.

In our sample, four schools had a percentage of NTT faculty that exceeded 50 percent and 15 schools had a percentage that was between 40 and 50 percent. We are not suggesting that these schools are below the AACSB acceptable percentages for faculty sufficiency. The AACSB (2008) guidelines are applied to various measures of teaching (such as the courses taught by faculty members and student credit hours taught by faculty measures), not the simple number of faculty. However, our results do suggest that many of these schools might be closer to the maximum use of NTT faculty than they would like to be.

A larger question than the one we examine specifically in our two studies is the issue of what academic accountants can do to ensure their survival. In terms of AACSB accreditation, the increasing use of accounting faculty not on tenure-track can jeopardize the AACSB accreditation of business schools. This is least likely to occur at schools that offer doctorates in accounting, since most new Ph.D.s in accounting are hired by other doctoral granting schools. However, the

danger can be very real if one looks at schools that only have a masters program or only offer an undergraduate degree in business disciplines. These schools often cannot offer the salary, summer support, and other resources that many new Ph.D. holders in accounting desire. As a result, schools without a doctoral degree in accounting are finding it increasingly difficult to hire doctorally-qualified accounting faculty. Some business schools are already hiring accounting faculty away from their peer schools to ensure that they do not run afoul of AACSB guidelines during the reaccreditation process. This exercise in “musical chairs” is likely to intensify in the next few years as the shortage of accounting faculty increases.

As fewer and fewer retiring accounting faculty are replaced in the next few years, universities at all levels are likely to hire more and more NTT faculty to replace the retiring faculty. These replacements could raise faculty sufficiency issues when the school is up for accreditation, especially for schools without doctoral programs. The teaching quality could also suffer as an increasing number of students are taught by NTT faculty (Ehrenberg, 2004; Ehrenberg and Zhang, 2005; Liu and Zhang, 2007). Not only does the future for accounting as an academic discipline look bleak, but problems in hiring doctorally qualified accounting faculty are increasingly going to translate into accreditation problems.

There are observers of the academic accounting community, including some of its own members, who do not see any issue with increasing the use of NTT faculty. Although one can draw a number of distinctions between the training, experience, and current work activities of TT and NTT faculty, it is difficult to determine that one is desirable to the exclusion of the other. NTT faculty have the advantage of being less expensive to hire and maintain. TT faculty have the advantage of being more prepared academically and engaging in the current production of research, generally speaking.

Some have argued that NTT faculty teach well and provide mentoring that helps accounting programs produce well-trained graduates ready for the jobs that await them (see, for example, Madison, 2007 and Smith, 2007). Others (see, for example, Bailey, 2008 and results reported in Koys, 2008) argue that the importance of academic accountants maintaining their credibility in the academy is of crucial importance and that accounting faculty who do not hold doctorates cannot participate in this academic life to the same degree as accounting faculty who do hold doctorates. Bailey (2008, C38) notes “The primary professional missions of the academic accountants are to contribute to maintaining leadership in accounting research, teaching, and service, including, but not limited to, contributions to practice.” Bailey (2008, C40) continues on to state that turning to NTT faculty as a solution to the accounting faculty shortage will “lower the reputation of the accounting discipline in academe” in ways that will encourage business school deans to reduce the budgets allocated to accounting programs.

To conclude, we find that the use of NTT faculty by accounting doctoral programs is probably greater than the schools would like it to be. It is probably greater than the accrediting bodies would like it to be. And, finally, it is probably greater than the demands of providing a high-quality education to students should allow it to be.

## **LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH**

Although we did use a multi-method approach (Tashakkori and Teddlie, 2003) with two separate studies that used separate methods and drew from different data sets, our research does have some limitations. Since we used only information about doctoral programs in accounting, our results cannot be generalized to the entire population of accounting programs.

Schools that offer masters degrees and baccalaureate degrees and schools that offer only baccalaureate degrees do face the same challenges as a result of the faculty shortage, however, they might have developed different strategies for dealing with it. We do suspect that many of these non-doctoral schools do face the same issues, perhaps in greater magnitude, and largely have the same set of possible responses. To the extent that is true, the results of this study do apply to those schools.

A logical extension of this research would be to replicate it with a larger sample, including schools that do not have doctoral programs. We intentionally limited our research to U.S. schools, however, an extension of the work presented here that includes non-U.S. schools could identify this as a problem that is international in scope.

In the second study, we were limited to gathering information from Web sites as they exist at the current time. A logical extension of the second study would be to gather the same information in subsequent years and compare it to the data in our study to determine whether trends can be detected in this set of what we believe to be data that are more accurate than those we used in the first study.

One accounting program director who spoke to us stated that an increasing number of accounting departments at prestigious schools (which would include most or all of our sample schools) have begun using a new tactic to deal with the faculty shortage. These schools, which generally have very high standards for tenure, have begun hiring NTT faculty who hold doctoral degrees and are publishing enough to maintain AQ status, even though the quality and quantity of their publishing activity would not be sufficient to earn them tenure at that school. Instead of a two-tier faculty system, these schools have implemented what is, effectively, a three-tier system. One limitation of our research is that we would have counted these AQ, NTT faculty as TT faculty (in both of our studies).

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# **STRESS, STRAIN AND COPING MECHANISMS: AN EXPERIMENTAL STUDY OF FRESH COLLEGE STUDENTS**

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## **ABSTRACT**

*This paper discusses the stress, strain and coping mechanisms among fresh college students. The purpose is to understand stress related problems, and suggest suitable solutions. Simple Random Sampling was assigned to all 120 first year students of a university (Matriculation Center), they were equally divided into experimental and control group. Classes were given only to experimental group on how to cope with academic stress. Hence, their levels of stress were measured twice, before and after the experiment. The findings of this study indicate that there are significant differences between the experimental and the control group in relation to stress, strain and coping mechanisms. Eventually, the experimental group proved to cope with academic stress better than the control group, and they were satisfied with their academic performance during the experimentation. After a period of four years, a follow-up study was performed on both groups in order to inquire into the students' academic results and CGPA at undergraduate level. The results were very encouraging for the experimental group.*

## **INTRODUCTION**

Stress is something that all of us experience from time to time but have difficulty defining it. Different ideas were given to explain the word stress. This ranges from simple physiological definition into more interpretative processes. Researchers proposed that the stress response is mediated by covert or overt cognitive appraisal of events, impinging on the individual that interprets same as either threatening or not; and concomitantly assesses the individual's ability to handle the stressor (Ronald & Jason, 1994). This paper is divided into six sections. Following this introduction is the theoretical framework and model. This is followed by the research design, research findings, discussion, and conclusion respectively.

## **THEORETICAL FRAMEWORK**

Stress is a term that almost everybody from all walks of life knows and uses, yet understanding and assessing stress is a complex task. It is often loosely used to refer to any

situation that evokes negative thoughts and feelings in a person. The same situation is not evocative or stressful for all people, and all people do not experience the same negative thoughts and feelings when stressed (Whitman, 1984).

Many people may not be aware that they are undergoing stress; few recognize that events such as pregnancy, retirement, marriage, death of a close family member, divorce, and writing exams or a number of smaller events, overload the adaptive system of the body, which causes high levels of stress (Smith, 1999).

McGrath (1970) defined stress as a substantial imbalance between environmental demand and the response capability of the focal organism. Whereas, Kaplan (1983) defined stress as subject's inability to forestall diminish perception, recall, anticipation, and imagination of disvalued circumstances, those that in reality or fantasy signify great and/or increased distance from desirable (valued) experiential states, and consequently, evoke a need to approximate the valued states.

### **THEORETICAL MODEL**

The person-environment model is useful in understanding stress among students. According to one variation of this model, an individual can appraise stressful events as "challenging" or "threatening" (Lazarus, 1966). When students judge their education as a challenge, stress can bring them a sense of competence and an increased capacity to learn. When education is seen as a threat, however, stress can elicit feelings of helplessness and a foreboding sense of loss.

College life can be very stressful in one way or the other. Generally, we idealize the college experience and remember it as that idyllic time when we had few worries or responsibilities. To students currently attending college, however, the process is often stressful and frustrating. The competition for grades, the need to perform, peer relationships, fear of failure, career choice, and many other aspects of the college environments are real life challenges that manifest as mental stress.

In one early attempt to define coping, Folkman and Lazarus (1980) suggested that coping is all the cognitive and behavioral efforts to master, reduce, or tolerate demands. It makes no difference whether the demands are imposed from the outside (e.g. by family, friend, job, school) or from inside (e.g. while wrestling with an emotional conflict or setting impossibly high standards). Coping seeks in some way to soften the impact of demands.

Lazarus and Folkman concentrated on two types of coping strategies: problem-focused coping and emotion-focused coping. In the problem-focused coping, efforts are made to change the stressful situations through problem solving, decision-making and/or direct action. In emotion-focused coping, attempts are made to regulate distressing emotion, sometimes by changing the meaning of the stressful situation cognitively without actually changing the situation (Folkman & Lazarus, 1985).

Recent study done by Richaudde & Sacchi (2001) indicated that coping includes behavior and thoughts employed by the individual to manage the stressing situation. Moreover, according to him, Folkman and Lazarus' theory defines two coping principles: the first category, being problem focused coping, refers to strategies employed to alter or manage source of stress. The second category, emotion focused coping, has to do with the strategies used to manage emotions. Since this study focuses on the stress, strain, and coping among students, it aims to test the applicable way to cope with academic stress. As stated earlier, the study will examine the effectiveness of coping mechanisms in managing academic stress by the research subjects.

## **RESEARCH DESIGN**

This inquiry examines the existing relationship between stress, strain and coping mechanisms among fresh college students. It expresses in descriptive and quantitative terms the degree of relationships between dependent and independent variables, as well as their magnitude. In line with Vockel and Asher (1995), these highlight the usefulness of a correctional study strategy in situations where experimental research seems difficult.

## **METHOD AND PROCEDURE**

### **Hypothesis**

- H1: There is a statistically significant relationship between stress, strain and coping mechanisms.*
- H2: There is a statistically significant mean difference in the level of stress among students at the beginning and the end of the semester.*
- H3: There is a significant mean difference in ways students cope with academic stress beginning and end of semester.*
- H4: There is a significant mean difference between experimental group and control groups in stress, strain and coping mechanisms.*

### **Population**

The research population includes all three levels of the Matriculation center. However, the fresh students are deemed most appropriate sample.

## **Sample**

The sample of 120 male and female students was randomly selected with the help of Admissions and Record (A & R) office. Consequently, each first year student's name and accommodation room number in relation to his/her program was taken from the (A&R) computer system. Hence, every sample in the population had an equal and independent chance of being selected.

## **Instruments**

The experiment of this study lasted four months, during which classes, advices and guidance on stress coping mechanisms were provided to only the experimental group. Members were counseled how to cope with academic stress. Fisher and Hood (1987) argued that all students group studied shared increased levels of depression, obsession symptoms and absent-mindedness within their first six weeks of university life. To this end, first year students are most venerable. This justifies their choice as the researched sample.

Previous studies used the following four instruments (Hodeges & Felling, 1970; Dov, 1982; Turner, Frankel, & Levvin, 1983; and Allport, 1967):

- Stressful Situation Questionnaire (SSQ)
- Role Strain Measures (RSM)
- Student Problem Questionnaire
- Coping inventory (COPE)

These measures showed significantly high reliability and validity in previous studies. However, the Student Problem Questionnaire (SPQ) failed the reliability and validity test.

## **The Questionnaire**

This questionnaire consists of five sections as follows:

- 1) *Demographic information* regarding age, gender (sex), nationality, year of study, course (major), hostel's name and room number (Students' accommodation inform of sharing rooms), religion, marital status, etc. The format of this section consisted of both multiple-choice class division and open-ended questions.
- 2) *Academic Stress* instrument is a 20-item questionnaire made-up of apprehension in classroom and speech situations (ACSS--13 items), and apprehension of social and academic failure (ASAF--7 items), adapted from Hodeges and Felling (1970).

- 3) *Students' Problem Questionnaire* focuses on the causes of stress (stressors), scaled by (Hafeez, 1974). This is a 40-item checklist of yes/no responses directed at specific stressors.
- 4) *Role Strain* is 21-item rated on a 5-point scale ranging from "never true" (1) to "very often true" (5) (Dov, 1982). This evaluates respondents' milieu of different situations.
- 5) *COPE* is a 60-item inventory developed by Carver (1989). It measures a wide range of dispositional coping tendencies such as, Active Coping, Planning, Seeking Instrumental Social Support, Seeking Emotional Social Support, Suppression of Competing Activities, Religion, Positive Reinterpretation and Growth, Restraint Coping, Resignation/Acceptance, Focus on and Venting of Emotions, Denial, Mental Disengagement, Behavioral Disengagement, Alcohol/Drug Use, and Humor.

## **Procedures**

All the 120 first year students were requested to complete the research questionnaire, whose results were grouped into experimental and control groups of 60 students each. Pre-test and post-test (quasi-experiment) was administered to both groups. The experimental group was subdivided into three teams of twenty students with (high stress, middle stress, and low stress) based on pre-test result. Group one was given classes only on emotion-focused coping, some methods like using social support for emotional reason, positive reinterpretation and growth, religious orientation etc. the 2<sup>nd</sup> group was groomed only on problem-focused coping, such as social support for instrumental reason, planning, active coping, behavioral disengagement, and so on. The third batch was schooled on both emotional and problem focused coping mechanisms. Weekly 2 hours lessons were delivered to the experimental group for 16 weeks. At the end of the semester, the same questionnaires on stress and coping mechanism were administered on both experimental and control groups to comparatively evaluate their academic stress coping strategies.

## **Statistical Analyses**

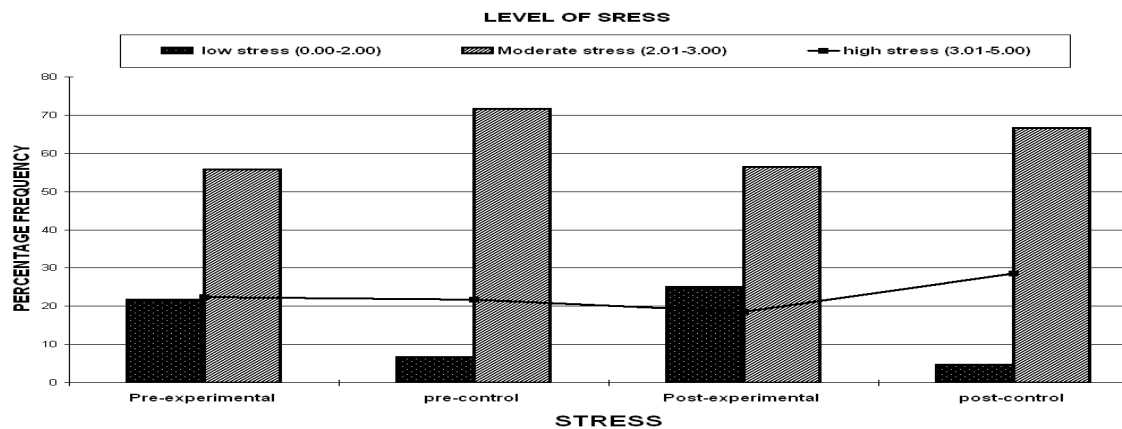
The data were analyzed by using the Statistical Package for Social Sciences (SPSS). The researchers employed an exploratory, descriptive approach in analyzing the data involving frequency counts and percentage analysis. The descriptive statistics was used to summarize and describe the prevalence of academic stress, strain, and coping mechanism, and the relationship between them.

## RESEARCH FINDINGS

### Level Of Stress

In this study, the majority of the respondents in the four test groups of pre-experimental, pre-control, post-experimental, and post-control maintained moderate level of stress. However, the number of low stressed students jumped by 6% of the sample in the experimental group. On the contrary, the high stressed group raised by 12% in the controlled group, hence, a cumulative impact of counseling stands at 18%.

Figure 4.1: Level of Stress



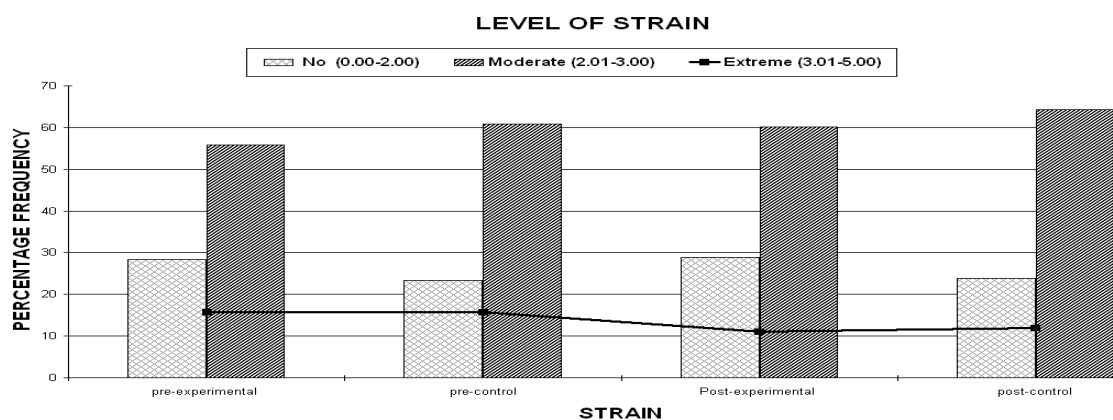
These results could be good outcomes, because the students in post-experimental group learned to control their level of stress through the guidance of the researcher, therefore, at the end of the semester, the time when stress was very high, some of them were low stressed. To this end, it is highly recommended to counsel fresh students on academic coping mechanisms.

### Level Of Strain Among The Students

As illustrated in figure 4.2, here is no significant difference in strain in this study between groups due to its natural attributes.



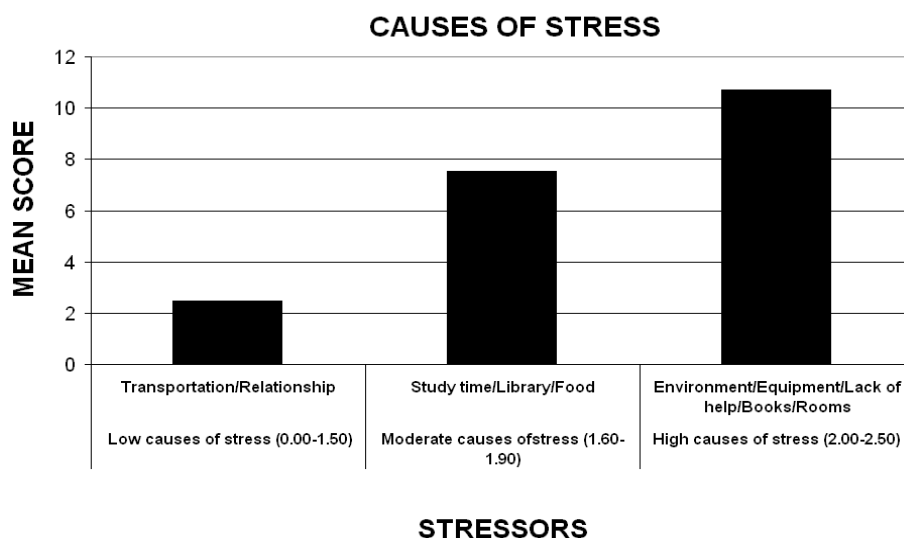
Figure 4.2: Level of Strain



### Causes Of Stress (Stressors)

Generally, hostel's rooms (accommodations), equipment, books, teacher's attention and environment seem to be a major source of stress in the case study. Therefore, there is a need to pay urgent attention to these basics. Students' learning time, library services, and food rank second in causing stress to the students. These enumerated fundamental needs to be strategically managed. This is to enhance the pedagogy through appropriate instructional system commensurate with students' peculiarities

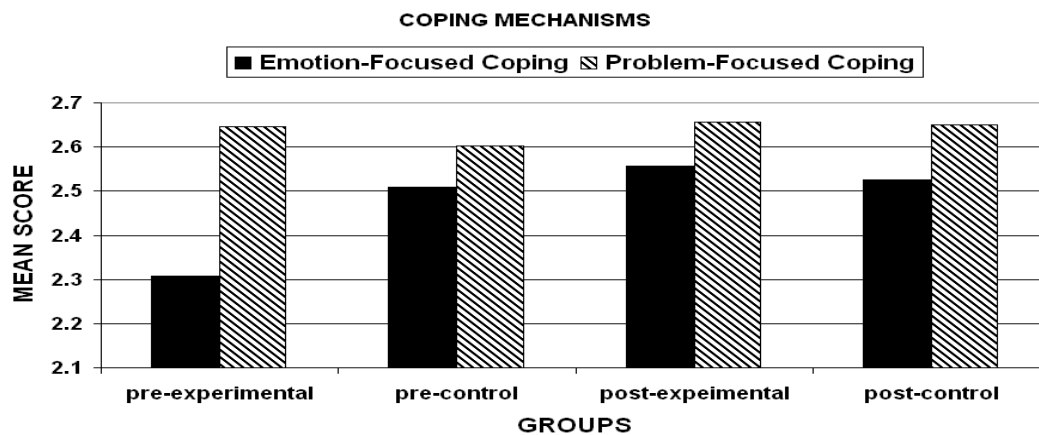
Figure 4.3: Causes of Stress



## Students' Coping Mechanisms

The chart (figure 4.4) shows that the experimental group tended to gain enhanced emotional balance, in spite of challenges associated with the later part of the semester. However, the control group emphasis on problem focused mechanisms with insignificant mean differences through out the semester. Unfortunately, this short term major could not meet their academic needs.

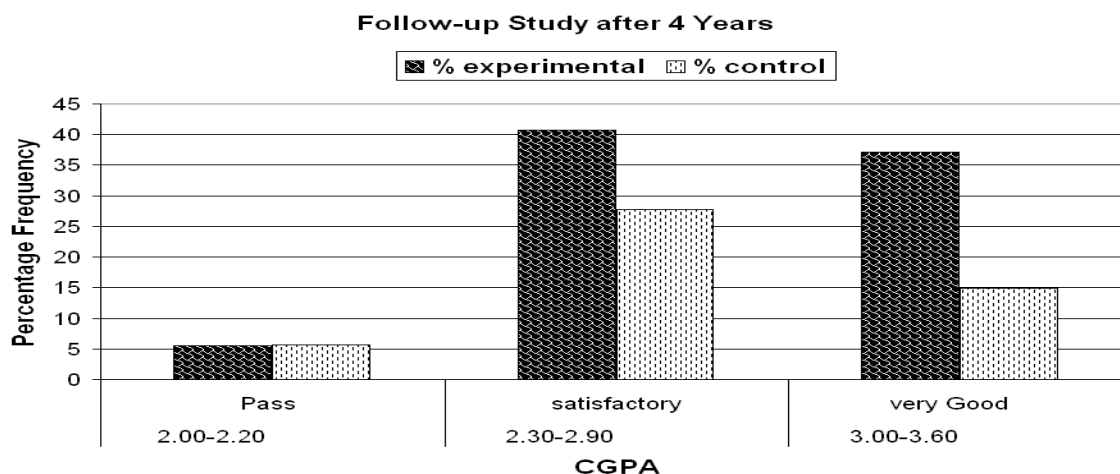
Figure 4.4: Coping Mechanism



## Follow-up Study

A follow-up study a year later indicated the experimental group scored high mean results in the Matriculation examination than the control group. Moreover, a second follow-up (after four years) shows that 28 out of 60 students in the control group withdrew. On the contrary, only 9 out of 60 students withdrew from the university. Out of the balance of 83 students, the experimental group shows superior academic ability over the control group.

Figure 4.5: Follow-up after 4 Years



## DISCUSSION

This study presents a stress coping counseling program based on series of lessons and personal interactions with fresh matriculation students, to investigate the effectiveness of coping mechanisms in managing stress and strain. In this study, a sixteen-week stress coping program based on emotion and problem focused was administered to an experimental group. Emotion-focused coping showed significantly reduced stress levels, while stress levels in a control group significantly increased over the same period. Study participants experienced the stressful situation of starting pre-university life and experienced increased psychological tension during this period, but those participating in the stress coping program had decreased stress level. Emotion-focused meditation was particularly effective in stress reduction by reducing repetitive and persistent thinking (Jain et al., 2007). In addition, Paul et al. (2007) reported that an eight-week coping meditation program reduced stress and increased college students' sense of control, which is consistent with the results of the current study. The results of this study were consistent with those of similar previous studies, suggesting that a meditation-based stress management program is effective in stress management. Also, the results of this study showed that the developed program significantly reduced the stress score in the experimental group. The control group's mean stress score increased, and there was a significant difference in mean stress levels between the two groups after controlling for pre-experimental values. This is consistent with the study of Kabat-Zinn et al. (1992) in which the MBSR was applied to patients with anxiety disorders to reduce their anxiety and panic symptoms. There were also positive results reported in Bae and Chang's (2006) study in which six-weeks of stress coping mechanisms meditation was performed in college students experiencing an examination period. However, the level of depression was not significantly different between the two groups after application of the

program. The depression score decreased significantly in the experimental group after participating in the program; however, there was no significant difference between depression scores before and after the program in the control group, suggesting only a partial effect of the program.

There are a few domestic studies applying meditation-based stress management programs. Kim et al. (2004) reported that psychosocial intervention in nursing students reduced the subjects' perception of their stress level, but this was ineffective toward anxiety and depression. On the other hand, the program applied in this study effectively reduced stress levels and anxiety. Shapiro et al. (1998) reported that medical students who performed mindfulness meditation improved their psychological symptoms, including anxiety and depression, increased sympathy, and that these results were maintained even during the examination period. In a study in which a stress reduction program with a combination of breathing, meditation, exercise, stretching, and relaxation was applied to patients with anxiety disorders, the program significantly improved the subjects' anxiety and depression (Lee et al., 2007). Rosenzweig et al. (2003) reported that mindfulness meditation helped to improve both stress and negative emotions of medical students.

This study verified the effectiveness of stress coping program based on emotion and problem focused coping in fresh students and showed the significance of a counseling meditation program as a part of academic intervention. However, a further limitation of this case study was the small sample size. However, further studies in a larger sample size are required for the results to be generalized.

## CONCLUSION

Pre-degree education can be a stressful experience for some individuals, and may impact negatively on emotional their well-being and academic performance. Psychological stress, strain and coping mechanism not been investigated extensively in fresh teen aged matriculation students. This research illustrates of the nature of stress experienced in College life. While adults' vivid remembrance of their student days generally symbolizes challenges overcome in their respective success; the youth who are currently passing through that vital stage of life, experience academic stress posed by peer competition for grades, self motivation to attain greater height, defining peer relationships, failure apprehension, and career choice dilemma. Cumulatively, all these culminate into mental stress. Failure to arrest mental stress among the youth could lead such victims to take to substance abuse, whose public health effect could be disastrous.

The results of this study confirm that a stress coping program based on counseling lessons is effective in reducing stress and strain among fresh students. Based on the results of this study, a meditation-based stress reduction-counseling program can be instituted among fresh students. It also verified the effectiveness of emotion cum problem focused coping mechanism,

as well as counseling meditation intervention in the academics. Hence, the study concurs with person-environment model of Lazarus (1996). The results highlighted the emotional vulnerability of a significant proportion among fresh students, with academic and environmental factors being the greatest concern. While personal causes of stress such as stressful events and anxiety are more difficult to control, programmed academic counseling seem to be an inevitable remedy to students stress.

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# **COURSE SELECTION: STUDENT PREFERENCES FOR INSTRUCTOR PRACTICES**

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## **ABSTRACT**

*When students select courses and choose from multiple class sections, their preferences serve as criteria for comparisons during the selection process. The primary purpose of this study is to determine **some** of the preferences, so information related to salient attributes may be provided before course selection. An understanding of preferences also helps instructors design their courses, form accurate student expectations, and obtain higher student ratings. Preferences were identified from focus group research and compared to the extant literature to select ones for evaluation that could be met by instructor actions. A survey then obtained students' ratings of preferences for instructor practices, including assessment approaches and use of learning resources. The study revealed that students have a strong preference for classes that are: taught by instructors they know, have acceptable testing formats, and include extra credit activities. In terms of learning resources, they prefer classes with lecture notes provided before class and the availability of previous exams for review.*

## **INTRODUCTION**

Colleges guide students through the process of selecting courses to meet requirements for academic majors. The students' choices influence their development of competencies, the selection of future courses, and career choices (Babad, 2001). They seek information to make well-informed decisions by referring to degree requirements, class schedules, course descriptions, instructor profiles, on-line rating services (e.g., RateMyProfessor.com) and other sources of information. They also rely on the opinions of fellow students and their own previous experiences with instructors. The course selection process is not a "uniform decision-making process repeated several times" but it is "a flexible mixture of factors, academic and personal considerations, idiosyncratic needs, and expected utilities." (Babad & Tayeb, 2003, p. 376).

Opportunities exist to shape students beliefs (i.e. expectations) by providing them with accurate and meaningful information as they select courses. Doing this necessitates knowing and placing attention on *what matters to students* when they compare courses and multiple sections

of classes. This study contributes to the literature by revealing students' preferences for course and instructor related attributes; these function as criteria for students when selecting classes. Findings complement research on course selection with respect to student ratings of instructors (e.g., Leventhal, Abrami, Perry & Breen, 1975; Leventhal, Abrami & Perry, 1976), student self concept (Marsh & Yeung, 1997), students' sources for information (Kerin, Harvey & Crandall, 1975), and relationships between the types of information provided and instructor evaluations (Babad, Darley & Kaplowitz, 1999).

## **BACKGROUND**

When class sections taught by different instructors are available, the Students' Ratings of Teachers/Instructors (SRT) may be used as a source of information. However, some colleges do not make SRTs available and the statistical format may be difficult to interpret correctly (Babad, Darley & Kaplowitz, 1999). Use of SRTs may also be limited among students taking upper-level courses (i.e. juniors and seniors). They may rely more on the opinions of fellow students because SRTs appear to have a stronger influence on those choosing lower-level course choices (Wilhelm, 2004). The SRTs may be less meaningful to upper-level students, thus leading them to rely more on other students for input when selecting courses. This would not pose a problem except that the advice from other students may be inaccurate and inappropriate (Dellar, 1994). The influence and inaccuracies of personal word-of-mouth advice is described by Borgida and Nisbett (1977) as the "brief and vivid face-to-face comments from another person" having a great impact on course selection "despite their informational deficiencies" (Babad, Darley & Kaplowitz, 1999, p. 159). Whether relying on SRTs, or fellow students, information related to the preferences of students may not be available; so students are less likely to make the best course choices.

It is important to know student preferences for the academic setting because they represent criteria used for comparisons of courses and multiple sections of classes. Students also consider their preferences to estimate their own potential for success when taking a course and the estimates influence their academic performance. When information related to the preferences (e.g., teaching methods) is conveyed to students, via SRTs or other means, a student can select the most preferable conditions available. The alignment of course conditions with preferences is likely to increase the belief, or expectation, that a course will be completed successfully. In turn, the student's anticipated success influences persistence and subsequent achievement of course objectives (Wigfield & Eccles, 2002). This reasoning is similar to the idea that matching learning methods preferred by students with instructor teaching approaches directly influences performance in a course (Davis, Misra & van Auken, 2000).

Learning about the students' preferences and attending to them also has the potential to improving instructor evaluations, reported as SRTs. Theoretically, the evaluations are likely to improve when students receive accurate and meaningful information before course selection.



When selecting a course, more accurate student expectations are formed that are compared to what actually occurs as a course is completed. The student's degree of satisfaction is derived from these comparisons. Consumer satisfaction literature supports this explanation when describing one's level of satisfaction being formed by a gap; the difference between what is expected and perceptions of the extent these expectations are fulfilled (Oliver, 1980; Zeithaml, Berry & Parasuraman, 1993; Parasuraman, Zeithaml & Berry, 1994). Moreover, the influence of providing meaningful information is indicated by research findings that show associations between types of information provided before course selection and instructor evaluations (Babad, Darley & Kaplowitz, 1999).

In summary, students are less likely to make the best course choices when they lack meaningful information and the opinions they obtain may provide inaccurate information. To determine what is meaningful to students, an understanding of their preferences is needed because these function as criteria considered when selecting courses. As explained, when information related to these criteria is provided, there is the potential for better academic performance because students may select courses that align with their preferences. Also, SRT may improve because the students' expectations are likely to be more accurate when information related to the criteria is provided.

## **COURSE SELECTION CRITERIA**

Two broad areas represent student criteria (i.e. preferences) considered during the course selection process: (1) *academic*, such as course and instructor characteristics; and (2) *personal*, such as a need to work while attending school (Babad & Tayeb, 2003). We place attention on the academic area by obtaining student feedback with respect to instructor practices. Academic criteria (i.e. course and instructor characteristics) are suggested by several studies examining student preferences and expectations for instructors. These are not fully reviewed here but are well summarized by Whitlark, Geurts, and Rhoads (2002) and Chonko, Tanner, and Davis (2002). Two of the previous studies highlight areas we examined to learn more about student preferences, used as criteria, when selecting courses. Grunenwald and Ackerman (1986) followed a modified Delphi technique with students to identify eight factors associated with good teaching: availability, communication skills, grading, interaction, and knowledge of the subject, rapport with students, teaching skills, and testing. Table 1 presents these factors with attributes from another study that were determined by asking students to describe the most important thing they expected of their instructors (Chonko, Tanner & Davis, 2002).

### **Criteria Examined**

Findings from the aforementioned studies were used to guide criteria selection for the current study. Table 1 presents the attributes found by Chonko, Tanner and Davis (2002)

matched-up with the ranking of factors provided by Grunenwald and Ackerman (1986). The third column (in Table 1) presents student preferences (i.e. criteria) examined in this study. These were determined from focus groups with students and based on our desire to examine potential actions that can be taken by instructors to meet student preferences. Therefore, the criteria suggest things considered as students select courses and what instructors “can do”; placing attention on them may also improve instructors’ SRT scores. As noted, the potential for improved SRT by informing students, in advance, about course details is supported in the literature.

Previous research, focusing on students’ academic considerations, indicated nine variables representing characteristics referred to when students select courses (Babad, Darley & Kaplowitz, 1999). These variables are similar to the factors and attributes presented in Table 1 and many of the preferences we examined. They were revealed by a content analysis of the *Princeton Course Guide*; it is written by Princeton University students and provides full information about forthcoming courses. The nine variables were significantly related to instructor ratings that were obtained after course completion. Specifically, the instructor variables included: personality, knowledge and expertise, approachability, and use of humor. The course variables were workload difficulty, interesting readings and papers, grading leniency, interesting course, and any criticisms of the course.

<b>Table 1: Student Course Selection: Instructor Related Attributes</b>				
<b>Factor *</b>	<b>Rank</b>	<b>Attribute</b>	<b>Percentage of Students Expressing **</b>	<b>Current Study Attributes Examined</b>
Communication Skills	1	Interesting	11.9	Course syllabus available before course selection
		Communicates ell	10.7	
		Easy to Talk to	10.3	
		Interested in Subject	4.0	
		Enthusiastic	2.7	
		Loves to Teach	1.9	
		Sense of Humor	1.5	
Rapport with Students	2	Wants Students to Learn	1.4	Know instructor before course selection
		Good Personality	7.9	
		Kind	6.0	
		Understanding	4.7	
Teaching Skills	3	Organized	1.10	Previous exams on reserve Lecture notes available Uses notes from text book Requires text book Gives regular homework
		Helps Students	11.6	
Knowledge of Subject	4	Knowledgeable	3.4	
		Experienced	1.1	

**Table 1: Student Course Selection: Instructor Related Attributes**

Factor *	Rank	Attribute	Percentage of Students Expressing **	Current Study Attributes Examined
Grading	5	Fair	2.5	Acceptable grading system Extra credit opportunities Homework is graded
Interaction	6	Easy-going Style Open-minded	1.2 1.1	Lenient attendance policy
Testing	7	No Attributes Categorized		Type of testing format
Availability	8	No Attributes Categorized		Keeps regular office hours

## METHODOLOGY

Questionnaires were administered to a sample of students taking classes at a mid-size southwestern public university. In order to provide more legitimacy and accuracy to the study, responses were obtained from a proportionately larger percentage of students taking upper-division courses because they tend to have more experience in course selection, have experiences with a variety of instructors, and previous research suggests they rely less on SRTs for information (Wilhelm, 2004). We took a pluralistic approach to this study; qualitative research was followed by quantitative research.

The questionnaire was developed after completion of two focus groups. One was held to explore the topic and the second one confirmed which attributes to examine in the study. The questionnaire was pretested with a convenience sample of students to verify the format and appropriate wording. During the pretest, any additional preferences that were not identified during the two focus group sessions with students were incorporated into the final version. The questionnaire informed students of the study purpose to better understand the process they go through when determining their semester class schedule. Statements pertaining to student preferences for instructor provided resources, instructor approaches to learning assessment (i.e. testing and grading) and other areas of interest were presented. Student considered times when they selected courses and reported the extent with which they preferred the attribute by responding to a 7 point Likert-type scale (1-Strongly Disagree, 7-Strongly Agree).

A total of 241 useable questionnaires were completed for data analyses. Respondents were males (52%) and females (48%) classified as freshmen (5%), sophomores (8%), juniors (29%), seniors (54%), and other (4%). During the semester, 40% of the students took 13-18 course credit hours and 50% were taking 6-12 hours. Respondents reported working each week 1-10 hours (15%), 11-20 hours (29%) and 21-30 hours (27%) with 18% not working. The majority of students held an overall GPA of 2.01–3.00 (67%) and 29% reported a GPA above 3.00.

## FINDINGS

Students reported they prefer taking classes from professors that taught them previously (mean 5.25, SD 1.37) and would like to enroll in the same classes that friends plan to take (mean 4.21, SD 1.74). Work schedules are considered when selecting courses (mean 4.37, SD 2.00) and students prefer courses with lenient attendance policies (mean 4.51, SD 1.76). In addition, they want to take classes from instructors that maintain regular office hours (mean 5.37, SD 1.50). Findings related to student preferences for assessment practices and learning resources are reported in Table 2.

<b>Table 2: Student Course Selection: Preferences for Instructor Practices</b>			
<b>Assessment (1-Strongly Disagree, 7-Strongly Agree)</b>	<b>n</b>	<b>Mean</b>	<b>SD</b>
Testing format (multiple choice or essay) is important	241	5.41	1.46
Instructor must provide opportunities to earn extra credit	240	5.35	1.69
Instructor collects and grades all assigned homework	241	3.78	1.89
Chooses classes based on the grading system	241	3.76	1.64
<b>Learning Resources (1-Strongly Disagree, 7-Strongly Agree)</b>			
Instructor must keep previous exams on reserve at library	240	4.62	1.58
Lecture notes must be made available prior to class	240	4.56	1.70
Class notes must come from the text book	241	3.71	1.76
Instructor must require a text book for the course	241	3.58	1.71
Instructor must give regular homework	239	3.15	1.49

Regarding assessment, they place a relatively strong emphasis on knowing about testing formats used by an instructor and whether or not extra credit activities will be available. Consideration of an instructor's use of graded homework assignments and the grading system is relatively lower as compared to that given to testing formats and extra credit activities. Learning resources (Table 2) represent actions by an instructor that enhance learning and improve the student's success with assessment activities (e.g., exams). Students prefer courses in which the instructor places previous exams on reserve at the library and makes lecture notes available before class meetings. On average, the use of regular homework is not preferred by students as indicated by a mean score of 3.15 (SD 1.49) that is lower than the 7 point scale midpoint. Student preference for a required textbook is essentially neutral (mean 3.58, SD 1.71).

## DISCUSSION

This study examined preferences of students considered as criteria when they complete the process of course selection. By doing so, the findings indicate student driven course selection

criteria that should be communicated to them in order to improve the course selection process. Providing students with meaningful information to support course selection could also result in academic performance improvements as well as increases in SRTs. Findings supplement previously noted research that examined students' expectations for instructors and what students believe about them to be most important.

Students' strong preference for taking classes from instructors they know indicates their desire to function with accurate beliefs about a class and the individual teaching it. Since opportunities for this may not be available, the students' desire related to this preference may be handled in two ways. First, colleges could distribute course syllabi, *in advance of course selections (i.e. prior to registration)*, so that students have information related to instructor practices. To be effective with this initiative, instructors would update syllabi to reflect their approaches in relation to student preferences that function as selection criteria. Many instructors already include information related to these preferences but may have overlooked some that were found in this study to be meaningful. Secondly, the students' desire to know more about a course and instructor could be handled by having student and faculty "meet and greets." These would facilitate interactions between students and faculty and might be informal get-togethers, or more formal events, including instructors' overviews of their classes.

In addition to communicating information related to student preferences, instructors can take steps to modify course components based on the preferences. This could improve student satisfaction with the course, thus increasing their SRT. Instructors could first place attention on attributes associated with the stronger student preferences. Considering both the assessment and learning resource areas (Table 1), the assessment preferences would first receive attention. Specifically, it is important to confirm with students that the testing format is acceptable and that extra credit opportunities are made available. Following these actions, an instructor would want to focus on the learning resource area by placing previous exams on reserve at the library and distributing lecture notes (e.g., Powerpoint handouts) for use during each class.

This study will hopefully stimulate discussion to advance research activity in the area of student course selection. It would be beneficial to obtain instructors views of student preferences and compare them to those held by students. This could be done using a dyadic approach to examine potential gaps and their influence on students' academic performance, course satisfaction, and SRT. In addition, changes in the very nature of students' preferences may also be revealed through more research. For instance, this study showed that students prefer instructors that maintain regular office hours. However, technology may have changed students' perceptions of the "office"; asynchronous communication (e.g., e-mail) may be perceived as an acceptable substitute for face-to-face interactions at a campus office. If this were found to be true, there would be support for making changes in the way instructors manage their schedules.

Future research could also explore the effectiveness of different ways to inform students of course characteristics and increase their familiarity with instructors. Much of this information is obtained via student word-of-mouth and SRT reports, but students also refer to instructor

rating web-sites and may utilize social networks. Examining the extent with which they refer to these sources would suggest where colleges can inform students. Assessing the accuracy of information conveyed by these sources would also be beneficial. Research may reveal information that is not being provided and certain types of information that are inaccurate. Colleges addressing these issues are likely to improve outcomes of the course selection process.

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# **THE ON-CAMPUS INTERNATIONAL SEMINAR VS. INTERNATIONAL TRAVEL: CHANGED PERCEPTIONS**

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## **ABSTRACT**

*Multicultural experiences and international travel have become critical components of many MBA programs. Exposure to foreign cultures and business practices are important to the educational foundation of future business leaders, especially as it relates to managing in a global economy. Research in this area supports the value of this exposure. The current paper extends that research by exploring some of the perceptual differences that result from international travel as part of an MBA program.*

*Specifically, the current study focuses on graduate business students who traveled to Madrid, Spain to satisfy the international travel component of their program. A pre-trip survey asked the students why they decided to go to Spain and what their perceptions were regarding Spanish culture and business practices. A post-trip survey administered on their return asked the same questions. A comparison of the results for those who went on the travel experience, and to a second cohort of students who attended an on-campus international seminar class, are presented. Despite similar educational objectives for the two courses, a deeper appreciation of cultural differences came about from those who experienced the foreign culture first-hand.*

## **INTRODUCTION**

It is widely accepted that exposure to foreign cultures and business practices is a key ingredient to the success of educational business programs. Now that industry and commerce truly span the globe and are no longer limited by national boundaries, an understanding of how the customs of various countries affect business practice is essential. A belief that business practices that work in the United States will work in other cultural environments likely will ultimately lead to business failure in those countries. These practices relate to how employees within a company interact with each other and to how customers in those countries relate to businesses. The best way for a student to gain an appreciation of these differences is to experience it for one's self; traveling and studying in a culture that differs significantly from their own.

The current study explores an international travel experience in an American MBA program. The curriculum of this program requires an international component. Most students satisfy the international component by traveling (as a class) to a foreign country and experiencing the culture first hand. Some students cannot travel for the 10-day experience due to family or work commitments. For these students they elect to satisfy the requirement by an on-campus international seminar course. This latter option however, fails to move students out of their 'comfort zones' and is not considered to be as realistic as the foreign travel experience, despite similar objectives for the two courses.

For those who selected the option of studying in Spain, surveys were administered immediately prior to and immediately after the travel. Surveys were divided into three major sections; why students chose the Spain-travel option, their perceptions of business practices in Spain, and views on the larger-scale European educational experience. They were further asked if they would recommend foreign travel over the on-campus option to others in order to satisfy the international travel experience requirement.

An additional set of surveys were administered to students in the on-campus international seminar course. While the phrasing of select questions was not identical to the ones for the other cohort of students, there were sufficient areas of overlap to allow for comparisons in areas of perceptions of the business arena relative to the U.S.

## **LITERATURE REVIEW**

Providing opportunities to understand international business practices is a fundamental responsibility of an MBA program. White & Griffith (1998, p. 104) suggest that critical thinking and analytic skills should be developed beyond one's "inherent biases." In addition, the internationalization of the MBA curriculum requires MBA programs to develop graduates' skills to manage business competently in the global environment (Tuleja, 2008). The normal study abroad experience, however, often emphasizes the what ... how capital is acquired in Germany as opposed to the United States, for example. Varner (2001) says of international experiences: "Culture expresses itself in politics, government policies, business regulations, educational systems, and business practices ... one cannot separate culture from these issues and study culture in isolation" (p. 104).

Ortiz (2004) noted that going to another country on an academic study program ... is the best way to begin the process of understanding what it means to function in a global economy. Other authors (Davis & Redmann, 1991) note that even short-term study abroad can help the student to a better understanding of another culture, as well as one's own culture in contrast. The Association to Advance Collegiate Schools of Business (AACSB, 2002) has stated that "the length of the program must be balanced against intended results.... Short term programs, when well- structured and value-added, are quite useful ..." (p. 6). While there cannot be a substitution



for an extended period of work or study in a non-native culture, the awareness of cultural differences is critical for the MBA.

In light of this, many schools, both in the United States and overseas, have adopted some form of multicultural experience in their MBA programs. For example, the WHU-Otto Beisheim School of Management partners with the Kellogg school at Northwestern University, which requires two weeks in the United States (Bryant, 2008), while King, et. al. (2009) describes the success of short-term foreign travel MBA programs offered by St. Bonaventure University. Short-term programs are particularly useful for MBA students in weekend or part-time programs who are also employed full-time, and for whom lengthy foreign study is simply not possible. This is the program offered at this university in the current paper.

## **BACKGROUND**

### **The Spain Experience**

The MBA trip to Spain covers a period of 11 days (including 1 ½ days for air travel). In Spain, students spend 5 ½ days in class at a Madrid-based university and 1 ½ days visiting Spanish businesses. The remainder of the time is used by students, either individually or in groups, exploring Madrid and/or visiting other Spanish cities.

When Franco was the leader of Spain, the use or teaching of English was forbidden. Although Spain is now a democracy, the anti-English language sentiment has persisted. As a result students experienced significant language barriers. Students encountered these barriers in restaurants, in shopping areas, and in their attempts to travel to other parts of Spain, many relying on a very limited Spanish vocabulary.

The university in Spain provides a series of European professors with different specialties. These professors coordinated their lectures which provided a lock-step presentation approach. Whereas the MBA program at home primarily employs a case-based approach, the professors at the Spanish university use a more European style lecture delivery. Although the professors in Spain indicated that student questions were welcomed, they allowed little time for questions and the answers provided were relatively brief.

### **The On-Campus Seminar Experience**

Students enrolled in the on-campus international seminar attend three weekends of classes Friday evenings and all day on Saturdays for a total of 31 and ½ contact hours. Sessions involved readings, case studies, problems, and a team-based interactive simulation game. This departed markedly from the teaching pedagogy used in Spain but was more in keeping with the approach of the MBA domestic program. Themed lunches on Saturdays from different cultures

rounded out the experience. While more cultures were explored at the on-campus seminar than for those students travelling, it was accomplished with less depth of experience.

## METHODOLOGY

A pre-trip survey was administered to students at the airport prior to their departure for Spain. The survey focused on three areas; why the students chose the Spain option instead of the on-campus seminar option, their perceptions of business practices in Spain, and their views on the educational experience. A follow-up survey was administered at the end of the trip to determine how their pre-trip perceptions may have changed based upon their individual experiences.

Both surveys were voluntary. A total of 30 students were enrolled in the class. All 30 students answered the pre-trip survey, but only 22 completed the post-trip survey. Because the purpose of the study was to examine changes in perceptions based on the trip, only the surveys of the 22 students completing both surveys were used. It should be further noted that a few students may not have answered all questions on both surveys. For this reason, the number of respondents for each question is noted in the tables presented here.

The first set of questions examined which factors influenced the students' decision to go to Spain. The second set of questions examined their pre-trip expectations regarding elements of the Spanish travel experiences and how well these expectations were met by their actual experiences. The third set of questions (post-trip only) examined the students' comparison of the Spanish university educational system with that of their home University.

Similarly, a pre- and post-course survey approach was employed with students enrolled in the on-campus international seminar. Individual questions were modified to reflect the multicultural nature of the course. Twenty-three of the 26 students completed both surveys. Their opinions were solicited related to their wider view of Europe concerning worker hours and benefits, tax and regulation burdens on businesses, and business practices among others.

## RESULTS

Twenty-two students participated in both surveys that elected to travel to Spain rather than satisfying the international component of their MBA program through the on-campus course. The pre-trip questions concerned the factors why they chose the Spain option. Responses ranged from 0–7, with zero being an isolated response representing 'Not a factor at all,' 1 being 'Minimally Important' and 7 representing 'Highly Important.' The post-trip survey asked the respondents to rate how successful they felt the trip was related to each factor. As shown in Table 1, the international trip fell short of student expectations in the observance of business practices and in making business connections. These results are not surprising given the structure of the trip, with over half the days being spent in the classroom. Students had

several days to choose between exploring Spain and making business contacts. Several students did use this time to contact businesspeople, but these were often prearranged by the students. The majority of the students used this time for travel in and around metropolitan Madrid.

Students were split on their evaluation of learning from the faculty at the Madrid university. Although the mean response was .57 higher on the post-trip survey, there were nine who rated this experience higher versus seven who rated it lower. Those who rated it higher commented that they enjoyed the related flow of the lectures while those who rated the educational program lower generally focused on the fact that there was little open discussion between faculty and students.

**Table 1: Evaluation of factors related to why students chose the Spain TRAVEL option**

Factor	Pre-Trip Mean	Post-Trip Mean	Number of Responses Increasing	Number of Responses Decreasing
Opportunity to Learn From Faculty at another University	4.91	5.48	9	7
Practice Language Skills	3.05	5.00	8	8
See Business Practices in Spain	5.23	4.28	5	13
Make Business Connections with Individuals	4.18	4.00	4	15

The biggest difference noted in the responses was the practice of language skills. While this was the lowest rated factor in pre-trips survey, the rating increased the most of the four factors on the post-trip surveys. It appears that when students were immersed into a culture where English was seldom spoken, the students were forced to expand their limited Spanish conversation skills.

### Perceptions of Spanish Business Practices

Prior to the trip, students were assigned readings on the current economic conditions in Spain. These conditions included an economy on the decline, high unemployment rates for young adults, and good benefits for the retired population. Students were also advised that very few Spanish citizens spoke English or even tried to converse in English.

**Table 2: Questions Relating to Spanish Culture and Business Practices**

Q#	1	4	7	Pre-trip	Post-trip
1	Spanish employees work <i>considerably fewer hours per year</i> than their U.S. counterparts	Spanish employees work <i>about the same hours per year</i> as their U.S. counterparts	Spanish employees work <i>considerably more hours per year</i> than their U. S. counterparts	N=22 Mean=2.55	N=22 Mean=3.32
2	Spanish employees receive <i>considerably fewer benefits</i> than their U.S. counterparts	Spanish employees receive <i>about the same benefits</i> as their U.S. counterparts	Spanish employees receive <i>considerably more benefits</i> than their U.S. counterparts	N=22 Mean=5.00	N=22 Mean=4.95

**Table 2: Questions Relating to Spanish Culture and Business Practices**

Q#	1	4	7	Pre-trip	Post-trip
3	Government regulation of business in Spain is <i>considerably less intrusive</i> than in the U.S.	Government regulation of business in Spain is <i>about as intrusive as it is</i> in the U.S.	Government regulation of business in Spain is <i>considerably more intrusive</i> than in the U.S.	N=22 Mean=4.82	N=22 Mean=4.91
4	Spanish businesses face a <i>lower tax burden</i> than businesses in the U.S.	Spanish and U.S. businesses face <i>about the same tax burden</i>	Spanish businesses face a <i>higher tax burden</i> than businesses in the U.S.	N=22 Mean=4.95	N=22 Mean=4.86
5	Spanish business practices are <i>less advanced</i> than in the U.S.	Spanish and U.S. business practices are <i>equally advanced</i>	Spanish business practices are <i>more advanced</i> than in the U.S.	N=22 Mean=3.27	N=22 Mean=2.77
6	The Spanish employees I meet will be <i>less customer oriented</i> than their U.S. counterparts	Spanish and U.S. business employees are <i>equally customer oriented</i>	The Spanish employees I meet will be <i>more customer oriented</i> than their U.S. counterparts	N=22 Mean=3.45	N=22 Mean=1.64
7	Spanish people I will meet in non-work settings will be <i>less friendly</i> than those in the U.S. employees	Spanish and U.S. people I meet in non-work settings are <i>equally friendly</i>	Spanish people I will meet in non-work settings will be <i>more friendly</i> than those in the U.S. employees	N=22 Mean=4.36	N=22 Mean=3.23

They were not told that most of the citizenry working in the services and sales industries earned a fixed wage and that the level of service they provided meant nothing to them monetarily. These same topics were included as part of the curriculum at the Spanish university so that the students would understand the effects of these items on Spanish business practices.

Survey questions related to Spanish business practices used a Likert scale ranging from 1–7. For each question, the pre-trip mean and the post-trip mean are recorded and the number of students whose responses changed either in a positive or negative direction is noted.

Tables 2 and 3 present the results of the pre-trip and post-trip surveys. Table 2 issues, related to Spanish culture and business practices indicate the 1, 4, and 7 points of the Likert scale along with the mean of the responses. Table 3 presents the comparative educational perceptions and means from students at the conclusion of their Spanish university experience.

The questions can be further broken down by the type exposure the students had regarding the question subject. These results are presented in Table 2. The number of hours worked (question 1) and the level of business practices (question 5) were discussed in the classroom and experienced in person as the students explored Madrid and outlying areas of Spain. Employee benefits (question 2), government regulation (question 3), and organizational tax burden (question 4) were items one does not normally observe in a tourist capacity. The students' responses to questions concerning meeting Spanish employees (question 6) and Spanish people in non-work settings (question 7) were most likely influenced by their casual observations as they ate, shopped and traveled in the area.

For questions concerning employee benefits, government regulation, and the tax burden on business, there were only slight changes in the mean responses, with the highest change being .09 (question 4). For the pre-trip survey, students had only the suggested readings about the economic situation in Spain as primary reference, while for the post-trip survey, they had the benefit of the Spanish classroom instruction and company visits. This result provides an indication that students prepared properly for the trip by finishing the suggested readings and that these readings were fairly consistent with the information provided in the classroom.

For questions concerning number of hours worked and Spanish business practices respectively, the change in the mean response was higher. Concerning the number of hours worked by the Spanish work force (question 1) as compared to that in the United States, the students, in both surveys rated the Spanish people as working less. The difference in the mean response, .76, indicates that the observed number of hours worked by Spanish employees were greater than what the students initially expected. Just the opposite is true on the question concerning how business practices compare to that of the U.S. (question 5). The mean response decreased by .5 on the two surveys which indicates that the gap concerning business practices was much greater than anticipated.

The largest changes in means from the pre-trip to the post-trip survey concerned the orientation of Spanish employees towards customers (question 6) and the friendliness of the Spanish people (question 7). Initially, students believed that the Spanish people were slightly friendlier than Americans, but after exposure in everyday life, that perception turned decidedly negative, with a decrease in mean of 1.13. The most dramatic mean change concerned the perception of Spanish business practices toward customers. The mean decreased by 1.81 indicating that the students found Spanish business to be far rudier to them than they originally thought. The dramatic change in means for these two questions are likely tied to the fact that most Spanish people do not speak English and a large majority of the students did not speak Spanish. The American students, who are taught to be customer oriented in their business programs, may have expected the Spanish people to at least attempt English, especially in a business setting.

### **Comparison of the Spanish University with that of their Home University**

The third set of questions asked students to compare their experience at the Spanish University to their home university. Due to their nature, these questions were asked only on the post-trip Survey. Again, a 7 point Likert scale was employed.

The results of the survey are shown in Table 3. In general, the students appear to have been disappointed with their overall University experience in Spain. Questions 8 and 10 refer to the instructional style and the overall level of education of the two schools (Spain vs. home).

**Table 3: Questions Relating to the European Educational System**

Q#	1	4	7	Post-trip only
8	The class sessions held in Madrid were <i>less interactive</i> than those at my home university	The class sessions held in Madrid were <i>as interactive</i> as those at my home university	The class sessions held in Madrid were <i>more interactive</i> than those at my home university	N=22 Mean=2.1
9	The physical school facilities in Madrid had <i>fewer amenities</i> than those at my home university	The physical school facilities in Madrid had <i>about the same amenities</i> as those at my home university	The physical school facilities in Madrid had <i>more amenities</i> than those at my home university	N=22 Mean=2.59
10	The overall level of educational quality at the school in Madrid was <i>worse</i> than at my home university	The overall level of education quality at the school in Madrid was <i>about the same</i> as at my home university	The overall level of educational quality at the school in Madrid was <i>better</i> than at my home university	N=22 Mean=3.14

As noted previously, the professors at the Spanish University left little time in their presentations for questions or discussion. In contrast, questions and discussions are welcomed and encouraged at their home university. This major difference in pedagogical styles was evident as shown by the extremely low mean for question 8. The students rated the overall education level of the Spanish university lower than that of their home university (question 10), but were not as negative in this rating as they were in question 8.

The students also felt that the amenities encountered at the Spanish University (question 9) were inferior to those of their home university. From the professors' points of view, the amenities appeared to be about the same as those of the home university, so it is unclear why the student evaluations in this regard were so negative.

### Spanish Travelers versus On-Campus Seminar Participants

The post-course survey administered to those students taking the on-campus seminar course does not allow for more than a rudimentary comparison of select questions. These results are presented in Table 4. Due to the exploratory nature of the research statistical tests were not performed. For those students who satisfied the international experience requirement by going to Spain, the entire focus of the class was on Spanish business and education. For those who satisfied the international experience requirement by taking the on-campus course, the focus was on European business practices and perceptions. Since, at the time of this study, Spain was one of the economically weaker countries in the European Union, it is probably not a country that could be considered representative of the European Union as a whole.

While information was provided to those students going to Spain so that they could have a feel for their trip and what they might encounter, no such information was provided for the on-campus seminar participants. Variations of the first five questions asked of the Spain participants were also asked of those responding to the on-campus survey.

As can be seen in Table 4 for two of the questions (employee benefits and tax burden) the post-international view of the two groups are extremely close (.04 and .02, respectively). For question number 3, concerning the regulation of business, the groups differ greatly (.69). All countries in Europe have a high highly tax burden and provide extremely favorable work benefits to their employees. Spanish companies however, face a somewhat higher regulatory environment than many of its European counterparts. Since the classroom experience in Spain focused on the Spanish business environment, this contrast in views is not surprising.

Questions 1 and 5, employed work hours and level of advancement in business practices, had the highest post-survey differences (.94 and .7, respectively). There may be two reasons for these larger differences. One, as noted above, is that the classroom information in Spain focused more on Spain than on Europe in general. A second reason may be that the Spain responses were likely partially influenced by the interaction of the students with Spanish businesses and Spanish employees in their daily activities, such as shopping, eating, and touring Spain in general.

### **Recommendation from Spain Travellers to Other Students**

The students were asked one additional question “Would you recommend the international trip to other students over the on-campus MBA seminar?” Again, a Likert scale ranging from 1 (Very Strongly NO) to 7 (Very Strongly YES) was used. The modal response was a 7 and the mean response was 6.05, with only one response being below 4.00, indicating that the international trip was by far more valuable than the on-campus seminar for satisfying the international experience requirement of the MBA program, even with the language difficulties students reported and dissatisfaction with the pedagogy they encountered in the classroom.

## **SUMMARY AND CONCLUSIONS**

Overall, students had mixed feelings concerning their experiences in Spain. For the first seven questions related to Spanish business and cultural behaviors, some means increased and some means decreased. A change in one direction or the other is not of major importance. What is important is that there were changes, indicating that their experience changed their views. For those questions where the students were given preliminary readings regarding the Spanish economy, the means changed only slightly, indicating that the students were relatively well-prepared for what they learned in the classroom. For the remaining seven questions the change in means was more dramatic. Each of the questions related to events encountered on the trip.

Despite the fact that students a) encountered language barriers and differences in customs, and b) did not look favorably upon the teaching style and accommodations of the Spanish university setting, they strongly indicated that the travel experience was superior to an on-campus seminar. Such a strong recommendation provides evidence that the international trip

is successful in introducing students to different culture and customs and demonstrating how those differences influence the conduct of business in foreign countries. It reinforces the prevailing research that shows direct experience has a greater impact on perceptions than indirect experience and knowledge transfer.

**Table 4: Comparison of Spain Travellers vs on-Campus Seminar Student Responses**

Q#	1	4	7	Post-trip Spain	Post-trip On-campus
1	Spanish ( <i>European</i> ) employees work <i>considerably fewer hours per year</i> than their U.S. counterparts	Spanish ( <i>European</i> ) employees work <i>about the same hours per year</i> as their U.S. counterparts	Spanish ( <i>European</i> ) employees work <i>considerably more hours per year</i> than their U. S. counterparts	N=22 Mean=3.32	N=23 Mean=2.38
2	Spanish ( <i>European</i> ) employees receive <i>considerably fewer benefits</i> than their U.S. counterparts	Spanish ( <i>European</i> ) employees receive <i>about the same benefits</i> as their U.S. counterparts	Spanish ( <i>European</i> ) employees receive <i>considerably more benefits</i> than their U.S. counterparts	N=22 Mean=4.95	N=23 Mean=4.91
3	Government regulation of business in Spain ( <i>Europe</i> ) is <i>considerably less intrusive</i> than in the U.S.	Government regulation of business in Spain ( <i>Europe</i> ) is <i>about as intrusive as it is</i> in the U.S.	Government regulation of business in Spain ( <i>Europe</i> ) is <i>considerably more intrusive</i> than in the U.S.	N=22 Mean=4.91	N=23 Mean=4.22
4	Spanish ( <i>European</i> ) businesses face a <i>lower tax burden</i> than businesses in the U.S.	Spanish ( <i>European</i> ) and U.S. businesses face <i>about the same tax burden</i>	Spanish ( <i>European</i> ) businesses face a <i>higher tax burden</i> than businesses in the U.S.	N=22 Mean=4.86	N=23 Mean=4.88
5	Spanish ( <i>European</i> ) business practices are <i>less advanced</i> than in the United States	Spanish ( <i>European</i> ) and U.S. business practices are <i>equally advanced</i>	Spanish ( <i>European</i> ) business practices are <i>more advanced</i> than in the United States	N=22 Mean=2.77	N=23 Mean=3.74

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# **THE IMPACT OF PERSONALITY TYPE AND GENDER ON STUDENTS' PERFORMANCE IN A BUSINESS CAPSTONE COURSE**

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## **ABSTRACT**

*An empirical study of Keirsey Temperament Sorter (KTS-II) finds that students' personality type as measured by the KTS-II correlates to their performance as evidenced by course grade in an undergraduate business capstone course. The study also examines the association between gender and course grade. The findings indicated that personality types combined with gender produces students who outperform their counterparts. The results suggest that female students who are feeling and judging types performed better in the course than others in the class. Some educational and managerial implications are discussed.*

## **INTRODUCTION**

The theory that individuals exhibit specific personality types was introduced by Carl Gustav Jung in his book *Psychological Types* in 1921. Jung described a set of dichotomous differences in the human psyche that he defined "introverted" and "extroverted." In a related paper in 1936, Jung expanded his concepts by describing two additional dichotomous sets of psychological types thinking vs. feeling and sensation vs. intuition (Storr, 1983). Myers and Briggs (Myers, 1975) expanded on Jung's original theory of personality by creating a fourth dimension of judging vs. perceiving with judging types being organized and planned while perceiving types being flexible and adaptive.

### **Introversion (I) vs. Extroversion (E)**

The dichotomy of extroversion and introversion (E-I) involves how individuals prefer to "focus their attention" and "gain their energy" (Myers, 1998). Extroverts focus their attention and gain energy through interaction with the external world of people, activities and things; while introverts focus their attention and gain energy through the inner world of ideas, impressions, and emotions. Introverts may prefer written communication while extroverts may prefer to communicate using discussion and interaction.

### **Sensation (S) vs. Intuitive (N)**

Schloemer and Schloemer (1997) discussed that the dichotomy of sensing vs. intuition involves how individuals gather and process information. Individuals with a preference for sensing rely more on their five senses, and are more focused on facts and details. Sensing types tend to organize input sequentially and prefer detailed instructions with concrete information. Intuitive types start with a view of broad concepts seeing patterns, connections and trends organizing them as a more workable general framework. Intuitive types may dislike detail oriented activities, preferring to process information in a top down format as opposed to the detailed, fact based bottom up approach of sensing types.

### **Thinking (T) vs. Feeling (F)**

The T and F functions deal with how an individual makes decisions. Those individuals who conform to the thinking type definition tend to use a logical, objective decision process, while those who resemble the feeling type are inclined to use a value-based or subjective process which puts more emphasis on how the decision will impact others (Schloemer and Schloemer, 1997).

### **Judging (J) vs. Perceiving (P)**

Judging types prefer to be planned, organized, and prefer closure and the settling of things. Perceiving types are less planned and may prefer to keep their options open. While judging types may be more organized, perceiving types may be more spontaneous tending to rely on their ability to adapt to a changing situation (Myers, 1998).

### **The MBTI and KTS-II Instruments**

The Myers-Briggs Type Indicator (MBTI) is a survey instrument with over 120 questions designed to access an individual's personality preferences in four primary areas: introvert/extrovert, sensing/intuitive, thinking/feeling, and judging/perceiving. Keirsey and Bates (1998) developed a 70 question survey which measures the same 16 personality types as the MBTI instrument. The Keirsey Temperament Sorter (KTS-II) has grown to become one of the most widely used personality inventory measuring tools in the world. The sixteen personality types listed in Figure 1 are based on descriptions and discussion from Keirsey (1998). Related information can be found at [www.keirsey.com](http://www.keirsey.com). Keirsey and Bates also classify four subtype combinations as the four temperaments of Idealists (NFs), Rationals (NTs), Guardians (SJ), and Artisans (SPs).

## Caveats on Psychological Typing

Jung also drew some notable caveats regarding psychological typing. First, the basic typologies of introversion, extroversion, sensation, thinking, feeling, and intuition were never intended to encompass all aspects of human personality. Furthermore, the purpose of psychological typing is not to classify people into neat, restrictive categories. Jung maintained that simply categorizing individuals would be a meaningless exercise. He believed psychological typing merely provided the methodology for conducting empirical research by providing points of view and guidelines that reduce the plethora of individual personality types down to a manageable array. In addition, psychological typing may aid us in understanding the broad differences in personality and personal preferences that occur among individuals (Storr, 1983).

It is important to note that the Jungian descriptions of introversion/extroversion, sensation/intuition, thinking/feeling, and judging/perceiving represent the extremes of human behavior. The four pairs may be better described on a scale rather than as dichotomous pairs. In actuality, each individual possesses all of the above attributes, but demonstrates a predisposition or preference to rely on some attributes more than others. The individual's preference toward individual attributes determines their specific personality type.

Figure 1: The 16 Personality Types				
TEMPREMENT	TYPE	PERSONALITY		
Idealists	ENFJ	Extravert, Intuitive, Feeling, Judging	Mentors	Teacher
	INFJ	Introvert, Intuitive, Feeling, Judging		Counselor
	ENFP	Extravert, Intuitive, Feeling, Perceiving	Advocates	Champion
	INFP	Introvert, Intuitive, Feeling, Perceiving		Healer
Rationals	ENTJ	Extravert, Intuitive, Thinking, Judging	Coordinators	Fieldmarshall
	INTJ	Introvert, Intuitive, Thinking, Judging		Mastermind
	ENTP	Extravert, Intuitive, Thinking, Perceiving	Engineers	Inventor
	INTP	Introvert, Intuitive, Thinking, Perceiving		Architect
Guardians	ESTJ	Extravert, Sensing, Thinking, Judging	Administrator	Supervisor
	ISTJ	Introvert, Sensing, Thinking, Judging		Inspector
	ESFJ	Extravert, Sensing, Feeling, Judging	Conservator	Provider
	ISFJ	Introvert, Sensing, Feeling, Judging		Protector
Artisans	ESTP	Extravert, Sensing, Thinking, Perceiving	Operators	Promoter
	ISTP	Introvert, Sensing, Thinking, Perceiving		Crafter
	ESFP	Extravert, Sensing, Feeling, Perceiving	Entertainers	Performer
	ISFP	Introvert, Sensing, Feeling, Perceiving		Composer

## **Purpose of the Study**

There is a body of research concerning the relationship of student personality and academic performance in selected courses primarily in accounting and economics disciplines, but less has been written about the relationship between student personality type and performance in a business capstone course with a work experience component. According to Myers (1998), the SN functions are the best match with a student's learning style. When the SN functions are combined with the TF functions (forming the middle letters of the type) the temperament pairs, ST, SF, NF, NT, are key in helping to identify occupational matches (Myers et al., 1998). Although most all of the 16 personality types can be found in all occupations, many occupations have a dominant type that appears more often than other personality types.

The current study extends the literature by investigating the relationships between gender, personality types as measured by the KTS-II and student performance as evidenced by course grade in a business capstone course. Further, it attempts to combine the gender effect with the personality types to examine course performance.

## **CONCEPTUAL FOUNDATION**

Utilizing the MBTI instrument, Nourayi and Cherry (1993) compared the performance of students in seven different accounting courses and their individual personality preferences. The results revealed that students categorized as sensing (S) type outperformed intuitive (I) types in the three courses: Tax, Auditing and Intermediate II.

In their 2006 study, Bealing, Baker, and Russo examined whether incoming accounting majors have a predisposition to a certain personality type and whether the personality types of accounting majors differ from other business majors. Results for the accounting majors revealed that 26.3 percent were ESTJs, 14.75 percent were ISFJs, 14.75 percent were ESFJs, and 11.48 percent were ISTJs. In total, 67.28 percent of the accounting majors were SJ personality types. The results for non-accounting majors revealed that 17 out of 76 (22.4 percent) of the non-accounting majors possessed the ESTJ personality type. In this study, the ESTJ type was the dominant personality profile for all business majors

In a sequel study, Bealing, Russo, Staley, and Baker (2007) examined six specific questions of the KTS-II which related to the sensing (S) and intuitive (N) dimensions of Jungian personality type and whether there is a correlation between the strength of a student's specific personality preferences and the letter grade they received in their introductory accounting course. The authors used a chi-square and the root mean square error of approximation (RMSEA) to assess the overall fit of the model to the data. The results revealed that students with the sensing (S) dimension performed better than students with the intuitive (N) dimension.

Bealing, et al., (2008) examined the causal relationship between personality type and performance in an entry level accounting course and found that an individual's personality preference in the sensing type is positively related to their grade in the course.

Borg and Stranahan (2002) demonstrated that personality type is an important explanatory variable in student performance in economics courses at the upper level, just as it was at the principles level. Similar to the results for principles students, they find that introverted students make better grades in their upper-level economics classes than identical students who are extroverts. They also find that students with SJ temperaments make significantly better grades in upper-level economics than identical students with SP temperaments. Their results showed that gender and personality types together will result in producing students who outperform other students.

In her 2000 study, Ziegert examined student performance in microeconomics. This study was similar to Borg and Shapiro (1996) but used a larger and more diverse sample. The sample included 617 students in 27 course sections taught by 11 faculty members. The results showed that Sensing (S) and thinking (T) types performed better than intuitive (N) and feeling (F) types. Additionally, the introverts performed better than extroverts, and SJs performed better than NFs and NTs. Gender was not statistically significant predictor of students' success as measured by either course grade or TUCE scores.

Bisping and Eells (2006) examined whether the different personality types perform better in microeconomics and macroeconomics. In microeconomics, the results indicated that ISTJs performed significantly better than INTJs while ISFJs performed worse. The researchers also found that NTs performed worse than SJs in microeconomics. In macroeconomics, ISTJs performed better than INTJs while ISFJs performed worse. ENTJs performed worse than INTJs. I-types tended to perform better than Es and Ss performed better than Ns. Similarly to microeconomics, NTs performed worse than SJs. NFs were also found to be at a disadvantage in macroeconomics but not in microeconomics. The results were very similar for both macro and microeconomics. Therefore, the researchers did not find significant differences in performance in microeconomics as compared to macroeconomics.

In their 2006 study, Swope and Schmitt examined the performance of economics majors at the U.S. Naval Academy over the entire curriculum. The dependent variable was GPA in the economics major. The results revealed that students with the personality preference of judging (J) performed better than students with the perceiving (P) preference. The results also revealed that gender was not a significant predictor of performance in the economics major. Race was a factor in that male minority students had lower GPAs than their counterparts.

Bisping and Patron (2008) examined the relevance of personality type in an introductory general business course. They found that personality type is indeed a significant factor in determining student success. They also found that intuitive students appear to be at a relative advantage when compared to their sensing counterparts.

## METHODOLOGY

### The Business Capstone Course

The business capstone course integrates practical work experience with a directed, academic component to help students develop personal, professional and academic competencies. Study, critical thinking, reflection, and theoretical and/or conceptual exploration supplement the work experience, through seven seminars, that help students develop workplace knowledge, skills and attitudes (KSA's). A primary and fundamental objective of the course is to help students develop the competency of self-directed learning. Grading criteria for the course are as follows:

Seminar Participation and Seminar Attendance	14%
Reflective Journals (incorporating assigned topics)	16%
Learning Plan	15%
Showcase Portfolio and Executive Summary	30%
Sponsor/Employer Evaluation of Work Performance	<u>25%</u>
Total:	100%

### KTS-II and the Questionnaire Development

The 70 question KTS-II instrument was administered in five sections of a business capstone course at a large metropolitan university. The KTS-II instrument contains ten questions on Extrovert vs. Introvert, Sensing vs. Intuitive, Thinking vs. Feeling; and Judging vs. Perceiving each had twenty questions. In addition, eleven additional survey questions were developed to collect academic and demographic data on the study participants.

### Data Collection

The data were collected in five sections of a business capstone course at a large metropolitan public university. All five sections had identical structure, including required and recommended readings, form of evaluation, and syllabi. Student performance in the course is the dependent variable in this study. For our purposes, this measure is constructed using a combination of the measures used by the instructor to evaluate course performance (refer to section on Business Capstone Course). Therefore, the data from the course itself provides a logical and convenient measure of course performance, and eliminates the need for any - additional testing.

About mid-semester, before any grades are given to the students, a packet containing a consent form, an instruction sheet for the instructor, and the KTS-II self score-able test was

delivered to the instructor. The instructor was asked to ensure that the signed consent form which granted access to the use of their grades was collected. Further students were to be informed about the purpose of the study and were to be instructed to take the test and bring the scantron sheet with themselves to the next class.

In the next 2-3 weeks, the researchers attended the classes and conducted a 45 minute session in each section of the course. After all of the scantron sheets were collected, a 30 minute discussion was ensued in order to help students better understand their results. At the end of the semester, the course grades were added to the data base for each student by matching the course grade to the student's ID number. There were 110 students participating in the study.

## **Variables**

The dependent variable Course Grade is treated as an interval/ratio variable using the plus/minus grading system on a 4.0 scale. The independent variables were gender, EI, SN, TF, and JP scores. Gender was treated as a categorical variable, while the personality scores were considered to be interval/ratio variables.

The ten Extrovert-Introvert (EI) questions were coded as +1 for an extroverted answer and -1 for an introverted answer, and were netted resulting in a maximum score of +10 and the minimum score of -10. A participant with a positive score is an extroverted type and a participant with a negative score is an introverted type. By the same token, a participant with a net score of zero is considered an X-type. Similar coding was done for the SN, TF and JP questions with a range of scores from -20 to +20. All variables dealing with the personality types were assigned interval/ratio scales and were used in the subsequent regression analysis.

## **Research Hypotheses**

Six research hypotheses were developed to address the objectives of the study.

*H1: There is a significant relationship between Course Grade and Gender.*

*H2: There is a significant relationship between Course Grade and the EI score.*

*H3: There is a significant relationship between the Course Grade and the SN score.*

*H4: There is a significant relationship between the Course Grade and the TF score.*

*H5: There is a significant relationship between the Course Grade and the JP score.*

*H6: There is a predictive relationship between the Course Grade and .gender, EI, SN, TF, and JP scores.*

## **Analytical Procedures**

Descriptive statistics, one-way analysis of variance (ANOVA), and regressions were used for testing the first five hypotheses, while OLS regressions and one-way ANOVAs were conducted for the last research hypothesis. In addition, a stepwise multiple regression was conducted for hypothesis six.

## **TESTS OF HYPOTHESES AND FINDINGS**

### **Descriptive Statistics**

The mean course grade for all sections of the course was 3.35, with a standard deviation of .71. The grades were distributed as follows: 37 grades of 4.00; 19 grades of 3.67; 16 grades of 3.33; 16 grades of 3.00; 15 grades of 2.67; four grades of 2.33; one grade of 2.00; two grades of 1.00 and one grade of 0.00.

The business capstone course is generally taken by students in their senior year of the undergraduate business degree. As shown in Table 1, 92.9% of students were between the ages of 20 and 24. There were 25 students who did not respond to the survey question on age. There were 51 (46.4%) male and 59 (53.6%) female students in the study. Finance and Economics majors constituted 20 (18.2%) of students, while 53 (48.2%) were management or E-business majors, and 37 (33.6%) were marketing majors. Accounting majors are not represented in this study because they were not required to take this capstone course.

As shown in Table 2, extroverted made the majority of the participants (60%), while the introverted comprised 24.6% with 16.5% identified as X-types. By the same token students with sensing type constituted 77.3% of the total, while the intuitive ones were 15.4% with 7.3% falling in the X-types. Thinking and feeling types were more evenly represented with 44.5% thinking, 50% feeling and 5.5% X-types. Lastly, 80% of the participants were the judging type; while the perceiving group made up 15.5% of the total, and X-types 4.5%.

Table 3 provides frequencies for all 16 personality types plus all observed X-types for the participants in the study. The three most common personality types in this study are ESTJ (21.8%), ESFJ (17.3%) and ISFJ (8.2%).



Table 1: Demographics					
Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-24	79	71.8	92.9	92.9
	25-29	4	3.6	4.7	97.6
	30-34	1	0.9	1.2	98.8
	35+	1	0.9	1.2	100
	Total	85	77.3	100	
Missing	Non-response	25	22.7		
Total		110	100		
Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	51	46.4	46.4	46.4
	Female	59	53.6	53.6	100
	Total	110	100	100	
Major		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Finance/Economics	20	18.2	18.2	18.2
	Management / E-Business	53	48.2	48.2	66.4
	Marketing	37	33.6	33.6	100
	Total	110	100	100	

Table 2: Personality Type Frequency Distributions					
		Frequency	Percent	Valid Percent	Cumulative Percent
<b>E vs. I</b>					
Valid	Extroverted	66	60	60	60
	Introverted	27	24.5	24.5	84.5
	X-Type	17	15.5	15.5	100
	Total	110	100	100	
<b>T vs. F</b>					
Valid	Thinking	49	44.5	44.5	44.5
	Feeling	55	50	50	94.5
	X-Type	6	5.5	5.5	100
	Total	110	100	100	
<b>S vs. N</b>					
Valid	Sensing	85	77.3	77.3	77.3
	iNtuitive	17	15.5	15.5	92.7
	X-Type	8	7.3	7.3	100
	Total	110	100	100	
<b>J vs. P</b>					
Valid	Judging	88	80	80	80
	Perceiving	17	15.5	15.5	95.5
	X-Type	5	4.5	4.5	100
	Total	110	100	100	

**Table 3: Four Letter Type Frequency Distribution**

<b>Four-Letter Type</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
<b>ENFJ</b>	5	4.5	4.5	4.5
<b>ENFP</b>	4	3.6	3.6	8.2
<b>ENFX</b>	1	.9	.9	9.1
<b>ENTJ</b>	1	.9	.9	10.0
<b>ESFJ</b>	19	17.3	17.3	27.3
<b>ESTJ</b>	24	21.8	21.8	49.1
<b>ESTP</b>	5	4.5	4.5	53.6
<b>ESXJ</b>	3	2.7	2.7	56.4
<b>EXFJ</b>	1	.9	.9	57.3
<b>EXFP</b>	2	1.8	1.8	59.1
<b>EXFX</b>	1	.9	.9	60.0
<b>EXTJ</b>	1	.9	.9	60.9
<b>INFJ</b>	2	1.8	1.8	62.7
<b>INTJ</b>	3	2.7	2.7	65.5
<b>ISFJ</b>	9	8.2	8.2	73.6
<b>ISFX</b>	1	.9	.9	74.5
<b>ISTJ</b>	6	5.5	5.5	80.0
<b>ISTP</b>	2	1.8	1.8	81.8
<b>ISXJ</b>	1	.9	.9	82.7
<b>IXFJ</b>	1	.9	.9	83.6
<b>IXTJ</b>	1	.9	.9	84.5
<b>XNFP</b>	1	.9	.9	85.5
<b>XSFJ</b>	7	6.4	6.4	91.8
<b>XSTJ</b>	3	2.7	2.7	94.5
<b>XSTP</b>	2	1.8	1.8	96.4
<b>XSTX</b>	1	.9	.9	97.3
<b>XSXP</b>	1	.9	.9	98.2

**Table 3: Four Letter Type Frequency Distribution**

<b>Four-Letter Type</b>				
	Frequency	Percent	Valid Percent	Cumulative Percent
<b>XSSX</b>	1	.9	.9	99.1
<b>XXFJ</b>	1	.9	.9	100.0
<b>Total</b>	110	100.0	100.0	

The Keirsey two-letter subtypes are SJ (Guardian), NT (Rational), SP (Artisan), and NF (Idealist). As presented in Table 4, SJ types are clearly overrepresented with 64.5% of the participants, followed by four NTs (3.6%); 12 SPs (10.9%); 11 NFs (10.0%) and 12 X-types (10.9%).

**Table 4: Frequency Distribution: Two-letter Keirsey Subtype**

<b>Keirsey Subtype</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<b>SJ</b>	71	64.5	64.5	64.5
	<b>NT</b>	4	3.6	3.6	68.2
	<b>SP</b>	12	10.9	10.9	79.1
	<b>NF</b>	11	10.0	10.0	89.1
	<b>X-Type</b>	12	10.9	10.9	100.0
	<b>Total</b>	110	100.0	100.0	

### OLS Regressions and ANOVAs

All data were analyzed using regressions and one way ANOVAs. The results are presented in Table 5. Regressions revealed significant results for the independent variables gender, TF score, and JP score at the .01 level. In Table 6, correlation analysis revealed that course grade demonstrates moderate and significant relationships with gender, TF score, and JP score ( $R = .309$ ,  $p < .01$ ;  $R = .291$ ,  $p < .01$ ; and  $R = .250$ ,  $p < .01$ , respectively). Thus, hypotheses H1, H4, and H5 were supported by the data.

As shown in Table 5, the results for the regressions analysis and ANOVAs for the variable gender were statistically significant at  $P \leq .001$  with  $R$  value of .309 and  $F$  value of 11.41. As shown in Table 6, the variable gender explains 9.6% of the variability in course grade. The regression for gender was significant for the dependent variable course grade. Therefore, the hypothesis H1 was supported by the data.

Table 5: Summary of OLS Regression Models								
Gender Model Summary OLS Regression								
Dependent Variable Course Grade								
Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.309 <sup>a</sup>	0.096	0.6764	0.096	11.405	1	108	0.001
EI Score Model Summary OLS Regression								
Dependent Variable Course Grade								
Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.017 <sup>b</sup>	0	0.71111	0	.032	1	108	.859
SN Score Model Summary OLS Regression								
Dependent Variable Course Grade								
Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.056 <sup>c</sup>	0.003	0.71009	0.003	0.343	1	108	0.56
TF Score Model Summary OLS Regression								
Dependent Variable Course Grade								
Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.291 <sup>d</sup>	0.085	0.68038	0.085	10.012	1	108	0.002
JP Score Model Summary OLS Regression								
Dependent Variable Course Grade								
Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.250 <sup>e</sup>	0.062	0.68865	0.062	7.195	1	108	0.008
a. Predictors: (Constant), Gender								
b. Predictors: (Constant), EI Score								
c. Predictors: (Constant), SN Score								
d. Predictors: (Constant), TF Score								
e. Predictors: (Constant), JP Score								

As shown in Table 5, variable EI score was not significant at .05 ( $P \leq .859$ ) with R value of .000 and F value of .032. Table 6 reveals that the variable EI score explains 0.0% of the variability in course grade. The regression for EI score was not significant for the dependent variable course grade. Therefore, the hypothesis H2 was not supported by the data.

**Table 6: Summary of OLS Regression ANOVAs**

<b>Gender OLS Regression ANOVA<sup>f</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.218	1	5.218	11.405	.001 <sup>a</sup>
	Residual	49.411	108	0.458		
	Total	54.629	109			
<b>EI Score OLS Regression ANOVA<sup>f</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.016	1	0.016	.032	.859 <sup>b</sup>
	Residual	54.613	108	0.506		
	Total	54.629	109			
<b>SN Score OLS Regression ANOVA<sup>f</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.173	1	0.173	0.343	.560 <sup>c</sup>
	Residual	54.457	108	0.504		
	Total	54.629	109			
<b>TF Score OLS Regression ANOVA<sup>f</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.635	1	4.635	10.012	.002 <sup>d</sup>
	Residual	49.994	108	0.463		
	Total	54.629	109			
<b>JP Score OLS Regression ANOVA<sup>f</sup></b>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.412	1	3.412	7.195	.008 <sup>e</sup>
	Residual	51.217	108	0.474		
	Total	54.629	109			
<sup>a</sup> . Predictors: (Constant), Gender <sup>b</sup> . Predictors: (Constant), EI score <sup>c</sup> . Predictors: (Constant), SN score <sup>d</sup> . Predictors: (Constant), TF score <sup>e</sup> . Predictors: (Constant), JP score <sup>f</sup> . Dependent Variable: Course Grade						

Table 5 also reveals that variable SN score was not significant at .05 ( $P \leq .560$ ) with R value of .003 and F value of .343. By the same token, Table 6 reveals that the variable SN score explains 0.3% of the variability in course grade. The regression for SN score was not significant for the dependent variable; therefore, the hypothesis H3 was not supported by the data.

Table 5 shows the results for the regressions and ANOVAs were significant at  $P \leq .002$  with R value of .291 and F value of 10.012, for the variable TF score. Table 6 reveals that the variable TF score explains 8.5% of the variability in course grade. The regression for TF score was significant for the dependent variable, therefore, the hypothesis H4 was supported by the data.

As shown in Table 5, variable JP was significant at .01 ( $P \leq .008$ ) with R value of .250 and F value of 7.195. Table 6 reveals that the variable JP score explains 6.2% of the variability in course grade. The regression for JP was significant for the dependent variable course grade. Therefore, the hypothesis H5 was supported by the data.

### Multiple Regressions Analysis

A forward-stepwise multiple regression was performed for the dependent variable course grade and the independent variables gender, EI Score, SN Score, TF Score, and JP Score. The forward-stepwise multiple regressions analysis leads us to accept the hypothesis H6 which postulates that there is a predictive relationship between the dependent variable course grade and the independent variables TF score JP score and gender.

Table 7 provides a summary of the variables included in the forward stepwise model. Only the variables for gender, TF score, and JP score were included by the forward stepwise multiple regression model. The independent variables EI score and SN score were excluded by the forward stepwise model. Tables 8 and 9 reveal gender, TF score, and JP score are significant predictors of course grade in the model using stepwise regression method, with an explained variance of 18.4%. Model 3, which included the independent variables gender, JP score and TF score, resulted in an R value of .429, an  $R^2$  of .184 with a p value of .000. Gender, JP score and TF score explain 18.4% of the variability in course grade. The results reveal that female students who are both judging and feeling types had the highest course grades in this study. The multiple regression was significant for the dependent variable course grade. Therefore, the hypothesis H6 was supported by the data.

Table 7: Multiple Regressions Independent Variables Included in the Model			
Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	<b>Gender</b>	.	Forward (Criterion: Probability-of-F-to-enter $\leq$ .050)
2	<b>JPscore</b>	.	Forward (Criterion: Probability-of-F-to-enter $\leq$ .050)
3	<b>TFscore</b>	.	Forward (Criterion: Probability-of-F-to-enter $\leq$ .050)
a. Dependent Variable: Course Grade			

**Table 8: Summary of Multiple Regressions Model**

Model	R	R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
1	.309 <sup>a</sup>	.096	.67640	.096	11.405	1	108	.001
2	.362 <sup>b</sup>	.131	.66619	.035	4.335	1	107	.040
3	.429 <sup>c</sup>	.184	.64852	.053	6.911	1	106	.010

a. Predictors: (Constant), Gender  
b. Predictors: (Constant), Gender, JPscore  
c. Predictors: (Constant), Gender, JPscore, TFscore

**Table 9: Multiple Regressions: ANOVA**

ANOVA <sup>d</sup>						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.218	1	5.218	11.405	.001 <sup>a</sup>
	Residual	49.411	108	.458		
	Total	54.629	109			
2	Regression	7.142	2	3.571	8.046	.001 <sup>b</sup>
	Residual	47.487	107	.444		
	Total	54.629	109			
3	Regression	10.048	3	3.349	7.964	.000 <sup>c</sup>
	Residual	44.581	106	.421		
	Total	54.629	109			

a. Predictors: (Constant), Gender  
b. Predictors: (Constant), Gender, JPscore  
c. Predictors: (Constant), Gender, JPscore, TFscore  
d. Dependent Variable: Course Grade

## DISCUSSION

The primary objective of this study was to assess the relationship between students' course performance and personality type, and students' course performance and gender. Further, the study attempted to combine the gender effect with personality types to ascertain the impact on the course performance. Hypothesis H1 measured the relationship of the respondents' course performance to the respondents' gender. The findings supported the hypothesis H1. Hypotheses H2 through H5 tested the relationships between course performance and the individual personality types (i.e., EI score, SN score, TF score, and JP score). The personality variables

performed differently at various levels relative to their relationship power. The results were not supportive of a statistical relationship between course performance and EI and SN scores, therefore, Hypotheses H2 and H3 were not supported. However, the findings support hypotheses H4 and H5 which postulate that a significant relationship does exist between course performance and both TF score and JP score.

Hypotheses H6 tested whether there is a predictive relationship between the dependent variable course grade and the independent variables of gender, and the individual personality types (i.e., EI score, SN score, TF score, and JP score). The multiple regression predictor variables for Model 3 revealed that 18.4% of the variance in the course performance can be explained by the three independent variables of gender, TF, and JP. Nevertheless, the low  $R^2$  of .184 provides meaningful information to the researchers. It suggests that there is a host of constructs that explain the variation in the course performance construct. Given the fact that many independent variables impact an individual's grade in a course, the predictive contributions of any variable are noteworthy. Table 10 presents a summary of each hypothesis, the p-value, and whether each hypothesis was rejected or failed to reject.

<b>Table 10: Summary of Hypotheses</b>			
<b>Hypothesis</b>	<b>Description</b>	<b>p Value</b>	<b>Rejected or Failed to Reject</b>
<b>H1</b>	There is a significant relationship between Course Grade and Gender.	.001	Failed to Reject
<b>H2</b>	There is a significant relationship between Course Grade and the EI score.	.859	Reject
<b>H3</b>	There is a significant relationship between the Course Grade and the SN score.	.560	Reject
<b>H4</b>	There is a significant relationship between the Course Grade and the TF score.	.002	Failed to Reject
<b>H5</b>	There is a significant relationship between the Course Grade and the JP score.	.008	Failed to Reject
<b>H6</b>	There is a predictive relationship between the Course Grade and .gender, EI, SN, TF, and JP scores.	.000	Failed to Reject

## CONCLUSIONS

In this study, the relationship between students' course performance in a capstone course with their gender and personality type were examined. The study did indeed find statistically significant relationships between course performance and two personality type, namely the



feeling and judging types. Further, the findings support that female students with feeling and judging personality types perform better in a capstone course than their counterparts.

According to Keirsey (1998), the FJ types include two guardian types ISFJ Protector, ESFJ Provider, and two idealist types INFJ Counselor and ENFJ Teacher. The dichotomous pair of thinking/feeling involves how people make decisions. Thinking types prefer to make decisions logically, analytically, and objectively, while feeling types prefer to make decisions with consideration for the impact on the people involved. Feeling types make decisions more subjectively based on personal values. Thinkers make decisions more on principles, while feelers make decisions more on values.

The dichotomous pair of judging/perceiving refers to how individuals deal with the external world. Judging types prefer things orderly, scheduled, neat and organized. Perceiving types prefer things to be spontaneous, flexible, and prefer to keep their options open. Similarly, the dichotomous pair of feeling and judging of the study participants refers to an individual who is organized, orderly and works according to a set schedule. The individual also makes decisions subjectively and would base them on personal values.

The business capstone course integrates work experience with a directed, reflective, academic component. There are no traditional quizzes or exams in determining course grade. Grading criteria for the course include seminar participation, reflective journals, a learning plan, a portfolio/executive summary, and a work performance evaluation by the employer. Students must interact with others both in the seminar setting and in the workplace. In addition, students must be organized to produce reflective journals on assigned topics, produce a learning plan and a portfolio. One may infer that the structure and nature of the course may have lent itself to higher course grades being earned by feeling and judging types.

## **IMPLICATIONS FOR EDUCATORS**

The results of this study are consistent with the prior research findings and clearly indicate that course performance of groups of students are different relative to their personality type. In this study, feeling (F) type students performed better than thinking (T) types, judging (J) types performed better than perceiving (P) types, and female students performed better than their male counterparts. Female FJ types appear to perform better than other combinations of gender and personality type.

With access to personality type, learner's styles, and gender research, advisors, faculty, and administrators may better understand student performance. A deeper understanding of personality type can have an impact on curriculum, instructional methods, advising, retention, and occupational selection. Researchers and educators alike must move beyond attempts to understand a general personality model by depicting student groups that have or have not embraced specific personality dimensions.

Recommendations for future study include expanding the sample size to increase the number of intuitive types, to increase the number of perceiving types or to examine personality type and choice of academic major.

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# **CLICK CLICK: OVER 1,000 INTERNATIONAL COLLEGE STUDENTS DETAIL TRADITIONAL COMPUTER USAGE**

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## **ABSTRACT**

*This article investigates the availability of computers and the tasks for which computers are used by undergraduate students enrolled in business classes at 12 selected universities in 7 countries. This research will expand the literature related to traditional computer usage in the countries represented.*

*Students were surveyed to determine similarities and differences in the use of computer technology at the universities. Countries included in the survey are: Canada, Mexico, United States (US), Belgium, France, Finland, and Spain. While there were significant differences in responses at the .001 level among students at the 12 universities, most students owned their own computers (85.6% and above), and most (86.0% and above) had Internet access outside of their university.*

*There are some differences in computer usage between the various countries. Overall, study results indicate that all students in all countries use the computer for a significant part of their education. The findings generally support previous research on computer use by university students.*

## **INTRODUCTION**

In a YouTube video, "Social Media Revolution", Erik Qualman (2009a) reported how quickly technology is changing. Qualman (2009a) is already at work on an updated version of this video which was posted in August 2009. Indeed, social media has now overtaken pornography as the number one activity on the web (Huffington Post, cited by Qualman, 2009a). The following timeline was among the statistics he cited: it took radio 38 years to reach 50 million users; television took 13 years; the Internet took four years; and the iPod took three years (United Nations Cyberschoolbus Document, cited in Qualman, 2009a). Then technology began to move even faster: Facebook added 100 million users in less than nine months (Mashable, cited in Qualman, 2009a) and iPhone applications had been used one billion times in nine months (Apple, cited in Qualman, 2009a).

At one time, using technology may have been regarded as a way for colleges to promote independent learning and cut costs by reducing the amount of direct teaching time by staff (Nash & Maxwell, 1994). Today, however, technology and education are synonymous. College professors and IT departments are hard-pressed to keep up with new trends in technology. Indeed, when the music-sharing site, Napster, appeared, students caused college networks to collapse with their intense swapping of music and video clips. Buffalo University had to limit the data packets available to residence halls during the day, when faculty and staff were still on campus (CNN.com, non-retrievable web site, accessed Sept. 22, 2006). A University of Florida student said, "My computer is turned on all day long, and I'm connected to the Internet 24 hours a day." (S. Coopersmith, non-retrievable YoungMoney.com web site, accessed Sept 22, 2006.) "Twitter" became the word of the year in 2009 topping "Obama", "H1N1", "Stimulus", and "Vampire" (Global Language Monitor, cited in Parr 2009).

Indeed, computer/Internet usage changes daily and it would be difficult to project how college students might be using it in only a few months. The latest rage is Chatroulette, which debuted in December of 2009 with 300 users. If you should log on today you would likely find 50,000 users at any one time. Invented by a 17-year old Russian, Andrey Ternovskiy, it is a web camera-based chat room. A user logs on and becomes instantly connected to another random person around the world via camera. One can "chat", or one can "next" a person and go on to another stranger (Braiker, 2010).

## REVIEW OF LITERATURE

### Technology Use in Universities

Statistics are equally staggering: 35% of male college Internet users in the U.S. spend 21 or more hours online per week (EDUCAUSE survey, cited in eMarketer newsletter, non-retrievable, accessed Oct. 14, 2008). In another study for Break Media, 7 out of 10 of young men aged 18 to 34 said they could not live without the Internet, while only three out of ten said they could not live without television. Half of these men spent 22 hours a week online and 26 % said they would rather surf the Web than have sex (Break Media, 2008, cited in Mele, 2008).

This increased adoption of new technologies affects colleges and universities which must invest significant sums in technology support systems to meet students' expectations. In "The Myth about Students" (Oblinger & Hawkins, 2005), questions were raised nearly five years ago about college administrations' reactions to student use of technology:

1. What is known about student use of technology ownership and use?
2. How are colleges adapting programs to students' needs?
3. What balance of the physical and virtual best serves the specific student population?

4. Has the tradition of separating computers from classrooms passed in its usefulness?

Many studies have focused on U.S. students. Oblinger and Hawkins (2005) referenced earlier U.S. studies from 2002 and 2003 that indicated there were variations of computer ownership and use within the U.S. Liberal arts students had more than twice the personal ownership of computers, compared to community college students. Further, access to computers and broadband in Hispanic and African American homes was less than access in Caucasian homes.

The most comprehensive studies of U.S. undergraduate student use of technology have been conducted by EDUCAUSE Center for Applied Research (ECAR). Since 2004, the center has conducted yearly surveys on how technology affects the college experience. The 2009 study surveyed students from over 100 U.S. colleges and universities. This study revealed that student ownership of computers was nearly ubiquitous, with 98 % of students owning computers. The current economic downturn notwithstanding, students are entering college with even newer equipment, most owning computers one year old or less (Smith, Salaway & Caruso, 2009).

This high rate of computer ownership is in stark contrast to just 20 years earlier, when 75 million Americans reported only having access to a computer (U.S. Bureau of Census, cited in Smith & Necessary, 1996). Smith and Necessary went on to observe “for students and business persons alike, exposure to computers is nearly unavoidable” (1996).

The 2009 ECAR study queried students about their IT use for school, work, and recreation. Nine out of ten students used the college and university website, and about nine out of ten used presentation software and spreadsheets. Another 84% downloaded music or videos. When asked whether the students contributed to web content on user-driven sites, over 40 % said they contributed to video sites and wikis; over 1/3 of the students contributed to blogs, used podcasts, and used their computers for phone calls (Smith, Salaway & Caruso, 2009).

For a closer look at the educational use, students were asked how they were actively using technology in their college courses. More than 73 % were using the college or university website; 70 % were using a course management system; 66 % were using presentation software; and 46 % were using spreadsheets. Despite the very high percentages of students using social networking sites during personal time, less than 28 % were using them for coursework. Results of student technology use for coursework were much lower for other software tools: less than 6% were using podcasts, 6 % were using video-creation software; and 5 % were using audio-creation software (Smith, Salaway & Caruso, 2009).

To determine uses of social networking for academic purposes, another in-depth U.S. study surveyed 400,000 students from 663 institutions. This study focused on communication with other students or instructors about coursework. The results found higher engagement among students who used social media multiple times a day for such academic purposes. Kay McClenney was director for the Center for Community College Student Engagement, which

released the report. McClenney states, “Colleges are not taking advantage of that particular set of tools [social networking] for making connections with students to the extent that they could” (Marklein, 2009). On the other side, the 2009 ECAR study revealed that almost one-third of the college students used their cell phones or handheld Internet devices during college classes for non-course activities (Smith, Salaway & Caruso, 2009).

One of the authors of this study has been experimenting with her own Facebook page as an academic tool. Daily, she posts a “business fact” as a “soft-sell” approach to recruiting business majors. She reports that students often will “Facebook” her, rather than contact her through college e-mail or office phone, to ask questions about homework assignments, college policies, etc. This professor is using the Facebook computer site ([www.facebook.com/shericarder](http://www.facebook.com/shericarder)) for her postings, but is finding that nearly half of the information received from her students arrives via hand-held cell phones (iPhones, etc.) equipped with Internet connections. Despite her college’s policy that cell phones be banned inside classrooms, she reports that students continue to “sneak” cell phones to class. Recently, a student used his cell phone inside a face-to-face class to pull up another on-line class of his to ask questions (S. Carder, personal communication, March 15, 2010).

Although students prefer technology because of convenience, in the ECAR study only about half of the respondents agreed that information technology (IT) in courses improved their learning. Also, about half agreed that the IT used in their courses will have adequately prepared them for the workplace after graduation. Despite the fact that today’s students are Digital Natives (having grown up with the technology), students still appreciated face-to-face learning. The surveys recorded student comments such as preferring “real books and people,” saying “shiny new tech is still no substitute for well-trained, passionate instructors” (Smith, Salaway & Caruso 2009).

## **Student Preferences**

The EDUCAUSE 2004 study of over 4,000 students in 13 U.S. colleges in five states expected to find that Net Generation students would demand more technology in the classroom. The study found that the students did not have the technology skills to support academic work outside the classroom and preferred a moderate use of technology in the classroom. Course management systems, used by both faculty and students, were used mostly for information and administrative activities, and not so much in support of learning. In the 2004 study students indicated they used technology first for educational purposes, followed by communication. However, the author concluded that, up to that date, technology was generally used for convenience and did not constitute a learning revolution (Kravik, 2004).

A study of U.S. college students at one university demonstrated that 87.5 % used the Internet from their home computer; 8.2 % from a library or lab; and only 1.7 % used it at work (Digital Divide network blog, non-retrievable, accessed Sept. 21, 2006). Although these



statistics did not include workplace use, the U.S. Census Bureau reported in 2003 that 90 % of U.S. college students used the Internet from home and 68 % used it at school (U.S. Census, 2003, cited in Back to School, 2006). Another study (Burst Media, 2006, cited in Back to School, 2006) reported that one-third of the U.S. students surveyed indicated that they used the Internet for more than 10 hours per week; 20 % said they used it for more than 20 hours. These findings were in line with an earlier study which found that 43 % of college students spent 10 hours or more online (Experience career site, 2006, cited in Back to School, 2006).

Another computer study on U.S. college business students indicated that there is a significant and positive relationship between student “enjoyment” and their levels of computer usage. The author concluded that perhaps educators should place a greater emphasis on providing a pleasant, enjoyable environment for computer-based learning or required computer use (Heilman & Brusa, 2008).

Recently, Jose Bowen, Southern Methodist University Dean, has challenged his colleagues to deliver lectures without using computers, thus delivering students from “death by PowerPoint.” He believes professors use PowerPoint as a teaching crutch and encourages professors to “teach naked” (Young, 2009).

### **International Influences**

An early “snapshot” study focused on student use of an open computer lab. Ten years ago, a student services director at a U.S. college wrote about the impact of “new communication technologies” on student affairs with international students. Grant (1999) mentioned these technologies: voice mail, cell phones, cheaper international direct-dialing long distance rates, fax machines, and personal computers. He cited the three “revolutionary” uses of personal computers: word processing, e-mail, and the Internet (Grant, 1999).

Concerning the issue of international students, Grant noted that students from different countries will have different considerations. Computers and support structure may not have been available in less-developed countries. Grant said, “The international students, with the exception of some Europeans and Asians, may never have touched a computer and may never have learned to type, so they may not have had the basic preparatory experiences to help them navigate a computer keyboard.” Further, he noted that, in some cultures, the written word had not been nearly as important as the spoken word. Students of other cultures (without easy access to machinery/electronics) may have feared damaging the machines or doing something wrong which would hurt the system (Grant, 1999). Certainly, the cultural divide is much narrower a decade later, but consideration must be given that some students may come from electronically deprived backgrounds.

In Europe, Microsoft began sponsoring a project in 2008 at Southern Regional College in Northern Ireland. For the first time, lecturers there were given time to sit in front of a computer to answer students’ questions. Microsoft supplied software and equipment, along with the

training for the lecturers – specifically on using social networking sites to better communicate with students. One college official remarked, “Technologically, students put us in the shade. We are using this to see if it can motivate, and hopefully, help us retain those students. This is about meeting their requirements for the future” (Lee, 2008).

Over 15 % of the U.S. population is Hispanic. Only Mexico has more Hispanic residents than the U.S. Previous marketers did not address this population because it was assumed “that few Hispanics were on-line because they could not afford a computer, Internet access or a cell phone” (Schwartz & Schwartz, 2009). However, Scarbrough Research (2009, cited in Schwartz & Schwartz, 2009) reported that 54 % of Hispanics were regular Internet users and 68 % had broadband in their homes. Telemundo reported that 90 % of Hispanics owned cell phones, compared to 79 % of the total U.S. population (Telemundo, 2009, cited in Schwarz & Schwartz, 2009).

eMarketer estimated that only two in ten Mexicans used the Internet, but with a total population of 108 million, that translated to 23.6 million users. Add that estimate to the 18.8 million Spanish-speakers online in the US, and the Hispanic market has rich potential. By 2011, eMarketer expects Mexico’s Internet population to reach nearly 40 million, using home and office locations (Mexico Online Overview, 2007). By 2012, nearly 30 million U.S. Hispanics will be online (Phillips, 2008).

In a study of 127 countries, the World Economic Forum reported that the U.S. information and technology infrastructure ranked fourth behind Denmark, Sweden, and Switzerland (Kim, 2008). By 2006, computer use in all European schools had reached almost 100 % saturation. Most schools (67 %) also had high speed broadband Internet connections. Scandinavian countries had a high 90 % broadband connectivity in schools while others (Greece, Poland, Cyprus, and Lithuania) were as low as 35 %. Over 90 % of European classroom teachers used computers or the Internet to prepare lessons and 74 % used computers as a teaching aid. By comparison, the U.S. public schools had 95 % broadband connection as early as 2003. (Computer Usage in Schools Across Europe, 2006).

Even in the U.S., there are “cultural divides” among different ethnic groups. In 2004, Asian American students at UCLA had the highest personal computer usage rates, at 91.2 %; Caucasian students had 85.7 %; Hispanic/Latino students had 81.4 %; and African American students had 76.5 %. In 1995, African American students and Hispanic students had almost identical levels of usage at about 45 % for each group (Sax study, cited in Farrell, 2005).

A 2004 pilot study that surveyed 270 students revealed that what really mattered was whether or not students could use a computer at home on their own terms. A follow-up study in 2006 of over 1,000 Chicago Northwestern students surveyed a very diverse student population; less than 50 % of the respondents were Caucasian. Results revealed that the following groups used the web less frequently: women, African Americans, Latinos, students with parents who had lower education levels, and people who did not own laptops (Hargittai, 2004, cited in Digital Divide network blog, non-retrievable, accessed Sept. 21, 2006).

As for the adoption rate of new technology in other countries, a 2010 Microsoft Advertising study in the United Kingdom found that 99 % of young males went online either every day or nearly every day with half of them using their mobile phones to do so. As reported earlier in this article, seven out of ten American men said they could not live without the Internet; in this UK study, eight out of ten men said they would be “lost without it.” The technology that British men (aged 18 to 44) were most attached to was the Internet (57%), followed by mobile phones at 49%. Television rated third at 46% (cited in Young Men are Hooked on the Web, 2010).

Based on this study, the Internet may be the most important activity for British men: 25% of them reported checking their e-mail when they woke up and 18% viewed their social networks before they got out of bed. Over 94% used email daily; 60% used a social network. To understand the pervasiveness of technology, 38% reported surfing the Internet while in bed with their live-in partners (cited in Young Men are Hooked on the Web, 2010).

## **PURPOSE AND METHODOLOGY**

Students from 12 universities in 7 countries were surveyed to determine similarities and differences in the use of technology. Universities included in the study were University of Central Arkansas (U.S.), Florida International University (U.S.), University of North Alabama (U.S.), University of Prince Edward Island (Canada), University of Moncton (Canada), St. Francis Xavier (Canada), Universidad Autonoma De Yucatan (Mexico), Universidad de Colima (Mexico), ESC Saint-Etienne (France), Häme Polytechnic (Finland), Universite de Mons-Hainaut (Belgium), and Universite de Vic (Spain). Many of the questions in the survey required “yes” or “no” responses. By computing the mean number of “yes” responses, tests for the equality of means can be applied to such responses to determine if there are significant differences in the responses of students from the seven countries. The analysis of variance (ANOVA) is a procedure used to compare sample means to see if there are differences. Other questions asked for responses based upon an ordinal scale. In such cases, an ANOVA test was used to determine if there were significant differences in the responses of students from the seven countries. The Tukey Pairwise comparison method was used to determine the differences among the seven countries. Chi-square tests were also used to determine if responses were independent of the countries where the students attended university. In order to save space, the Tukey comparisons are not reported, but are available from the authors upon request.

## **FINDINGS**

A total of 1134 usable responses were received, distributed as follows: 359 USA responses, 254 Canadian responses, 271 Mexican responses, 50 French responses, 100 Finnish responses, 57 Belgian responses, and 43 Spanish responses.

Table 1 reports the computer ownership and use of students from each country. Almost every student (99.2 % and above) who responded used a computer; thus supporting prior research (see Computer Usage in Schools Across Europe, 2001). Students overwhelmingly owned their own computers (85.6% and above).

While there were statistically significant differences among the various countries, most students had access to the Internet outside of their universities (86.0% and above). Most students surveyed have access to the Internet at the universities with the exception of Mexico. The Tukey Pairwise comparisons indicated that Mexican students' access to the Internet at their universities was significantly lower than in other countries. However, Internet use by Mexican students exceeded use in the general population in Mexico (Mexican Online Overview, 2007).

<b>Table 1: Computer Ownership and Use</b>			
Country	Computer Ownership	Outside Internet Access	Inside Internet Access
Canada	95.6%	98.4%	91.2%
Mexico	85.6%	91.5%	48.0%
United States	92.9%	95.5%	89.2%
France	95.9%	86.0%	100.0%
Finland	94.9%	94.9%	99.0%
Spain	100.0%	90.7%	100.0%
Belgium	96.4%	92.7%	100.0%

Table 2 reports the percentages of students who indicated they used the Internet at school for assignments, email, research, and entertainment. An ANOVA was run on the mean number of students responding "yes" to each of these questions (see Table 2). The differences in responses were all significant. Additionally, the Tukey procedure determined that there were differences among the seven countries.

Use of university Internet for entertainment was generally lower than other uses among all groups. The percentage of Canadians and Finns who use the Internet for entertainment was greater than Internet use for entertainment in the other countries (Table 2).

<b>Table 2: Purpose of Internet Use</b>				
Country	Assignments	E-Mail	Research	Entertainment
Canada	91.2%	92.0%	91.6%	84.7%
Mexico	36.5%	44.5%	40.8%	25.7
US	86.7%	86.5%	81.0%	72.0%
France	56.0%	100.0%	100.0%	58.0%
Finland	92.9%	99.0%	93.9%	82.8%
Spain	67.4%	100.0%	97.7%	65.1%
Belgium	72.7%	83.6%	94.4%	50.9%

Information in Table 3 indicates that the vast majority of students use their university Internet accounts. This finding supports previous research findings in a 2009 ECAR study (Smith et al, 2009). While the great majority of students indicated they used the Internet daily, the majority of Belgian students indicated they only used the Internet weekly. The ANOVA indicates that there were significant differences in the frequency of Internet usage among countries ( $p = .001$ ) (Table 3).

Table 3: Frequency Internet Use					
Country	Never	Less than once a month	Once a month	Weekly	Daily
Canada	0.4%	0.4%	6.1%	3%	90.0%
Mexico	4.3%	0.7%	16.7%	11.6%	66.7%
United States	2.2%	0.9%	1.9%	22.3%	72.6%
France	0.0%	0.0%	2.0%	8.0%	90.0%
Finland	0.0%	0.0%	0.0%	7.1%	92.9%
Spain	0.0%	0.0%	0.0%	23.3%	76.7%
Belgium	1.8%	0.0%	0.0%	50.9%	47.3%

When students were asked if they had ever been assigned work in a class that required the use of the Internet or their e-mail account, the vast majority (79.6% and above) indicated that they had been assigned work requiring use of the Internet or e-mail accounts. The one-way ANOVA indicated that there were significant differences between the countries at the .001 level. Table 4 reports the percentages of students desiring more/less computer assignments that reveal significant differences between the responses. Additionally, the Tukey procedure indicated that students at Mexican universities preferred more computer assignments when compared to students from other countries. The results also partially support previous claims that students may prefer a moderate amount of technology in their courses (Smith et al., 2009). Students were asked if they thought computers were easily accessible on their campuses, and whether or not accessibility influenced how often students used computers. Summary results in Table 4 report the percentages of students responding “yes” to these questions.

Students were asked to identify times when they would like to have access to computer labs on campus. The student preferences for more computer lab access are reported in Table 5. Chi-square tests indicated that the responses are significantly different for each of the time periods, but most preferred access during the day time and evenings. Students did not prefer access late at night or very early in the mornings.

**Table 4: School Internet Assignment**

Country	Have you ever been assigned work in a class that required the use of your Internet or e-mail account?	Would you like more assignments that use the Internet?	Do you think computers on your campus are easily accessible?	Does the accessibility of the computers on campus affect how often you use them?
Canada	97.0%	62.1%	89.1%	63.3%
Mexico	93.0%	85.1%	78.8%	67.8%
United States	97.2%	66.2%	76.4%	73.5%
France	79.6%	71.4%	44.0%	76.6%
Finland	89.7%	50.5%	97.0%	68.4%
Spain	86.0%	79.1%	74.4%	74.4%
Belgium	94.5%	49.1%	59.3%	59.3%

**Table 5: Computer Access**

Country	8:00AM - 12:00 Noon	12:00 Noon - 4:30 PM	4:30 PM - 12:00 Midnight	12:00 AM - 4:00 AM	4:00 AM -8:00 AM
Canada	55.2%	64.5%	71.8%	27.4%	24.2%
Mexico	49.1%	36.2%	37.3%	7.0%	4.8%
United States	60.1%	64.4%	81.5%	29.6%	23.4%
France	49.0%	65.3%	79.6%	24.5%	26.5%
Finland	78.8%	85.9%	46.5%	8.1%	10.1%
Spain	41.9%	39.5%	48.8%	11.6%	14.0%
Belgium	57.4%	74.1%	38.9%	13.0%	3.7%

Table 6 includes the percentages of responses for the questions: relating to the university requirement to purchase a computer, employment status, and computer use at work. When asked whether their respective universities required them to purchase a computer, students within the same university differed on whether the university required them to purchase a computer (see Table 6). This suggests that this requirement may vary according to the college or degree program in which the student is enrolled. In all of the European and U.S. universities, students were required to purchase a computer. Only in Mexico and Canada were students not expected to purchase a personal computer. The analyses supported the results that showed that the percentage of students required to purchase a computer is significantly lower in Canada and Mexico (.001 level of significance).

Students were also asked several questions relating to their employment and the use of computers at work. The first question asked if students had jobs. The results are also shown in

Table 6. Except for Canadian and Mexican students, the vast majority work (78.0% and above). The one-way ANOVA was run on the mean number of students responding “yes.” The analyses indicated that there were no significant differences in the mean number of “yes” responses among the countries. Computer use at work was most prevalent in the USA (84.2%) and Canada (72.3%).

<b>Table 6: Required Purchase of Computers, Have Job, Use Computer at Work</b>			
Country	Does your university require all students to purchase a computer?	Do you have a job?	Do you use a computer at work?
Canada	21.3%	65.9%	72.3%
Mexico	62.5%	56.9%	63.8%
United States	100%	97.2%	84.2%
France	100%	78.0%	30.8%
Finland	100%	93.0%	53.8%
Spain	100%	97.7%	47.6%
Belgium	100%	84.2%	31.3%
% answering “yes”			

## Summary of Significant Findings

Students from 7 countries at 12 universities were surveyed to determine similarities and differences in the use of technology. While there were significant differences in responses at the  $P < .001$  level among students at the 12 universities, most students owned their own computers (85.6% and above), and most (86.0% and above) had Internet access outside of their university. Results correspond to previous research findings. Most (89.2% and above) Canadian and U.S. respondents reported access to the Internet at school, while only 48.0% of Mexican respondents reported access to the Internet at school.

Use of university Internet for entertainment was generally lower than other uses among all countries. While significant differences exist among respondents in different countries, the majority use the Internet daily. However, the Belgian students indicate that they only use the Internet weekly.

A large majority of respondents (79.6% and above) reported that they had been assigned work requiring the use of Internet or e-mail. When students were asked if they preferred more or fewer assignments, the Mexicans preferred more when compared with the U.S. and Canada. Although significant differences existed among the countries, the majority of respondents preferred computer access at school during the day and evenings rather than late at night or very early in the mornings.

Overall, study results indicate that all students in all countries use the computer for a significant part of their education.

### **LIMITATIONS**

This research is limited by the fact that it represents a convenience sample of selected, not random universities. To generalize the results would be questionable. The 12 universities included in the study are or were previously partners in either North American Mobility or U.S.-E.U. Grants funded by the Departments of Education in the NAFTA countries. The survey was administered in English in all countries, thus language skills and/or translation discrepancies are also limitations. Further, since technology evolves at such a rapid rate, it is almost impossible for any research on computer usage to be up to the minute. Data for this study was collected over several years.

### **AREAS FOR FURTHER RESEARCH**

Typically, use of computers within formal education has meant developing word processing, spread sheets and charts for homework assignments and PowerPoints for classroom presentations; it meant using distance learning teaching techniques for reaching disenfranchised learners; and it meant using the Internet for research and communication. The Internet, in turn, has revolutionized every facet of our business, educational, and personal lives. As one student said, "I can talk to my friends, write a paper and search for information for a term paper all at once." (T. Fancy, personal communication, Sept. 12, 2006).

### **Future Technology Trends**

Currently, some schools are embracing hand-held devices and are no longer barring them from the classrooms. Recently,, a Sheffield, England, high school announced it was considering using mobile phones and MP3 players in class lessons. Notre Dame High School's assistant head teacher, said mobiles were "a huge untapped resource." The real bonus was that students would have access to technology and the school would not have to invest in any more software (Ritchie, 2009). BECTA, the UK government technology agency, reported that secondary schools had one laptop for every 61.4 pupils and a desktop computer for every 4.3 pupils. By comparison, nearly every student had a cell phone and the technological capabilities of phones are expanding and getting cheaper. Ritchie (2009) asked, "Why wouldn't schools avail themselves of free resources?" The answer to this question may relate to the risks associated with inviting hand-held devices into classrooms. Risks may include:



- staging incidents where students record teachers' reactions and then post them to YouTube,
- manipulating photos taken in class,
- blurring of the lines between an instructor's professional/personal time, and
- the dangers of students and teachers developing one-on-one relationships.

Certainly, restricting hand-held devices has proven to be ineffective. Officials in the Escambia Co. School District (Pensacola, FL) had 2,000 suspensions in 2008-2009 for cell phone violations. Currently, they are confiscating the phones on the first offense and calling parents to retrieve the phone (Schools to Confiscate Phones, 2009).

However, at least one other Florida, high school, Wesley Chapel, used the opposite approach. A Spanish teacher encouraged students to use their cell phones in class, sending them text messages in Spanish. Cell phones were no longer prohibited but were incorporated into class lessons. Text messaging was used for homework reminders. Cell phone cameras copied notes from the board. "It is really taking advantage of the love affair that kids have with technology today," said the executive director of American Association of School Administrators (Armario, 2009).

Overall, technology makes education more democratic and more available for more people. However, its proliferation may not make learners more productive. Multitasking is turning toward "multislacking" says David Greenfield, director of the Center for Internet Studies. Multitasking may actually take users more time to accomplish basic tasks (Greenfield, 2004).

In a small 2007 study of U.S. college students in an information technology class, students listed the following uses of technology:

- Cell phone usage was close to four hours per day.
- E-mail and instant messaging were used 30 minutes per day.
- Landline phone communication was less than 30 minutes per day.
- iPod use was an hour per day.
- Using technology for communication averaged 5.63 hours per day, compared to face-to-face interaction at 3.7 hours per day (Diamanduros, Jenkins & Downs, 2007).

For all the use of technology, Pace University in New York City, noted that there is less face-to-face socialization in universities and more electronic contact. Since 2002, Pace has allocated nearly \$22 million to the construction of a student union and cafeteria in downtown Manhattan, creating more spaces for students to gather and socialize. Aniello Blanco, Chairman of Pace, wanted to get students out of their dorm rooms and away from their computers (Hawthorne, 2008).

Among pre-school and elementary students in the U.S. between the ages of 4 and 6, about 27 % used computers over an hour a day (Oblinger & Oblinger, 2006). To narrow the digital divide, all countries should join the One Laptop Per Child low-cost laptop initiative which aims to deliver a fully functional \$100 laptop to the developing world. The One Laptop Per Child mission statement is: To create educational opportunities for the world's poorest children by providing each child with a rugged, low-cost, low-power, connected laptop with content and software designed for collaborative, joyful, self-empowered learning. The website is available at: [http://wiki.laptop.org/go/One\\_Laptop\\_per\\_Child](http://wiki.laptop.org/go/One_Laptop_per_Child).

However, the digital divide exists even in industrialized countries. One of the paper's authors is currently teaching a traditional face-to-face dual enrollment business class on the campus of a southern, rural high school in the U.S. Much of the class is based on technological content – streaming videos, on-line quizzes and self-assessments, pod casts, lecture notes and slides by e-mail and from the textbook's web site, and grades posted via the Blackboard class management system. Approximately one half of the class has no Internet access or no computer at home (S. Carder, personal communication, March 15, 2010).

To further exacerbate the digital divide, some students have no cars and cannot come to school early or stay late to use campus or library computers. They must ride the school buses which arrive just as school begins. There are no longer study halls in the high schools, which eliminates using computers during the school day. If a student has a class with computers available within the classroom, there are no speakers to listen to any audio. Additionally, technology is lagging and not all the computers in the same classroom have the same platform, capabilities, or programs. Finally, due to limited bandwidth within the public school systems and misuse of copyrighted material, high school students are forbidden to stream video or audio. (S. Carder, personal communication, March 15, 2010).

The Pew Internet & American Life Project surveyed 742 "Internet stakeholders" around the world in 2006 to ask their predictions concerning the effect of the Internet on the world in the year 2020. A majority believed the world would be further "flattened" by a robust, global, low-cost network, which will open up many opportunities. Others thought that the world would not flatten enough to wipe away never-ending social inequities. These experts were evenly split on whether the new "transparency" of individuals and organizations would outweigh the privacy costs. Many believe that English will evolve to become the world's language; others believe that the Internet will preserve languages and cultures. More than half believed we will lose people to addictions in alternate realities. As well, more than half believed that "Luddites" (those who are unconnected to the web due to economic circumstances) and "refuseniks" (those who refuse technology) will commit acts of violence in protest to technology (Anderson & Rainie, 2006).

### **Addressing Social Networking and Hand-Held Devices**

Much of the data in this study is based upon the use of laptop or desktop computers. However, Erik Qualman (2009b) coined the term "Socialnomics" to indicate the current technological change. While his book is directed toward business and marketing use of social media, educators should also take note.

One public K-12 school recently banned “hoodies” (hooded pull-over sweatshirts with kangaroo-type pockets on the front) because students were secreting cell phones in the pockets and using them during class (Ball, 2010).

As a further implication to educators, social media serves as the world’s largest referral service. Students post recommendations about certain classes and certain professors. Students ask each other homework questions. Students may seem addicted to the constant communication via social media and their hand-held devices. The term “crackberry” has entered the urban lexicon in the United States – a student may set the BlackBerry or iPhone so that it vibrates every time a message comes in. Then, like an addict, the student must check the message immediately. Nevertheless, the essential tenet of Qualman’s book is that “wasting time on Facebook and social media actually makes you more productive” (Qualman, 2009b, p. 4).

There are several cooperative games available through Facebook and some middle school teachers in the U.S. are using these as classroom projects. When playing “Farmville,” students have to ask other students for contributions to their farm, or they may have kittens or extra produce to give away, etc. This game is used to teach collaboration and cooperation. (C. Carder, personal communication, March 15, 2010).

The latest data indicates that Facebook is the most popular form of all online communication. Facebook is used by 96 % of those surveyed in the US; texting is used by 93 %; and e-mail is used by 91 %. Concerning the research, survey author James Gerber further adds, “60% of people believe that they rely too much on technology.....but they are addicts – over 52% claim they couldn’t last a week without social media.” (Prompt Communications study, cited in Omikron Media, 2009).

Van Eck (2006) wrote about the ghosts of technology past. He said, “Of the several technology ‘learning revolutions’ during the last quarter-century, most have failed to achieve even half of their promise.” He reviewed technology-based studies from the 1970s and 1980s and concluded that “we had mistaken technology use for technology integration” and that there was “no significant difference between classrooms that used technology and those that did not.” He admitted that technology integration began to improve in the 1990s as educators began to align curriculum with technology.

Ray Kurzweil was the inventor of optical character recognition (OCR), the first vocabulary speech recognition technology, and the first CCD flat-bed scanner – all of which have become foundations for the information age. For our future, he believes that society is approaching an augmented reality, beginning with some recent iPhone applications. “In the future we’ll be online all the time, the electronics will be in our belt buckles and woven in our clothing, and images will be superimposed on the real world through our lenses.” He suggests that when we approach people, people’s names will pop up for us (Harris, 2010). Kurzweil continues, “When I was a student at MIT, you did have to be an engineer to use the computer.....Today, I have a computer on my belt, and I am able to access virtually all human

knowledge with a few keystrokes. And, already, 5 billion people have these mobile devices in their pockets” (Harris, 2010).

None of the reported research in this paper considered the use of social media such as MySpace, Twitter, Facebook, or the proliferation of hand-held devices. Future research should include hand-held computers as well as desk-top and laptops. Further, future research should consider total integration of all computer usage and its possibility for use for education.

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# **USING PUBLICLY AVAILABLE PODCASTS AND VODCASTS IN THE ACCOUNTING CURRICULUM: SUGGESTIONS AND STUDENT PERCEPTIONS**

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## **ABSTRACT**

*This paper examines student attitudes toward the use of podcasts and vodcasts in accounting courses. Podcasts and a vodcast were assigned in a Managerial Accounting class and an Accounting Information Systems class as an assignment to supplement class readings and lectures. Student surveys at the completion of the assignment revealed that the students preferred the podcasts and vodcast over both traditional written communication and live speeches, that they felt the assignment helped them to learn the topics, that they found the podcasts and vodcast interesting, and that they would be likely to listen to podcasts again in the future. Unlike previous studies, this project utilized existing available podcasts and vodcasts rather than instructor-developed ones. Suggestions for finding useful podcasts and vodcasts are provided.*

## **INTRODUCTION**

Podcasts are a relatively new phenomenon. Over the course of the last six years, the number of podcasts has grown exponentially. Similar to Internet sites, not all podcasts are credible or educational. However, a plethora of credible podcasts from national news sources, foundations, and educational institutions does exist. Podcasts can also be produced by instructors or students. The podcasts can be a primary or supplementary source of material for a class. Podcasts allow for learning to take place anytime and anywhere because they are portable. That is, they can be downloaded to a portable device such as a laptop computer or a MP3 type device. That portability can make them an attractive, convenient learning source for students. The purpose of this paper is to examine student perceptions of the effectiveness of podcasts and vodcasts as a supplemental learning tool in an Accounting Information Systems class and a Managerial Accounting class.

## WHAT IS A PODCAST?

Podcast and podcasting are relatively new terms. Campbell (2005) reports that a September 2004 Google search on the word “podcasts” yielded 24 entries. In May 2005, the search yielded 4.46 million entries. By August 2005, the number of entries increased to over 60 million. The number has continued to grow and now stands in excess of 269 million entries (Google, 2010). Many definitions of a podcast have been proffered. The definitions mainly differ on technical aspects. The New Oxford American Dictionary (2006), which declared podcast to be the “Word of the Year for 2005,” defines a podcast as “a digital recording of a radio broadcast or similar program, made available on the Internet for downloading to a personal audio player.” The Oxford Dictionaries Online (2010) defines the term as “a multimedia digital file made available on the Internet for downloading to a portable media player, computer, etc.” Meng (2005) offers a more technical definition that defines podcasting as “the process of capturing an audio event, song, speech, or mix of sounds and then posting that digital sound object to a Web site or “blog” in a data structure called an RSS 2.0 [Real Simple Syndication] envelope.” Wikipedia (2010A) states that a podcast can have an audio form or a video form. Others, including Wikipedia (2010B), call the video form a VODcast (Video on Demand) (Meng, 2005). The online encyclopedia also mentions that podcasts can be heard on a mobile device or personal computer. Mobile devices include a smartphone, a basic cell phone with Internet capability, an iPod, a Zune or any MP3 player.

The word podcast is a combination of two words: iPod (an MP3 player manufactured by Apple Computer Company) and broadcast (Meng, 2005). A broadcast typically is single source (i.e. television, radio) at a broadcaster-specified time, whereas, a podcast can be heard either online or off-line at any convenient time or in any location (Wikipedia, 2010A).

## PODCASTS AND VODCASTS FOR THE GENERAL PUBLIC

Wikipedia (2010C) catalogs various uses for podcasts: public services (cultural tours, information dissemination, crime prevention, and literary purposes), education and academia (mobile learning (m-learning), mobile knowledge transfer, academic journal digests, professional development, and tutorials), entertainment (comedy, television commentary, radio series, sports, and fiction), news (television, radio, Internet-based, and print-based), music, politics, religion, publicity and marketing, health and special interests. Podcasts can be entertaining, such as ESPN Daily Radio, or serious, such as the University of California podcast on heart attack and stroke prevention (Grossman, 2010). A recent viewing in September 2010 of the Podcast section within the iTunes Store revealed several major sections. The sections within the Podcast menu included: arts, business, comedy, education, games and hobbies, government and organizations, health, kids and family, music, news and politics, religion and spirituality, science and medicine, society and culture, sports and recreation, technology, and TV and film. With all of this



information available, the challenge is to find a way to harness relevant podcasts and use them to enhance learning in higher education.

### **USES FOR PODCASTS AND VODCASTS IN EDUCATION**

Podcasting in higher education has become more prevalent in recent years. Podcasts from large universities, such as Ohio State University and the University of Minnesota, and smaller institutions, such as Bowdoin College, can be found on iTunes U within the iTunes Store. Podcasts can be made available to the general public or can be restricted to current students through controlled access. There are many ways that podcasts can be used in higher education, including recording and disseminating news, classroom lectures, meeting and conference notes, oral histories, interviews, sporting event information, recruiting information, and student projects (Meng, 2005). Several papers have addressed the ways podcasts have been used to date. Hew (2009) performed a literature review of the use of audio podcasts in kindergarten to higher education. The author limited his literature review to thirty articles on the subject of audio podcasts in education. A vast majority (93.3%) of the articles addressed podcasting in higher education and included the following content areas: “engineering and sciences (e.g., electrical engineering and biology), computing and information technology (e.g., computer science), language (e.g., English as a foreign language), business and law (e.g., marketing), education and other” (Hew, 2009). Two thirds of the studies were in the engineering and science and computing and information technology areas. Business and law related to 13.3% of the studies. The author found that a significant majority of the audio podcasts were either recordings of an instructor’s lecture or recordings of supplemental learning material.

Podcasts and vodcasts can only be useful as learning tools if students actually use them. If they do not find them interesting or perceive them to be useful, they likely will not take the time to listen to them. Therefore, several studies have looked at student attitudes and reactions to their use in the curriculum. Student surveys have revealed that most students prefer to listen to the audio podcast on their personal computer (94% in the Copley (2007) study and 81% in the Lane (2006) study). Though student response results can vary, the majority of students seem to prefer to listen to podcasts in the five to ten minute range (Anzai, 2007; Chan & Lee, 2005; and Muppala & Kong, 2007). Students also felt that audio podcasts aided them in understanding content covered in class and/or helped them to prepare for an examination. (Anzai, 2007; Clark et al., 2007; Sutton-Brady et. al., 2009 and Scutter et. al., 2010). In the Scutter et. al. (2010) study, ninety lectures on medical radiation were made available to 160 students. Half of the students completed a questionnaire that asked about what they found to be the most helpful in regard to podcasted lectures. Their responses revealed that the most useful aspects were: “Being able to hear the lecture again (70%), Flexibility of where I can listen to the lecture (61%), Revision for exams (59%), Clarification of issues or questions (50%), Can just listen instead of also taking notes in lectures (49%) and Means I don’t have to go to lectures (14%).” (Scutter et.

al., 2010, 184). Sutton-Brady et. al. (2009) also reported that students appreciated the flexibility of location feature.

Several articles have been written about the use of both podcasts and vodcasts. Parson et. al. (2009) found that students felt that podcasts and vodcasts were beneficial to learning the course material. However, the students felt that the material should supplement their learning and not serve as a substitute for a traditional classroom experience. Shantikumar (2009) found that students felt that a vodcast improved the value of the supplemental learning tool as opposed to an “audio only” podcast. Additionally, students reported via a questionnaire that a podcast or vodcast was helpful in the reviewing process for an examination and expressed the desire for more podcasts or vodcasts in the curriculum. Dupagne et. al. (2009) conducted an experiment in which all students, in both a control group and experimental group, viewed twelve videos in class. The twelve videos were made available to the experimental group in the form of a vodcast. In contrast, in the control group, students were only able to view the videos in class. The authors reported that the students who were able to view the vodcasts outside of class (experimental group) did not outperform students in the control group on examination questions that related to the videos. The authors reported low viewership in the experimental group which ranged from 21.8% to 58.6% on the twelve videos. When asked about their viewership, students reported that they had already viewed the video in class and had adequate notes, they did not have enough time to view the vodcast or they experienced technical difficulties with the vodcast. Consistent with other findings, the students felt that the vodcasts served as a helpful supplemental learning tool. Unlike other studies, McKinney et. al. (2009) conducted an experiment to determine the actual learning benefit of podcasts rather than looking only at student opinions. Students participating in an extra credit psychology experiment were assigned either to a lecture only condition or a podcast only condition. Students in both groups received the same lecture either live or via podcast/vodcast (podcast for students with a mp3 player that did not have video capability). The students in both conditions were supplied with a copy of the PowerPoint slides on which they could take notes. After a week of studying the material and recording their study time in a journal, students in both conditions completed a fifty item examination over the material. Analysis of the resulting scores indicated that students in the podcast/vodcast condition who took notes while listening to/viewing the podcast/vodcast scored significantly higher on the examination than those in the lecture condition.

Saeed et. al. (2009) conducted a study that examined the effect of students’ learning styles on their attitudes toward Internet technologies. The authors administered the Felder-Soloman Learning Style Inventory to 204 undergraduate and graduate students who were majoring in information technology. The 44 item questionnaire provides an individual with a score on each of four different scales (active/reflective, sensing/intuitive, visual/verbal and sequential/global). The authors then matched various avenues of Internet technology with the various learning styles. The authors found that podcasts were preferred by individuals whose

learning styles were reflective, verbal and sequential in nature and the vodcasts were preferred by individuals whose learning styles were visual in nature.

These studies indicate that podcasts and vodcasts can be useful supplemental learning tools for students in higher education. Many of these studies utilized instructor-prepared podcasts, such as lectures. The current paper differs from the earlier reports by using only publicly available podcasts obtained from major news outlets and an internationally recognized university. The design of a podcast/vodcast assignment for an Accounting Information Systems class and for a Managerial Accounting class is discussed. The paper also reports student attitudes toward and perceptions of the podcasts and vodcast, solicited via a student questionnaire, to determine if students find them to be useful supplemental learning tools in Accounting courses.

### **THE ASSIGNMENT**

A podcast/vodcast assignment was selected because a large amount of credible, relevant and informative business-related material is available. This material can be used to augment what is covered in class lectures, textbooks, and assignments. Podcasts and vodcasts can serve as a new and exciting medium for engaging students in the learning process. Podcasts and vodcasts offer students 24/7 accessibility to learning materials. If a podcast is downloaded to a MP3 type player or cell phone, the student can access learning material anywhere in the world without the added weight of a textbook or computer.

In designing the podcast/vodcast assignment it was important to take into consideration the content of the course and the demographics of a particular class. The Managerial Accounting class mainly consisted of management and marketing majors. An attempt was made to find podcasts that incorporated management and marketing principles and also possessed a managerial accounting component. The primary audience in the Accounting Information Systems class was accounting majors with a few finance and management majors. For this audience, it was important to select podcasts that dealt with technology, internal control and business. Additionally, for both classes, it was important to find podcasts/vodcasts that the students would find interesting so that they would be motivated to learn the material.

Apple's iTunes was utilized in the selection process. First, the top 100 podcast/vodcast sites were reviewed for business content. Next, key word searches were performed within iTunes. After listening to several podcasts and viewing several vodcasts, it was determined that most applicable selections came from BusinessWeek (Cover Stories and Technology and You), The Wall Street Journal Report and Harvard University. The selections, along with the source, the length of time, and class utilization can be found in Table One.

**Table One: Podcast and Vodcast Descriptions**

Title	Source	Time	Class
Can MTV Stay Cool?	BusinessWeek	15:18	Mgr-Required AIS-Required
The MySpace Generation	BusinessWeek	23:20	Mgr-Required AIS-Required
Understanding Computers and the Internet- Computer Security- Vodcast	Harvard University Extension School Computer Science Class	1:50:00 in total 21:00 Required	Mgr-Required AIS-Required
Net Privacy	BusinessWeek- Technology and You	8:11	Mgr-Extra Credit AIS-Required
Is Privacy a Thing of the Past?	Wall Street Journal Report	15:00	Mgr-Extra Credit AIS-Required
An Update on Sarbanes-Oxley	Wall Street Journal/Virginia Tech MBA	6:36	AIS-Required
Secure about Security	Wall Street Journal Report	7:44	AIS-Required

The first two podcasts were selected for business content and for student interest. Most college students seem to be interested in or are very familiar with MTV (Music Television) and tend to be involved in a social networking system like MySpace. It was hoped that these selections would especially appeal to the management and marketing majors in the Managerial Accounting class.

The vodcast from Harvard University's Extension School's Computer Science E-1 course entitled "Understanding Computers and the Internet" was selected because the lecture on computer security centered around phishing and cookies- items that impact every computer user. The vodcast was almost two hours in length. In order to keep the assignment to a reasonable length, students were instructed to watch only the first twenty one minutes of the vodcast.

The remaining podcasts were selected based on applicability for the Accounting Information Systems class. Two of the podcasts were of a general computer security nature and were offered to the Managerial Accounting students as an extra credit assignment.

After the podcast/vodcast selections were made, an informative PowerPoint presentation on the topic was designed. The PowerPoint presentation included a section defining a podcast, a vodcast, and a podcast receiver (software for reading or subscribing to a podcast), also known as a podcatcher. The next section of the PowerPoint presentation contained a disclaimer that stated that the professor did not endorse any podcast receiver products and that the professor did not encourage the students to purchase any product from the podcast receiver sites. Furthermore, the disclaimer stated that the podcast/vodcast exercise was strictly for educational purposes. The third section of the PowerPoint presentation demonstrated how to download iTunes (the most popular receiver) onto one's computer (every student in the class owned a laptop computer). Additionally, students were instructed how to search for and download podcasts/vodcasts. The

final section of the presentation highlighted the exact location of each podcast/vodcast assignment.

During the class period following the PowerPoint lecture on podcasts and vodcasts, students were required to show if they had downloaded a podcast receiver to their personal laptop computer. As an incentive, one bonus point on a future examination was offered to the Managerial Accounting students and a homework grade of two points was offered to the Accounting Information Systems students. Email reminders were sent the night before the assignment was due. Ninety-five percent of the Accounting Information Systems students and fifty-seven percent of the Managerial Accounting students downloaded a podcast receiver by the due date.

The podcast/vodcast assignment was posted on the course web page for each class. Students were given in excess of two weeks to complete the entire assignment. For each podcast or vodcast assigned, a series of multiple choice, true/false and essay questions were designed. The questions appeared within the quizzing function of an online classroom management system, Desire2Learn. The multiple choice and true/false questions were automatically scored. The essay questions were evaluated by the instructor.

### **THE SURVEY**

Following the assignment, students were given the opportunity to complete a questionnaire about their use of and attitudes toward podcasts and vodcasts. Students in both the Accounting Information Systems class and the Managerial Accounting class were offered the opportunity to earn three extra credit points upon completion of the questionnaire. In the Accounting Information Systems classes, ninety-seven percent (60) of the students completed the survey and in the Managerial Accounting class, eighty-six percent (30) of the students completed the survey. The questionnaire addressed the issue of podcast receivers, modes of podcast/vodcast delivery, podcast/vodcast versus other modes of delivery, interest in and amount learned from each podcast/vodcast, future use of podcasts/vodcasts and demographic information.

### **SURVEY RESULTS**

Every student participant, except for one, used iTunes as her/his podcast receiver. Two-thirds of the students reported that they already had a podcast receiver stored on their computer prior to the assignment being issued. However, only six (6.7%) reported that they had ever listened to a podcast. It can be inferred that the students most likely used their podcast receiver to listen to music or watch videos. All but one student listened to the podcasts or watched the vodcast on their computer rather than on a MP3 type device. This finding is consistent with other studies previously cited.

When queried about whether they would rather listen to a podcast or watch a vodcast, students were almost evenly divided, with 47.7 percent preferring a podcast and 52.3 percent preferring a vodcast.. However, when asked whether they prefer listening to a podcast or reading a textbook, 84.1% of those responding indicated that they preferred listening to a podcast. When given the option of reading an article in a magazine or listening to a podcast, 65.5% of those responding preferred listening to a podcast. The final comparison involved listening to a live speaker or listening to a podcast. Almost 52% of those responding preferred the podcast.

When the student participants were asked whether they preferred to watch a vodcast or read a textbook, 89.7% of those responding preferred the vodcast. When a comparison was made between reading a newspaper or magazine article and watching a vodcast, once again the vodcast was favored by 76.1% of those responding. Finally, when asked whether they preferred listening to a live speaker or watching a vodcast, 56.3% of those responding preferred the vodcast.

The next section of the questionnaire involved asking the respondents about their podcast/vodcast interest level and the amount that they learned from each podcast/vodcast. A seven point Likert-type scale was used with one representing “Not Interesting” and seven representing “Very interesting” on the interest query. For the amount learned query, one represented “Nothing” and seven represented “A Great Deal.” The resulting mean scores are reported in Table Two.

<b>Table Two: Mean Scores for Interest in Topic and Amount Learned from Topic</b>				
Title	Source	Interest Mean	Learned Mean	N
Can MTV Stay Cool?	BusinessWeek	4.73	4.37	90
The MySpace Generation	BusinessWeek	5.09	4.64	90
Understanding Computers and the Internet- Computer Security- Vodcast	Harvard University Extension School Computer Science Class	4.90	5.08	90
Net Privacy	BusinessWeek- Technology and You	4.59	4.56	86
Is Privacy a Thing of the Past?	Wall Street Journal Report	4.98	4.84	86
An Update on Sarbanes-Oxley	Wall Street Journal/Virginia Tech MBA	3.98	4.23	60
Secure about Security	Wall Street Journal Report	4.62	4.53	60

Students were next asked two questions relating to the likelihood of listening to another podcast or watching another vodcast on any topic or on a business topic in the future. Once again, a seven point Likert-type scale was utilized with one representing “Never Again” and seven representing “100 percent.” A mean response score of 4.77 was found for the question about any topic and 4.54 was found for the question about a business topic. When asked about the optimum length of a podcast in minutes, approximately 61 percent of the responses fell between ten and fifteen minutes and 72.3 percent of the responses fell between ten and twenty

minutes. When asked about the optimum length of a vodcast in minutes, 28.9% indicated twenty minutes, 26.7% indicated fifteen minutes and 17.8% indicated ten minutes.

Students were queried about whether or not they would recommend the podcast/vodcast assignment for future classes. The vast majority of the students, 96.7%, felt that the assignment should be used for future classes.

## **DISCUSSION OF THE RESULTS**

The analysis of data from the survey yielded some interesting results. Students preferred listening to a podcast or watching a vodcast over written forms of communication, such as a textbook or magazine article. The notion of finding the written word not as appealing is not surprising given that students often comment about not reading or not enjoying reading their textbooks. However, the magnitude of preference was surprising. Also surprising was the fact that students preferred vodcasts over podcasts by only a slim margin. Most students tend to be visual learners instead of verbal learners (Felder & Spurlin, 2005). One would have expected the vodcast percentage to be much higher. A possible explanation could be that the students only viewed one vodcast and it was of a classroom lecture. If more vodcasts were required in the assignment or if the vodcast would have been a professionally edited production with multimedia components, then the preference for vodcasts may have been higher.

It was also interesting that over half of the students would rather listen to a podcast or watch a vodcast than hear a live speaker. The convenience factor may have come into play with this preference. Podcasts and vodcasts offer time flexibility, whereas a live speaker is tied to a specific date and time. Also, the students can listen to the podcasts or watch the vodcasts as many times as necessary to learn the material, whereas with a live speaker they must absorb the entire speech the first time through.

The finding that students were interested in and learned from the podcasts and vodcasts is encouraging. It is important to select podcasts from credible sources. A more difficult task is the selection of the podcast. It was initially thought that the podcast about MTV would score the highest in the interest category. Instead the podcast about MTV fell in the middle of the interest rankings.

Students provided reasonable estimates for the optimum length of a podcast or vodcast. It was thought that students might opt for short time lengths, like five minutes (a song or a music video is typically four to five minutes long). Instead, the vast majority fell within the ten to twenty minute span.

It was encouraging to note that students, on average, indicated that they would listen to a business-related podcast or watch a business-related vodcast in the future. Listening to podcasts produced by credible sources like BusinessWeek and the Wall Street Journal may aid the students, or faculty members for that matter, in their awareness of business issues and in their ability to solve business-related problems because of increased knowledge. Since podcasts can

be downloaded along with music to a portable device, any amount of free time could be transformed into a learning event.

Overall, students were pleased with the podcast/vodcast assignment. The overwhelming majority indicated that the assignment should be used in the future. In the Managerial Accounting class an additional extra credit podcast assignment was designed because students had verbally expressed that they enjoyed the required podcasts.

## **CONCLUSION AND RECOMMENDATIONS**

Incorporating podcasts into the accounting curriculum can produce positive results. Podcasts can be played on devices (computers, MP3 type players, cell phones) that students typically own. Instructors do not have to produce their own podcasts and vodcasts to make use of the technology. Many credible business sources are producing podcasts that can supply students with current and relevant business knowledge. In addition to sources discussed previously, iTunes U can be a valuable source for materials.

iTunes U was developed by Apple Corporation in 2007. iTunes U allows educators to disseminate information to interested parties, namely students, via any device, typically a computer or a smartphone, that allows access to the Internet. If the podcast or vodcast, is downloaded to a computer, the content can be transferred to a mp3 type device, such as an iPod or Zune. When a mp3 device is used, the learner is not constrained by Internet access and can learn material in an anytime/anywhere environment. In order to be an iTunes U content provider a university or college must go through an application process. Within the application process, a university or college must choose whether to be an internal access provider, a public access provider or both. If a university or college desires to be an internal access only provider, then all content will be password protected. If an entity chooses to be a public access only provider, then entity's content is available to everyone (iTunes U A, 2010).

As of September 2010, the iTunes U web site states that over 600 universities and colleges are active iTunes U providers. A count of public access providers that are affiliated with a college or university on iTunes U revealed 330 providers worldwide. Content within iTunes U includes class lectures (audio only or video with audio), class-related documents (stored as PDF files), slideshows, audiobooks and tours (iTunes U B, 2010). A recent search (September, 2010) within the iTunes Store revealed 549 entries within iTunes U that contained the key word accounting and 888 entries within the podcast category that contained the key word accounting.

It is apparent that there is a plethora of choices of podcasts and vodcasts for accounting instructors to use in the classroom. The biggest challenge may be choosing the appropriate ones from the vast array available. The results of our survey, as well as previous surveys, suggest that the podcast or vodcast should ideally be 15-20 minutes long or less and should be relevant as a supplement to, but not substitute for, other learning materials. Students appreciate the ability to



participate in a valuable learning experience anywhere and at any time. If students have their way, podcasts and vodcasts will be the wave of the future in the accounting curriculum.

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# **STUDENT PERCEPTIONS ABOUT TEAM PROJECTS AS A PEDAGOGICAL TOOL IN UPPER DIVISION UNDERGRADUATE ACCOUNTING COURSES: INDIFFERENCE CURVES**

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## **ABSTRACT**

*Results of a survey conducted at two large accounting programs reveal a student indifference type curve with respect to the amount of time and number of team meetings required to complete team projects used as a tool in upper division undergraduate accounting courses. Up to the indifference point, more hours and more meetings are perceived by students as worthwhile and beneficial. Beyond the indifference point, more hours and more meetings are perceived as a negative.*

## **BACKGROUND**

In the past decade, Corporate America has embraced the team concept as a platform for building and re-engineering organizations. They also claim that teamwork is the structural norm now in organizations across the globe. Katzenbach and Smith (1993) claim that “teams will become the primary unit of performance in high-performance organizations.”

Assigning students to teams to work on a major project has been heralded in business school programs as a significantly positive form of learning which introduces students to the team environment they are likely to encounter in the workplace. Hansen's (2006) summary of the literature on the use of group projects supports this contention. Hansen identified collaborative learning, experience with complex work, team projects, and improved communication, interpersonal and social skills, among the various benefits. As part of pedagogy, the authors have used various types of team involvement. One author prefers and requires all team project presentations to be videotaped by each team and shown via television on the presentation day. The authors use other traditional approaches to team presentations. In discussing the relative merits of each approach, the author requiring students to videotape presentation made the following anecdotal observations:

Students who videotaped their presentation, on average, put more effort into the research and the presentation. This arises as the students naturally are curious about how they appear on

television and review the presentation for determining how they look. Being their own critic, they generally redo and revise their work.

Videotaping forces the students to consider the presentation program in more detail, especially interactions of team members during the presentation. Live presentations often do not require as much detailed planning of the presentation.

Students tend to get more out of the other team presentations because when they make a live presentation, they are so worried about their own presentation they tend to not focus on the other teams. Likewise after presenting, they tend to be so exhausted that they have difficulty focusing attention on the other teams' presentations.

Given the above, the author requiring video presentations believed that students learned more, spent more time, and met more often than the more traditional live method of team project presentations.

The authors decided to conduct an experiment to determine if students perceived that learning is better or enhanced by the use of videotaping. The experiment was to compare student perceptions of the team experience from classes where the videotaping was required with student perceptions from classes using traditional live presentations. By comparing the student observations, a measure of the effectiveness might be established.

## **LITERATURE REVIEW**

Research by Shaw (2004) examined differences between intragroup diversity and student diversity-management skills. The researchers considered age, gender, and nationality of student-subjects to determine the students' satisfaction, final grade and perception of their own effectiveness. The research results indicated that the type of group the students were assigned to affected their grade performance. The position within the group also affected their grade performance.

Cross-functional teams are hyped as the most effective approach to succeeding in business projects. Rothstein (2002) used cross-functional disciplines of "business" and "design" to examine the values and behaviors of students in group projects. He then had the students develop and design a "Shopping Experience" for customers. This collaborative research resulted in perceptions changing during the duration of the project for both groups in the areas of creativity and the need for openness in discussions with colleagues.

Research by Kohli and Gruopta (2002) concentrated on student perceptions concerning team projects done while completing a systems analysis and design course. Student perceptions when working on these teams was that team members did not always do their fair share of the work on the project. But students did believe that working on teams on real-life projects was a very valuable experience and realized that users of systems need to be involved during the project duration and that feedback during a system's design project was important to the success of the project.

Ferrante, Green and Forster (2006) concentrated on student perceptions of group projects when the team leaders are incentivized. Project teams were developed in an introductory financial accounting course, and each team appointed a leader. The final project grade for each group-appointed team leader was contingent on their team's performance. They found that team members experienced fewer dysfunctional behaviors and teams with incentivized leaders had better performance.

Sergenian and Pant (1998) believe that at less competitive colleges, often students come ill-prepared to meet the academic challenges of college life. Due to socio-economic backgrounds that do not lend themselves to awareness of what is needed to succeed in the accounting profession and because students who work too many hours while in college do not take advantage of the needed socialization activities that colleges provide, many students come to the recruiting process in their senior year ill-prepared to succeed at obtaining a satisfactory first accounting job. This research involved junior accounting students who were assigned a team project to increase their knowledge of the accounting profession, the job research process, team learning, and written and oral communication skills. The pre and post tests indicated a significant increase in team work skills as a result of this career enhancing project.

## **THE EXPERIMENT**

### **Research Design**

This research experiment was developed to determine if students perceived that team project learning is better or enhanced by the use of videotaping. The design consists of comparing student perceptions of the team experience from classes where the videotaping was required with student perceptions from classes using traditional live presentations, in effect, an experimental group of students and a control group of students. A questionnaire was developed (Appendix A), using a bipolar Likert type scale to measure student perceptions about the presentation experience and the amount of learning obtained. Additional questions were used to assess demographic information.

### **Hypotheses**

The following null hypotheses, Ho (a-j), were developed to test the assertions of the faculty member who claimed the above mentioned benefits of requiring team presentations to be videotaped. Each sub-hypothesis corresponds to one of the claimed benefits.

Ho: There is no difference between perceptions of students who videotaped their presentations from those who did not videotape their presentations among the following items:

Ho (a):	value of team projects.
Ho (b):	team projects ability to help learn course material.
Ho (c):	stress arising from worry about presenting distracting from what other teams present.
Ho (d):	exhaustion after presenting the project distracting from what other teams present.
Ho (e):	learning something new from other teams.
Ho (f):	amount of learning from one's own team members.
Ho (g):	ranking of the team project with respect to other learning experiences in college.
Ho (h):	relative value of time invested in team project work.
Ho (i):	influence of team meetings in changing presentations.
Ho (j):	quality of presentation relative to team presentations in other classes.

## Subjects

The experimental group consisted of 57 responses from senior accounting majors at one university in an audit course and 45 senior accounting majors in an advanced accounting course at another university as the control group. This comprised 102 usable responses.

## RESULTS

Analysis of variance using t-tests on each of the opinion questions in the questionnaire was used to determine significant differences at the .05 level. Results are identified in Table 1 and indicate the acceptance of the null hypothesis for 8 of the 10 sub-hypotheses. Hypothesis Ho (e) and Ho (f) showed that a significant difference exists between the perceived learning for students whose group projects required video tape projects and students who presented live in class.

Table 1			
Survey Questions	Videotape $\eta = 57$	Live Presentation $\eta = 45$	P =
Ho (i): I learned something new from the other teams	.7193	1.000	.005
Ho (j): I learned a lot from my team members	.5789	.8222	.025
(Strongly agree=2, Agree=1, Disagree=-1, Neither=0, Strongly Disagree=-2)			

The results of the study of Ho (e) and Ho (f) indicate that students agree in their perceptions with the faculty member who favors the live in-class presentations and reject the assertions of the faculty member asserting benefits from required videotaping. These students who presented live in the classroom believed that they learned something new from the other teams and from their own teammates.

Interestingly, analysis of the demographic type data, as seen in Table 2, using paired comparison analysis, revealed that students required to videotape spent significantly more hours and held more team meetings than their counterparts with live presentations. This seems obvious, in that time to plan and produce the videotape is required in addition to the research and analysis time required to complete the project.

<b>Table 2</b>			
Survey Questions	Videotape $\eta = 57$	Live Presentation $\eta = 45$	P =
Number of hours spent on project: $x < 10 = 1, 10 < x < 20 = 2, 20 < x < 30 = 3, x > 30 = 4$	2.0877	1.8000	.078
Number of meetings: none = 1, once = 2, $2 < x < 5 = 3, 5 < x < 10 = 4, x > 10 = 5$	3.3684	3.0889	.000

Exploring the relationship of hours to the same perceptions but classified by the number of hours of activity spent in the team activity produced interesting results. Table 3 summarizes results of paired comparison data among students spending less than 10 hours on the project with those who spent 10 to 20 hours and those who spent 10 to 30 hours.

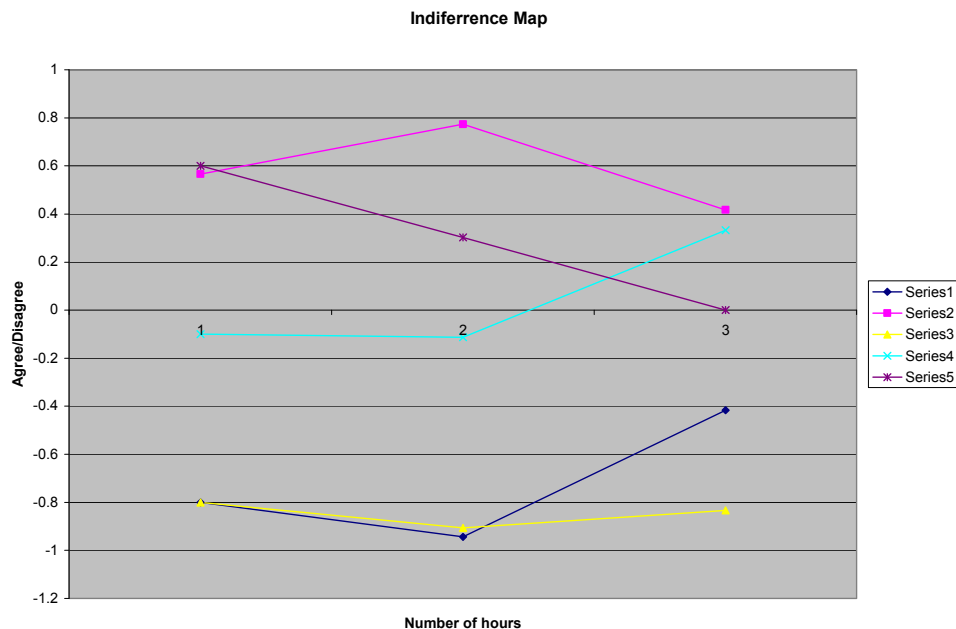
<b>Table 3</b>						
	A	B	C	A:B	A:C	B:C
Hours	<10	>10<20	>20<30	p=	p=	p=
Ho (a): This project was a waste of time	-.8000	-.9434	-.4167	.574	.045*	.009*
Ho (e): Learned a lot... other team members	.5667	.7736	.4167	.594	.046*	.025*
Ho (h): Teams are a waste of time	-.8000	-.9059	-.8333	.047*	.517	.022*
Ho (i): Changed presentation after rehearsing	-.1000	-.1132	.333	.541	.203	.072*
Ho (j): Presentations in this class better	.6000	.3019	.000	.154	.034*	.014*
Number of meetings	2.9	3.245	3.833	.086	.035	.083
* Significant difference						

Significant differences exist among these groups in several perceptual dimensions as indicated with  $p < .100$  representing a significant difference at the .05 level.

Individuals spending more than 20 hours on their project were significantly more likely to say that the project was a waste of time than students spending 10 to 20 hours or students spending less than 10 hours [Ho (a)]. Students spending more than 20 hours on their project were significantly less likely to perceive that they learned more from other team members than students spending 10 to 20 or less than 10 hours on their project [Ho (e)]. Students spending less than 10 hours on their project are significantly more likely to perceive that teams are a waste of time than teams spending 10 to 20 or 20 to 30 hours on their project [Ho (h)]. Students spending 20 to 30 hours on their project were significantly more likely to have changed their presentation after rehearsing with their teams than students spending less than 10 hours on their project [Ho (i)]. Students spending 20 to 30 hours on their project were significantly more likely to perceive that class presentations were better in this class than other classes than students spending less than 10 hours or students spending 10 to 20 hours on their project [Ho (j)].

Plotting the average responses of each group of students by hours-spent on the project reveals an indifference type curve among student perceptions (see Figure 1). It appears that up to a point, the more time required to complete the project results in positive perceptions about the project. Beyond that point, the more time required for the project results in less positive perceptions about the project. This suggests an indifference curve type effect resulting from the amount of time required to complete the project.

**Figure 1**





Series 1 in the chart represents Ho (a), “This project was a waste of time.” Along the y-axis, positive numbers agree with the statement, while negative numbers disagree with the statement. The leftmost point on the x-axis represents less than 10 hours. The mid-point represents 10 to 20 hours, while the rightmost point represents 20 to 30 hours. Students in the 10 to 20 category were more likely to strongly disagree than the other two categories. Series 2 corresponds to Ho (e), “I learned a lot from other team members”. Series 3 corresponds to Ho (h), “Teams are a waste of time.” Series 4 represents Ho (i), “I changed my presentation after rehearsing with my team”, and Series 5 represents Ho (j), “Presentations in this class were better than presentations in other classes.” In each of the series, the trend line is kinked in the middle, except the last series, indicating an indifference point somewhere between 10 and 20 hours working on a team project among student perceptions.

## IMPLICATIONS AND CONCLUSION

The implications of this study are two-fold: a) students do not perceive any benefit from videotaping team projects and b) the amount of time required to complete the project may be subject to an indifference type curve among student perceptions of the team project experience. The first implication leads us to conclude that an instrument that measures learning needs to be developed to determine whether or not the asserted benefits of more learning from videotaping have merit. The second implication leads to several considerations about how faculty structure team projects. Projects that require extensive time commitments from students, more than twenty hours, could result in more dissatisfaction on the part of students, adverse faculty evaluations, poorer performance among students and an undeserved negative reaction to the program’s reputation.

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## APPENDIX A: QUESTIONNAIRE

### Team Presentation Questionnaire

Age: Under 21 \_\_\_\_, 21 to 26 \_\_\_\_, 27 to 32 \_\_\_\_, 33 to 40 \_\_\_\_, over 40 \_\_\_\_.

Gender: Male \_\_\_\_ Female \_\_\_\_.

Number of team presentations other than in this class:

None \_\_\_\_, One \_\_\_\_, Two \_\_\_\_, Three \_\_\_\_, More than three \_\_\_\_.

How many times did your team meet as a group to prepare for the class presentation?

None \_\_\_\_, 1 time \_\_\_\_, 2 to 5 times \_\_\_\_, 6 to 10 times \_\_\_\_, More than 10 \_\_\_\_.

How many hours did you spend on this project?

Less than 10 \_\_\_\_, 11 to 20 \_\_\_\_, 21 to 30 \_\_\_\_, More than 30 \_\_\_\_.

Statement	Strongly Agree 2	Agree 1	Neither 0	Disagree -1	Strongly Disagree -2
Ho (a): This project was a waste of time.					
Ho (b): This project really helped me understand the course material.					
Ho (c): I was so stressed about presenting that I didn't much pay attention to the other teams presenting.					
Ho (d): I was so exhausted after presenting that I didn't much pay attention to the other teams presenting.					
Ho (e): I learned something new from the other teams.					
Ho (f): I learned a lot from my team members.					
Ho (g): This project was one of my best learning activities in college.					
Ho (h): Working in teams is a waste of time.					
Ho (i): I changed my presentation after rehearsing as a team.					
Ho (j): The team presentations in this class were a lot better than team presentations in other classes.					

# **CROSS-LEVEL, CROSS-DISCIPLINARY, CROSS-CULTURAL COLLABORATIONS IN ACTION: A PUBLIC SERVICE EDUCATIONAL INITIATIVE INTEGRATING HEALTH, ENGINEERING AND ENTREPRENEURSHIP**

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## **ABSTRACT**

*This paper outlines a project that represents collaboration between faculty members across three colleges: Professional Studies (Health), Engineering and Business at one University to educate a group of high school students, a class of undergraduate engineering students and two classes of MBA Entrepreneurship students in social entrepreneurship activities. The project began by sending a group of students to Guatemala for a summer program designed to excite them about careers in health, science and engineering by having them conduct needs assessments and develop preliminary solutions for needy citizens in the developing country. The next step involved having engineering students spend a year developing long term solutions to the issues faced by the community members. Finally, students in MBA Entrepreneurship courses took these engineering solutions and developed business plans to determine feasibility and implementation of the solutions effectively and efficiently. The project is an example for other colleges and universities of how the AACSB goal of integrating innovation and cross-college collaborations can be accomplished.*

## **INTRODUCTION**

QAccording to a recent report of the AACSB International Task Force on Business Schools and Innovation (2010), a business school's mission should include fostering innovation. One of the models suggests that a way to integrate innovation is to develop cross-disciplinary collaborations both within and outside of the Business school. This paper outlines such collaboration. The program includes students at three levels of education: stage 1 involves high school students, stage 2 involves undergraduate engineering students and the final stage involves MBA students in entrepreneurship. The project focus for all three groups is on helping the community of Calhuitz, Guatamala.

In spring 2009, Global Public Service Academies (GPSA) issued a request for proposals titled Innovative Experiences to Promote Science, Engineering and Math Majors to High School Students Self-Identifying as Being Interested in Health Careers. Faculty from Florida Gulf Coast University's (FGCU) Bioengineering and Nursing programs collaborated to submit a proposal for a study abroad experience for high school students. FGCU engineering faculty were interested in the grant opportunity as a potential resource for finding future student design projects to be used in an upper level undergraduate class, which would incorporate challenges of international engineering design. The faculty members were specifically interested in design projects for a developing country. Since none of the interested engineering faculty had experience with international programs, a nursing faculty member was asked to join the grant team as she had experience taking college students to Guatemala as well as Peace Corps experience in Guatemala. The nursing faculty member specialized in maternal and child care as well as health care delivery in the developing world.

The grant was awarded to FGCU for a four year GPSA summer program. The engineering faculty would deliver an engineering design curriculum for high school students through a course entitled "Problem Solving and Design for Developing Countries". Included in the curriculum is the engineering design process and needs assessment. The nursing faculty would teach the high school students how to conduct health assessments on pregnant women and children. The final grant team consisted of three engineering faculty members and one nursing faculty member. The goal of this paper is to discuss how this project is being implemented in order to demonstrate how different schools, programs and colleges can work together not just to benefit themselves but also to engage in a type of social entrepreneurship, benefiting others throughout the process.

## **BACKGROUND**

The recent AACSB International Task Force report points out that innovation is needed more than ever to reenergize our economy and add value to our society. Utilizing a new conceptual framework for education, they suggest Business Schools can be a vehicle for innovation through new process and product design. New product design must use innovative processes to be successful and sustainable. The recommendation is for Business Schools to integrate innovation into their learning outcomes whenever possible, which will require academics to link with communities. The challenge in management education is to design new curriculum to support the gap between innovation and implementation. The report suggests various models universities can utilize to support innovative thinking in their curriculum. One of these is teaching managers communication, collaboration and ways to build bridges between various fields and industries. In this paper, we present an example of how a project was designed to utilize students at various stages of education (high school, undergraduate and graduate) to develop the skill sets of innovation and implementation among different colleges in

one University. The design provides students a valuable learning experience, while seeking to add value to society through learning by doing.

As mentioned, the initial goal of the project and the grant was to get high school students interested in science, engineering and math. It is a well-documented fact that students in the United States are falling behind other countries in terms of both their performance and their interest in these areas (Hanushek, Peterson & Woessmann, 2010). However, as the project was being developed, it became clear that the engineering aspect would involve helping people in a third world country. Many Universities, including FGCU, are focusing on sustainability in their missions for the next century. One aspect of this focus includes social sustainability. We have all heard the Chinese proverb “give a man a fish and he eats for a day, teach a man to fish and he eats for a lifetime.” Sustainability with respect to this project would suggest that designing the engineering solution is not enough. The people must be taught how to create and market these solutions for the long term. In addition, because these solutions improve society as a whole, they are considered the outcomes of “social entrepreneurship.” This is where engineering and the business school come together.

New business ventures created from the exploitation of opportunities to help relieve social ills, lessen the loss of natural resources and build sustainable futures is believed to be creating a new generation of mission-based social entrepreneurs (Neck, Brush & Allen, 2008). A recent study found that science and engineering students who took an entrepreneurship course raised their attitudes and their overall entrepreneurship intentions. The inspiration the students developed to start their own businesses was seen as the most influential benefit (Souitaris, Zerbinati, & Al-Laham, 2007).

In September, 2010, *Harvard Business Review* asked the question: Can Entrepreneurs Save the World? “Working together, corporations and social entrepreneurs can reshape industries and solve the world’s toughest problems,” (Drayton & Budlinich, 2010). These authors term individual entrepreneurs who focus on helping others while also making money “the citizen sector.” They believe that the citizen sector is creating jobs three times as fast as the private sector. They claim that the success of collaborations between the citizen sector (not for profit) and the private sector will succeed by focusing on creating real economic value as well as social value. Entrepreneurs play a central role in finding the solutions; driving economic growth and helping hundreds of millions of people worldwide (Thompson & MacMillan, 2010). They claim that the management challenges associated with producing and marketing goods and services at the bottom of the economic food chain include imperfect markets, uncertain prices and costs, nonexistent or unreliable infrastructure, weak or absent formal government, untested technology and unpredictable responses. Yet, interestingly enough, entrepreneurs in emerging markets start 25% more companies than their U.S. counterparts do, and their firms have a higher survival rate (Habiby & Coyle, Jr., 2010). The authors’ claim that today’s entrepreneurs are anywhere in the world and can create value with relatively little capital.

## **THE CURRENT COLLABORATION**

The project presented in this paper describes a collaboration designed to get high school students interested in science and engineering, while getting everyone (undergraduate engineering students and MBA Entrepreneurship students) interested in social entrepreneurship and solving real problems for real people in a third world country.

### **The Initial Project: Stage 1**

The program included a pre-trip experience for high school students on the FGCU campus for two days, followed by a three and half week visit in Calhuitz, Guatemala, ending with a two day post trip experience on the FGCU campus. The project was funded through support from GPSA, and partnering with Curamerica (an organization dedicated to healing communities, one person at a time), to establish a long-term partnership with FGCU to improve health services and to help develop the economy through entrepreneurial engineering projects within the community of Calhuitz near Huehuetenango (located approximately twenty hours northwest of Guatemala City). The objectives of the experience were for high school students to understand and apply the initial steps of the design process and to be knowledgeable of sustainability and universal design issues, especially in developing countries.

### **Stage 2: The Engineering Curriculum**

The original intent of the program was to teach high school students about engineering using the engineering design process to identify client needs for assistive devices. In addition, the identified needs would be used in undergraduate engineering design classes to provide international projects for the engineering students. Two courses were developed to provide undergraduate engineering majors the opportunity to be involved in designing solutions to be implemented in Guatemala based upon the results of the high school students' summer experience. The first course: "Engineering Service Learning" was offered in the fall, 2010 semester. Engineering Service Learning promotes the concept of social responsibility of the engineering profession. Service to the community is considered fundamental to the success and growth of the engineering profession. A driving factor in the course is to increase student awareness of engineering in society. Students in Engineering Service Learning are expected to use the engineering design process to identify a community based need, work with a client to identify design criteria and constraints, develop alternative solutions and prepare a basic business plan for the desired solution. Outcomes for this course include: an ability to function on and assume leadership roles in diverse, multidisciplinary teams; ability to communicate effectively, especially in an interdisciplinary environment; an understanding of entrepreneurship and the

ability to write a business plan; and an ability to define a community problem and to use the engineering design process to deliver a solution.

The second engineering course, “Engineering Entrepreneurship,” is the follow-up course to Engineering Service Learning. During Engineering Entrepreneurship students take the design proposed at the end of Engineering Service Learning and continue the design process, specifically design, test and implement. At the end of the semester the students are expected to deliver a fully documented product or process to the client. The course is focused on turning the proposed solution not only into a working product or process, but also developing the concept into a business model. The course is structured such that the students are expected to spend time outside of class working with the client to test, revise and retest proposed solutions. Class time is used to acquaint the engineering students with basic business concepts necessary to write an abbreviated business plan. Outcomes for Engineering Entrepreneurship include: an ability to design a system, component, or processes to meet desired engineering needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, regulatory, manufacturability, and sustainability; an ability to function on and assume leadership roles in diverse, multidisciplinary teams; an understanding of professional and ethical responsibility; an ability to communicate effectively, especially in an interdisciplinary environment; the broad education necessary to understand the impact of engineering solutions in a rapidly changing global, economic, environmental, and societal context; a knowledge of contemporary issues; an understanding of entrepreneurship and business plans; an ability to define a community problem and to use the engineering design process to deliver a solution; and an ability to explain basic concepts in management, business, public policy, and leadership.

### **Stage 3: The MBA Business Plan Development Curriculum**

While designing solutions for the Guatemalan's is an admirable objective, the challenge remains to determine whether these solutions are viable. In other words, are the solutions feasible? Can the products be made efficiently and effectively in the community so that there are long term benefits? The goal of the MBA business plan course is to work with the engineering student to analyze the resulting cost of the devices and implementation plans. At the end of the spring semester, the MBA students, along with the undergraduate engineer students, are expected to deliver a full business plan to assess the feasibility of the new product design. The plan can ultimately be used to attract external stakeholders (investors, partners and/or private and government-funded grant awarding agencies).

The MBA course learning objectives includes an ability to: identify the major components of a business plan; investigate and analyze opportunities to start a new entrepreneurial venture; identify the environmental factors (social, market, economic, technological and product data) pertinent to the new business; identify factors involved in determining the location of a proposed business; conduct an in-dept market analysis and design a

financially feasible marketing plan for the new start-up; differentiate and evaluate which legal forms are appropriate for a start-up business; create a proactive plan for the treatment of the ethical issues facing the new business and to create and analyze projected financial alternatives for the initial start-up and operations of a new business.

## **RESULTS TO DATE**

This project is to be completed in Calhuitz, Guatemala. In order to understand the context, it is necessary to share some basic statistics on the area:

- Guatemala has the third highest infant and child mortality rate in the western hemisphere.”
- Huehuetenango is considered the “triangle of death” because it has the highest rates of infant and child mortality and malnutrition in the country of Guatemala.
- Sixty eight percent of children under three are malnourished and 1:250 pregnancies result in death as compared to 1: 12, 500 in the US.”  
(<http://www.curamericas.org/wherewework/guatemala.html>)

### **Stage 1: The Initial Experience: Summer, 2010**

The breakeven point for the program is approximately 20 participating high school students. Due to a number of factors, only 8 students were accepted into the program. Rather than cancel the program, the granting agency decided to run the first year as a pilot, primarily due to the remoteness of the location. The difference between the pilot program and the full scale is the number of high school students accepted, 8 students in the pilot, and 20 to 30 in the full scale program. The objectives for the summer engineering program were:

The following discussion will focus predominantly on the engineering aspects of the program and specifically the engineering design functional group. By the completion of the GPSA Summer Program in Guatemala the student will be expected to:

- Apply the engineering design process.
- Work in a team to effectively solve problems and complete projects.
- Design and assemble simple projects including assistive needs devices.
- Conduct a needs assessment.
- Identify stakeholders and explain the importance of stakeholders in engineering design.
- Participate in and facilitate brainstorming activities.
- Define design constraints and specifications.
- Develop design constraints and specifications.



- Conduct concept evaluation.
- Understand concepts of sustainable design.
- Prepare a poster or presentation that demonstrates the learning experience from the GPSA summer program in Guatemala.

High school students were recruited throughout the United States utilizing announcements in various talented student organizations, the Health Occupations Students of America (HOSA) newsletter, in person presentations to high school groups and flyers at conferences. Interested students applied to the program, and could be eligible for financial assistance, or may fundraise to cover the program expenses which included all travel, transfers, food, lodging, excursions, except travel to the FGCU campus and spending money. Student selection criteria included an expressed desire to pursue a career in a health related field (e.g., medicine, nursing, physical therapy, and bioengineering), experience with a foreign language (at least one year of high school foreign language), demonstration of community service and recommendations from community leaders and school officials.

Eight students (five female and three male) were accepted into the program. The students came from Texas, North Carolina, New York, West Virginia, Pennsylvania and Massachusetts. Approximately 50% received financial assistance for the program cost. The two engineering faculty members and the nursing faculty member traveled to Guatemala for the initial program during the summer of 2010.

### **The Campus Orientation: Two Days**

The project began with a summer program, designed to introduce high school students, primarily juniors and seniors, to engineering and health care needs in the developing world. The program started with the students' arrival on the FGCU campus. The first evening included a dinner, an introduction of the students and program faculty. Two full days were spent on the FGCU campus. The nursing faculty member introduced the students to basic health care assessment tools such as taking blood pressure, temperature and weight and introduced the students to community health assessment concepts. Engineering faculty members introduced the engineering design process, needs assessment, and client interviewing techniques.

### **The Three Week Guatemalan Experience**

The third day of the program was a travel day. Students and faculty traveled from Fort Myers, FL to Guatemala City, Guatemala, and then on to Calhuitz, Guatemala. The trip from Guatemala City took two days, approximately 18-20 hours, by micro bus. For the next 3 weeks the group resided in the visitor center of Casa Materna in Calhuitz.

Calhuitz is a remote village in the northwestern mountains of Guatemala with a population of approximately 1200 people. Most of the village men earn a living by walking 2 hours each way, usually waking at 4:00 am and returning home around 8:00 pm, to work on farms. Women of the village are expected to tend to the home and the children. Grown men and women unable to perform these functions have little value in the community and are seen as a burden to their families. Other than the “cantinas” which are storefronts operated out of the homes that sell chips, soda and some candy, operated by local families, there is no industry or local economy.

Educational opportunities in Calhuitz consist of a “public” school and a small school run by the Catholic Church. Many of the young children attend school. When a girl reaches approximately 10-12 years of age (usually the total education at this time is the equivalent of 3<sup>rd</sup> or 4<sup>th</sup> grade) she typically quits school to help take care of the home, cook meals, wash clothes and perform other household tasks. Boys are encouraged to stay in school through 8<sup>th</sup> grade. Currently children attending high school would have to walk to a neighboring community for their education.

Calhuitz is also home to Casa Materna. Casa Materna is a women’s and early childcare clinic. The primary role of Casa Materna is to serve as a maternal care and childbirth clinic. There is one physician, Dr. Manuel, in the area who tends to approximately 20,000 people in the Nantone region. Dr. Manuel attempts to visit the community once a week; however this is often not possible due to several factors including case load and weather. In addition to Dr. Manuel, Casa Materna employs two trained nurse midwives, neither of whom lives in Calhuitz, an education specialist and a clerk for the pharmacy and supplies store. When asked, on several occasions, how people earned money or what the economy of Calhuitz consisted of, the team never got an answer. Most of the work is done through barter; for instance medical care is exchanged for fire wood or chickens.

### **Creating Engineering Design Functional Groups**

During the time in the country, the high school students were separated into teams, two teams of three and one team of two. At least one student on each team was fluent in Spanish. Teams were assigned to one of three functions: health care delivery, engineering design or technology, and the assignments rotated weekly. Monday through Thursday the schedule followed a format of functional group and large group activities. The first week was focused on health assessments, the second week on technology, and the final week on engineering design. The faculty met every morning to discuss the daily schedule and adapted lessons to provide as much topic coverage as possible while adapting to the community needs.

The engineering design functional group's project was to identify client based needs focused on adaptive devices, such as a walking device or a tool to assist a person with everyday tasks. Two engineering faculty members were the leaders for each group. Every Monday

morning the team would meet with the community liaison, Jose. Jose was born and raised in the community, although he spent several years in the United States and spoke English, Spanish and Chuj, and personally knew almost every member of the community. He selected at least two individuals or families for each team to meet with for the week. Typically the team met the first individual on Monday and the second on Wednesday. The team would walk to the client's home and the students would conduct interviews. Since the native language in the village was Chuj, the high school students would conduct the interviews in Spanish. Jose would translate from Spanish to Chuj, the client or client's family would respond in Chuj; Jose would translate to Spanish and the students would translate from Spanish to English. One faculty member video recorded the interviews while the other documented the interview questions and answers. Students also documented the interviews.

After the interview, which typically lasted 1 ½ to 2 hours, the team would return to the Casa Materna to discuss the identified needs, brainstorm solutions and work on documentation and editing the video recording. Details of the interviews are provided in the Clients section. If necessary, the team would return to the client on the second day (Tuesday or Thursday). If a return visit was not necessary, the team would continue to brainstorm solutions and develop a plan to provide a solution for the family either prior to leaving Calhuitz, or as a longer term project to be developed over the next academic year and brought back during the next trip.

Upon returning to the United States a mini conference was hosted on the FGCU campus. Students were assigned either a poster or a presentation for the conference. Topic areas included "Life in Calhuitz", "Needs Assessment", "Engineering Design" and "Community Health". University administration, other faculty, local high school teachers and representatives from Southwest Florida business were in attendance at the conference.

## **The Clients**

The following are examples of clients the students interviewed. Three of these projects have been implemented into the Engineering Service Learning and Engineering Entrepreneurship courses. The student based projects will be completed by April 2011. Final products will be delivered to the clients either before the start of the summer, 2011 program, or as part of the summer program.

Maria is a 12 year old girl with difficulty walking among other disabilities. Although undiagnosed, Maria appears to have Down's syndrome and suffers from seizures. Maria's parents expressed a need for a device that allows children and young adults the ability to travel long distances with minimum work over rough terrain including mud, rocks, steep hills and other obstacles. Given Maria's physical limitations she is unable to join her family on excursions outside the homestead (such as walking to church or market) and is usually left home alone. A temporary solution was developed and delivered to the family; however a long term solution that provides for self mobility is desired. The goal of the project is to design a vehicle that meets the

needs of disabled persons in rough terrain environments and can be manufactured in Calhuitz. This project was used as the design project for the high school students who built a cart out of locally available material and delivered the finished product to the family. This project is also continuing in the current engineering entrepreneurship course where students are improving upon the original design as well as developing a business plan to produce the carts in or near Calhuitz.

Roberto is a 13 year old boy currently in 3<sup>rd</sup> grade in the elementary school in Calhuitz. His goal is to become a teacher. Roberto was born with a club foot making sitting in a standard chair uncomfortable therefore making it difficult to study. The team's assessment was he needed an adjustable desk with support for the leg of a child or young adult. Ideally, the desk needed to be made of low cost, readily available material, be lightweight, adjust to the growth needs of a child, be portable, and be easy to assemble/manufacture. This project has also been introduced to the current engineering entrepreneurship course. Students working on this project plan to develop a prototype, researching locally available materials in Calhuitz and developing a feasibility analysis to produce the carts in or near Calhuitz.

Julia, Ellatoria and Jose needed a device to walk over rough terrain. Designing devices for walking on nicely paved, flat surfaces and finished floors is a well developed science. Unfortunately, the devices used in the developed world are less than ideal for people in developing countries. The clients are three adults, with varying levels of walking ability from unstable but able to walk upright to unable to walk upright, moving about in a modified crawl (hands and feet rather than hands and knees). The need is to design a device that would assist these three adults with walking over a rough terrain that includes steep hills, mud, rocks, uneven pathways and other obstacles. Low cost is an essential criterion for this device. This is the third project introduced to the current entrepreneurship course. Undergraduate engineering students are developing a product similar to a crutch or walking device, suitable for the terrain- rocky, uneven, hilly and muddy, while Maria's needs, the first project, require a special cart design for transportation.

## **Stage 2: Engineering**

These three projects, (Maria, Roberto, and Julia, Ellatoria and Jose) have been identified as long term projects. These projects were identified as having engineering design and entrepreneurial aspects appropriate for upper level engineering courses, specifically the Engineering Service Learning and Engineering Entrepreneurship courses. There is demand for each of these products beyond the clients identified. The goal is to ultimately develop a means to manufacture the items in or near Calhuitz to be sold, or bartered, in the surrounding communities, which will provide local work for the people. The learning objectives for the Engineering Service Learning are for students to identify a community based need and develop a proposed solution to meet the need.

As of the writing of this article, the three teams have submitted initial project proposals for the three clients. Design concepts are preliminary, and will be subjected to testing and prototyping in the spring semester. All three teams have incorporated sustainable design concepts including local manufacturability into their original designs. Project posters are provided in Figure 1, 2 and 3.

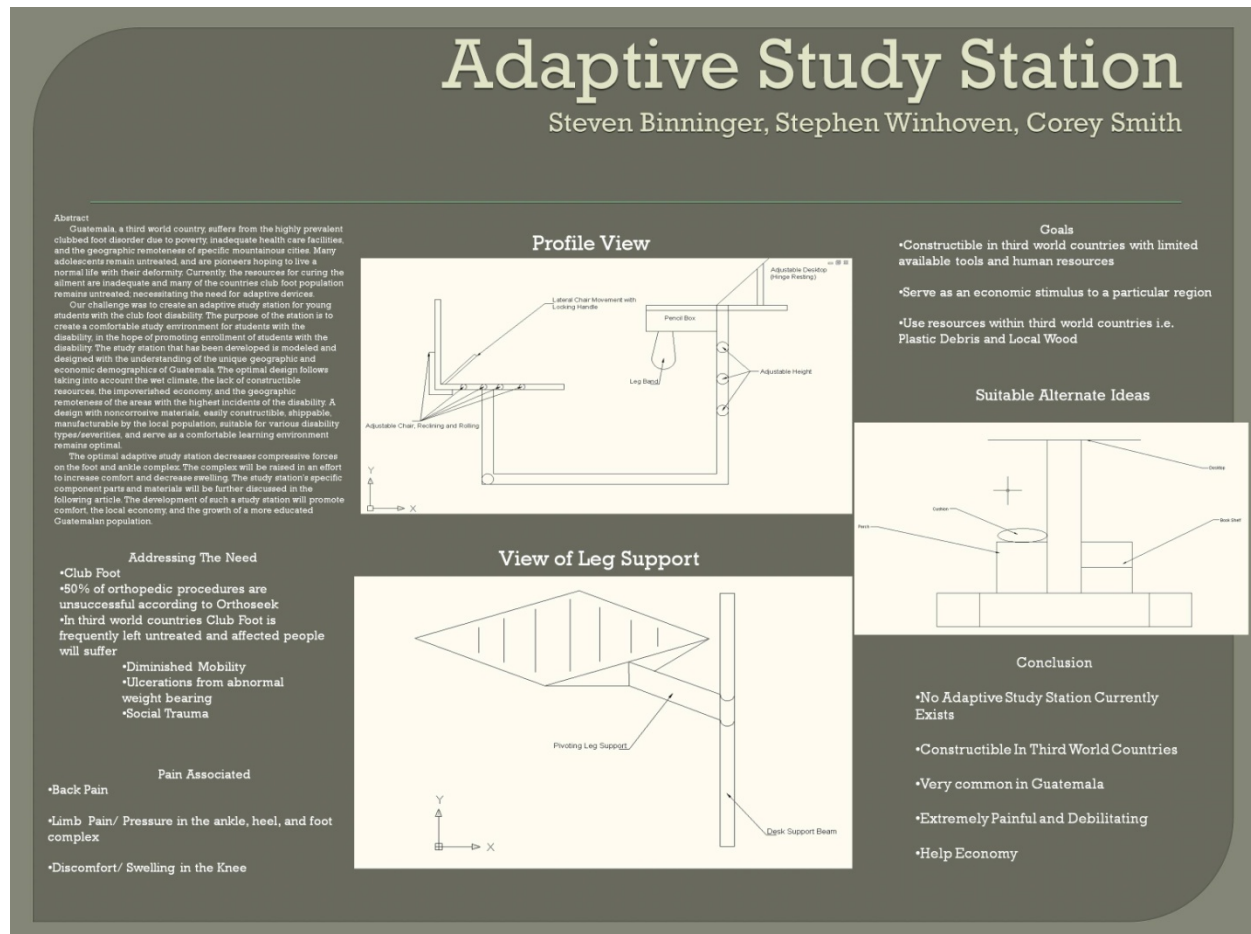


Figure 1

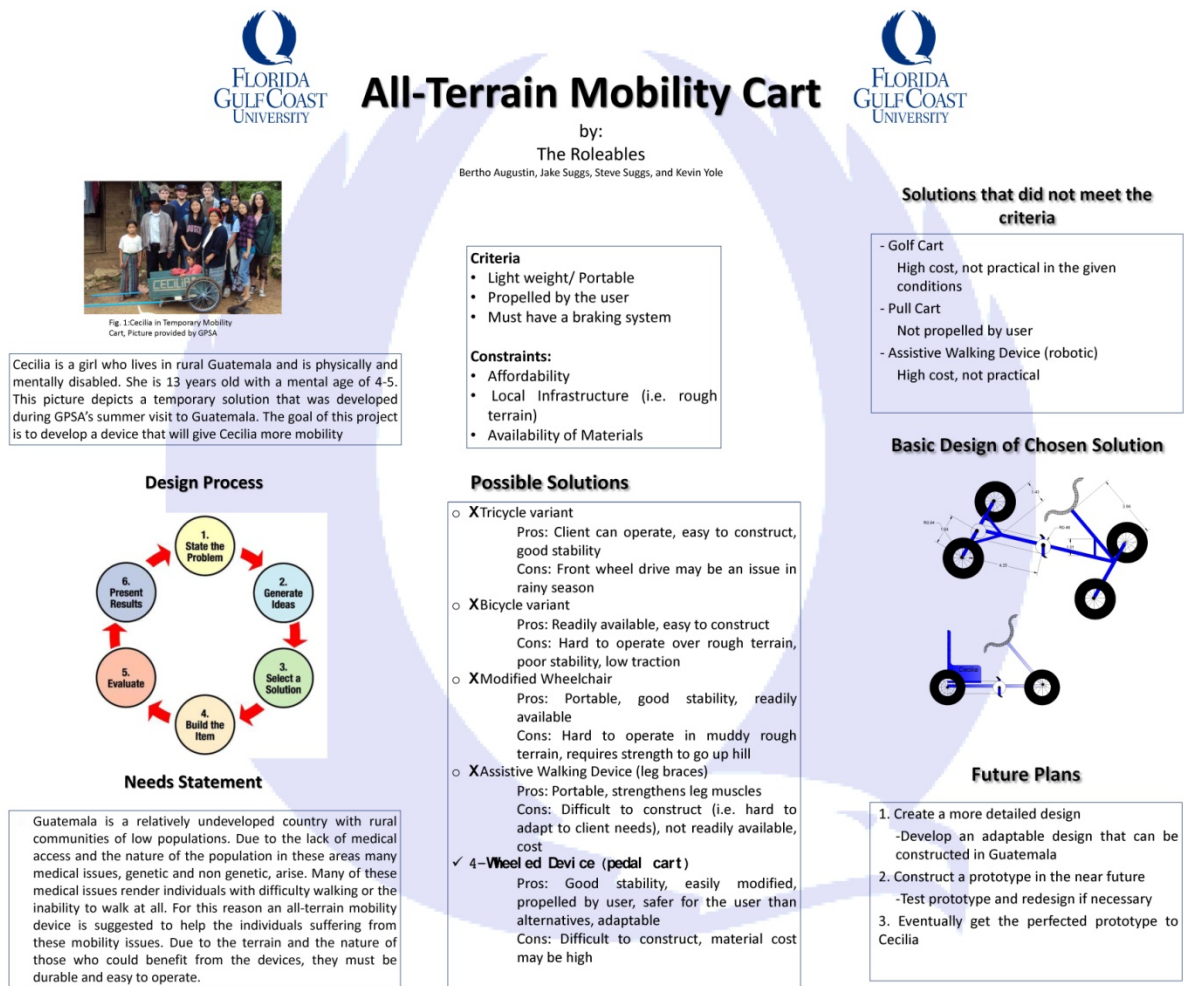


Figure 2

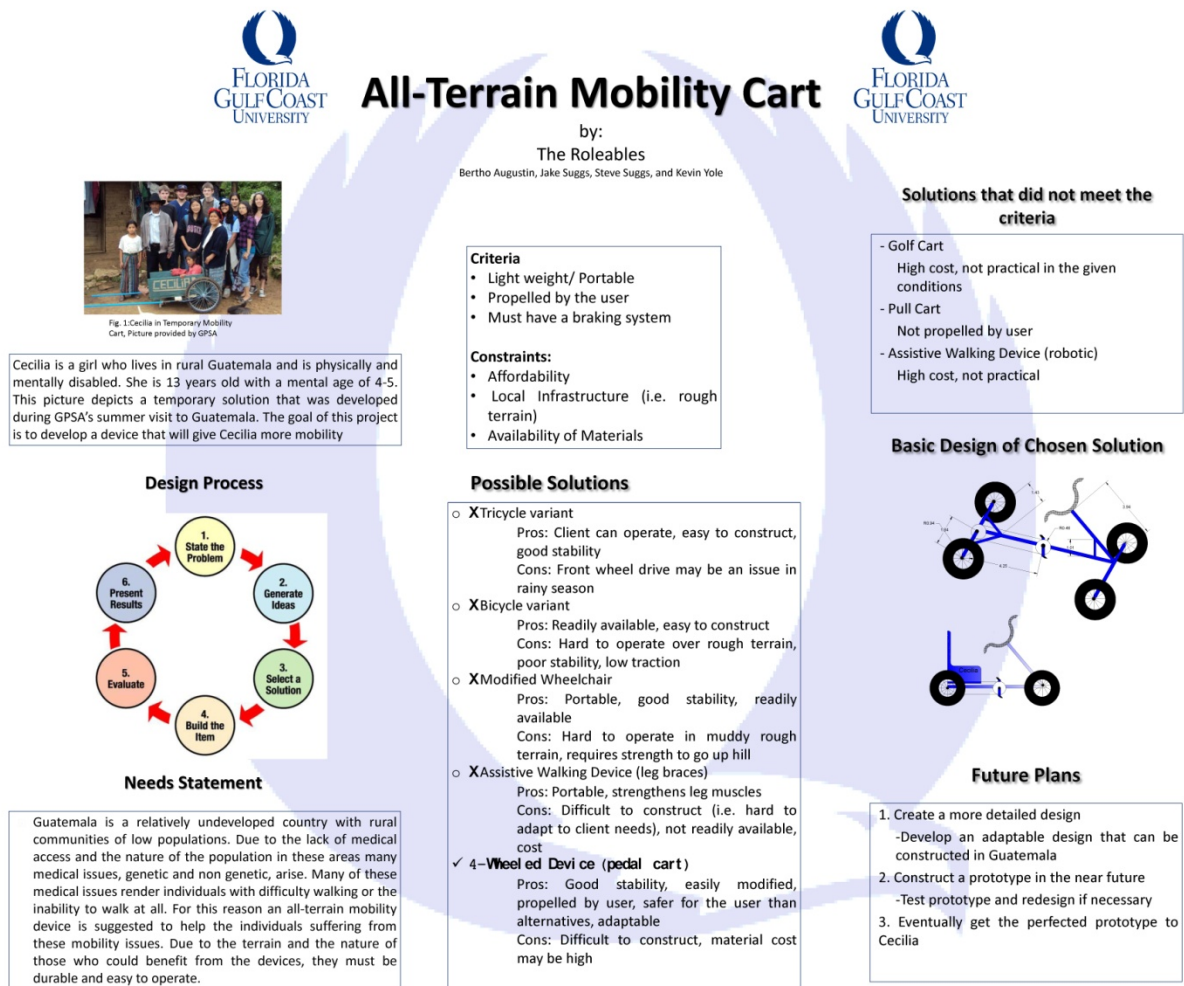


Figure 3

Engineering Entrepreneurship is the follow-on course that requires the students to take the proposed solution from Engineering Service Learning and develop the solution into a working model and develop a business plan for the solution. During the second class, Engineering Entrepreneurship students will be teamed up with MBA students in an Entrepreneurship business planning course. The MBA students will concentrate on the business plan aspects while the engineers refine and test the designs. Completed projects will be delivered to the clients in July of 2011, when the summer program returns to Calhuitz. At least one engineering undergraduate student will be acting as a counselor for the 2011 program and will assist with the engineering educational program.

### **Stage 3: Entrepreneurship**

In the first week of the spring, 2011 class, the MBA business planning students will hear a presentation by the engineering professor about the specific projects needing feasibility studies. Each student (or team) will select the project they are most interested in working on. The students will develop full feasibility plans for each of the projects designed by the engineering students. The two classes will have four separate class periods in which the engineering students will be working with the MBA students. In addition, a Blackboard/Angel website will be set up so that students can exchange information and share ideas as they are working on their projects. At the end of the semester, a final awards ceremony is planned for the best project design and feasibility study from the semester. Judges from the community will be asked to judge the awards ceremony and funds will be awarded to the student group with the best overall project and feasibility study from the Institute of Entrepreneurship at FGCU.

### **CONCLUSION**

The program described is a unique collaboration of a summer experience for high school students, undergraduate students in engineering and MBA students in Entrepreneurship. High school students had the opportunity to live in the community in Calhuitz, Guatemala and work in the local clinic and the community at large. Students learned about entrepreneurship using an engineering approach to complex problems faced by the community, specifically community members in need of assistive devices. The original intent of the program was to first develop a needs assessment, then create assistive devices, which would be designed by undergraduate students and then returned to the village the following summer; however during the needs identification the students and faculty teams identified entrepreneurial solutions and immediately implemented them. Students were able to immediately feel a sense of accomplishment in making a difference to someone's life.

Each team provided well-documented needs statements, problem constraints and criteria, and supporting materials such as interviews and videos by the end of the program. The project ideas were summarized and specific projects were identified by the students and faculty as suitable for a two-course sequence in Engineering Service Learning and Engineering Entrepreneurship.

During the second semester course, Engineering Entrepreneurship, the undergraduate engineering students are being teamed up with MBA students taking a business planning course. Together the undergraduate Engineering Entrepreneurship students and graduate students will write a feasibility analysis based on the needs assessments of the high school student teams and the product design developed by the undergraduate engineering students for implementation in Calhuitz, Guatemala.



This project was a success as it provided an educational and research component to three levels of students (high school, undergraduate engineering, and graduate business students). The educational component of the program consist of conducting a course in Problem Solving and Design for Developing Countries, with emphasis on sustainability, business feasibility and universal design aspects important to developing countries and rural communities.

The research component entails high school students, along with the faculty, documenting needs of local community members that would benefit from assistive devices for improved quality of life. The “Problem Solving and Design for Developing Countries” course was used to introduce the high school participants to the engineering design process. Each case was video documented and summarized (through methods learned in their classes given in their first two days in their Problem Solving and Design course) and presented to undergraduate students to be used in a series of design courses completed as yearlong project, and returned to the community during the following summer visit.

The feasibility plan will require additional research which will be done in conjunction with the MBA students to develop a business plan that will be used for implementation. For the MBA students, it provides a great opportunity to apply their learning to something of real value to society.

### **Initial Lessons Learned and Recommended Changes**

Clients were identified by the local contact, Jose. The concept of adaptive devices was not fully understood and created challenges in identifying the best suited clients. Many of the families interviewed had children with severe physical and mental disabilities. Although the team wanted to help these families, the challenges faced were largely medicinal and therapeutic in nature rather than addressed by the addition of an adaptive device. This initial experience provided the engineering faculty a benchmark for the needs of the community and allowed us to communicate the characteristics of an appropriate client to the community liaison.

Future programs will have 20 to 30 students. The current model is not scalable to these numbers. In future programs students will select modules for the daytime activity (needs assessment being one of the modules) and all students will be involved in the engineering design component of the program. It was also difficult to keep the High School students involved once the program was turned over to the engineering students. For the next program, the engineering professor plans to develop a group cite, such as Facebook, so the engineering and high school students can stay better connected. In addition, they can use pod casting through YouTube to keep the high school, engineering and business students more connected, and thereby more committed to the final project.

In addition, the Engineering professor and the MBA professor realized they should have had their student’s class times at the same time so the students would be able to work together

more efficiently. In addition, a rubric needs to be further developed with criteria for both classes.

In summary, the project described in this paper, while still in the initial stages, describes an example of how colleges and schools of business and engineering can work together to foster innovation and social entrepreneurship among the future leaders, thereby implementing the goals put forth by the AACSB. Involving students at several levels and across disciplines shows them that working with others to solve problems can be both socially and economically profitable, and truly may be the way to change the world by solving many of the problems faced by those less fortunate.

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# **DISTANCE LEARNING IN A CORE BUSINESS CLASS: DETERMINANTS OF SUCCESS IN LEARNING OUTCOMES AND POST-COURSE PERFORMANCE**

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## **ABSTRACT**

*In this paper, we outline the results of a study at a small Midwestern university regarding distance-learning education in a core business class. In a comparison of distance- and non-distance-learning students in an Introduction to Business course, we follow students both before and after taking a newly created distance learning class. Our findings indicate that students wait longer in their programs before enrolling in a distance learning course. Most importantly, though, there is no detected difference in learning outcomes between traditional and distance learning students, either in the class itself, or after the course has been taken.*

## **INTRODUCTION**

One of the most rapidly growing areas in college education is the offering of distance learning courses (Piña, 2008). For example, in the ten year period leading up to 2007, enrollment of students in some form of online learning coursework had increase some 4.4 times, and online-only students had increased an incredible 11.5 times (State University System of Florida, 2008), and Although there exist today numerous online colleges, an increasing number of traditional college institutions are introducing and expanding distance learning courses and programs for their students in addition to offering courses in a traditional classroom setting. In these dual mode institutions, many students take both traditional and online courses. Although recent research, particularly in the area of education, has compared distance learning courses with their traditional counterparts in terms of learning outcomes from those target courses (Spooner et al, 1999), far less is known about how students fare once they have moved beyond those target courses. Distance learning courses offer benefits to both the students who take the course and the institutions offering them. For students, it allows for asynchronous learning and frees them from the need to be in a specific location when learning. At the same time, some have expressed concerns about the quality of education that students receive in distance learning classes relative to their peers taking similar courses in the traditional classroom setting (Carr, 2000 & Schoech, 2000).

The purpose of this paper is to explore and compare the determinants of student learning outcomes in distance learning courses with traditional classroom-based courses. The major contribution of this paper is that we not only compared learning outcomes of traditional versus online students, but we also followed their academic performance in the semester after they left the course of interest to see if either teaching method had any lasting effect on learning outcomes

### **COURSE DELIVERY**

The target course for this study was Management 101, an introductory course that is required for all management students, but also taken widely by students outside of the school of management. Many of these students cannot physically attend class so instruction is delivered online asynchronously as well as in a traditional classroom setting. The online courses are delivered using the Blackboard software system with traditional instructional design methods to construct the course. The course content is identical when delivered online as on campus. The asynchronous delivery accommodates the various time zones and geographical challenges for students. The software allows for electronic posting of content to supplement the textbook, electronic submission of assignments, discussions, and online testing.

### **ISSUES OF DISTANCE LEARNING EDUCATION**

From a student standpoint, there are at least two advantages to being able to take courses online. In most cases, distance learning courses are asynchronous, allowing students to fulfill course requirements at a scheduled pace, rather than having to attend class at specific times, such as is the case for traditional classroom-based courses. Such flexibility of scheduling improves students' abilities to schedule coursework around family, work, and other obligations. In addition to more flexible scheduling, distance-learning courses typically offer students flexibility of location. In being able to take a course via distance learning, students are no longer confined to living near to the campus from which the course is taught.

While there are still conflicting opinions on distance learning, now a research base supports the value of online distance education. According to Prester & Moller (2001), "Today's computer-mediated communication tools are used to create rich learning environments where many-to-many relationships can flourish. At the same time that technological advancements are improving our capacity to deliver instruction at a distance, two forces are reshaping education and workplace learning: the reexamination of what learning means and the willingness to reconsider instructional formats". Another advantage is that students are introduced to and use the technologies used in business (Leidner & Jarvenpaa 1993).

The benefits that accrue to students in distance learning classes end up being advantageous to colleges as well. In eliminating the traditional classroom setting, distance-learning courses mean a reduced burden on university facilities and reduce overhead costs

overall on a per student basis. Since distance-learning courses can be offered at locations independent of the main campus, this also allows the university to attract students from outside of a school's traditional recruiting areas. Distance-learning is becoming an important option within education because it facilitates the sharing of costs, information and expertise in multiple locations (Webster & Hackley 1997). This can help schools increase overall enrollment and/or increase the quality of the average student at the school.

Despite the benefits associated with distance-learning, some have expressed concern about the quality of distance-learning courses relative to those based in a traditional classroom. Much of this concern is rooted in the lack of face-to-face interaction between professor and student in many distance-learning courses. College administrators interviewed in *The Chronicle of Higher Education* (Carr, 2000a) agreed that course completion rates in distance education courses are often lower than in traditional classes. Distance-learning courses also tend to have more flexible schedules than those of their distance-learning counterparts.

Distance-learning courses often have minimal face-to-face interaction between student and instructor. In order to compensate for this, distance-learning courses often build in other interactive activities such as discussion forums and chat rooms. Whereas traditional lectures typically take place one or more times per week at the same time and in the same place, distance-learning classes often have lessons and activities available on demand. A process based assessment model is used in these classes and shifts the emphasis to student based learning and discovery (Bergstrom, 2010). Regardless of the advantages and disadvantages of each method of course delivery, the fact remains that the two methods differ in their approach to teaching. As such, the purpose of this paper is to begin to explore the factors that affect students' enrollment and ultimate success in distance-learning courses.

The remainder of this paper is divided into four sections. In Theory and Hypotheses, we develop a series of hypotheses that will be tested later in the paper. In Data and Methods, we detail the data collection and statistical methods used to test the hypothesis. In Results, we discuss the outcomes of our data analyses and results of our hypothesis testing. In Discussion, we explore the meaning of the results as well as their implications for both researchers and educators.

## **THEORY AND HYPOTHESES**

As students progress in their college programs, demands on their time often increase. As students age, they are more likely to be married and/or have children that are demanding of their time. As their time in school progresses, many if not most students have to deal with climbing student debt loads and may need to work in order to meet those financial obligations. We believe that these pressures may encourage students to gravitate toward the flexibility of distance learning courses (Pierrakeas et al, 2004).

As well, students will become more accustomed with the obligations and expectations of coursework at their school of choice, increasing the likelihood that a student will feel comfortable to enroll in a distance learning course (Tuckman, 2007). Taken together, we expect to find that:

*H1: Students will be more likely to take distance learning courses later in their academic programs.*

As discussed previously, there are both advantages and disadvantages associated with the provision of courses via distance learning. In terms of the net effect of distance learning on student performance, we have no reason to believe that students' performance will differ significantly from those of their peers who are taking the course in a traditional setting. Prior research has shown that learning outcomes need not be deficient in distance learning courses, so long as the teaching methods are also effective (Schultz et al, 2008; Kan & Cheung, 2007). Because our third hypothesis looks at post-Management 101 performance of students, we must first test the following hypothesis:

*H2: There will be no significant difference in the performance of students enrolled in a distance learning course in comparison with students enrolled in a traditional course.*

Although previous studies have considered a question similar to that of Hypothesis 2, there is very little research that has tracked student performance once those students have moved beyond a target course to see whether or not there are lasting effects of taking the given target course in a distance learning versus a traditional setting. This is of particular concern in so-called dual-mode schools that offer both online and traditional courses to the same group of students. Ultimately, it is important to understand whether or not a former distance learning student is able to perform equally well when they return to the traditional classroom. In addition to expecting no performance differences between distance learning and traditional students, we also do not expect to find performance differences as students move on to other coursework in their program:

*H3: There will be no significant difference in post-course performance between distance learning and traditional students.*

## **DATA AND METHODS**

Data was collected from 118 students enrolled in five different Management 101 Introduction to Business courses offered in the Spring and Summer semesters of 2009. As shown in Table 1, three of the courses were distance learning (47 students total) and two were taught in a traditional classroom setting (71 students total).

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## Variable Definitions

In order to identify the learning format of each course, a dummy variable, Dummy if Distance Learning, was created, which took the value of 1 if students took Management 101 via Distance Learning and 0 for the Traditional format course. Semester of Program was coded as a number from 1 to 8. This number took integer values and represents increments of fifteen hours' worth of courses that the students has completed (0-15 hours=1; 16-30 hours=2 and so on). To control for the possibility that differences might be due to differential student aptitudes, we controlled for each student's GPA. In results not reported, we also looked at the influence of such variables as gender and race but the results were robust in terms of sign and significance. In order to compare the performance of students inside and outside of the school of management, we created a dummy variable (School of Management) that took a value of 1 if the student was enrolled in a management major and zero otherwise (please see Table 2 for a breakdown of student enrollments). Grade in Next Management course was used to assess the performance of students after they had taken Management 101. This course was designated as the first management course taken after Management 101.

## Analyses

Hypothesis 1 was tested using a one-way ANOVA analysis with an F-test to test for significant difference between the stage of program in which students enrolled in the traditional versus distance learning course format (results are presented in Table1). Hypotheses 2 and 3 were tested using multiple regression and missing data was deleted list-wise (results are presented in Tables 3 and 4). Because we were concerned that significant results may be driven by differing performance among students from different colleges around campus, we also tested all hypotheses twice: once using all students enrolled in Management 101, and again using only those students who were enrolled in the School of Management. The two hypotheses were tested using the full sample of students, and again using only students enrolled in the School of Management. Tables 1, 3 and 4 outline the results of the study, discussed below, and Table 2 shows the breakdown of students in the study by college of enrollment.

## RESULTS

Results of our data analyses provided strong support for Hypothesis 1, indicating that students enroll in distance learning courses significantly later in their programs than do their peers who attend classes in a traditional setting. On average, students enrolled in the distance learning version of Management 101 were 1.34 semesters further along in their programs than their peers who took the course in a traditional classroom setting. Although the plan of study for for management students recommends that Management 101 be taken during the first year of

study, the typical student waited until roughly halfway through their program before taking the Distance Learning version of the course. As the p-values in Table 1 indicate, the differences between the means were highly significant. In results not reported, we also tested all hypotheses in the paper using credit hours completed in the program as an alternate measure of students' stage in the program. As with semester of program, credit hours completed showed a sizable and significant difference between students in distance learning and traditional classroom students in terms of stage of program.

<b>Table 1 – Descriptive Statistics and one-way ANOVA results comparing Distance Learning and Traditional students based on their Semester of Program (ranging from 1 to 8)</b>			
Course Type	N	Mean	Std. Dev'n
Traditional	47	2.83	1.79
Distance Learning	71	4.17	2.48
Total	118	3.64	2.32
F = 28.650, p-value = <0.001			

<b>Table 2 – Breakdown of students by school of enrollment.</b>		
College of Enrollment	Frequency	Percent
Management	35	29.4
All Others	83	70.6
TOTAL	118	100.0

Hypothesis 2 predicted that there would be no significant difference between distance learning and traditional students in terms of their performance in Management 101. Table 3 below shows the results of our hypothesis testing. Models 2a and 2b represent tests on the entire sample of students. In Model 2b, we controlled for the school in which a given student was enrolled to help rule out the possibility that results were driven by differential skill sets possessed by the students from different schools. In Model 2c, we tested the hypothesis using only Management students. In all three models, there was no significant difference in students' performance in Management 101 (with alpha set at 0.05), supporting Hypothesis 2.

Hypothesis 3 considers the performance of students in the sample who went on to take another course in Management. This is the key hypothesis of the paper because undetected differences in format and grading styles among the two course formats might be able to explain grades in Management 101, but any difference in actual learning that takes place in Management 101 should be reflected in students' performance as they progress in their respective programs. Models 3a and 3b test the hypothesis with the full sample of students, whereas Model 3c uses



only Management students. Note that the sample size drops appreciably in comparison with the test of Hypothesis 2 because not all students took a subsequent management course during the sampling window of the study. In all three samples, there was no significant difference between students who had taken the Management 101 course via distance learning. Surprisingly, and although there was no significant difference, the large and positive coefficients in all three models hint that students who had taken Management 101 via distance learning may in fact outperform their peers who took the course in a traditional setting.

<b>Table 3 – Multiple regression results for the effect of various factors on students’ grade in Management 101 (p-values in parentheses).</b>			
Dependent: Grade in Management 101	Model 2a	Model 2b	Model 2c
Dummy if Distance Learning	-0.150	-0.109	0.397
	(0.386)	(0.521)	(0.203)
Semester of Program	0.064	0.076	0.038
	(0.100)	(0.048)	(0.643)
GPA	1.014	0.992	0.823
	(<0.001)	(<0.001)	(<0.001)
Dummy if School of Management		0.419	
		(0.019)	
Intercept	-0.400	-0.538	0.185
	(0.118)	(0.037)	(0.664)
F-Test	47.585	38.698	12.672
	(<0.001)	(<0.001)	(<0.001)
Sample Size	108	108	31
R-Squared	0.576	0.598	0.576

<b>Table 4 – Multiple regression results for the effect of various factors on students’ grade in their next management class after Management 101 (p-values in parentheses).</b>			
Dependent: Grade in Next Management Course	Model 3a	Model 3b	Model 3c
Dummy if Distance Learning (Management 101)	0.428	0.424	0.482
	(0.145)	(0.154)	(0.237)
Semester of Program	-0.097	-0.095	-0.052
	(0.134)	(0.155)	(0.612)
GPA	1.236	1.232	1.073
	(<0.001)	(<0.001)	(<0.001)

<b>Table 4 – Multiple regression results for the effect of various factors on students’ grade in their next management class after Management 101 (p-values in parentheses).</b>			
Dependent: Grade in Next Management Course	Model 3a	Model 3b	Model 3c
Dummy if School of Management		0.071	
		(0.796)	
Intercept	-0.651	-0.679	-0.382
	(0.200)	(0.196)	(0.538)
F-Test	17.012	12.528	9.429
	(<0.001)	(<0.001)	(0.001)
Sample Size	51	51	21
R-Squared	0.515	0.516	0.611

## DISCUSSION

This study offers three key findings, the last of which is arguably the most important and least explored. Given a choice, students seem to take distance learning courses later in their programs. To the extent that this is true, schools may want to consider maintaining traditional classroom-based courses for those courses that fall earlier in a given program’s curriculum in addition to distance learning classes. Instead, schools may want to focus on making online courses available in the upper levels of the program first. In this study, the students had the opportunity to take the target class either in a traditional format or distance learning.

The second finding is that there seems to be no difference in performance between those students who take distance learning courses and those who take courses in a traditional classroom setting. More important is our last finding, which followed student performance after they had taken Management 101, to see whether future student performance remained unaffected by the format in which they took the introductory course. It is our hope that this study allays some of the concerns that faculty, students and administrators have regarding the quality of education provided in a distance learning environment with a foundational course.

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