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# **A COMPARISON OF AACSB, ACBSP, AND IACBE ACCREDITED U.S. BUSINESS PROGRAMS: AN INSTITUTIONAL RESOURCE PERSPECTIVE**

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## **ABSTRACT**

*Accreditation is a means by which business programs can assure accountability and quality to their stakeholders. However, attaining and maintaining accreditation can be a costly endeavor. The Accreditation Council for Business Schools and Programs (ACBSP), the Association to Advance Collegiate Schools of Business (AACSB), and the International Assembly for Collegiate Business Education (IACBE) differ with respect to the cost of accreditation and the rigidity and rigor of their accreditation guidelines. Therefore, we hypothesize that institutional resources may be a determining factor in the choice of accreditor. Our results provide compelling evidence to support our hypothesis. Public institutions are more likely to have AACSB-accredited business programs, whereas private institutions are more likely to have ACBSP- or IACBE-accredited business programs. Research institutions are more likely to have AACSB-accredited business programs, whereas master's and baccalaureate institutions are more likely to have ACBSP- or IACBE-accredited business programs. Institutions with AACSB-accredited business programs have the most assets and equipment, generate the most revenue overall and from all revenue sources examined except tuition and fees, expend the most on instruction, pay the highest professor salaries (at all ranks), and they have the most personnel (both total staff and instruction/research and public service staff) and students.*

**JEL:** I20; I21

**KEYWORDS:** Higher Education; Business Education; Accreditation; AACSB; ACBSP; IACBE

## **INTRODUCTION**

**B**usiness education and higher education in general face criticism on several fronts and are subject to increasing scrutiny. Enrollment and tuition are up, yet the benefits of higher education are suspect. Pringle and Michel (2007) advised that “state legislators, parents, taxpayers, and donors want universities to justify their investments by providing evidence of student learning” (p. 202). This justification seems warranted given Arum and Roksa’s (2011) compelling evidence demonstrating that undergraduate students are learning little, partly because of the lack of rigor at institutions of higher education. In addition, possessing an MBA degree and the mastery of MBA subject matter (i.e., grade point average) are uncorrelated with career success (Pfeffer & Fong, 2002). Business schools are at a crossroads and it is time to seriously rethink or redesign business education (Datar, Garvin, & Cullen, 2010). The *Wall Street Journal* recently reported that corporate recruiters are questioning the value of the undergraduate business degree and “they’re looking for candidates with a broader academic background” (Korn, 2012).

In light of these criticisms, it would be prudent for business schools to assure their stakeholders of quality and accountability. Accreditation is one method of holding a program or institution accountable and demonstrating that the program/institution meets at least a minimum quality threshold. The Council for Higher Education Accreditation (CHEA) defines accreditation as “a process of external quality review created and used by higher education to scrutinize colleges, universities and programs for quality assurance and quality improvement” (Eaton, 2011, p. 1). Accreditation serves several roles, two of which

include “assuring quality” and “engendering private sector confidence” (Eaton, 2011, pp. 2-3). CHEA indicates that “accreditation in the United States is about quality assurance and quality improvement. It is a process to scrutinize higher education institutions and programs” (Eaton, 2011, p. 11).

The goal of CHEA is to assure “that accrediting organizations contribute to maintaining and improving academic quality” (Eaton, 2011, p. 9). CHEA’s role is to review and scrutinize the quality and effectiveness of accreditors and “recognize” them. CHEA does not accredit institutions or programs; rather, CHEA accredits the accreditors. CHEA recognizes 60 institutional and programmatic accrediting organizations, including three that accredit business programs: the Accreditation Council for Business Schools and Programs (ACBSP), the Association to Advance Collegiate Schools of Business – International (AACSB), and the International Assembly for Collegiate Business Education (IACBE).

Attaining and maintaining accreditation may help a business program distinguish itself based on quality. However, accreditation requires a substantial financial investment. Roberts, Johnson, and Groesbeck (2004) indicated that “the annual incremental cost increases for even a small school...can easily exceed \$500,000” (p. 112). Given the sizable financial investment that is required for a business program to become accredited, the support of the broader institution is critical. As Scherer, Javalgi, Bryant and Tukul (2005) explained, “deans cannot achieve the desired objectives without the support of the central administration and adequate resources, which to some degree are governed by the institutions’ central administration. Institutional resources are essential for driving the mission and achieving the goals” (p. 656). Surprisingly, we could not find any research that considers the influence of institutional resources on choosing a business program accreditor. This paper aims to fill that void by analyzing the relationship between institutional resources and choice of accreditor. We will first discuss the direct and indirect costs associated with attaining and maintaining AACSB, ACBSP, and IACBE accreditation. Next, we summarize differences in the guidelines proffered by the three accreditors and how they affect the less visible costs of accreditation. Ultimately, the three accreditors require varying levels of financial commitment. Therefore, we hypothesize that the choice of business program accreditor may depend in large part on the resources of the institution. Statistical analysis provides support for this hypothesis.

## **BACKGROUND AND LITERATURE REVIEW**

All three business program accreditors are international in scope and, not surprisingly, the age of the accreditor is related to the number of programs it accredits. The AACSB is the oldest of the business school accreditors, founded in 1916. The AACSB is also the largest of the accreditors, accrediting 649 programs globally (488 in the U.S.). The AACSB had a monopoly on U.S. business school accreditation until 1988, when the ACBSP was founded. The IACBE is the newest of the accreditors, founded in 1997. There are 391 programs accredited by the ACBSP globally (322 in the U.S.) and 157 programs accredited by the IACBE globally (133 in the U.S.). The financial cost of attaining accreditation is quite substantial for the business program seeking accreditation as well as the institution to which it belongs. The direct costs for obtaining AACSB accreditation include one-time expenses of \$13,000 and an annual \$4,500 accreditation fee (AACSB, n.d.a). The direct costs for obtaining ACBSP accreditation include one-time expenses of \$7,400 and annual expenses of \$2,450 (ACBSP, n.d.a). Finally, the direct costs for obtaining IACBE accreditation include one-time expenses of \$7,500 and annual expenses of \$2,750 (IACBE, n.d.). The AACSB requires re-accreditation on a five-year cycle, whereas the ACBSP and IACBE are on a ten-year cycle. After factoring in the review cycle differences, the direct cost of AACSB accreditation is three to four times the direct costs of IACBE or ACBSP accreditation.

The aforementioned direct costs are the bare minimum. Workshops, conference fees, airfares, meals, and consultant fees can exceed \$50,000 in a modest effort to achieve AACSB accreditation and approach \$100,000 in a more aggressive attempt (Roberts et al., 2004). Furthermore, the direct costs paid to accreditors are only a fraction of the overall financial impact of accreditation. The assessment required

for assurance of learning requires both financial and human resources. The majority of respondents surveyed by Pringle and Michel (2007) estimated that their costs of assessment (e.g., expenses associated with workshops, faculty release time, assessment committee meetings, and software) exceeded \$10,000. Kelley, Tong and Choi (2010) found that many schools have budgets exceeding \$15,000 for implementing the assessment program.

There are also less visible costs such as faculty time and salaries (Lowrie & Willmott, 2009) that require additional financial resources. Several researchers have examined faculty resource requirements of AACSB-accredited programs (we found no research with respect to programs accredited by the ACBSP or IACBE). For example, AACSB-accredited schools have more faculty with terminal degrees than do non-AACSB-accredited schools (Yunker, 1998). Faculty salaries are higher at AACSB-accredited programs (Levernier & Miles, 1992). Bell and Joyce (2011) found differences at all ranks (instructor, assistant professor, associate professor, and full professor) in the state of Missouri; faculty at AACSB-accredited schools earned \$15,593 more on average. Hedrick, Henson, Krieg, and Wassell (2010) found that faculty at AACSB-accredited schools earn approximately 50% more as measured by basic salary; regression analyses controlling for selection bias and institutional and regional factors found quantitatively smaller but qualitatively similar results.

In addition to higher salaries, AACSB-accredited programs provide faculty incentives including training, support staff, stipends, and release time from teaching (Kelley et al., 2010). Faculty in AACSB-accredited schools are reallocating their efforts from teaching and students toward research (Roberts et al., 2004). They have lighter teaching loads (Yunker, 1998), teaching one less course per semester/quarter on average and earning about twice as much as faculty at non-AACSB-accredited programs when measured by pay per course taught (Hedrick et al., 2010). Furthermore, Yunker (1998) found that AACSB-accredited programs have more faculty than non-AACSB-accredited programs. Similarly, Jantzen (2000) found that non-candidate programs have far fewer full-time faculty compared to AACSB-candidate schools. Hedrick et al. (2010) stated that:

*because accreditation is costly, requiring the recruiting and retention of more productive (and hence more costly) faculty, universities with more resources are more likely to seek and obtain accreditation. (p. 289)*

...

*In deciding whether to obtain or maintain AACSB accreditation, university administrators should consider its full cost – which includes the cost of higher paid instructors teaching fewer courses. (p. 290)*

All told, the financial resources required for accreditation can be considerable. Heriot, Franklin, and Austin (2009) collected data from AACSB-accredited programs regarding one-time costs (e.g., use of consultants, mock review, peer-review team, infrastructure upgrades) and increased annual expenditures (e.g., faculty salaries, recruitment, technology, professional development, library holdings and information access, AACSB dues and conference participation). Heriot et al. reported means calculated based on only the schools that incurred the costs. We re-analyzed their results and calculated overall means (including the schools that did not incur costs), and our re-analysis indicates that, on average, the business schools in their sample expended \$31,770 on one-time costs, and increased annual expenditures by \$359,054. Furthermore, one school in Heriot et al.'s sample reported an annual opportunity cost of \$400,000 as a result of program reductions in order to support accreditation efforts. The majority of deans in their sample indicated that they did not fully anticipate the costs that were incurred by the accreditation process. Scherer et al. (2005) described the grim financial reality of accreditation:

*During tough economic times, business schools find it increasingly difficult to fund and sustain programs and attract and retain the highly qualified faculty necessary to meet the expectations of*

*accreditation. Business school deans are feeling the pressure to generate outside funds in the form of gifts and endowments to support programmatic needs. Without adequate funds, support for research, teaching, and continuous quality improvement initiatives cannot be satisfactorily implemented. (p. 659)*

...  
*Second-tier schools are facing pressure to recruit more students for financial reasons...Similarly, these schools do not have the necessary reputation or financial leverage to recruit the best faculty. In preparing for AACSB International accreditation, these factors need to be kept in mind. (p. 664)*

The less visible direct and indirect costs of accreditation may vary by accreditor depending on the rigor of their respective guidelines. Therefore, it is important for institutions to consider the similarities and differences between the accreditors' guidelines. The accreditation guidelines provided by all three accreditors are mission-based. The AACSB changed to mission-linked standards in 1991, whereas the ACBSP and IACBE were mission-based since inception. Many scholars have suggested that the emergence of the ACBSP as a competitor may have been partially responsible for AACSB's change to mission-linked standards (Lowrie & Willmott, 2009; McKenna, Cotton, Van Auken, 1997; Ramey, 1993). The accreditation guidelines proffered by the three accreditors are similar with respect to the overall content and underlying principles. Julian and Ofori-Dankwa (2006) described several similarities in the mission focus of the three accreditors. Furthermore, Ramey (1993) suggested that ACBSP is a clone of AACSB and Lowrie and Willmott (2009) stated that the mission linked approach of AACSB is "emulated by its national competitors, the ACBSP... and IACBE" (p. 412).

The accreditation guidelines of the ACBSP and IACBE, in particular, are very similar to one another (and nearly identical with respect to curricula and scholarship), perhaps because both accrediting bodies were founded by the same person: Dr. John L. Green, Jr. (IACBE, 2011a). Though the contents of the accreditors' guidelines are similar, the rigidity and rigor of the guidelines vary. Before discussing accreditor guideline differences, we should note that the levels of rigidity and rigor of accreditor guidelines are not necessarily related to the quality of the accredited programs. We are not aware of any empirical research demonstrating that business school quality varies with business school accreditor or with the rigor of their corresponding accreditation guidelines. First, accreditor guidelines differ in rigidity. Both the AACSB (2012) and ACBSP (2011a) have more rigid accreditation "standards" that must be met to attain or maintain accreditation. In contrast, the IACBE (2011b) has less rigid accreditation "principles" that should be met. Standards mandate arbitrary thresholds; principles allow for a more flexible continuum of accomplishments (IACBE, 2011b).

Second, accreditors differ in the rigor of the faculty qualification requirements. The ACBSP's definition of "academically qualified" (AQ) faculty is similar to the IACBE's definition of "doctorally qualified" (DQ) faculty, and they both have similar definitions of "professionally qualified" (PQ) faculty. However, the IACBE definitions could be considered less rigorous because they are suggested principles rather than required standards. The ACBSP and IACBE allow for a greater variety of pathways to becoming A/DQ and PQ compared to the AACSB. Therefore, the AACSB has the most rigorous, and the IACBE has the least rigorous definitions of A/DQ and PQ. Third, the required percentages of qualified faculty vary. The AACSB requires at least 90% of the faculty to be AQ or PQ and 50% to be AQ. The ACBSP criteria vary by undergraduate and graduate programs. The ACBSP requires that at least 80% of undergraduate and 90% of graduate credit hours be taught by AQ or PQ faculty. Therefore, the ACBSP's required percentage for overall AQ and PQ faculty is less rigorous than the AACSB's. The ACBSP requires that at least 40% of undergraduate and 70% of graduate credit hours be taught by AQ faculty, and 100% of doctorate credit hours be taught by AQ faculty. The ACBSP faculty qualification standards regarding the percentage of AQ faculty required at the graduate level are more rigorous than the AACSB's standards. However, the ACBSP's standards are less rigorous at the undergraduate level and would be less rigorous

overall because there are typically many more credit hours at the undergraduate level. Overall, the AACSB has the most rigorous requirements regarding the necessary percentages of qualified faculty. The IACBE has the least rigorous requirement, offering the principle that there should be at least one full-time DQ faculty for each program (i.e., major, concentration, or emphasis).

Finally, accreditors differ with respect to the rigor of research or scholarly activity requirements. The AACSB expects a significant portion of intellectual contributions to be peer-reviewed scholarship (see Standard 2), whereas the ACBSP and IACBE are more open to other forms of scholarly activity. In fact, the ACBSP (n.d.b) explicitly acknowledges that AACSB is the premier accreditor for research-oriented programs. In addition, Roller, Andrews, and Bovee (2003) surveyed faculty from AACSB-, ACBSP-, and IACBE-accredited business programs and found that all three groups of faculty rated AACSB the highest with respect to promoting excellence in research. The scholarly activity guidelines of the ACBSP and IACBE are nearly identical, but the ACBSP's guidelines could be regarded as more rigorous given that they are standards rather than principles.

The differences with respect to the definitions and required percentages of qualified faculty and faculty research/scholarly activity are important factors to consider before seeking accreditation, especially given that the AACSB standards related to faculty qualifications, faculty sufficiency, and intellectual contributions are, respectively, the first, second, and fourth most frequently cited reasons for a sixth year review (Flaherty & Trapnell, 2007). Undoubtedly, the more rigid and rigorous faculty qualifications will ultimately result in greater expenses related to faculty salary and support. In fact, deans of both AACSB-accredited and non-accredited schools indicated that AACSB accreditation is not reasonably possible for all schools (Henderson & Jordon, 1990). The magnitude of the required financial resources are not trivial, and the consequences for insufficient financial resources are serious given that financial strategy was the third most frequently cited reason for a sixth year review (Flaherty & Trapnell, 2007).

Financial measures are an important indicator of success for any organization. In the context of higher education, strong financial performance allows the institution and business program to invest in faculty and other resources. Obviously, institutions do not have unlimited resources. The current trend of reduced government funds, for public schools in particular, is creating a strain on the budgets of institutions and business programs and requires them to increasingly rely on grants and endowments for research, teaching, and faculty support (Thomas, 2007). Financial constraints could be a key factor in whether an institution will support the accreditation of its business program and, if so, which accreditor it will choose. If the financial barrier for accreditation varies by accreditor, perhaps institutional resources are related to the choice of business program accreditor. Given the differences across accreditors in both direct and indirect costs, we expect to find a relationship between institutional resources and choice of business program accreditor.

*Hypothesis: Institutions with AACSB-accredited business programs will have the most resources, institutions with ACBSP-accredited business programs will have the second-most resources, and institutions with IACBE-accredited business programs will have the fewest resources.*

## **DATA AND METHODOLOGY**

We obtained lists of AACSB-, ACBSP-, and IACBE-accredited business programs from the accreditors' websites in April, 2012. Institutional data for these business programs' respective institutions were downloaded from the Integrated Postsecondary Education Data System (IPEDS, n.d.) in May, 2012. IPEDS contains data from more than 7,500 institutions surveyed annually by the U.S. Department's National Center for Education Statistics. Institutions that participate in any federal student financial aid program are required to complete the surveys. Our initial sample included all U.S. institutions that had business programs accredited by any of the three CHEA-recognized business program accreditors. Some

institutions with multiple campus locations had IPEDS data that could not be disaggregated at the campus level and, as such, were excluded from the sample. Other institutions with accredited business programs did not have any data in IPEDS and were also excluded from the sample. In addition, 13 institutions that had business programs with dual accreditation were excluded.

The ACBSP accredits associate degree programs, but the AACSB does not accredit associate degree programs, and the IACBE only accredits associate degree programs if the program also offers degrees at a higher level. Therefore, we excluded all schools that had an “Associate’s” Carnegie Classification because these schools could only be accredited by ACBSP; institutional resources do not influence their choice of accreditor. We also excluded some institutions that we considered to be outliers.

We omitted two institutions with a specialized or professional Carnegie Classification not related to business. All retained institutions had a baccalaureate, master’s, research (or doctoral research), or school of business Carnegie Classification. We excluded seven private for-profit institutions because their revenue generation and resource management are quite different from that of public and private not-for-profit institutions. Our final sample contains 741 institutions, including 469 institutions with AACSB-accredited business programs, 153 institutions with ACBSP-accredited business programs, and 119 institutions with IACBE-accredited business programs. We compare the institutions on several variables to determine if there are meaningful statistical differences between institutions with business programs accredited by the AACSB, ACBSP, or IACBE. We first examine institutional characteristics including institutional control/affiliation and Carnegie Classification.

The associations between these variables and the chosen accreditor are tested using the Pearson chi-square test of association. Research institutions are more likely to have more resources than master’s institutions, which likely have more resources than baccalaureate institutions. In addition, public institutions tend to be larger and have more resources than private institutions. Therefore, we expect that research and public institutions would be more likely to have AACSB-accredited business programs and baccalaureate and private institutions would be more likely to have IACBE-accredited business programs. The remaining variables are analyzed using one-way ANOVAs.

We compare means across accreditors with respect to institutional assets (total net, total, and endowment), liabilities, and total core revenue. We also compare end-of-year equipment balance (which includes library collections) because all three accreditors require accredited business programs to have sufficient technology and library resources. In addition, we analyze mean differences with respect to several financial variables calculated on a per full-time-equivalent (FTE) enrollment basis, including total net assets, revenue measures (i.e., total core revenue; government grants and contracts; private gifts, grants, and contracts; tuition and fees; investment return; and other core revenue), and instructional expenses. Human resources variables including personnel headcount (both total FTE staff as well as instruction/research and public service FTE staff) and average professor salaries (both overall and by rank) are also compared by accreditor. Finally, we analyze student variables including FTE enrollment and tuition and fees. Data for all variables were downloaded from the IPEDS. We used the most recent data that were available: all financial data are from the 2009-2010 fiscal year, and all data for the human resource variables and student variables are from the 2010-2011 academic year.

## RESULTS

The Pearson chi-square test of the association between institutional control/affiliation and accreditor is statistically significant,  $\chi^2(4, N = 741) = 194, p < 0.001$ . As shown in Table 1, public institutions are more likely to be AACSB accredited. Private not-for-profit institutions tend not to be AACSB accredited. Those with no religious affiliation are more likely to be IACBE accredited whereas those with religious affiliation are more likely to be ACBSP or IACBE accredited. The proportion of ACBSP schools that are



private not-for-profit with religious affiliation is significantly greater than the proportions that are private not-for-profit with no religious affiliation or public.

Table 1: Association between Institutional Control/Affiliation and Accreditor

		Accreditor			Total	
		AACSB	ACBSP	IACBE		
Institutional affiliation	Private not-for-profit (no religious affiliation)	Count	74 <sup>a1</sup>	18 <sup>a1</sup>	37 <sup>b1</sup>	129
		Expected Count	81.6	26.6	20.7	--
		% of Total	10.0%	2.4%	5.0%	17.4%
	Private not-for-profit (religious affiliation)	Count	71 <sup>a2</sup>	92 <sup>b2</sup>	65 <sup>b1</sup>	228
		Expected Count	144.3	47.1	36.6	--
		% of Total	9.6%	12.4%	8.8%	30.8%
	Public	Count	324 <sup>a3</sup>	43 <sup>b1</sup>	17 <sup>c2</sup>	384
		Expected Count	243.0	79.3	61.7	--
		% of Total	43.7%	5.8%	2.3%	51.8%
	Total	Count	469	153	119	741
		% of Total	63.3%	20.6%	16.1%	100.0%

*This table depicts the descriptive statistics summarizing the association between institutional control/affiliation and accreditor. Each subscript letter denotes a subset of accreditor categories whose column proportions do not differ significantly from each other ( $p < 0.05$ ). Each superscript number denotes a subset of accreditor categories whose row proportions do not differ significantly from each other ( $p < 0.05$ ). The Pearson chi-square test of the association between institutional control/affiliation and accreditor is statistically significant,  $\chi^2(4, N = 741) = 194, p < 0.001$ .*

The association between Carnegie Classification and accreditor was also analyzed using the Pearson chi-square test. There were only four institutions with the “schools of business and management” Carnegie Classification, so these institutions were excluded from the analysis. The chi-square is statistically significant,  $\chi^2(4, N = 737) = 165, p < 0.001$ . As shown in Table 2, research institutions are more likely to be AACSB accredited. Master’s programs are more likely to be ACBSP or IACBE accredited, and Baccalaureate programs are even more likely to be ACBSP or IACBE accredited. Means and standard deviations for the remaining institutional resource variables are shown by accreditor in Table 3.

Mean differences between accreditors are in the hypothesized direction for all variables except “revenue from private gifts, grants, and contracts per FTE enrollment,” “revenue from tuition and fees per FTE enrollment,” and “tuition and fees.” F-tests of overall mean differences are statistically significant ( $p < 0.05$ ) for all variables except “revenue from tuition and fees per FTE enrollment” (see Table 3). We also conducted unweighted polynomial linear contrasts to test for trends in the resource variables across the ordered levels of the accreditor variable (with AACSB = 1, ACBSP = 2, and IACBE = 3). Trends for all variables except for “revenue from private gifts, grants, and contracts per FTE enrollment” and “revenue from tuition and fees per FTE enrollment” are statistically significant ( $p < 0.05$ ).

Levene’s tests of the homogeneity of variances are significant for all variables, so we used Tamhane's T2 for our post hoc tests because it does not assume equal variances. The results of the Tamhane’s T2 post hoc tests show that AACSB and ACBSP means are significantly different ( $p < 0.05$ ) for all resource variables except for “revenue from tuition and fees per FTE enrollment,” and that AACSB and IACBE means are significantly different for all resource variables except for “revenue from tuition and fees per FTE enrollment” and “revenue from private gifts, grants, and contracts per FTE enrollment” (see Table 3). The ACBSP and IACBE means are significantly different ( $p < 0.05$ ) for total net assets, total assets, “revenue from government grants and contracts per FTE enrollment,” “instruction expenses per FTE

enrollment,” and all faculty salary variables (all ranks combined as well as full professor, associate professor, assistant professor and instructor ranks). The rank-order differences for some variables are quite striking. Table 4 depicts the ranks and percentiles of the highest ranked institutions with ACBSP-accredited and IACBE-accredited business programs for a subset of the resource variables.

Table 2: Association between Carnegie Classification and Accreditor

		Accreditor			Total	
		AACSB	ACBSP	IACBE		
Carnegie Classification	Baccalaureate	Count	33 <sup>a1</sup>	46 <sup>b1</sup>	43 <sup>b1</sup>	122
		Expected Count	77.3	25.3	19.4	--
		% of Total	4.5%	6.2%	5.8%	16.6%
	Master's	Count	215 <sup>a2</sup>	97 <sup>b2</sup>	66 <sup>b2</sup>	378
		Expected Count	239.5	78.5	60.0	--
		% of Total	29.2%	13.2%	9.0%	51.3%
	Research	Count	219 <sup>a3</sup>	10 <sup>b3</sup>	8 <sup>b3</sup>	237
		Expected Count	150.2	49.2	37.6	--
		% of Total	29.7%	1.4%	1.1%	32.2%
Total		Count	467	153	117	737
		% of Total	63.4%	20.8%	15.9%	100.0%

*This table depicts the descriptive statistics summarizing the association between Carnegie Classification and accreditor. Each subscript letter denotes a subset of accreditor categories whose column proportions do not differ significantly from each other ( $p < 0.05$ ). Each superscript number denotes a subset of accreditor categories whose row proportions do not differ significantly from each other ( $p < 0.05$ ). The Pearson chi-square test of the association between Carnegie Classification and accreditor is statistically significant,  $\chi^2(4, N = 737) = 165, p < 0.001$ .*

Twenty-five percent or more of the institutions with AACSB-accredited business programs are larger in magnitude (in terms of total net assets, total core revenue, total FTE staff, and instruction/research and public service FTE staff) than the largest institution with an ACBSP-accredited business program. Differences in total net assets per FTE enrollment and total core revenue per FTE enrollment are less pronounced. Taken together, the results provide compelling support for our hypothesis. Institutional resources are related to choice of accreditor.

### CONCLUDING COMMENTS

Accreditation is a means through which business programs can assure stakeholders of the program’s commitment to accountability and quality. Unfortunately, there is scant empirical research comparing the three CHEA-recognized business program accreditors, so business programs seeking accreditation have little information available to guide their choice of accreditor. Julian and Ofori-Dankwa (2006) provided a narrative summary of some of the strategies and standards of three business program accreditors, but they called for more empirical research. The only prior empirical comparison of accreditors that we are aware of is a survey of faculty perceptions of accreditors (Roller et al., 2003). The goal of our paper was to extend the empirical research through an investigation of the influence of institutional resources on choice of accreditor. Attaining and maintaining accreditation can be a costly endeavor. Given that the AACSB, ACBSP, and IACBE differ with respect to the cost of accreditation and the rigidity and rigor of their accreditation guidelines, we hypothesized that institutional resources may be a determining factor in the choice of accreditor, and our results provided compelling evidence to support our hypothesis. We gathered data from IPEDS with respect to several resource variables for institutions with business programs accredited by the AACSB, ACBSP, or IACBE.

We found that public institutions are more likely to have AACSB-accredited business programs, whereas private institutions are more likely to have ACBSP- or IACBE-accredited business programs. Private not-for-profit institutions with no religious affiliation are more likely to have IACBE-accredited business programs than ACBSP-accredited business programs, whereas private not-for-profit institutions with

religious affiliation do not have a significant difference between IACBE or ACBSP accreditation. We also found that research institutions are more likely to have AACSB-accredited business programs, whereas master’s and baccalaureate institutions are more likely to have ACBSP- or IACBE-accredited business programs.

Table 3: Institutional Resource Mean Differences by Accreditor

Variable	AACSB		ACBSP		IACBE		F	Partial Eta Squared
	Means	SD	Means	SD	Means	SD		
<i>Institution Financial Variables</i>								
Total Net Assets	886.9MM <sup>a</sup>	2,284.3MM	83.1MM <sup>b</sup>	61.2MM	62.6MM <sup>c</sup>	73.7MM	17.2***	0.045
Total Assets	1,378.5MM <sup>a</sup>	3,357.4MM	134.8MM <sup>b</sup>	86.0MM	100.8MM <sup>c</sup>	120.5MM	19.1***	0.049
Endowment Assets	39,250 <sup>a</sup>	121,638	11,340	13,856	9,453 <sup>c</sup>	13,388	7.5***	0.020
Equipment Balance (Including Art & Library Collections)	175.0MM <sup>a</sup>	281.5MM	20.7MM	13.6MM	16.3MM <sup>c</sup>	18.7MM	41.8***	0.102
Total Liabilities	491.6MM <sup>a</sup>	1,139.7MM	51.7MM	43.7MM	38.2MM <sup>c</sup>	58.0MM	20.8***	0.054
Total Core Revenue	459.3MM <sup>a</sup>	643.8MM	58.0MM	34.2MM	48.1MM <sup>c</sup>	60.8MM	53.5***	0.127
<i>Financial Variables per FTE Enrollment</i>								
Total Net Assets	66,462 <sup>a</sup>	142,408	29,442	23,969	27,151 <sup>c</sup>	21,929	9.5***	0.025
Total Core Revenue	32,365 <sup>a</sup>	30,913	18,819	7,331	18,290 <sup>c</sup>	7,106	26.1***	0.066
Revenue from Gov't Grants & Contracts	6,226 <sup>a</sup>	10,165	2,256 <sup>b</sup>	2,666	1,254 <sup>c</sup>	1,601	25.3***	0.064
Revenue from Private Gifts, Grants & Contracts	2,690 <sup>a</sup>	4,840	1,516	1,923	2,385	5,442	3.9*	0.010
Revenue from Tuition & Fees	10,501	7,108	10,179	4,570	10,739	3,965	0.28	0.001
Revenue from Investment Return	3,933 <sup>a</sup>	11,976	1,054	1,283	1,050 <sup>c</sup>	1,944	7.8***	0.021
Other Core Revenue	4,009 <sup>a</sup>	8,589	1,057	6,214	764 <sup>c</sup>	1,278	14.9***	0.039
Instruction Expenses	11,481 <sup>a</sup>	10,375	7,187 <sup>b</sup>	2,868	6,155 <sup>c</sup>	2,121	27.9***	0.070
<i>Human Resource Variables</i>								
Total FTE Staff	2,954 <sup>a</sup>	3,642	497	253	411 <sup>c</sup>	420	63.4***	0.147
Instruction/Research & Public Service FTE Staff	958 <sup>a</sup>	1,023	198	102	166 <sup>c</sup>	174	77.0***	0.173
Average Salary-All Professor Ranks	77,572 <sup>a</sup>	16,730	59,777 <sup>b</sup>	9,704	55,257 <sup>c</sup>	10,610	159.2***	0.302
Average Salary-Full Professors	102,359 <sup>a</sup>	23,492	73,746 <sup>b</sup>	14,364	68,245 <sup>c</sup>	14,109	194.6***	0.347
Average Salary-Associate Professors	77,016 <sup>a</sup>	13,411	61,674 <sup>b</sup>	9,265	56,772 <sup>c</sup>	10,607	179.1***	0.328
Average Salary-Assistant Professors	65,961 <sup>a</sup>	11,467	53,516 <sup>b</sup>	7,262	49,505 <sup>c</sup>	8,241	167.8***	0.314
Average Salary-Instructors	50,605 <sup>a</sup>	14,365	45,229 <sup>b</sup>	7,738	40,930 <sup>c</sup>	8,511	27.6***	0.082
<i>Student Variables</i>								
FTE Enrollment	12,798 <sup>a</sup>	10,179	3,237	2,085	2,801 <sup>c</sup>	3,086	120.2***	0.246
Tuition & Fees	15,053 <sup>a</sup>	12,371	17,642	8,787	18,760 <sup>c</sup>	7,308	6.9**	0.019

This table shows means and standard deviations for the resource variables by accreditor. MM = million. FTE = full-time equivalent. The table also shows F-test results and the partial eta-squared for overall mean differences. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ . Sample sizes for all variables except “average salary-instructors” (AACSB  $n = 387$ , ACBSP  $n = 134$ , IACBE  $n = 97$ ) ranged as follows: AACSB ( $n = 460-469$ ), ACBSP ( $n = 151-153$ ), IACBE ( $n = 115-119$ ). Tamhane’s T2 was used for post hoc tests. The results of the post hoc tests are depicted in the table as follows: <sup>a</sup>Significantly different AACSB and ACBSP means ( $p < 0.05$ ). <sup>b</sup>Significantly different ACBSP and IACBE means ( $p < 0.05$ ). <sup>c</sup>Significantly different AACSB and IACBE means ( $p < 0.05$ ).

Table 4: Highest Ranked Institutions with ACBSP and IACBE Accredited Programs

Variable	Rank of Highest Ranked Institution		Percentile of Highest Ranked Institution	
	ACBSP	IACBE	ACBSP	IACBE
Total Net Assets	188	154	25	21
Total Core Revenue	240	100	32	13
Total FTE Staff	234	105	32	14
Instruction/Research & Public Service FTE Staff	209	107	28	14
Average Salary-All Professor Ranks	76	115	10	16
Full-Time Equivalent Enrollment	170	98	23	13
Total Net Assets per FTE enrollment	24	29	3	4
Total Core Revenue per FTE enrollment	24	37	3	5

*Institutions were rank-ordered according to the subset of resource variables shown in the table. Institutions with AACSB-accredited business programs ranked highest on all variables. The table depicts the ranks and percentiles of the highest ranked institutions with ACBSP-accredited and IACBE-accredited business programs.*

With respect to financial, human resource, and student variables, we found that institutions with AACSB-accredited business programs have the most assets and equipment, generate the most revenue overall and from all revenue sources except tuition and fees, expend the most on instruction, pay the highest professor salaries (at all ranks), and they have the most personnel (both total staff and instruction/research and public service staff) and students. In contrast, institutions with IACBE-accredited business programs have the least assets and equipment, generate the least total core revenue, expend the least on instruction, pay the lowest professor salaries (at all ranks), and they have the fewest personnel (both total staff and instruction/research staff) and students. Institutions with ACBSP-accredited business programs fall between those with AACSB- and IACBE-accredited programs with respect to most variables, but they are far more similar to institutions with IACBE-accredited business programs than institutions with AACSB-accredited business programs. Institutions with ACBSP-accredited business programs have significantly greater total net assets, total assets, revenue from government grants and contracts per FTE enrollment, expended more on instruction, and had higher professor salaries (at all ranks) compared to institutions with IACBE-accredited business programs.

We conclude that institutional resources influence accretor choice, but it could be argued that the opposite relationship is also plausible: Accreditors, because of their different requirements, might cause institutions to secure different levels of resources. However, though the accretor may influence business program resources, we speculate it is unlikely that the accretor has a major influence on the resources of the entire institution. We examined the differences in institutional resources by accretor, but it would also be informative to investigate business program resources by accretor. We suspect that the results with respect to business program resources would be similar to our findings. Future research could also compare accredited versus non-accredited business programs to determine factors that might influence the decision to become accredited in the first place. Are there institutional and business program resources differences or other factors that might influence the decision to seek accreditation?

Almost all research regarding business program accreditation has focused on AACSB accreditation. This is likely due, in part, to the more recent establishment of the ACBSP and IACBE. More research is needed with respect to other accreditors as well as comparisons among accreditors. In addition, our sample was limited to U.S. institutions. Given the global education market, future research related to non-U.S. institutions and global accreditors that are not CHEA-recognized (i.e., Association of MBAs [AMBA] and European Quality Improvement System [EQUIS]) would also be informative. Faced with the choice of competing business program accreditors, Trapnell (2007) offers the following advice:

*First, business school leaders must decide which one or more accreditation designations provide value to the school within its context, mission, student body, and its aspirations. Secondly, the*

*school must assess its probability of success based on its alignment with the accrediting body's philosophy and focus. (p. 71)*

Given that all three accreditors proffer mission-based guidelines and the contents and underlying philosophies of these guidelines are quite similar, there is little by which to distinguish accreditors. Our findings suggest that a major factor in determining the probability of success might be the institution's financial resources both overall and by FTE enrollment. It appears that there is an accreditation caste system for business programs that effectively screens and classifies the "haves" and "have-nots." This prompts several critical questions for future research: Do accreditors vary in the value they provide to stakeholders? What value is added by being accredited by more resource-intensive accreditors? Do business schools reap more benefits from some accreditors than others? Does the quality of business school education and student learning vary by accreditor?

Though deans of both AACSB-accredited and non-accredited schools indicated that AACSB accreditation is not reasonably possible for all schools, they did believe that the cost was justified (Henderson & Jordon, 1990). Faculty perceived that classroom instruction was worse, they were putting more effort into research and less effort into teaching and working with students, they were more stressed and less satisfied, and relationships with other faculty and administration were strained as a result of AACSB accreditation (Roberts et al., 2004). Yet, they believed that AACSB accreditation helps students and employers, helps the business program compete for resources, and is worth the effort (Roberts et al., 2004). Does the quality of prospective employees vary depending on the accreditor of the business program from which they obtained their degree? Employers do not appear to be taking note of the accreditation caste system. Only 36% considered AACSB accreditation as an important consideration in evaluating a candidate, 88% said it has no impact on new-hire salary, and 56% believed that applicants who graduated from an AACSB-accredited school were better prepared (Shiple & Johnson, 1991). In addition, it appears that CEOs with degrees from AACSB-accredited schools do not perform any better than, and may even perform worse than CEOs from non-AACSB-accredited schools (Jalbert, Jalbert, & Furumo, 2011). According to Yunker (2000),

*To most people, academically "accredited" means that the educational institution meets the reasonable minimum standards applied by the accrediting agency...To most people, the status of being academically accredited does not imply that the educational institution is appreciably superior to the average institution within the specific category.*

...

*At some point in the history of accreditation of business schools by the [AACSB], business educators began linking AACSB accreditation with "significantly above average" performance, rather than "performance at or above a reasonable minimum standards. (pp. 348-349)*

The AACSB is regarded by many as the most prestigious of the accreditors (Roller et al., 2003). The AACSB (n.d.b; n.d.c) brands itself as: "the benchmark of quality for business education worldwide," "the most internationally recognized, specialized designation," "the premier accreditation body for institutions," "an elite group of institutions," and "distinguished hallmark of excellence in management education." Many scholars perpetuate AACSB's branding efforts, saying that institutions seek AACSB accreditation to enhance the school's image (Miles, Hazeldine & Munilla, 2004), and it is the most influential accrediting body in the U.S. and "AACSB accredited schools are 'elite' institutions" (Lowrie & Willmott, 2009, p. 413). Trapnell (2007) states that "AACSB accreditation is clearly a major recognition that contributes to the stature of a business school... [and] is an important statement to key constituencies of the quality of the business school" (p. 68). Some have admonished that the AACSB's change in 1991 to "lower," easier to achieve mission-based standards (like those of the ACBSP) reduced the distinctiveness, exclusiveness, prestige, and value of AACSB accreditation (Jantzen, 2000; White,

Miles & Levernier, 2009). The ACBSP (n.d.b) brands itself as “the premier accrediting association for business schools and programs with a focus on teaching excellence.”

However, the ACBSP (2011b) appears to implicitly acknowledge the higher prestige of AACSB through their simplified dual accreditation process that is available to ACBSP institutions when they attain AACSB accreditation. Finally, the IACBE brands itself as “the leader in outcomes-based programmatic accreditation in business” (Gash, n.d.), but it appears to have the weakest or least recognizable brand, perhaps as a result of its more recent establishment. For example, deans from AACSB-accredited schools were not aware of competition from the IACBE (Roller et al., 2003). Are there actually differences among accreditors in quality or philosophy, or is it nothing more than accreditor prestige differences resulting from marketing and brand recognition? Unfortunately, there is little empirical evidence to support any differences among accreditors or even accredited vs. non-accredited programs, much less differences based on quality or value. The scant prior research has only reported stakeholder perceptions. Empirical research that goes beyond stakeholder perceptions is sorely needed.

We found a relationship between institutional resources and business program accretor. Institutions with public institutional control/affiliation, a research Carnegie Classification, greater financial resources (overall and by FTE enrollment), more human resources (i.e., greater headcount and higher professor salaries), and more students are more likely to have business programs that are accredited by AACSB. Future research is needed to determine if there are quality differences among schools accredited by the different business program accreditors and to determine the relative utility of accreditors for all stakeholders.

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# ASSESSMENT OF BUSINESS PROGRAMS: A REVIEW OF TWO MODELS

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## ABSTRACT

*This article presents two contrasting assessment programs implemented at a small School of Business in the Los Angeles area. The program for the undergraduate degree, which includes four majors, relies upon tight coordination and a centralized assessment group, while the graduate program, an MBA, relies upon individual courses as the key building blocks of the assessment program. This article shows ways in which pre- and post-tests, nationally normed instruments, longitudinal tracking, and cross-sectional analysis can be used to demonstrate effective assessment of learning in each program. Lastly, the article concludes by discussing ways to continually continuously improve a curriculum.*

**JEL:** M00 Business General

**KEYWORDS:** Assessment, Assurance of Learning, Business Accreditation, AACSB

## INTRODUCTION

Assessment is a critical issue in higher education today. Colleges and universities are moving to a more formal process of quality improvement that relies upon the entire faculty to decide issues of quality and content (Zemsky, 2011). However, in the transition from individual decision-makers to rigorous systems, the wide range of methods available (University of Wisconsin-Madison, 2011) can be overwhelming. While a great deal of literature is available, it can be difficult to locate models that compare and contrast the techniques. This paper reviews the implementation of two assessment models that successfully coexist in one small business school. In the graduate MBA program, individual faculty coordinate and assess each learning outcome, and the results compiled and evaluated at the program level. The undergraduate program (a consolidation of four majors) utilizes a core assessment committee and more tightly coordinated learning activities. This paper's goal is to help programs evaluate approaches to assessment through a close examination of a single case study. We begin with a literature review discussing the role of assessment in higher education. This paper then presents an overview of the three techniques used in the graduate assessment program: faculty rubrics, co-teaching with writing faculty, and an externally validated simulation. We then present an overview of the undergraduate program, and discuss how it uses a committee analysis and longitudinal processes to assess learning. The paper then ends by summarizing major lessons learned, study implications, and limitations of our analysis.

## LITERATURE REVIEW

Higher Education is continually being called upon to justify its value. Groups such as the Spellings' Commission (Zemsky, 2011) have been highly critical of colleges' and universities' ability to educate students. Changing landscapes in higher education, such as declining public support and increasing costs (Staley & Trinkle 2011) are forcing colleges to move from a system of *trust* to a system of *evidence*. Assessment is a tool for moving beyond anecdotes and into a rigorous and verifiable system of education. A wide variety of techniques, surveys, and validated tools exist to measure learning (University of Wisconsin-Madison 2011). These include qualitative measures relying on faculty and student self-assessments, such as the AAC&U LEAP Project's standardized rubrics (Miller & Morgaine, 2009). More

quantitative measures also exist, such as the Collegiate Learning Assessment, which assesses critical thinking. Disciplinary measures also exist, such as ETS MBA exam.

A good assessment program can significantly improve student learning and outsider perceptions. Assessment best practices require institutions to create formalized assessment processes, externally valid record sets, multiple years of data, a continuous improvement process (Scott & Ofori-Dankwa, 2006). Disciplinary accreditations also demand assessment processes beyond those required by regional accreditations. As an example, Pesta and Sherer confirm that schools seeking the AACSB business accreditation “must develop assessment tools that measure the effectiveness of their curriculum, as outlined in the AACSB assurance of learning standards” (2011, p. 163).

They say that each school has the freedom to determine which type of assessment works best given its policies, procedures, and structures, as long as the assessment is appropriate and consists of direct measures of learning. Many institutions trying to deal with the new demands focus heavily on quantitative measures that scale well. Unfortunately, a heavy emphasis on numerical data makes it more difficult for institutions to be flexible and responsive (Kilpatrick et. al, 2008). A constant tension exists between quantitative measures that are easily comparable and externally verifiable, and qualitative measures that more useful for internal improvement. Many scholars emphasize a process that focuses on improvement and local flexibility (Kelley, Tong, and Choi 2010, Sampson and Betters-Reed 2008, Treleaven and Voala 2008, and Romero 2008, Martell 2007a, & Martell 2007b). Focusing on the distinctiveness of each assessment process, Beard, Schwieger, and Surendran (2008) argue that assessment has to be consistent with an institution’s mission, and that it should add to the credibility and continuous improvement of learning and teaching. A number of scholars argue that accreditation measuring and reporting requirements impose an undesirable degree of rigidity and constriction in focus for business schools (Scott and Ofori-Dankwa 2006, and Kilpatrick, Lund Dean and Kilpatrick 2008).

However, other scholars argue that the flexibility dilutes quality (Francisco, Noland, and Sinclair, 2008, and Lowrie and Willmott 2009). Many nationally based improvement efforts, such as “No Child Left Behind,” focus heavily on quantitative measures that are easily verified and comparable between schools. Similarly, groups like Spellings’ Commission have emphasized the use rigid quantitative approaches as a way of measuring the quality of institutions (Zemsky, 2011). When used properly, assessment processes can improve the quality of learning. When focusing on assessment *for* learning, instead *of* assessment of learning, these techniques have a well-documented impact on learning outcomes (Stiggins, 2002, and Black & Wiliam, 1998). A variety of well-supported formative assessment policies can be shown to increase student outcomes (Black, Harrison, Lee, Marshall, and Wiliam, 2004). While the increased focus on assessment has justly increased the pressure on education to be accountable and transparent, it has had the unfortunately impact of making it less flexible (Zemsky, 2011).

For individual schools and colleges working to develop their own assessment programs, the balance between externally valid data, and data useful for improvement in a local context, is difficult. Minimizing faculty overload is a critical. How can assessment *of* learning be balanced with assessment *for* learning? This paper presents the process used by a small school of business during the 2010-2011 academic year. This paper tries to move beyond process-based roadmaps, such as Tillema, Leenknecht, and Segers (2011). Instead of looking at a calendar-based process, we analyze a working process. The case study provides a model of how the different conflicting purposes of assessment can be harmonized. We also show how program differences can lead to different assessment methods. Ultimately, we hope that this case helps address faculty assessment concerns.

### Graduate Program Assessment

The graduate MBA program uses an individual faculty level of coordination and analysis, with the results consolidated at the program level. The curriculum consists of 10 core courses and 2 electives. Students may finish the program in a single year by taking a full load of four courses per semester. The faculty

tends to be very stable from term to term. The courses are closely aligned with the program learning outcomes, and most of the courses can be taken in any sequence. The tight integration between Program Learning Objectives, PLOs, and courses in the MBA Program means that it is relatively straightforward to assign each course a primary responsibility for an outcome. Each faculty teaching a core course is responsible for his or her own course assessment. The instructor works on defining the outcome, measuring student pre- and post-tests, assessing benchmark assignments according to defined rubrics, and writes a report each term summarizing student learning and changes made. These reports are then aggregated at the end of each term for archiving and reporting to accreditation agencies. These links are shown in the table below. The table demonstrates the tight integration between outcomes and courses.

Table 1: Primary Assessment Responsibilities for the Graduate Program

Course	Leadership	Communication	Ethic	Global	Integrate	Domain-specific
WMBA 501 Managerial Accounting						X
WMBA 503 Quantitative Methods						X
WMBA 504 Managerial Economics						X
WMBA 505 Management & Organizational Behavior	X	X	X			X
WMBA 506 Marketing Concepts and Strategies				X		X
WMBA 507 Managerial Finance						X
WBMA 509 Management of IT		X				X
WMBA 510 Management of Global Enterprise				X		X
WMBA 560 Ethical Leadership	X		X			X
WMBA 562 Management Policy and Strategy					X	

*The table above shows the progression of courses in the MBA program. Each outcome for the program is listed. Places where the outcomes are emphasized have an 'X' character.*

## GRADUATE PROGRAM METHODS

The MBA program uses three primary approaches to assess outcomes. Each approach is demonstrated in the following sections by showing a specific example. Assessment with Faculty Rubrics Leadership in this MBA program is defined as the “ability to demonstrate leadership competencies.” It comprises the following specific outcomes: First, to develop and enhance existing leadership strengths in oneself and others and to acquire relevant, new leadership skills (Application, Synthesis, Evaluation) Second, to determine and select the most effective leadership approach after examining the context, the people, and the organization (Synthesis, Evaluation) Third, to assess the ability to lead a team towards the successful completion of goals (Evaluation) Leadership is primarily assessed in the WMBA 505 course, the initial core course in the program. One of the assignments used to assess student leadership is a 60-140 page personal portfolio. It is generated over a number of weeks, and includes personal reflections, student ‘stories’ (pertaining to course subjects) and a 100-day leadership implementation plan. An example from the portfolio assessment can be seen in the following tables. The two faculty teaching WMBA 505 use the rubric below to grade every assignment (Table 2). This rubric is used for all sections offered.

For each section, professors generate the table below to demonstrate student growth from the pre-course assignment to the final project (due on the last week of class). This table demonstrates the increase on satisfactory completion of the learning outcomes from the initial assignment to the final assignment Through close collaboration, the two professors formulated a coherent quality standard in the different sections of the course. During the initial development of the assignment, other faculty members were consulted on both the assignment and the grading standards. Assessment Through Co-teaching with Writing Faculty Communication is defined as the “ability to communicate effectively.” This learning

outcome centers on the following: First, to demonstrate the application of effective communication skills in speaking, writing, and using electronic media. (Application, Analysis). Second, ability to express one’s position succinctly, logically, and persuasively (Synthesis). Third, to apply communication strategies to improve team effectiveness (Application, Analysis). Fourth, to apply communication skills across diverse contexts and environments (Application, Analysis, Synthesis)

Table 2: Rubric Used to Assess Portfolio Assignment in an MBA Course

Assessment Criteria/	Exceeds the Standard	Meets the Standard	Doesn’t meet Standard	Max. Points
<b>Dimension</b>				
Organization and Presentation	Excellent Presentation with pertinent graphics/artifacts Org. like a Mini-book. Very Creative. 3	Good Presentation using appropriate documents and graphics 2	Portfolio seems like a bunch of disparate papers put together 1	3
Content Coverage	Very comprehensive and much beyond what is stated in the template 3	Full coverage of all the elements required 2	Missing assignments: does not include all the required information 1	3
Quality of 2 Key Assignments (Extra Credit)	A Based on Actual Grade/quality 3	B Based on Actual Grade/Quality 2	C Actual Grade/ Quality 0	3
Application of Leadership/Ethics	Excellent integration of Leadership/ethics: Personal and Professional life 3	Good example of application of material 3	Shows no or very little application of material learned 1	3

The table above is a rubric used to assess a portfolio assignment in an MBA course. It was jointly created by 2 faculty, who then used it in all sections offered.

The two MBA 505 “Management and Organizational Behavior “ faculty co-teach with writing faculty. Working together, the two instructors jointly administer pre- and post-tests, grade papers, and provide instruction. In the first term where faculty co-taught the course, the validated pre-test found that only 50% of students were writing at an acceptable graduate level. Each paper was also assessed by a minimum of 2 external writing professors to ensure valid and reliable scoring (with an inter-rater reliability of 80%). The assignment at that time consisted of a brief written description, in-class discussion, and a two-stage (proposal and final copy) process two interventions were then tested in the subsequent academic year. In the Fall term, the paper assignment was redesigned into a series of 6 assignments, supported by a number of in-class workshops. In the Spring, an additional writing professor was included and a number of additional one-on-one sessions were added. The external writing professors provide scoring validity. So far, the additional interventions have not brought significant improvement in average scores. While disappointing, the high degree of external validity provided by writing faculty provides a reliable way of testing interventions in coming terms. Assessing with Externally-Validated Simulations Integration in this MBA program is defined as the “ability to integrate strategies within overall organizational context.” It entails the following: First, to identify salient features of complex situations and organizations and be able to recommend an effective change strategy (Synthesis). Second, ability to adapt strategic thinking creatively to address unpredictable situations and contexts (Analysis, Synthesis). Third, to demonstrate the ability to integrate and synthesize various functional areas and to assess their effectiveness in terms of achieving overall organizational goals/success (Synthesis, Evaluation)

Table 3: Student Growth from Pre-course to Final Project

Assessment Criteria/ Dimensions	Exceeded the Standard	Met the Standard	Did not meet Standard
Pre-Class Assignment: Values to Vision Passion to Purpose Course-end Check point: Course Takeaways 100 Day Leadership Implementation Plan	50%	42%	8%
	75%	17%	8%

The table above shows progress by students from the pre-class assignment to the post-class assignment. It shows that students who initially met the standard at a basic level were able to improve their learning by the end of the course.

The two capstone faculty members use the CAPSIM business simulation to assess integration. This is a computer-based simulation emphasizing strategy and the alignment of all parts of a firm. It is team-based, and takes place over a series of simulated years (each taking one “turn” by the students for decision making). One of the advantages of a nationally normed simulation instead of an exit examination is that it provides greater motivation to students. For example, one of the nationally normed MBA exit exams was piloted for a single academic year. Unfortunately, the students did not care much about their scores. As a result, many simply raced through the exam without really trying to score well. While assigning a high point value to the exam results was tempting, the lack of alignment between the exam contents and the MBA curriculum made this unfair to students. The exam company also did not provide detailed results, but limited the six-hour in-class exam to a summary measure and 6 sub-measures.

Using a simulation to compete against other MBA students nationally provides a much more motivating experience for students. The task covers many of the same skills as the curriculum, and emphasizes a team-based decision-making approach similar to how most businesses work. Through a careful statistical analysis, it was determined that the sub-scores available in the simulation provide similar feedback to the nationally-normed ETS exam, and the practical nature of the exercises makes it a valuable learning experience (instead just a summative assessment exercise).

### Undergraduate Program Assessment

The undergraduate program uses a core assessment committee and more tightly coordinated learning activities. The program consists of four majors: Management, Marketing, Fashion Marketing, and Accounting. All undergraduate students take twelve common core courses. The four majors are not assessed separately, but only as an overall business degree program. Unlike the graduate program, the undergraduate mapping of outcomes to courses is complex. The undergraduate program is designed to last 4 years (as opposed to a one-year MBA), and there is much more sequencing and longitudinal growth. Due to the program’s comprehensiveness, there is also more variation from term to term. A greater number of instructors are used, and a larger number of offered sections must be coordinated.

The following table shows the key assessment points at which outcomes are introduced, developed, and mastered. Each outcome is assessed at an *introductory* level, *developmental* level, and *mastery* level. Please note that these outcomes are generally taught in every course; the following table indicates the key points at which the outcome is assessed by the committee. The table demonstrates the longitudinal growth expected by students in the program.

### Undergraduate Learning Methods

The undergraduate assessment process initially used a similar assessment model. However, the increased number of outcomes, courses, and faculty made coordination difficult. To remedy this model, a committee drives all assessment-related activity. This multi-disciplinary group is composed of faculty from each program. After developing and simplifying the program learning outcomes, the group created a series of benchmarked assignments used in all core courses. Throughout each semester, the committee coordinates with faculty teaching these courses. Faculty members are responsible for ensuring that all student work for each of the key assignments is submitted to the university course management system (Moodle). Faculty members are also responsible for using the provided standardized rubrics in Moodle.

At the end of each semester, the committee reviews all submitted work in Moodle. They then create a report focusing on two elements: course-by-course analysis, and longitudinal analysis. The following sections provide two examples of these analyses.

### Committee Course Analysis

For each core course, the committee examines all submitted work and answers the following questions. First, assignment/rubric: Did the faculty use the required assignment, collect student work, and grade using the provided rubric? Did they provide overall and sub-scale scores? Second, usage of the

University’s online submission source usage (Moodle): Did the faculty use the online submission source, for posting files, collecting student work, and for online grading? Third, learning outcome: Did students demonstrate learning in the appropriate learning outcome? How does that compare to work in previous terms and in similar sections?

Table 5: Assessment Responsibilities for the Undergraduate Program

	Communication	Ethics	Global	Leadership
MGMT 100 Intro. to Business	Introduce		Introduce	Introduce
MGMT 110 Legal		Introduce		
ACCT 205 Act. I				
ACCT 206 Act. II				
MRKT 301 Marketing		Develop	Develop	
MGMT 326 Mgmt. & Org. Behavior	Develop		Develop	Develop
MGMT 336 IT	Develop			
MGMT 350 Ethics		Develop		Develop
FINA 360 Financial Management	Develop	Develop		
MGMT 400 Operations Management				
MGMT 461 Leadership		Master		Master
MGMT 483 Capstone	Master		Master	

*The table above shows the progression of courses in the BBA program. Each outcome for the program is listed. Places where the outcomes are emphasized are shown as “introduce,” “develop,” or “master” to show the expected level of student performance.*

Assessment of each course is qualitative, rather than quantitative. Individual faculty members are all required to use rubrics, but the overall assessment program relies upon the expert opinion of the committee members. As an example, the marketing course focuses on assessing ethics and global outcomes. The key benchmark assignment requires students to analyze a global brand. Students individually write a paper discussing variations in product, price, place, and promotion (the 4 Ps of marketing). They then are responsible for creating a marketing plan that contains an analysis of cultural reasons for different marketing approaches. The standardized rubric below is used to grade each assignment. It is used by all faculty teaching the core marketing course.

Because 4-6 sections of this course are offered each term, it requires coordination by the department offering the course. While some faculty experience a tough learning curve using the course management system, overall, the use of a central repository minimizes the work of the assessment committee. Committee Longitudinal Analysis Beyond just evaluating work done in individual courses, the assessment committee also looks at the progression of student work from the freshman to the senior level.

This answers questions of alignment and value-added nature. One outcome that is regularly assessed is communication. This is broken into written and verbal aspects. For written communication, the assessment committee pulls a sample of student work from the “Introduction to Management” freshman course, a junior “Management of Organizational Behavior” course, and the senior “Leadership” course.

By comparing each sample, the committee can see growth over time and assess weaknesses. Improving written communication requires more work than the simpler co-teaching method used by the MBA program. Because there are so many more undergraduate students and faculty, it would be cost-prohibitive to co-teach each of these courses. As a result, a semester-long Faculty Learning Community is being conducted to improve and align business faculty’s written communication instruction. One of the



key attributes of this approach is that it focuses on education rather than assessment. Assessment is simply the process of curriculum management in a scientific manner; improving instruction and faculty knowledge leads to improved assessable outcomes. Focusing on the education of faculty in a low-stress, highly-collaborative, and bottom-up driven process allows better buy-in and less of the top-down “we have to do X” attitude that often is driven by accreditation requirements.

Table 6: Rubric used to assess globalism assignment in marketing course

<b>Rubric</b>	<b>Beginner: Does Not Meet Standard Points</b>	<b>Novice: Nearly Meets Standard Points</b>	<b>Proficient: Meets Standard Points</b>	<b>Advanced: Exceeds Standard points</b>
Identification of Global/Cultural Factors	No or incomplete identification of some or all of the following relevant cultural factors	Some identification of most of the relevant factors	Clear identification of relevant factors	Detailed identification of all relevant factors
Analysis of Marketing Mix and Cultural Factors	No analysis of impact of relevant cultural issues; Erroneous analysis of impact	Some analysis of impact of cultural factors: Some inaccuracies in analysis	Clear analysis of impact of cultural factors; Accurate analysis of impact	Detailed and accurate analysis of impact of relevant cultural factors
Application of Key Marketing Concepts to the Situation	No application of theory/concepts to specific marketing situation; Incorrect conclusions or recommendations made	Some application of theory/concepts to specific marketing situation; weak conclusions or recommendations made	Clear application of theory/concepts to specific marketing situation; Valid conclusions and good recommendations given	Comprehensive application of theory/concepts to specific marketing situation; Strong conclusions made” creative recommendations given

*The table above is a rubric used to assess a globalism assignment in an marketing course. It was jointly created by the marketing faculty, who use it in all sections offered.*

For oral communication, faculty taped student presentations in the “Introduction to Business” freshman course, the junior “Management of IT” course, and in the senior capstone course. This provides a longitudinal view of student growth over time. Simply viewing a sample of student presentations provides highly visible evidence of learning. In order to move from a more qualitative approach, faculty are planning on running another faculty learning community to jointly work with public speaking faculty. This should help with standard approaches to developing this skill. Taping presentations with digital camcorders is relatively easy and low-cost, and provides direct evidence for assessment. In future terms, the committee plans on having a number of courses video-taped for assessment purposes. The courses taped should vary each term. This will allow the assessment committee to conduct a rolling view of all courses over a multi-year assessment cycle.

## CONCLUSION

This paper presents a case study of a small university’s two contrasting assessment programs. The methods used are able to satisfy the two conflicting goals of assessment. External quality assurance is developed through the use of an externally validated case simulation. Internal improvement goals are met through the use of faculty-driven assessments. Longitudinal data is collected and assessed by a committee, and all results are regularly reported to stakeholders. The major lesson learned from this study is that there is no one single “right” way to do assessment. Depending on local conditions, a variety of approaches may all satisfy a program’s needs. Using a variety of methods driven and developed by individual faculty members can lead to a stronger ‘bottom-up’ approach to quality assurance. Because this is a single case study, it has some limitations. The research was conducted at a small business school, meaning that the results may not be generalizable to larger schools or different majors. Because this project used a qualitative process, the results may not be easy to compare to other situations. In future work, we plan to develop more assessment case studies. These studies should help decision makers by providing concrete examples of successful assessment programs. We hope that the results of this study are useful to other schools looking to develop their assessment programs. The wide range of tactics and strategies available today can be overwhelming, but this case provides a concrete example for broader emulation.

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# INTERNSHIPS AND THE ASSESSMENT OF STUDENT LEARNING

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## ABSTRACT

*The use of internships is a powerful learning tool that allow business students to make connections between their classroom experience and the world of work. If designed appropriately and positioned correctly in the curriculum, they can also be an ideal opportunity to conduct assurance of learning activities related to business school accreditation. This study reports on survey results relating to business schools' use of internships in their assurance of learning efforts and describes one school's successful attempt to use internships as the key platform for its well-developed assurance of learning program.*

**JEL:** M10

**KEYWORDS:** assessment, internships, student learning, experiential learning, business education

## INTRODUCTION

A significant body of literature suggests that people learn most effectively through active learning, when they do something with their knowledge [e.g. Bonwell & Eison, 1991]. Observers both outside and inside the academy have criticized business schools' for providing so few active, practical learning experiences. For example, the Accounting Education Change Commission [1990], and Pearce [1999], both criticize the lack of relevance in business education, especially the lack of practical experiences such as those provided by internships. As we discuss in a later section, internships are an effective, active learning tool in the business disciplines. In addition to the practical experience, internships provide an opportunity to incorporate academic assignments in which students connect their internships to their classroom business curriculum. This linking of theory and work experience can enhance the total business education for students helping to ensure that students see the relevance of their classroom learning. Despite the criticism offered by outsiders and the apparent benefits of internships as an educational tool, research suggests that very few business schools require all students to complete internships [Updyke & Sander, 2005].

In addition to being a relevant and effective educational practice, internships and their attendant academic assignments provide an effective platform on which to conduct assessment activities (called "assurance of learning" or "AOL" in business schools). Revisions to the Accreditation Standards for Business Accreditation from the AACSB International (AACSB) have generated unprecedented interest in AOL activities and nearly all business schools are seeking better methods for demonstrating that their students are, indeed, learning what they intend for them to learn. Students successfully drawing on concepts and skills learned in previous academic experiences and applying them to an actual work situation are more powerful indications of learning than AOL attached to the classroom course in which students first learn those concepts and skills. As outlined in the 1992 American Association for Higher Education Assessment Forum's Nine Principles of Good Practice for Assessing Student Learning [American Association for Higher Education, 1992], schools need to assess not only what students learn at a particular time in a particular course, but also what they can do with what they know through later performance. In other words, AOL should involve evaluating the effects of an entire program on student learning and students' ability to integrate and apply what they have learned. A well-developed AOL

program entails a much broader view than evaluating what students learn in a particular course and assessment connected to internships are an ideal element of that sort of AOL program.

Since the mid-1980s, the Butler University College of Business (COB) has required all students to complete two internships. The faculty has always been adamant that a substantial proportion of the course grade must be based on academic papers and presentations, both of which reflect students' connection of business concepts to their work experiences. The grading structure remains relatively unchanged since the program began, and calls for 30 percent of course grades to be based on supervisors' evaluations, with 70 percent based on instructors' evaluation of written and oral assignments.

While the faculty has always required students to demonstrate their learning through assignments for the purpose of determining their grades, it only recently began using the assignments to measure students' learning across the business curriculum. Internship assignments now are a key component of the AOL program with respect to students' accomplishment of four of the seven learning objectives for business majors: general business knowledge, global issues' importance in business, problem-solving and thinking skills, and communications skills. The objectives of this paper include 1) to review the literature relative to internships and their use in assessing student learning, 2) to report the results of a survey designed to determine the extent to which business schools use internships and related assignments for assessment purposes, and 3) to report how one business school uses internships and connected student assignments for assessment of student learning.

## LITERATURE REVIEW

Studies in a wide variety of disciplines emphasize the many advantages of internships and cooperative education experiences [e.g., Maskooki, Rama & Raghunandan, 1998, p. 75; Kelly, 2007, p. 10; Beard, 1998, p. 507-08]. Although cooperative education experiences have different characteristics than internship programs, they both involve a student actively working as a requirement of or a supplement to a program of business study, either with or without academic credit. For purposes of the discussion in this paper, we refer to both types of experiences as an "internship." Internships provide many advantages to students, their business schools, and employers.

For example, internships introduce many students to the world of work and the necessary work habits and values that are necessary to succeed in the world of work. Moreover, they provide students the opportunity to gain valuable practical business experience and insights that might be otherwise absent from the business curriculum [e.g., Gabris & Mitchell, 1989, p. 485]. Internships also allow students to connect their practical experiences in the workplace with the theoretical constructs that they have explored in the classroom [e.g., Clark, 2003, p. 472-73; Young, Wright & Stein, 2006, p. 131]. In addition, students become more engaged in their classroom work and become better students when they are better able to understand the relevance of the theoretical models. Some studies have noted improved student classroom performance upon their return from internship experiences. [e.g., English & Koeppen, 1993; Clark, 2003, p. 473]. When properly monitored, many internships offer students significant educational benefits even when no formal effort is made to link the experience to classroom activities.

Through their professional work experience, students receive an "inside track" in finding post-college employment, which is becoming an increasingly significant factor in a depressed job market for recent, inexperienced college graduates. [e.g., Knemeyer & Murphy, 2001, p. 17; Knouse & Fontenot, 2008]. An internship, even if it is unsuccessful for the student, can help students discern career direction. Finally, although an increasing proportion of internships are unpaid in a down economy, students are often able to earn some money to help offset their educational experiences [Hall, Stiles, Kuzma & Elliott, 1995, p. 43-44]. Internship programs also provide numerous benefits for business schools and employers. For example, they can provide regular points of contact between businesses and business schools and their faculty [Maskooki, Rama & Raghunandan, 1998, p. 74]. Internship programs allow employers to

evaluate potential employees over an extended period without any formal commitment to hire the students permanently [e.g., Knechel & Snowball, 1987, p. 800; Hall, Stiles, Kuzma & Elliott, 1995, p. 43-44; Employers Rate Internship Programs as Most Effective Recruiting Tool, 2004]. Finally, subject to the requirements and limitations of the Fair Labor Standards Act and appropriate norms of business ethics, internship programs can serve as a source of inexpensive, educated, highly motivated labor for employers [Bell, 1994, p. 481].

These advantages have led many business schools to institute internship programs and provide academic credit for the programs [e.g., English & Koeppen, 1993, p. 292; Lipka, 2010]. However, few business schools have made internships a universal requirement. In an earlier survey of AACSB institutions, Updyke and Sander [2005] found that of 133 respondents, 114 offered internship programs. Of those 114, only 12 required internships for all business majors, while another 16 required it for some programs. Beard [1998] reported comparable findings.

In its standards for accreditation, the AACSB establishes detailed standards for the acquisition and maintenance of accredited business programs. Many business schools view AACSB accreditation as representing a signal of quality to their prospective students and other stakeholders and aspire to either achieve or maintain accreditation. AACSB touts its standards as being “mission driven,” allowing for a variety of different types of educational institutions to respond to various types of missions and markets, rather than a “one size fits all” method of evaluation modeled on premier research institutions. The standards emphasize quality delivery of the institution’s stated mission, assurance of student learning, and continuous improvement—all goals which should resonate with business faculty. However, the standards convey some relevant general mission expectations:

*In general, appropriateness for higher education for management implies learning experiences and career preparation that goes well beyond skill training. It conveys an expectation of education about the context within which management careers develop, as well as capacities for direct applications of functional skills. Students should comprehend the “why” of business activity as well as the “how.” [AACSB International, Eligibility Procedures..., 2010, p. 18]*

Moreover, the Standards emphasize that “...students also are responsible to take an active role in their learning experiences. Passive learning should not be the sole, or primary, model for collegiate business education.” [AACSB International, Eligibility Procedures..., 2010, p. 30] As the advantages of internships cited above make clear, a well-managed internship program could integrally contribute to the achievement of these expectations.

Likewise, internship programs provide the opportunity to measure student learning in an academic program and “to assist the school and faculty members to improve programs and courses. By measuring learning, the school can evaluate its students’ success at achieving learning goals, can use the measures to plan improvement efforts, and (depending on the type of measures) can provide feedback and guidance for individual students.” [AACSB International, Eligibility Procedures..., 2010, p. 58]

The AACSB standards require that schools establish programmatic learning goals, that they monitor student performance to make sure that these goals are met, and that they use these measures of achievement as a continuous improvement tool to make programmatic changes, i.e., “close the loop.” [See generally, e.g., Martell, 2007; Interview/Kathryn Martell, 2007]. The standards note that these goals could include general knowledge and skills, such as communication skills, problem-solving ability, critical thinking, etc., as well as management-specific skills, ethical and legal responsibilities, financial theories, etc. The AACSB accepts that schools may assure learning outcomes by selection (which arguably does not assure any learning at the particular institution at all), course-embedded measurement

tools, or by stand-alone testing or performance. The standards make it clear that indirect measures of student learning, such as surveys of employers or alumni, can supplement but not supplant direct measures of learning. Although many schools seem to be using a stand-alone test, such as the Educational Testing Service (ETS) Major Field Test, to assess overall business knowledge [Kelley, Tong & Choi, 2010, p. 300], such a measurement provides virtually no information to assess many specific programmatic goals [e.g., Pritchard, Saccucci, & Potter, 2010], particularly those related to general knowledge and skills. The standards indicate that a capstone course, such as a “capstone business-strategy course” might be an appropriate place to imbed the measurement of achievement of more integrative goals. We suggest that an alternative place to assess achievement of student learning and accomplishment of programmatic goals is in an internship course, which, by definition, is tied to a student’s experience in the messiness and ambiguity of the business world. In fact, for this reason, we argue that internships provide a superior context in which to assess accomplishment of programmatic goals compared to the capstone business strategy course. Although universities are experimenting with a wide variety of educational approaches and measurement techniques [e.g., Weldy & Turnipseed, 2010, p. 268-69; Pringle & Michel, 2007], we have found no previous published reports of attempts to use internships for formal programmatic assessment for AACSB.

## **SURVEY DATA AND METHODOLOGY**

To investigate the question of how domestic AACSB accredited business schools use internship programs in their undergraduate AOL programs, we constructed a survey. In addition to basic demographic information, the survey items explored the characteristics of the respondents’ internship programs, the stated learning objectives that were connected to the internship programs and the types of AOL methodologies employed in the internship programs. The key survey items themselves appear in Tables 1 through 6, which also display results. The target respondents for the survey were associate deans at AACSB accredited business schools in the U.S. In July 2010, we downloaded a list of all accredited schools from the AACSB website. This resulted in a list of 599 colleges and universities. We eliminated schools that are not located in the U.S. or that do not offer undergraduate programs in business. We found the email contact information for the associate deans at the remaining 427 schools by examining the websites for each school. The target respondents were sent an email inviting them to participate in the survey by clicking on a link to the survey, which was housed on Survey Monkey. After 2 weeks, non-respondents were sent a second invitation. Ultimately, we received 107 responses (a 25% response rate), although respondents were permitted to skip questions and the results show that some of them did so.

## **SURVEY RESULTS**

For the schools that responded to the survey, the average university enrollment is 13,703 while the average business school enrollment is 2,143. For most of these schools, internships are an elective component of their programs. Only four schools (3.7% of respondents) require internships for all major programs, and only 16 schools (15% of respondents) indicate that one or more internships are required for at least some of their programs. Typically, schools award 3 semester hours of credit for an internship, and while that was also the maximum credit awarded for a single internship experience for the majority of the schools, five schools award up to 12 semester hours. Fifty-five percent of those responding to the question about grading systems indicate that internships are done on a pass/fail basis. About 43 percent indicate that internships receive a letter grade and the rest indicate some combination depending on circumstances. The vast majority of respondents indicate that students in their internship programs are required to complete reports, reflections, or academic assignments as part of the course grade (letter grade or pass/fail) in internships, with approximately 90 percent reporting that student work is evaluated by business faculty. Table 1 indicates the types of activities schools require.



Table 1: Academic Requirements for Internships

<b>Survey item: The following types of student reporting, reflection and academic assignments typically are required for internship credit (check all that apply):</b>		
<b>Answer Options</b>	<b>Response Percent</b>	<b>Response Count</b>
Summary of activities on periodic basis	81.3%	65
Personal reflection on professional or skill development related to work duties	83.8%	67
Project and report related to work duties	68.8%	55
Academic papers that require application of concepts from the business curriculum	33.8%	27
Industry or company analysis	21.3%	17
Oral presentations based on work experience	22.5%	18
Mock interviews based on work experience	2.5%	2
Interactive group exercises based on work experience	0.0%	0
Other	11.3%	9

*This table shows the percentage and count of respondents reporting various kinds of academic requirements associated with internships courses.*

A key question in the survey concerns whether schools use internship activities in their AOL programs. The results, with 28 respondents choosing not to answer this question, are shown in Table 2. It is clear that many schools have not recognized internships for their AOL potential.

Table 2: The Use of Internships for AOL

<b>Survey item: Does your business school use exercises or academic activities associated with internships for AOL purposes?</b>		
<b>Answer Options</b>	<b>Response Percent</b>	<b>Response Count</b>
Yes	22.8%	18
No	77.2%	61

*This table shows the percentage and count of respondents reporting whether academic activities are used for assessment (AOL) purposes.*

We then asked business schools to rate the importance of AOL efforts done in connection with internship activities relative to their entire AOL programs. Table 3 contains these results. With only 13 respondents indicating that internships are moderately or very important parts of their AOL programs, it seems safe to conclude that, for the majority of business schools, the academic work done by students during internships are an untapped resource for AOL activities.

Table 3: The Importance of Internships in the AOL Program

<b>Survey item: Relative to the entire AOL program at your school, how important is the use of exercises or academic activities associated with the internship course?</b>		
<b>Answer Options</b>	<b>Response Percent</b>	<b>Response Count</b>
Not important	57.0%	45
Somewhat important	26.6%	21
Moderately important	10.1%	8
Very important	6.3%	5

*This table shows the percentage and count of respondents reporting the importance of academic activities for AOL.*

We further explore how schools use internships in their AOL programs by asking them to indicate what learning objectives they attach to internships and which of those they attempt to assess in the internship course. The results in Table 4 show that a variety of student learning objectives can be connected with internship experiences and yet, even when identified as such, many schools do not follow up by performing AOL activities. The response to this item is not perfectly consistent with the responses shown in Table 1 in which only 18 schools indicate that they use assignments from internships in their AOL programs. For example, in this table, 22 schools claim to use internships to assess problem-solving skills. That may be due to some confusion on the part of some respondents, however the general results still seem consistent. Relative to the number of schools offering internship programs, not many schools use internship assignments in their AOL programs.

Table 4: Internship Learning Objectives and AOL Efforts

<b>Survey item: Here are some student learning objectives that may be associated with the internship course. Please indicate if each is applicable to your school's internship experience and whether you attempt to assess that student learning objective for AOL purposes in the internship course.</b>		
<b>Answer Options</b>	<b>Development of this aspect is a student learning objective of our internship course.</b>	<b>We assess this student learning objective in the internship course.</b>
	<b>Response Count</b>	<b>Response Count</b>
Skills in professional writing	30	21
Skills in professional oral communication	26	20
The ability to apply concepts from the core business program	38	20
The ability to apply concepts from the specific major	37	20
Skills in the use of information technology	18	13
Skills in problem solving	34	22
Skills in ethical reasoning	21	16
Understanding of global business issues	13	10
Understanding of social issues	11	9

This table shows the number of respondents reporting various learning objectives and whether they are used in AOL.

For those schools that conduct AOL in the internship course we asked what AOL methodologies they employ. Table 5 shows that assessment of writing samples and exit interviews were the most popular of specific methodologies named in the survey. The majority of the “Other” responses mentioned use of employer feedback as the preferred methodology. We note that employer feedback is an indirect, and therefore a less valuable, assessment of student work.

Table 5: AOL Methodologies in Internship Programs

<b>Survey item: Which of the following AOL methodologies do you employ with work that students are doing for internships?</b>		
<b>Answer Options</b>	<b>Response Percent</b>	<b>Response Count</b>
Embedded AOL questions in an exam	0.0%	0
Embedded AOL problem or required analysis in internship assignments	12.8%	6
Assessment of writing samples	38.3%	18
Assessment of oral communication samples	21.3%	10
Internship exit interview with student	27.7%	13
Other (please specify)	51.1%	24

This table shows the percentage and count of respondents who report applying various AOL methodologies to student internship assignments.

Finally, to ask the all-important “closing the loop” question, we included an item concerning feedback to faculty and resulting curricular changes based on internship AOL activities. Table 6 shows the results. Although several schools say that they report the AOL findings on internship activities to faculty, only a couple of respondents provided examples of how faculty might have incorporated the results into courses or programs. Several said they review and use feedback to try to enhance students’ communication and professional skills, and one said the feedback from employers resulted in incorporating more Excel work into an upper level course.

Table 6: The Use of AOL in Internships to Effect Change

<b>Survey item: Have AOL results based on internship activities been:</b>			
<b>Answer Options</b>	<b>Yes</b>	<b>No</b>	<b>Don't know</b>
Communicated to the faculty periodically?	26	20	6
The impetus for curricular or program changes?	18	26	7

This table shows the count of respondents who report whether AOL results are communicated to faculty and used to drive curricular or program changes.

Through this survey, we wanted to learn 1) about business schools’ use of internships, and 2) about the use of academic work by student interns for AOL purposes. The findings indicate that most schools offer

internships as an elective, but few schools require internships of all students. While it appears that a number of schools are using internship activities for some assessment purposes, the number is just a fraction of the total that offer internships. By not requiring internships, schools may recognize that any assessment of learning for those students would be done on a biased sample and therefore not appropriate. Whatever the reason, and despite their suitability as a platform for AOL activities, internships appear to be severely under-utilized as part of the AOL program.

### Internships and Assessment at Butler University

The COB implemented its current internship program in the mid-1980s. With a campus-wide undergraduate student body of just over 4,000 students, the COB has about 700 undergraduates in its six majors. Faculty are adamant that to award three hours of academic credit for each of the two required internships, the grading structure must include a significant academic component. Students normally complete the first internship in their junior year or during the summer after their junior year and the second during their senior year. To enroll in the first internship, students must achieve junior status, finish at least 12 hours of upper level business courses, and earn at least a C- in the first upper level course in their major. While the academic component has undergone changes over the years, it has always comprised 70 percent of the course grade, with the supervisor's evaluation of the student's job performance comprising the remaining 30 percent.

The COB faculty has identified seven general learning objectives for its undergraduate business programs. Students should understand 1) general business concepts, 2) functional business concepts, and 3) global issues and how they affect business. In addition, students should develop competency in 4) communication, 5) problem-solving and critical thinking, 6) teamwork and leadership, and 7) ethical and legal knowledge and skills. Based on the general student learning objectives for the program, the faculty established several student learning objectives specifically for the two internships. Students should be able to identify, integrate, and apply both general business concepts as well as technical knowledge from their majors to their job environment. In addition, students should be able to demonstrate their proficiency in professional communications, through papers and oral presentations.

They should also be able to articulate how their work experience has enhanced their professional, academic, and personal growth, as well as their career development. Finally, in the second internship, students should be able to demonstrate their awareness and understanding of global issues relative to business. Students complete several assignments to accomplish the course learning objectives described above. In both the first and second experience, they write a paper in which they analyze the organization, in terms of its mission, structure, competitive market environment, financial condition and structure, and its marketing strategy. For both experiences, this is the key assignment and it is completed about midway through the experience. In the first experience, an introductory assignment first has students identify, explain and apply two business concepts to their organizations, at least one of which is from the student's major. They conclude the semester with an oral presentation, during which they describe and analyze a problem either they or their organization encountered. In the second experience, students study and report on global issues relative to their organizations, and also write a problem-solving paper, in which they describe and analyze the results of a problem they or their organization faced. Table 7 contains a summary of the assignments for each of the two internship experiences in the order in which students complete them.

We use three of the academic assignments to assess students' performance on the COB programmatic learning objectives. Students in all six majors take about 60 hours of common business courses, so we use the Organization Analysis paper to assess senior students' performance on the "core" business concepts of marketing strategy, economics, and global issues, among others. Through the Global Issues assignment, we assess students' ability to identify contemporary, global macro-environmental trends and

issues, and determine the opportunities and threats they present to business. Through the Problem Solving papers, we evaluate students’ ability to apply their critical thinking and problem-solving skills. Also through the Problem Solving papers and presentations, we evaluate students’ ability to communicate both orally and in writing. All of these assessments, with the exception of the assessment of oral communication, are done during the second internship, when students are seniors. Since the oral presentation is during the first internship, students are generally beginning their senior year. Course embedded assessment in the senior year allows us to make programmatic judgments about the extent of student learning with respect to both general knowledge and skills as well as management specific skills.

Table 7: Academic Assignments for COB Internships

<b>The assignments shown in <i>italics</i> represent those on which teams of COB conduct AOL evaluations independent of the course grading.</b>	
<p><b>Business Internship I</b></p> <p>Career Goals Paper – Identify and discuss goals for your career and internship experience.</p> <p>Business Concepts Paper – Identify, explain, and apply curricular business concepts to the work environment.</p> <p>Organization Analysis Paper – Provide a comprehensive analysis of the condition, performance, structure and strategies of the work organization.</p> <p>Problem Solving Oral Presentation - Define a problem or opportunity related to the work organization and use a problem solving process to explore alternative solutions.</p> <p>Written Reflections and Portfolio – Provide personal reflections on your work and academic experience and samples of your work product.</p>	<p><b>Business Internship II</b></p> <p>Career Goals Paper – Identify and discuss goals for your career and internship experience.</p> <p>Organization Analysis Paper – Provide a comprehensive analysis of the condition, performance, structure and strategies of the work organization.</p> <p>Global Issues Paper - Identify contemporary, global trends and issues, and determine opportunities and threats they present to the work organization</p> <p>Problem Solving Paper - Define a problem or opportunity related to the work organization and use a problem solving process to explore alternative solutions.</p> <p>Written Reflections and Portfolio – Provide personal reflections on your work and academic experience and samples of your work product.</p>

*This table shows the assignments required in the Business Internship I and Business Internship II courses.*

The internship instructors employ a common rubric while evaluating student work for calculating the internship grade. However, for assessment purposes within business disciplines, we provide a sample of the papers to a team of faculty members in that discipline. For example, a team of marketing faculty members assesses student performance using a rubric designed specifically to assess student learning in marketing. The AOL activities are conducted independently of the grading activities.

The following paragraphs describe examples of what we have gleaned about students’ learning from the evaluation of these assignments, and the responses the faculty decided on to “close the loop.” The first paragraph describes how the Marketing faculty came to make some fairly straightforward modifications to a core marketing course. The second paragraph recounts how the COB determined that it needed to make substantial, sweeping changes to how it integrates global business issues into the undergraduate program. In a portion of the Organization Analysis paper, students are required to describe the marketing strategy of their organizations, and then analyze whether they believe the strategy is appropriate and successful in helping to meet organizational objectives. The marketing faculty rated 37 percent of the responses as unsatisfactory. While evaluators found that students mostly used the correct terminology and concepts, students failed to demonstrate their understanding of the application of the concepts. For example, they could describe the four Ps of a marketing strategy (Price, Product, Place, and Promotion), but they had little idea of how that marketing strategy was implemented in their organizations. They offered no evaluation of the effectiveness of their organization’s strategy and failed to discuss how it compared to competitors’ strategies. In light of the results, the faculty concluded that three basic changes to delivery of certain principles in the marketing course all COB students take would help alleviate students’ low performance. First, all instructors agreed to standardize coverage across all sections. Second, they all agreed to emphasize the use of frameworks versus *ad hoc* methods in marketing decision-making. Finally, they all agreed to coordinate the emphasis on marketing terminology and concepts across the three freshmen, sophomore, and junior-level business courses. In two years, when

students have encountered these improvements in the curriculum, the faculty plans to conduct the assessment again to measure improvement in student learning.

The COB faculty has developed the following student learning objective for undergraduate students: they should be able to identify contemporary, global macro-environmental trends and issues, and determine opportunities and threats they present to business. We assess the outcome through an assignment in the second internship in which students must demonstrate their understanding and application of these concepts. We evaluated student performance and obtained poor results. Students were unable to draw on the terminology and basic concepts of international business to provide insight or explanation of issues they encountered in their internships. In response, the dean funded a work group of faculty that spent the summer studying the extent of global business in the curriculum. The group wrote an extensive report, and recommended several paths for the COB to take. These recommendations included developing additional area studies courses, creating more study trip opportunities for students, and providing development funds to support faculty as they globalize their courses and their research. The COB faculty approved the report, which then served as the basis for a grant application to the Department of Education. The grant was funded for \$175,000 and the recommendations are being implemented. We expect that the implementation of these activities to improve students' awareness of global business issues and their ability to evaluate business issues from that perspective.

The COB is in an advantageous position to require internships, mainly because of its location in a relatively large metropolitan area and the relatively small student body. Universities existing in smaller communities or having a larger student body might not be able to ensure that all students would be able to find one internship, much less two of them. Recall that respondents reported average business school enrollment of 2,143. Still, even smaller schools do not often require internships. Thirty-one respondents reported business school enrollment of 1000 or fewer, but only three of those schools require an internship for even some of their programs. While most universities report offering elective internships to students in some or all majors, they may require students to find their own internship positions or impose strict prerequisites on who may participate, such as a minimum cumulative grade point average.

Why don't more schools require at least one internship for one or more of their programs? Anecdotally, a colleague from a similar sized university also located in a metropolitan area once marveled at Butler's requirement. He told one of the authors, "I wouldn't trust a lot of our students to represent us in the workplace!" Perhaps he underestimates his students. For 25 years, we have been very successful in requiring two internships of every student graduating from the COB. We have not found academic performance, as evidenced by cumulative grade point average, to be a good predictor of students' performance on their internships. Embarrassing incidents are few and far between. In fact, the average employer evaluation of our interns has been around 95 percent for years. Internships are important to all students and their learning, and should be more widely required.

If internships were more widely required, they would be ideally suited to AOL efforts, as we have tried to demonstrate. Schools that offer only elective internships still might be able to incorporate assessment activities if they can find a way to insure an unbiased sample. We recommend required internships because of their value as a learning tool, but the additional benefit is that they provide one of the best possible platforms on which to conduct unbiased AOL activities.

## **CONCLUDING COMMENTS**

In this paper, we reviewed an array of literature, much of which strongly supports the use of internships as a powerful learning tool. We also presented the results of a survey documenting the use of internships by business schools, and the use of academic components of internships as a formal part of the AOL program. We found that most schools offer internships on an elective basis, but relatively few schools

require them even for some of their programs. Perhaps not surprisingly then, few schools rely very heavily on internships for AOL purposes. The results seem to suggest good opportunities for schools to improve their programs. Finally, this paper presented a description of one school's successful attempts to incorporate AOL activities into its required internships.

One area for further research could be on the effective design of internship programs and their academic components. The nature and volume of the assignments that we require has changed over the years, but we still wonder if we might be able to improve them in order to better help students learn how business concepts apply in practice and how to integrate those concepts into a more meaningful understanding of the business world. We also suspect that we might be able to adjust the assignments to provide a better opportunity for additional AOL activities in the internship program.

Further research into best practices in the assessment of business programs and the best program elements on which to conduct AOL activities also seems warranted. Many business schools rely heavily on the ETS and its Major Field Test (MFT) for assessment of student learning, which raises two issues. The first relates to concepts covered by the MFT and whether they coincide with those included in student learning objectives established by business schools. The second issue is that the MFT is limited to assessing students' knowledge, rather than their ability to integrate and use that knowledge to make business decisions. We have suggested that internship assignments assess both students' understanding of concepts as well as whether they can apply them to real-world situations. The MFT is more limited in that regard, but there may be additional program elements that lend themselves particularly well to conducting AOL. The continued importance of AOL in the AACSB accreditation process suggests that all business schools should be seeking those opportunities.

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## WHAT MOTIVATES STUDENTS IN GRADUATE SCHOOL? AN EMPIRICAL STUDY

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### ABSTRACT

*Knowledge of motivation levels of students in programs is insightful information for educators. At the graduate level there exists an even greater need to understand the motivation behind the desire to pursue a master's degree. However, the lack of research on motivation of graduate students makes it difficult to develop a comprehensive understanding of this student population. This study employs the Academic Motivation Scale to measure the motivation of 70 graduate business students and 43 liberal arts students. Comparisons are made between the two student populations and recommendations are offered in the assessment of these student populations.*

**JEL:** I21, I23, M10.

**KEYWORDS:** Graduate Students, Intrinsic, Extrinsic, Academic Motivation Scale.

### INTRODUCTION

A few short years ago these authors embarked upon understanding graduate student motivation in an effort to better assist program developers to design programs which satisfy industry requirements. An initial discovery was that while there was limited information on graduate students in general, there was an even greater deficiency in the measurement of graduate student motivation. Although information was existent on undergraduate and adult learner populations there was a dearth of information directly related to graduate students. And while there exists a multitude of reasons for returning to graduate school, there was not concrete research that returned quantitative information describing the motivation of this population. Consequently, this research sought to simply measure the strength of motivation of students in graduate programs, and to identify predominant motivations as being either intrinsic or extrinsic in nature. It is hoped this research will advise educators and program developers on the motivational background of graduate students, and result in programs which cater to the learning goals of this population. This study therefore seeks to advance the literature and knowledge base pertaining to graduate student motivation through the application of the Academic Motivation Scale (AMS) as a measurement tool of motivation.

Insight into an individual's motivation provides us with an indication of his/her work ethic and commitment to completing an advanced degree. While it is generally accepted that a graduate degree takes two years to complete on a full time basis and three to four years on a part time basis, motivation then becomes a factor in sustaining an individual throughout the length of a program. In the absence of an instrument that specifically measures graduate student motivation, the Academic Motivation Scale (Vallerand et al, 1992) is an obvious selection as an appropriate measurement for this population. Developed to measure motivation levels of college students, the AMS has as its foundation the tenets of Self Determination Theory (Deci & Ryan, 1985) which identifies motivation as being either intrinsic or extrinsic. The existence of these forms of motivation is not dichotomous; that is, an individual is not either intrinsically motivated or extrinsically motivated, but rather can possess both in varying amounts depending upon the subject matter. The AMS evaluates the strength of each type of motivation present and therefore was chosen for this study for the detail it provides. It also builds upon the research of the

present author in examining the validity of the AMS as a viable instrument in the measurement of graduate student motivation.

Goals are often discussed in terms of motivation, however goal setting and motivation although connected do not necessarily have a causal relationship. One is not motivated simply because he has set goals. While goal setting is highly relevant for organizations and individuals as a method of maintaining focus, for an individual wishing to earn a master's degree setting a goal of earning such a degree may be a lot easier than maintaining the required motivation levels to complete a program. However, correctly setting challenging but achievable goals does have a positive impact on motivation (Latham, 2004). In examining this student population it is hoped to deliver a position on not only the strength of motivation in graduate students but also on the amount of motivation needed to successfully complete a graduate program. Essentially, we posit the query of whether motivation is necessary in completing a graduate degree or whether just a desire to do the work at an acceptable level will suffice in maintaining an individual's presence in a graduate program.

The literature extant on the AMS appears to be contingent upon scholarly interest in Self Determination Theory. While there appears to be continued interest in the discussion of intrinsic versus extrinsic motivation in terms of a preferred form of motivation the use of the AMS as measuring tool lags behind the aforementioned discussions. This may also be due to the lack of motivational studies which focus on graduate students. As many colleges and universities pride themselves on the caliber of their graduate programs it is highly advantageous to have additional information pertaining to the performance of this population. Consequently, it is the intention of this research to contribute to an area of motivational study that has not received an enormous amount of attention, and offer valuable information to assist graduate program administrators to better understand and cater to this student population.

The remainder of this paper is structured to firstly examine the available pertinent literature on the subject of student motivation as well as applications of the AMS instrument. The method in which the AMS is used in this study is then described as well as the statistical results obtained. A commentary discussion is offered as are limitations of the study. The authors then offer recommendations for improved teaching of this student population and well as future applications of the AMS instrument.

## REVIEW OF LITERATURE

While not designed specifically for a graduate population, the Academic Motivation Scale (AMS) is generally regarded as a versatile instrument which can be used across multiple populations. Developed in 1992 by Robert Vallerand, its original development was for use with undergraduate populations. However in selecting a tool specifically geared toward a graduate population it is a natural selection as it requires minimal, if any, word modifications. The AMS has recently been used by Smith, Davy, and Rosenberg (2010) in the assessment of graduate students and returned values consistent with the design of the instrument. Their study, however, predominantly looked at internal values of intrinsic and extrinsic motivation as opposed to an overall Self Determination Index which the AMS produces.

Research by Deci and Ryan (1985) on Self Determination Theory forms the basis from which the AMS is built. SDT posits motivations as being intrinsic, extrinsic, or amotivated. The AMS then builds upon this theory by assigning values to the strength of motivation in each area culminating in an overall SDI. An attractive feature of the AMS is that it breaks Intrinsic and extrinsic motivation into three subsets categories and together with amotivation returns an overall seven-factor approach to the measurement of motivation. Much research has concentrated on the study of the autonomy of these types of motivation (Ryan, Mims, & Koestner, 1983, Deci & Ryan, 2000; Gagne & Deci, 2005; Vansteenkiste, Lens, & Deci 2006) resulting in the acceptance that intrinsic and extrinsic motivation were not dichotomous.

Recent studies by Barkoukis et al (2008) and Brouse et al (2010) using the AMS have returned results consistent with the instrument's design. Other studies in the area of SDT have focused on intrinsic and extrinsic motivation in terms of their relationship to goals. Kasser and Ryan (1993) conducted research on associating specific goals as being either intrinsic (personal development) or extrinsic (wealth growth) to illustrate the connectedness of goals and motivation. The available research in this domain indicates that goal-setting, SDT, and AMS are themselves inherently related.

While there are numerous areas of concentration for study under the SDT umbrella there are still numerous measuring tools. Such tools as the Intrinsic Motivation Inventory (IMI) which looks at enjoyment levels experienced from various activities, and the Aspirations Index (AI) which looks at an individual's life goals, serve to illustrate the scope of SDT in examining motivation. The IMI has been used by McAuley, Duncan, and Tammen (1989) to examine personal motivation in sports while the AI has been utilized by Kasser and Ryan, (2001) to examine intrinsic and extrinsic motivation in setting and attaining life goals. The existence of these scales, and many others to examine motivation, underline the complexity of motivation and the need for population specific measuring tools. Hence the need for recognized measuring instruments in specific areas.

In the domain of educational motivation, which is the focus of this article, the Academic Motivation Scale continues to receive usage in various studies. One such recent study by Isiksal (2011) examined differences between Turkish and American university students. This research provided informative information on the differences in motivation between the two different cultures. The Turkish students exhibited greater intrinsic motivation, while the American student extrinsic motivation proved stronger. This illustrates the versatility of the instrument in assessing student motivation. The use of the AMS on undergraduate students has also returned useful information in terms of gender with females reporting higher levels of both intrinsic and extrinsic motivation (Brouse et al, 2010). The use of the AMS as the central topic of research however, is sparse enough that it will take significant time to validate it as an instrument which can be used across numerous academic disciplines.

Literature on motivation spans across a number of different realms including leadership, entrepreneurship, and employee motivation. While research by Raposo, do Paco, and Ferreira (2008) on entrepreneurial students offers excellent insights into student motivation it fails to use an established motivation instrument which would assist in establishing a benchmark tool in the measurement of motivation. Similarly, Carsrud and Brannback (2011) offer invaluable insight into motivation in entrepreneurs but do so without quantitative data to substantiate recommendations. While the AMS measures intrinsic and extrinsic motivation, an attractive feature of this instrument is that it also acknowledges the existence of amotivation where an individual believes their efforts, whether intrinsic or extrinsic, will not affect outcomes therefore lack any form of motivation (Vallerand et al, 1992).

To date use of the AMS on graduate samples is lacking, and therefore forms the core of this study with the intention of returning results for future researchers to build upon, and to also increase the knowledge base on graduate student motivation.

## **METHOD**

For this study, a sample of 70 business students and 43 liberal arts students was used. These students were enrolled in a large private metropolitan university in the northeast United States. The instrument chosen for the study, the AMS, was approved by the university's Institutional Review Board. This was made known to each course instructor upon request to visit classrooms.

No instrument exists to the knowledge of these researchers that is specifically designed for graduate student populations. Consequently, the AMS was the instrument chosen for this study. The AMS was

designed for undergraduate student populations and is gaining traction as a versatile instrument in the assessment of various university populations. Modifications to the instrument for use on this sample population was minimal to preserve the integrity of the instrument. The instrument entails 28 questions measured on a 7 point Likert type scale. These questions are based on an overall question of “*Why do you go to college?*”. The AMS facilitates the measurement of intrinsic and extrinsic motivation and breaks each category into sub-categories for detailed analysis of each type of motivation. Under intrinsic motivation, motivation to Know, Accomplish, and Stimulate are identified. In the extrinsic domain, External Regulation, Introjected Regulation, and Identified Regulation are identified as the sub categories. The scale returns an individual’s overall *Self Determination Index* (SDI) of motivation which ranges from -18 to 18. This SDI gives an overall indication of strength of motivation. Internal analysis in turn gives a better indication of the strength of an individual’s intrinsic or extrinsic motivation. Both sets of students were analyzed separately and collectively to provide for identification of any anomalies in each group. T-tests were performed to identify any differences between business and liberal arts students. Descriptive statistics and regression analysis were also used to explore any possible conclusions that may be drawn from the study. Additional descriptive information (age, work experience, etc) was gathered from individuals in an attempt to identify any possible trait indicators of motivation.

**RESULTS**

These researchers had as their goal the overall measurement and identification of graduate student motivation as being either intrinsic or extrinsic. The Academic motivation scale (AMS) was used and returned that graduate student motivation is predominantly extrinsic in nature. Simply put, graduate students pursue a graduate degree not with an inherent interest in subject matter but rather with an external motivation for earning the degree.

As can be seen in Table 1, the overall SDI mean for all students was 5.92 which is strikingly low considering the AMS scale has a range of -18 to 18. There were some differences however between business and liberal arts students. The business students overall SDI mean was 5.33 while the liberal arts students’ index was significantly higher at 8.93. Business students intrinsic mean was 4.30 and their extrinsic mean was 5.0 while the liberal arts students returned respective figures of 5.0 and 5.30 . Only ‘Intrinsic to Know’ showed any strength of correlation with the SDI (.82) in the intrinsic sub category while the extrinsic sub-categories displayed no correlation with the SDI

Table 1: Self Determination Index

Statistic	Score	Bin	Frequency
Mean	5.92	-8 < r < -6	1
Standard Error	0.38	-6 < r < -4	2
Median	6.83	-4 < r < 0	8
Mode	8.29	0 < r < 2	7
Standard Deviation	4.01	2 < r < 4	13
Sample Variance	16.07	4 < r < 6	18
Kurtosis	0.69	6 < r < 8	26
Skewness	-0.79	8 < r < 10	25
Range	20.83	10 < r < 12	9
Minimum	-7.25	12 < r < 14	4
Maximum	13.58	14 < r < 16	0
Sum	668.92	16 < r < 18	0
Count	113		

*This table displays descriptive statistics pertaining to the Self Determination Index. The mean score of 5.92 may not offer a proper assessment of this population due to a SD of 4.01. The median and mode provide insightful statistics in understanding this population in terms of motivation as measured by the Self Determination Index..*

The intrinsic mean for all students in the sample was 4.44 as opposed to the extrinsic mean which was 4.90. A t-test was conducted which indicated that this was a significant difference. A subsequent t-test

was performed on both samples which indicated that significant differences existed between intrinsic and extrinsic motivation in business students but not in liberal arts students. These results can be seen in Table 2.

Table 2: T-Test

		Intrinsic	Extrinsic	Signif.
Mean	overall	4.441	4.902	.000***
	bus	4.31	5.026	.000***
	lib	5	5.375	0.491
Intrinsic	Bus/Lib			0.209
Extrinsic	Bus/Lib			0.046**

*The purpose of this table is to show the significance difference between overall intrinsic and extrinsic means for all students. This significance difference is also reflected in the business student population. The table also highlights that while there is no significant difference in intrinsic motivation between business and liberal arts students there is a significant difference in extrinsic motivation between these two samples. \*\*\*  $p < .001$ . \*\*  $p < .05$ .*

When looking at overall motivation table 3 displays the array of results on the SDI plane. On the previously stated range of -18 to +18 with a value of 10 being the expected norm graduate students are clearly lacking in strength of any kind of motivation while pursuing a graduate degree.

Table 3: Self Determination Index

Bin	Frequency
-8 < r < -6	1
-6 < r < -4	2
-4 < r < 0	8
0 < r < 2	7
2 < r < 4	13
4 < r < 6	18
6 < r < 8	26
8 < r < 10	25
10 < r < 12	9
12 < r < 14	4
14 < r < 16	0
16 < r < 18	0

*This table displays the Self Determination Index frequency where Bin refers to the range of responses (r). These responses range from -18 to +18 on the Academic Motivation Scale. The large range illustrates the lack of homogeneity in graduate student populations. The high frequency of responses in the 6 < r < 8 and 8 < r < 10 bins suggests some possible conformity to the scale's average predicted return value of 10.*

In an effort to locate reasons why the SDI values returned from the AMS were so low, the researchers examined the additional demographic information collected on the population sample. Only U.S. born, English speaking, and work level exhibited strong Pearson r correlations with the SDI. As a result, Analysis of Variance was performed to examine for any differences between the SDI and the combined demographics. The results in table 4 show that there is no significant relationship between the overall demographics and the SDI.

The results of the statistical analysis indicate that liberal arts students are significantly more motivated, both intrinsically and extrinsically, than their business counterparts while, overall, graduate students exhibit more extrinsic than intrinsic motivation in their approach to the respective subject matter.

Table 4: Analysis of Variance

	df	SS	MS	F	Significance F
Regression	12	237.443	19.786	1.266	0.250
Residual	101	1562.504	15.625		
Total	113	1799.946			

*An ANOVA was conducted to test for a possible relationship between the Self Determination Index and population demographics. This table illustrates that the overall demographics of the sample do not have a significant relationship with the motivational Self Determination Index. Consequently, demographics are not a determining factor in individual motivation at the  $p > .05$ ,  $p > .01$ , and  $p > .001$  levels.*

## LIMITATIONS

Further research is required to accurately measure the graduate student population. While the results of this research are similar to previous research, further study on larger samples is required. Due to the very nature of graduate programs being smaller than undergraduate programs, large samples can prove difficult to obtain.

The AMS instrument, although validated at the undergraduate level, needs further use to achieve validation at the graduate level. However, early returns appear to be consistent and point to an obvious lack of motivation in graduate students regardless of the subject matter. This study only examined liberal arts and business students and did not consider the many other disciplines which offer graduate degrees. This study was deliberately kept uncomplicated so as to highlight the basic strength of motivation in graduate students. Subsequent research would necessitate internal demographic analysis for any observable differences. However, such research would not be expected to undermine the main observation of this study, that is, the lack of motivation, both intrinsic and extrinsic in graduate students.

As many graduate programs rely on standardized entry examinations such as the GRE and GMAT, it stands to reason that such programs therefore only attract individuals who can perform well on such tests. Also, as students earn letter grades in coursework, graduate programs therefore could possibly contain a high number of individuals who are performance oriented in achieving grades as opposed to being intrinsically motivated in mastering the subject matter. The location of the university where this study took place is also a limiting factor. Located in the northeast United States, conclusions can only drawn pertaining to similar large urban private universities.

## DISCUSSION

The measurement of motivation in graduate schools students is an important endeavor in terms of its value to educators, employers, and society. The lack of motivation in graduate school students is of concern. From an educational perspective it provides a great challenge to program developers looking to provide a quality education to students. Motivated students enhance the learning experience for all students and invigorate faculty to constantly provide learning challenges to students. Clearly, graduate faculty face an uphill battle in trying to motivate students in the learning process. Of subsequent concern is that assuming graduate students are pursuing advanced education in their chosen professional fields, their professional motivation is subsequently below what an employer would expect from someone seeking career advancement. This in turn translates into unmotivated employees who are underperforming. Ideally, society seeks to have maximum utilization of skills, and the ramification for society is that graduate programs are producing unmotivated mid level managers who are responsible for leading companies while returning mediocre results.

The Academic Motivation Scale has seen increased use as an instrument for measuring motivation at the graduate level, however an instrument designed for graduate school students is required to get an accurate

indication of the motivation levels of graduate students. To this end there is a void in the knowledge base pertaining to this population. Until an instrument designed for graduate students is developed and validated, all research on this population using the AMS, although insightful and directive, is still speculative.

## **RECOMMENDATIONS**

These researchers are of the opinion that research on graduate student motivation has far reaching implications. Graduate program development, and indeed graduate program admissions need to better identify motivated candidates who bring a desire for learning to the classroom. Furthermore, graduate faculty need to be aware of existing motivation levels inherent in graduate school students. While faculty may rightly assume graduate students are attending master degree programs to simply advance their careers, they may not however be aware of the dearth of motivation in students for the subject matter. While these researchers do not advocate a complete overhaul of graduate programs as this would be impractical, we do recommend faculty teach in a manner that is more engaging and strives to enlist graduate students as partners in their learning experience.

Further use of the AMS is also recommended to validate its use as a measuring tool at the graduate level. However, the design of a graduate student specific instrument would add to the existing body of knowledge in this area. Until such time, repetitive use of the AMS may suffice as a reliable indication of graduate student motivation. Indeed, the use of this instrument in both public and private institutions across different disciplines would provide a more accurate statistical evaluation of this student population.

## **CONCLUSION**

In this study we sought to advance the knowledge base extant on graduate school student motivation. Specifically, information was gathered on graduate business school and liberal arts students and the AMS was used to measure and compare intrinsic and extrinsic motivation between these two groups. This measuring tool compared these students' SDI index which is an overall measure of motivation. Descriptive statistics were analyzed while t tests and ANOVA were also conducted to examine for differences between these two samples. Overall, the AMS instrument returned results indicating that liberal arts students are more motivated overall than business students.

Motivation is an individual phenomenon in that it occurs in everyone but in a different way in each person. In studying this graduate population, these researchers sought to obtain a reading on the strength and type of graduate student motivation using the AMS. The use of an instrument not specifically designed for a population always presents challenges. However, continued use of the AMS with this population is an important building block in the measurement of graduate school students until such time as a population-specific tool is developed. Deliberately, the simplicity of the statistical analysis in this paper highlights the lack of motivation in graduate school students which presents challenges to both educational programs and the industries which employ them. With further research, programs and teaching methods can be developed to better enhance the learning experience of graduate students while also adding value to the industries where graduate students develop their careers.

As opposed to undergraduate students there is less homogeneity in graduate students which is a limiting factor in making generalizations about this population. Graduate students which are composed of full-time, part-time, and adult learners have greater course concentration in major courses than undergraduates. Consequently, while separate programs such as liberal arts, education, business, and pharmacy may enjoy greater homogeneity within their subjects this specializing focus of study makes generalizations about graduate students difficult to make.

The AMS is a versatile instrument due to the generic questions it contains which have applicability across numerous populations. Its widespread use with undergraduate samples has clearly established it as a preferred tool. As such, further use at the graduate level may establish its reliability and validity for a better understanding of graduate school population traits. Ideally the development of a tool specifically geared towards a graduate population which encompasses the ethos of the AMS may be a preferred long term solution in measuring motivation at the graduate level. Such a tool could also include cost factors which could affect motivations while attending graduate school.

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# TEACHING SUPPLY CHAIN MANAGEMENT STUDENTS ABOUT USING ACTUAL MOTOR CARRIER FREIGHT RATES IN PURCHASE LOT-SIZING MODELS

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## ABSTRACT

*In this paper, we analyze a purchase lot-sizing decision that includes transport cost using actual motor carrier freight rates. Lot-sizing models in the literature either estimate motor carrier freight rates with a continuous function or simplify less-than-truckload freight rates unrealistically by using too few weight-break ranges. We present an Excel Solver model that we use in a supply chain management class to teach students the following principles: how to look up less-than-truckload freight rates using a carrier's software, how to calculate less-than-truckload and truckload freight rates, to decide whether to over-declare (artificially inflate) the weight of a less-than-truckload shipment to lower the freight charge, and how to find the purchase lot size that minimizes annual logistics cost. We assume that all-units purchase quantity discounts are offered by the supplier and the product is shipped Free On Board (FOB) Origin, Freight Collect. We discuss how to solve this model with Excel's GRG Nonlinear Solver.*

**JEL:** A22, C61, C88, N72

**KEYWORDS:** Excel Solver, linear programming, logistics, purchase lot-sizing

## INTRODUCTION

Total annual logistics cost models were been discussed in the literature around 1970 (e.g., Baumol and Vinod, 1970). These “inventory-theoretic” models add transportation costs to the economic order quantity (EOQ) model, resulting in a model that combines transport, order, holding, and purchase costs. The inventory theoretic model in this paper has been used in an exercise in our supply chain management courses. We have used this model to teach students how to perform the following: (a) to look up less-than-truckload (LTL) freight rates using software from an LTL carrier; (b) to calculate LTL and truckload (TL) freight rates; (c) to decide whether to over-declare the weight of an LTL shipment to lower the total freight charge, and (d) to find the purchase lot size that minimizes annual logistics cost. Annual logistics cost equals the total of annual order cost, annual warehouse holding cost, annual in-transit holding cost, annual transportation cost, and annual purchase cost. In the next section, we review the literature discussing inventory-theoretic models. Next, we present the methodology: the data and the Excel spreadsheet and Solver model. Next, we report and discuss the results from this exercise. The last section is the conclusion section.

## LITERATURE REVIEW

Baumol and Vinod (1970) introduced the inventory-theoretic model. Later, other researchers (e.g., Carter & Ferrin, 1996; Gaither, 1982; Langley, 1980; Larson, 1988; Tyworth, 1991b; Wehrman, 1984) demonstrated adding actual motor carrier freight rates to the purchase lot-sizing decision by using enumeration techniques. Other researchers, e.g., Burwell, Dave, Fitzpatrick, & Roy, 1997; Hwan, Moon, & Shin, 1990; Lee, 1986; Madadi, Kurz, & Ashayeri, 2010; Ramasesh, 1993; Russell & Krajewski, 1991; Tersine & Barman, 1991; Tersine, Larson, & Barman, 1989, created complex algorithms to add actual freight rates into the purchase lot-sizing decision. More recently, Mendoza and Ventura (2008) presented

an algorithm based on a grossly simplified freight rate structure (using either a constant charge per truckload (TL) or a constant cost per unit for less-than-truckload (LTL) shipments). Their algorithm also included two types of purchase quantity discounts (all-units and incremental). He, Hu, and Guo (2010) explained an algorithm for finding the optimal purchase quantity using actual freight rates; however, their model did not incorporate purchase quantity discounts.

The difficulty in solving the inventory-theoretic model when using actual motor carrier freight rates is created by the complexity of the LTL freight rates. This complexity is caused by the practice of over-declaring LTL shipments (this issue is discussed later in this paper). Given this complexity, researchers resorted to using enumeration techniques or complex algorithms when using actual freight rates. Alternatively, other researchers decided to model freight rates with continuous functions as described next. Modeling freight rates is estimating freight rates based on the value of some parameter in a continuous function. Examples of these parameters include: (a) the TL charge in an inverse function (Blumenfeld, Burns, Daganzo, Frick, & Hall, 1987; Sheffi, Eskandari, & Koutsopoulos, 1988; Swenseth & Godfrey, 2002; Yildirmaz, Karabati, & Sayin, 2009); (b) distance in a proportional function (Ballou, 1991); (c) the constant used as an exponent in an exponential function (Buffa, 1987, 1988); (d) the smoothing constant in an adjusted inverse function (Swenseth & Buffa, 1990, 1991; Swenseth & Godfrey, 1996; Swenseth & Godfrey, 2002); and (e) load density, shipment weight, and shipment distance in a nonlinear model (Kay & Warsing, 2009). Ballou (1991) argued that considerations such as time, effort, and cost often dictate that logistics decision-makers should use estimated, rather than actual, freight rates.

Mendoza and Ventura (2009) described several limitations when trying to use actual freight rates: time and expense determining exact rates between origin and destination and the issue of the freight rate function not being differentiable. Time, effort, and cost would be expended searching for LTL freight rates for all possible weight-break ranges, determining over-declared weights for each LTL weight-break range, and enumerating all possible lot-size alternatives. In addition, Kay and Warsing (2009) argued that representing the freight rates with an equation makes it easy to determine the optimal purchase lot size, and that shippers would be able to avoid paying for access to LTL tariffs. Using freight rate functions, however, leads to another problem. Tyworth (1991a) and Higginson (1993) criticized existing freight rate functions for not estimating freight rates accurately. Besides, LTL freight rate software can be downloaded at no cost from many LTL carriers. In addition, the minimum cost purchase lot size can be determined with a basic Excel Solver model that uses actual LTL and TL freight rates.

## METHODOLOGY

### Data

The inventory-theoretic model presented here uses the data shown in Table 1 (copied from the Excel spreadsheet). The instructor provides students the data for a single purchased item that is shipped Free On Board (FOB) Origin, Freight Collect. We assume the buyer arranges transportation, pays the carrier, and bears the freight charges. In addition, the supplier offers all-units purchase quantity discounts. Table 1 displays part of the Excel spreadsheet used for entering data. The instructor provides students most of the data except for the less-than-truckload (LTL) freight rates, which the students must find using ABF's Q-Rate for Windows® (Q-Rate Download). Students must enter the following data for the problem on the left part of the screen: Holding Cost Rate Warehouse (Cell C7), Holding Cost Rate In-transit (Cell C10), Annual Demand in units (Cell C12), Order Cost (Cell C14), Unit Weight in pounds (Cell C16), Unit Cube in cubic feet (Cell C17), Freight Class (Cell C18), Less-than-Truckload (LTL) Shipping Time Days (Cell C22), Truckload (TL) Shipping Time Days (Cell C23), Maximum TL Weight in pounds (Cell C25), and Maximum TL Cube (Cell C27). The Maximum TL weight is based on a trailer loaded exactly at the U.S. gross weight limit of 80,000 pounds. Similarly, the TL cube is based on the maximum cubic capacity of a 53-foot trailer. We caution students that companies will create guidelines for limits on

weight and cube limits for different products based on their unique product characteristics and transport equipment.

Table 1: Input Screen

	B	C	D	E	F	G
5	<b>Origin Zip Code:</b>	19140		<b>Destination Zip Code:</b>		54901
6	<b>Inputs:</b>				<b>Unit Cost Schedule</b>	
7	Holding Cost Rate	0.65		At Least	Unit Cost	
8	at Warehouse			1		\$195.00
9				300		\$194.90
10	Holding Cost Rate	0.45		600		\$194.80
11	In-transit					
12	Annual Demand	5,000			<b>Nominal Freight Rate Schedule</b>	
13				<b>Range</b>		<b>Rate</b>
14	Order Cost	\$42.00		Minimum LTL Charge		\$367.79
15				1		\$234.46 /CWT
16	Unit Weight	40.00		500		\$196.36 /CWT
17	Unit Cube	4.50		1000		\$164.00 /CWT
18	Freight Class	100		2000		\$145.50 /CWT
19				5000		\$115.89 /CWT
20				10000		\$104.30 /CWT
21	Shipping Time (days)			20000		\$93.87 /CWT
22	(LTL)	3		LTL Discount (%)		60.00%
23	(TL)	2		LTL Fuel Surcharge (%)		30.50%
24						
25	Max.TL Weight	46,100		TL Fuel Surcharge/Mile		\$0.64 /MILE
26	(Pounds)			TL RATE/MILE (\$)		\$0.97 /MILE
27	Max. TL Cube	3,936		MILES		909
28				Min. TL CHARGE		\$600.00
29						

*This table shows all of the data that a student must enter for this purchased item, including holding cost rates, order costs, shipment characteristics, shipping times, trailer capacities, purchase costs, and freight charges.*

On the right of the screen are data related to purchase costs and transportation costs. The all-units purchase quantity discount schedule is listed in a table array named, "UnitCostLookup" (Cells E8:F11). This array is created as follows: (a) Highlight Cells E8:F11, (b) Select "Formulas" from the Excel toolbar, (c) Select "Define Name" from "Name Manager," enter the name, "UnitCostLookup," and select "OK." This table array can be searched using the "VLOOKUP" function of Excel to find the purchase cost per unit for a given order quantity. The problem considered here has three purchase quantity ranges: 1 – 299 units, 300 – 599 units, and 600+ units. The LTL freight rates (Cells F14:F21) are nominal freight rates (no LTL discount has been applied) and are available on Q-Rate for Windows ®.

The instructions for retrieving LTL freight rates from this software are as follows: (1) Download and install Q-Rate for Windows ®, (2) Enter the origin zip code and the destination zip code, (3) Uncheck "Single shipment charge," (4) Left click on "Tools," (5) Left click on "Rate Inquiry," (6) Print the nominal tariff of LTL freight charges. This tariff lists nominal freight rates for all freight classes (based mainly on product density) and weight-break ranges. Once students have printed the tariff of nominal freight rates, they must find the row for the given freight class (Class 100 was used in this exercise) and the matching freight rates. Then, students must enter those freight rates in Cells F14:F21 under the labels "Range" and "Rate." The Minimum LTL Charge (Cell F14) serves as a floor on the freight charge assessed by the LTL carrier, in this case a flat charge of \$367.79. The next range labeled "1" corresponds to 1 – 499.99 pounds. The freight rate for this range is \$234.46/CWT, where CWT corresponds to century weight (hundreds of pounds). The remaining ranges correspond to 500 – 999.99 pounds, 1,000 – 1,999.99 pounds, 2,000 – 4,999.99 pounds, 5,000 – 9,999.99 pounds, 10,000 – 19,999.99 pounds, and 20,000+ pounds. Directly below the 20,000+ pounds range is the LTL Discount (Cell F22) negotiated between the customer and ABF. The LTL Discount must be applied to the nominal LTL freight rates in Cells F14:F21. The LTL Fuel Surcharge (Cell F23) is a fixed percentage added to the LTL freight charge to offset the cost of rising diesel prices. The LTL freight charge is: (a) the linehaul rate (based on dividing the shipment weight by 100 and then multiplying by the \$/CWT) plus (b) the LTL Fuel Surcharge (the linehaul rate multiplied by the LTL Fuel Surcharge %).

The LTL rates also must account for the practice of over-declaring a shipment at the next weight-break range. This over-declared weight is based on looking at the next highest LTL weight-break range only. It can be shown algebraically that every LTL weight-break range, except for the last weight-break range of 20,000+ pounds, always will have some weight at which it becomes less expensive to over-declare the shipment at the minimum weight and corresponding freight rate of the next weight-break range. For example, if the shipment weight fell within 500 – 999.99 pounds (rate = \$196.36/CWT), it would be less expensive to label the shipment weight, for example, as follows: 990 pounds as 1,000 pounds @ \$164.00/CWT). LTL carriers will allow the shipment to be artificially increased if doing so saves the customer money. The benefit to the LTL carrier is that customers list true weights on the bill of lading, which allows the LTL carrier to avoid having to weigh every shipment.

TL freight rate data are listed below the LTL freight rate data. The fuel surcharge for the TL carrier must be entered in Cell F26. Notice that TL Fuel Surcharge is stated in \$/mile. The TL Rate/Mile (Cell F27) must be negotiated by the TL carrier and the party paying the freight (the customer in this example). The Miles (Cell F28) were obtained from ABF’s software. The Minimum TL Charge (Cell F29) serves as a floor on what the TL carrier will charge. In general, the freight rate per CWT, per pound, and per unit decrease at a decreasing rate as shipment weight increases (economies of weight). The TL freight charge is competitive compared to the LTL freight charges beyond 10,000 pounds (and sometimes even at lower weights). Therefore, we always must check to determine if an LTL shipment should ship with the TL carrier, i.e., over-declared as a TL. Before this problem can be modeled using Excel Solver, some other calculations are necessary to calculate the actual freight rates. Actual freight rates must account for the following: LTL Discount, LTL and TL Fuel Surcharges, the weights over which the Minimum LTL Charge applies, the LTL over-declared weights, and the TL over-declared weights. Table 2 from the Excel spreadsheet includes most of these: LTL Discount, LTL and TL Fuel Surcharges, weights over which the Minimum LTL Charge applies, and the LTL over-declared weights. The TL over-declared weight is addressed later in this paper.

Cell C36 in Table 2 applies the LTL Discount and the LTL Fuel Surcharge to the Minimum LTL Charge as follows:  $= (F14 * (1 - F\$22)) * (1 + F\$23)$ , where Cell F14 corresponds to the nominal Minimum LTL Charge, Cell F22 corresponds to the LTL Discount, and Cell F23 corresponds to the LTL Fuel Surcharge %. For the LTL weight range of 1 – 499.99 pounds (Cell C37), the LTL Discount and the LTL Fuel Surcharge % are applied as follows:  $= (F15 * (1 - F\$22)) * (1 + F\$23)$ . The formulas for all LTL weight ranges are as follows:

- Cell C36:  $= (F14 * (1 - F\$22)) * (1 + F\$23)$
- Cell C37:  $= (F15 * (1 - F\$22)) * (1 + F\$23)$ .
- Cell C38:  $= (F16 * (1 - F\$22)) * (1 + F\$23)$
- Cell C39:  $= (F17 * (1 - F\$22)) * (1 + F\$23)$
- Cell C40:  $= (F18 * (1 - F\$22)) * (1 + F\$23)$
- Cell C41:  $= (F19 * (1 - F\$22)) * (1 + F\$23)$
- Cell C42:  $= (F20 * (1 - F\$22)) * (1 + F\$23)$
- Cell C43:  $= (F21 * (1 - F\$22)) * (1 + F\$23)$

The TL Charge (Cell C44) equals the maximum of two charges: the Minimum TL Charge and the applicable TL charge, which is calculated as  $[(TL \text{ Fuel Surcharge/Mile} + TL \text{ Rate/Mile}) * \text{Miles}]$ . The formula in Cell C44 is  $= \text{MAX}(F29, ((F26 + F27) * F28))$ . In Cells E36:E42 are the “Weight Breakpoints.” Cell E36 determines the Weight Breakpoint (indifference point) between the Minimum LTL Charge (\$191.99) and the freight rate of \$122.39/CWT for the range of 1 – 499.99 pounds. The weight breakpoint is calculated as  $\$191.99 = \$122.39X$ . Then, solving for X provides 1.5687 CWT (156.87 CWT \* 100 = 156.87 pounds). Therefore, the Minimum LTL Charge applies for weights between 1 – 156.86 pounds. For the range of 1 – 499.99 pounds (\$122.30/CWT), we must first determine the weight at which we will over-declare a shipment as 500 pounds @ \$102.50/CWT. This over-declared weight is

calculated as  $\$122.39X = 500 * \$102.50$ , or  $\$122.39X = \$512.50$ . Then, solving for X provides 418.74 pounds.

Table 2: Freight Rates after Applying LTL Discount & Surcharges

	B	C	D	E	F
3		<b>Actual</b>		<b>Weight</b>	
5	<b>Weight (pounds)</b>	<b>Rate*</b>		<b>Breakpoints</b>	
3					
6	Min. LTL Charge	\$191.99		156.87	Weight up to which Min. LTL applies
3					
7	1	\$122.39	per cwt	418.74	Weight at which to over-declare to next LTL range
3					
8	500	\$102.50	per cwt	835.22	Weight at which to over-declare to next LTL range
3					
9	1,000	\$85.61	per cwt	1,774.33	Weight at which to over-declare to next LTL range
4					
0	2,000	\$75.95	per cwt	3,982.23	Weight at which to over-declare to next LTL range
4					
1	5,000	\$60.49	per cwt	8,999.83	Weight at which to over-declare to next LTL range
4					
2	10,000	\$54.44	per cwt	18,001.47	Weight at which to over-declare to next LTL range
4					
3	20,000	\$49.00	per cwt		
4					
4	<b>TL Charge</b>	\$1,463.49			

*This table applies the LTL discount and the LTL and TL fuel surcharges. In addition, weight breakpoints are determined for which the Minimum LTL charge applies and for the LTL over-declared weights.*

Therefore, the freight rate for 156.87 pounds – 418.73 pounds will equal \$122.39/CWT, and the freight rate for 418.74 pounds – 499.99 pounds will equal a flat charge of \$512.50. The remaining LTL over-declared weights are calculated similarly. The formulas for all the Weight Breakpoints are as follows. Note: Students could confirm all of these Weight Breakpoints using Q-Rate for Windows ®.

- Cell E36:        =(C36/C37)\*100
- Cell E37:        =(B38\*C38)/C37
- Cell E38:        =(B39\*C39)/C38
- Cell E39:        =(B40\*C40)/C39
- Cell E40:        =(B41\*C41)/C40
- Cell E41:        =(B42\*C42)/C41
- Cell E42:        =(B43\*C43)/C42

Table 3 displays the restructured tariff of all freight rates after building in the over-declared weight ranges. The values in Cells B54:B67 correspond to the beginning of each LTL weight-break range. Cells C54:C67 contain the relevant freight rates for each LTL weight-break range using the following formulas. Note: Cell C68 contains the TL charge.

- Cell C54:        =C36
- Cell C55:        =C37
- Cell C56:        =B38/100\*C38
- Cell C57:        =C38
- Cell C58:        =B39/100\*C39
- Cell C59:        =C39
- Cell C60:        =B40/100\*C40
- Cell C61:        =C40
- Cell C62:        =B41/100\*C41

Cell C63: =C41  
 Cell C64: =B42/100\*C42  
 Cell C65: =C42  
 Cell C66: =B43/100\*C43  
 Cell C67: =C43  
 Cell C68: =C44

Table 3: Actual Freight Rates with Over-Declared Weight Ranges Added

	B	C	D	E	F	G
53	<b>Weight (pounds)</b>	<b>Actual Rate</b>				<b>Formula</b>
54	1	\$191.99	Minimum LTL flat charge			=C54
55	156.87	\$122.39	per cwt			=K\$10/100*C55
56	418.74	\$512.50	flat charge (over-declared to next LTL breakpoint)			=C56
57	500	\$102.50	per cwt			=K\$10/100*C57
58	835.22	\$856.10	flat charge (over-declared to next LTL breakpoint)			=C58
59	1,000	\$85.61	per cwt			=K\$10/100*C59
60	1,774.33	\$1,519.00	flat charge (over-declared to next LTL breakpoint)			=C60
61	2,000	\$75.95	per cwt			=K\$10/100*C61
62	3,982.23	\$3,024.50	flat charge (over-declared to next LTL breakpoint)			=C62
63	5,000	\$60.49	per cwt			=K\$10/100*C63
64	8,999.83	\$5,444.00	flat charge (over-declared to next LTL breakpoint)			=C64
65	10,000	\$54.44	per cwt			=K\$10/100*C65
66	18,001.47	\$9,800.00	flat charge (over-declared to next LTL breakpoint)			=C66
67	20,000	\$49.00	per cwt			=K\$10/100*C67
68	<b>TL Charge</b>	\$1,463.49	flat charge			=C68

*This table shows the weight-break ranges, the actual LTL and TL freight rates, and the formulas for calculating freight rates based on the shipment weight.*

As shown in Table 3, for the first weight range of 1 – 156.86 pounds, the Minimum LTL Charge (\$191.99) applies. For 156.87 – 418.73 pounds, the LTL freight rate is equal to the Shipment Weight (listed in Cell K10)/100 \* \$122.39/CWT. For 418.74 – 499.99 pounds, the LTL freight rate is \$512.50 (the weights in this range are over-declared as 500 pounds @ \$102.50/CWT). For 500 – 835.21 pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$102.50/CWT. For 835.22 – 999.99 pounds, the LTL freight rate is \$856.10 (these weights are over-declared as 1,000 pounds @ \$85.61/CWT). For 1,000 – 1,774.32 pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$85.61/CWT. For 1,774.33 – 1,999.99 pounds, the LTL freight rate is \$1,519.00 (these weights are over-declared as 2,000 pounds @ \$75.95/CWT). For 2,000 – 3,982.22 pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$75.95/CWT. For 3,982.23 – 4,999.99 pounds, the LTL freight rate is \$3,024.50 (these weights are over-declared as 5,000 pounds @ \$60.49/CWT). For 5,000 – 8,999.82 pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$60.49/CWT. For 8,999.83 – 9,999.99 pounds, the LTL freight rate is \$5,444.00 (these weights are over-declared as 10,000 pounds @ \$54.44/CWT). For 10,000 – 18,001.46 pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$54.44/CWT. For 18,001.47 – 19,999.99 pounds, the LTL freight rate is \$9,800.00 (these weights are over-declared as 20,000 pounds @ \$49.00/CWT). For 20,000+ pounds, the LTL freight rate is equal to the Shipment Weight/100 \* \$49.00/CWT. Cells B54:G67 form an Excel table array (LTLFreightRate) that will be used in another part of the spreadsheet to determine the relevant LTL freight charge. The TL Charge is \$1,463.49 (shown in Cell G68).



Model

The format of the inventory-theoretic model is based on the model described by Swenseth and Godfrey (2002). Annual Logistics Cost = Annual Order Cost + Annual In-Transit Holding Cost + Annual Warehouse Holding Cost + Annual Purchase Cost + Annual Transportation Cost. Annual Logistics Cost ( $L$ ) is represented as:

$$L = \frac{RS}{Q} + C_v f_i R t + [C_v + C_s] \frac{f_w Q}{2} + RC_v + RC_s \tag{1}$$

$R$  = annual requirements or demand in units;  $S$  = cost to place an order;  $Q$  = order quantity in units;  $C_v$  = unit cost from the vendor (determined from the all-units purchase quantity discount schedule);  $f_i$  = in-transit holding cost fraction (rate);  $t$  = transit time (fraction of a year);  $C_s$  = shipping (transportation) cost per unit;  $f_w$  = warehouse holding cost fraction (rate). These costs are built into the spreadsheet as shown in Table 4 in the Appendix. Table 4 shows the following. Cell J10 is the Order Quantity, which is used as the “Changing Variable” cell in the Excel Solver model. Cell K10 (Shipment Weight) is equal to the Order Quantity \* Unit Weight. Cell L10 returns the Relevant LTL Freight Rate based on performing a table lookup (using Shipment Weight) of Cells B54:G67 in the table array, “LTLFreightRate.” Cell M10 is the TL Freight Rate. Cell N10 is the Applicable Freight Rate (the lower of the Relevant LTL Rate and the TL Freight Rate). Cell O10 determines the Freight Rate per Unit. Cell P10 is based on a table lookup (using Order Quantity) of the Unit Costs in the table array, “UnitCostLookup,” in Cells E8:F11. Cell Q10 is used to calculate the Annual Order Cost. Cell R10 is used to calculate the Annual In-Transit Holding Cost (note: the transit time is dependent on whether the LTL or the TL carrier is used). Cell S10 is used to calculate the Annual Transport Cost. Cell T10 is used to calculate the Annual Warehouse Holding Cost. Cell U10 is used to calculate the Annual Purchase Cost. Annual Logistics Cost is calculated in Cell V10, which serves as the “Set Objective” cell in the Solver model. Cells K12:K15 are used to create the constraints in the Solver model. The Cube Used (Cell K12) equals Order Quantity \* Unit Cube.

The Max. TL Cube (3,936) is given in Cell K13. The Weight Used (Cell K14) simply references Shipment Weight. The Max. Weight (Cell K15) is 46,100 pounds. All formulas for this part of the spreadsheet are provided in the Appendix. We now need to add three constraints:  $K12 \leq K13$ ,  $K14 \leq K15$ , and  $J10 = \text{integer}$ . Note: Before running the Solver model, it is important to enter some positive value in Cell J10; otherwise, Solver will return an error message. Next, we solve the model in Solver using the GRG Nonlinear Solver.

**RESULTS AND DISCUSSIONS**

Results Of Excel Solver Model

The results for the Excel Solver model are displayed in Table 4 in the Appendix. The Order Quantity that minimizes Annual Logistics Cost is 345 units, with a Shipment Weight of 13,800 pounds and Annual Logistics Cost of \$1,021,041. The TL carrier will be used (note the Applicable Freight Rate corresponds to the TL Freight Rate). The Unit Cost is \$194.90 (345 units falls in the range of 300 – 599.99 units). At this point, the instructor might want to require students to experiment with different quantities to analyze what happens to each of the annual costs as the Order Quantity increases. For example, the instructor could have students find Annual Logistics Cost for the purchase quantity breakpoints of 300 and 600 units. In addition, students could calculate Annual Logistics Cost at each of the weight breakpoints by converting the weights of 500, 1,000, 2,000, 5,000, 10,000, and 20,000 pounds to their corresponding order quantities by dividing each of these weights by unit weight. Alternatively, the instructor could

require students to enumerate all possible order quantities and their respective costs in the spreadsheet (in the cells below Table 4).

Assessing Effectiveness Of This Approach

To test the effectiveness of this approach, the instructor could randomly divide students into two groups: Group 1 would be the control group (no exposure to the ABF’s Q-Rate for Windows® and Excel Solver software) while Group B would use both types of software. Then, the instructor could measure performance on exam problems related to calculating freight rates and inventory-theoretic model costs. Finally, the instructor could test for a significance difference between the mean scores on these problems.

**CONCLUSION**

In conclusion, the goal of this paper was to present an exercise helps students learn the following concepts: how to look up LTL truckload freight rates using software provided by an LTL carrier (ABF); how to calculate LTL and TL freight rates, including how to apply minimum charges, less-than-truckload discounts, and fuel surcharges; to decide whether to over-declare LTL shipments; and how to modify the basic Economic Order Quantity (EOQ) model to find the purchase lot size that minimizes annual logistics cost. We presented two tools to be used in the exercise—software for obtaining actual LTL motor carrier freight rates and Excel Solver. The primary finding in this paper was the development of an exercise for teaching Supply Chain Management students how to calculate motor carrier freight rates and the annual costs in the inventory-theoretic model. The primary limitation of the exercise presented here is the time required to discuss both tools used in this exercise. The instructor previously has devoted a 3-hour class to discuss this exercise. Future research related to this exercise will include creation of an inventory-theoretic model applied to multiple products sourced from the same supplier and from multiple suppliers using a milk run.

**APPENDIX**

Table 4: Excel Solver Setup

	J	K	L	M	N	O
6						
7			Relevant	TL	Applicable	Freight
8	Order	Shipment	LTL	Freight	Freight	Rate
9	Quantity	Weight	Rate	Rate	Rate	per Unit
10	345	13,800.00	\$7,512.72	\$1,463.49	\$1,463.49	\$4.24
11						
12	Cube Used	1,553				
13	Max. TL Cube	<b>3,936</b>				
14	Weight Used	13,800				
15	Max. Weight	<b>46,100</b>				

	P	Q	R	S	T	U	V
6			Annual		Annual		
7		Annual	In-Transit	Annual	Warehouse	Annual	Annual
8	Unit	Order	Holding	Transport	Holding	Purchase	Logistics
9	Cost	Cost	Cost	Cost	Cost	Cost	Cost
10	\$194.90	\$609	\$2,403	\$21,200	\$22,329	\$974,500	\$1,021,041

Cell Formulas:

- Cell K10: =C16\*J10
- Cell L10: =VLOOKUP(K10,LTLFreightRate,6)
- Cell M10: =G68

Cell N10:        =MIN(L10:M10)  
Cell O10:        =N10/J10  
Cell P10:        =VLOOKUP(J10,UnitCostLookup,2)  
Cell Q10:        =(C12/J10)\*C14  
Cell R10:        =IF(N10=G68,P10\*C23/365\*C10\*C12,P10\*C22/365\*C10\*C12)  
Cell S10:        =C12\*O10  
Cell T10:        =(P10+O10)\*C7\*(J10/2)  
Cell U10:        =P10\*C12  
Cell V10:        =SUM(Q10:U10)  
Cell K12:        =J10\*C17  
Cell K13:        =C27  
Cell K14:        =K10  
Cell K15:        =C25

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## PARTNERING WITH PRACTICE FOR ACCOUNTING EDUCATION: EVIDENCE FROM THE PACIFIC

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### ABSTRACT

*The Partnering with Practice (PWP) approach to teaching accounting is a relatively new and an under-researched phenomenon. This approach requires partners from chartered accounting (CA) firms to work in collaboration with academics in the delivery of accounting courses or a designated module in a course at tertiary institutions. This paper seeks to discuss the viability of the PWP approach to teaching accounting in the School of Accounting and Finance (SOAF) at the University of the South Pacific (USP). The paper explores the existence of an expectation gap in the accounting curriculum that could be fulfilled via the PWP approach. To gather data for this study, we carried out in-depth interviews of two stakeholder groups, namely, the partners of the big four CA firms operating in Fiji and the senior academics of SOAF. The results revealed that the PWP approach had its share of perceived benefits and limitations. The results also showed that both stakeholders were willing to collaborate in this teaching approach should SOAF decide to pursue this approach in future. This paper has practical implications for the field of accounting education.*

**JEL:** M4; M41; M49

**KEYWORDS:** Partnering with Practice (PWP), teaching approach, chartered accountants

### INTRODUCTION

Globalization of businesses, the increasing complexities of business transactions and advances in information technology that are facilitating electronic commerce and communication are challenging the relevance and usefulness of traditional accounting education (AlHashim, 2004). Added to this, is the increasing demand for accounting courses and shortages of qualified accounting academics around the world. Kirk and Spector (2009) state that the shortage of qualified business faculty, especially in accounting, has resulted in competition for scarce academic and professionally qualified faculty. Accounting salaries have become increasingly competitive and therefore are scoring past the budgetary means of some schools. One solution to the dual problem of faculty shortages and rising salaries has been to increase the number of part-time (adjunct) faculty. Research carried out by Geary, Kutcher and Porco (2010) highlighted formidable staffing challenges currently faced by the accounting departments.

Mohidin, Jaidi, Sang and Osman (2009) state that since accounting is a professional subject, it is crucial to have someone who is equipped with all the knowledge and skills to teach this subject. Their study found that lecturer characteristics also play an important role in determining the effectiveness of teaching particularly in accounting subjects. Kinney (2003) states that if one wants to improve education for professionals, what better way than to have better professors who can develop and adapt curricula for professionals from a rich and broad basis of an understanding of the concepts underlying individual and social accounting choices?

Musselwhite (2006), Chiou (2008), and Grenzke (1998) have discussed various other teaching approaches such as the use of electronic learning tools, distance and flexible approaches to teaching and many more

to meet the growing demands of accounting. While the 'how' remains important in terms of the teaching approach or the method of delivery, one should not take away emphasis from 'who' is delivering the course. The success of any course depends on the ability of course coordinators to deliver their courses in an interesting and dynamic manner that will not only enhance student learning but also enable schools to compete efficiently.

A recent study by Geary et al. (2010) has added a new dimension to the field of accounting education through the introduction of 'Partnering with Practice' (PWP) approach to teaching accounting. This approach has opened up a new role for the accounting practitioners in the field of accounting education. The authors suggest that colleges and universities, including those who typically rely upon adjuncts and clinical faculty, should consider entering into a formal collaboration with a public accounting firm whereby a partner with support from the firm commits to teach an accounting course or a designated module in a course. The study involved a review of a pilot program, Partner Teaches Program (PTP) in the United States. A large public accounting firm designed this program to explore the benefits of transforming informal teaching arrangements into a formal collaboration between educational institutions and the sponsoring firm. Their study found that properly selected partners, matched with the demands of a particular course and properly prepared, supported and integrated into the curriculum, can make significant contributions to accounting education. Based on Geary et al. (2010) findings, the authors made strong recommendations for firms and schools to consider using such teaching arrangements.

The impact of globalization and advancing technologies has placed increased demands on the academics world over to adopt innovative teaching methods that are aligned to the changing educational environment and the diverse nature of students. The Pacific Island Countries (PICs) such as Fiji is also facing challenges brought about by globalization and the use of social networks such as Facebook. Thus the academics in the PICs must also learn to adopt innovative techniques such as the PWP approach to face these challenge and make their courses as fascinating and as captivating as possible. One of the top schools at the University of the South Pacific (USP), the School of Accounting and Finance (SOAF), that produces hundreds of accounting graduates annually, is currently not using the PWP approach. Due to increasing demand for accounting courses and shortage of senior academics in accounting, the PWP approach is likely to prove to be quite cost effective and a successful teaching mechanism at SOAF.

The lack of awareness owing to limited literature on the use of PWP approach to teaching accounting may have hindered initiation of such methods in accounting schools. Thus, there is a need to carry out further research on this particular approach. Therefore, this paper intended to determine the perceptions of the senior academics of SOAF at USP and the partners of the accounting firms such as KPMG, PricewaterhouseCoopers (PWC), Ernst & Young and G. Lal & Co. on the PWP approach to teaching via in-depth interviews. The paper discusses their perspectives in terms of the perceived benefits, constraints, interests, willingness, the relevant areas in accounting where such approach could prove beneficial as well as determines the viability of the PWP approach to teaching accounting at SOAF.

This paper has five sections. Section 1 will provide a brief overview of USP and SOAF. Section 2 covers the literature review. Section 3 discusses the methodology of this paper followed by section 4, which analyzes the results of the interviews. The final section concludes the paper and discusses the implications, recommendations and limitations of this research.

## **LITERATURE REVIEW**

### Brief Overview of USP SOAF

The University of the South Pacific is a twelve-member regional tertiary institution established in 1968 (University of the South Pacific Calendar, 2010). The University's main campus known as the Laucala



Campus, resides in Fiji. USP has three faculties: the Faculty of Arts and Law (FAL), the Faculty of Business and Economics (FBE) and the Faculty of Science, Technology and Environment (FSTE).

The School of Accounting and Finance (SOAF) is one of the largest schools in FBE. It currently has around thirty-five academic staff with a majority holding positions of teaching assistants, tutors and assistant lectures. At present, SOAF has two accounting professors and four senior lecturers. SOAF offers courses in accounting, banking and finance. The school currently offers courses via two modes: face to face (on campus) and distance and flexible learning (DFL). Due to increased student demand, SOAF also conducts winter schools and summer schools within Fiji as well as in other PICs. An electronic learning tool known as Moodle supports all the modes.

SOAF has maintained close ties with the only professional accounting body in Fiji, the Fiji Institute of Accountants (FIA) and the chartered accounting firms. However, the school has not yet approached the partners or the members of the accounting firms to collaborate and assist in the delivery of accounting courses at USP.

### Review of the Literature

The literature has discussed various teaching methods such as the use of computers, concept mapping and teaching adjuncts to counteract the evolving issues in the delivery of accounting courses. Musselwhite (2006) states that university executive education programs are changing both the materials and the teaching methods by incorporating business simulations and interdisciplinary teaching teams into classrooms. Chiou (2008) found that concept mapping strategy could significantly improve students' learning achievement compared to using a traditional expository teaching method in understanding accounting concepts.

Research also shows that universities are increasingly turning to adjunct faculty (Grenzke, 1998). Young (1989) cites lack of faculty member expertise needed for specialty courses as a frequently given reason for hiring adjunct faculty. Even though part-time faculty are mainly well-qualified to carry out their duties, and although many colleges are working to orient and combine them more fully into the college infrastructure, it can be disputed that part-timers are more feebly linked to their students, colleagues, and responding institutions than full timers (Gappa and Leslie, 1993; McGuire, 1993). Another issue pertaining to the use of adjunct faculty is grade inflation. Sonner (2000) and McArthur (1999) found a disparity in grading pattern of adjunct and full-time faculty. Specifically, Sonner (2000) established that adjunct faculty has a propensity to give higher grades to business students than a full-time faculty. Studies of adjunct grade inflation suggest that inclination to student complaints and poor student evaluations due to lack of employment security are probable explanations for the differences in grading (McArthur, 1999). Kirk and Spector (2009) also found evidence consistent with adjunct faculty assigning higher grades to students than full-time faculty, thus contributing to grade inflation.

Plumlee, Kachelmeier, Madeo, Pratt and Krull (2006) highlighted that there is a deficiency in new accounting faculty with particularly sharp shortages in audit and tax specialties. While many academic fields are suffering from professor shortages, the issue is more acute in accounting because of the shortage of faculty that may in part be attributable to the pull of attractive career opportunities in public accounting (AAA 2009; Wall Street Journal 2004). Therefore, a lot of attention is now being placed as to who is the appropriate personnel to teach accounting. Prior research suggests that students found professors possessing appropriate practical experience to be of fundamentally of higher quality than professors who lacked appropriate practical experience (Mounce, Mauldin and Braun, 2004). Many adjuncts have considerable real-world experiences in their fields and are able to offer students a perspective that may be different from that of teachers who do not work in the field (Thompson, 1984). Practitioners serve as another staffing resource for introducing industry-related courses or course components (Avakian 1995). This is essential at a time when well-publicized financial scandals with

distressing personal and professional outcomes are in the limelight. Mounce et al (2004) suggests that faculty and administrators should look for experiences that complement the academic unit's mission and faculty strengths. As Demski and Zimmerman (2000) posit in their essay on teaching and research, two apparently distinct activities can complement each other and elevate overall performance. On this note, currently there are only limited studies that look at the importance of professional experience to the stakeholders of accounting programs (Mounce et al., 2004).

Geary et al (2010) in their study found a number of potential benefits from their review of the PTP where the hours used to conduct classes were included in the teaching partner's schedule and was part of their workload. These benefits included students' appreciation of the use of real world experiences and applications in classrooms, which created an enriching learning environment for them. However, in some cases students saw inadequate provision of business experiences that led to their dissatisfaction. Other benefits were that partners were found to be more approachable and friendly and were willing to help. According to the partners, the PTP was a worthwhile program. It gave the partners a chance to explore alternative employment opportunities such as college teaching after retirement. Some partners perceived this as an opportunity to give something back to the community as well as respond to shortage of instructors in accounting, maintain firm's presence and make a meaningful contribution to the relationship between the institution and the firm as well as raise awareness of professional opportunities in the accounting profession. Partners believed that they "are a people asset firm; we need to supply assets to universities so they can in turn create assets for us". At the same time, partners saw this as a means of helping the faculty to achieve their research expectations. According to the academics, PTP assisted them to meet their staffing challenges as well as made them deliver challenging courses especially in the areas of tax and audit. However, the academics stated that PTP could result in alienating other public accounting firms as well as business partners from other sectors such as industry and government.

## METHODOLOGY

To gather data for this research, we conducted in-depth and confidential interviews with the partners of the CA firms in Fiji and the senior academics of SOAF at USP. We selected four partners representing the top four chartered accounting firms in Fiji based on their availability. For a balanced sample, we also interviewed four senior academics of SOAF. The time during which these interviews were conducted, SOAF had six senior academics. The interviews were conducted between August and October 2010.

The partners whom we interviewed were from KPMG, PwC, Ernst & Young and G.Lal & Co. The reason for selecting these four firms was due to their dominating presence in Fiji and the other PICs. Anecdotal evidence suggests that these firms have a larger clientele base compared to the smaller accounting firms operating in Fiji. In addition, these firms actively seek to recruit accounting graduates from SOAF annually after conducting on-campus interviews of final year students. Furthermore, we chose to interview the partners given the 'steering' authority they have in the decision-making role in their firms. Ultimately the decision to participate in the PWP approach, allocate appropriate personnel to undertake teaching simultaneously with practice and workload adjustments would lie with the partners.

The senior staff selected for the interviews specialized in diverse areas of accounting such as auditing, accounting theory, financial and managerial accounting, taxation and accounting information systems. We took into account factors such as their vast experience, tenure at USP and their designations during the selection process. Thus, these academics were in a suitable position to reflect on whether the adoption of the PWP approach would be in the best interest of SOAF and its students.

Authors made prior appointments with the interviewees via telephone and email. These interviews lasted for approximately 30 minutes. We sought permission from the interviewees to record the sessions digitally.

## **RESULT ANALYSIS**

### The Perspectives of CA Partners

Our interviews gathered partners' responses on seven specific areas: partner awareness of the PWP approach to teaching, firm expectations from SOAF graduates, the areas of accounting where there was a critical need for this approach, the perceived benefits and limitations of this approach, workload issues and the use of proxies, willingness to undergo teacher-training and finally, the reasons for participating in this teaching approach.

The interview first sought to determine whether the partners were aware of the PWP approach to teaching. Three of the four partners admitted that they were not aware of this approach to teaching while one partner stated that he was familiar with this approach but required further elaboration on the matter. We then briefed all the partners on the PWP approach. Following this, they showed great eagerness in participating in this teaching approach. The interviewees also suggested that apart from CA firms, SOAF could request financial executives and other senior executives from the areas of trade and commerce, economics and the financial institutions to participate in such an approach.

During the course of the interviews, we discovered that one of the interviewees had served on the External Advisory Committee (EAC) of SOAF who revealed that members serving on the EAC had suggested SOAF to adopt innovative methods of delivering accounting courses. Consequently, the partner was highly appreciative of the fact that the authors had taken the initiative to undertake research in an approach that could become a powerful teaching tool for SOAF.

We asked the partners as to whether our graduates were fulfilling their firms' expectations. The responses gathered on this issue were astonishing. They revealed that from the number of accounting students that graduate annually, only 20 per cent meet up to the CA firms' expectations. All of the partners were of the view that our graduates had poor written, verbal and analytical skills. The comment of one of the partners was as follows:

“We find their disability to write and particularly to write a grammatically correct report. Secondly, their disability to speak in grammatically correct sentences. These are the two areas where they fall short.”

The reasons given for such poor communication and interpersonal skills of our graduates were the impact of “Facebook, internet and text messaging.” While the issue appeared to be minor, the partners believed that “it mattered a lot in practice.” An additional critique was the lack of practical knowledge on the part of our graduates. One of the partners stated:

“...the practical side is not to the level that is expected...when we ask students to name five different types of taxes in Fiji or name five different accounting or auditing standards, they cannot come up with satisfactory answers. The feedback from our clients is also that our graduates are not delivering up to the expected standard.”

Regardless of the above comment, the partners did acknowledge the fact that the work of SOAF is to develop the intellectual capacity of accounting graduates by equipping them with theoretical knowledge. This is a crucial component in becoming a practitioner. The partners underscored the teaching of theoretical concepts in “training and grooming” a budding practitioner.

The results thus, pointed towards an urgent need to improve the communication, analytical and critical thinking skills of SOAF graduates. On this note, the authors highlighted the introduction of generic courses at USP from 2010 that could counteract partner grievances such as this. The use of innovative

teaching methods such as the PWP approach would be an added solution to narrow the existing expectation gap.

Notably, all the partners were showing great keenness in participating in this approach by the first quarter of the interview session. According to them, such an approach could help “bring out the practical bend and viewpoint” and carve a path away from conventional teaching. The partners saw a critical need for the PWP approach in specific areas of auditing, accounting theory, financial reporting, accounting information systems, taxation, corporation’s law as well as management accounting.

The interview went on to seek the partners’ views on whether they saw any benefits and limitations of participating in the PWP approach to teaching. The major advantage that the partners foresaw for the students was that they could become more familiar with the practical operations of CA firms rather than simply studying this in theory. In addition, the students would be exposed to practical case studies and hence, get the opportunity to learn from the practitioners’ real life experiences. Students would also get the opportunity to interact with people from practice, which they would not get otherwise. This in turn would enable students to make better career choices. Thus, the students would be able “to see beyond textbook and classroom learning” which would help them in conceptualizing how the theory works in practice.

The partners also discussed the potential benefits of using the PWP approach for the University (USP) and the profession (CA firms). According to the partners, the University will be able to tap into “rich experience and resources at a very competitive price.” This approach could help fill the practical knowledge gap on the part of academics through interaction with practitioners. The partners also believed that both the quality of accounting education and the accounting graduates would improve.

The interview results also revealed benefits for CA firms in participating in the PWP approach. Partners perceived this approach as a means of fulfilling the firms’ corporate social responsibility (CSR). In addition, it would provide the CA firms with the opportunity to meet students individually and hence be able to recruit quality graduates. The continuous interaction between the academics and the teaching partners could help in designing and delivering accounting courses that suits both the academic and the business environment.

The partners also gave their feedback on the perceived limitations of engaging in the PWP approach. They highlighted the need of having “good moderators” to ensure selection of right personnel to teach. In addition, the lectures delivered by the teaching partners and the academics should be consistent to avoid confusion amongst students. Anecdotal evidence suggests that textbook contents often clashes with practical reality. An added issue was that of client confidentiality. The partners were mindful of the fact that certain boundaries would have to be drawn to safeguard clientele interests.

However, the major limitation emphasized by the partners was the issue of their workload. All the partners drew attention to their “significant workload” which often left them pressed for time. The partners stressed that they would require advance notices on the content and timing of lectures to factor this into their workload. Considering the busy workload of the partners, we inquired as to whether they would be willing to assign proxies to participate in this teaching approach. Almost all partners agreed to use proxies upon their unavailability. Three of four partners stated that the senior managers would be the best proxy for them as these managers have conducted various trainings and workshops in-house and were highly experienced. However, one of the partners added that factors such as staff availability and complexity of the subject matter would determine who would be the best proxy.

We questioned the partners further as to whether they would seek remuneration for participating in this teaching approach. Three out of four partners stated that they were willing to teach certain hours on a

pro-bono basis. These partners saw this “as something to give back to the university.” However, should this approach demand a greater amount of time and depending on the level of engagement expected of them, the partners reported that they would seek remuneration. One partner stated that the firm might charge the University a nominal rate per hour as opposed to the market rate. This would help ensure a monetary return on their time expanded on teaching.

Our interview progressed further to inquire whether the partners were willing to undergo teacher-training programs in order to ensure effective participation from them in the PWP approach. We received mixed responses to this question. While some partners agreed that such training would be beneficial, some stated that they had the necessary skills and experience to teach having conducted various in-house trainings and workshops. They noted that the time factor would be another aspect to consider.

We further questioned the partners if they had any personal reasons for participating in the PWP approach. The partners saw this initiative as a means of helping the students and assisting in the development of the University. A local partner in one of the CA firms had this to say:

“I am a USP graduate and also completed my postgraduate at USP. It is important for us locals and alumni to come back and give something back to the University.”

Overall, all the four partners who were interviewed saw the PWP approach as a very dynamic and constructive means of teaching accounting courses and were willing to engage in such approaches if implemented in future.

### The Perspectives of the Academics

We interviewed the senior academics of SOAF on six specific areas: awareness of and willingness to participate in the PWP approach to teaching, the areas of accounting where there was a critical need for this approach, perceived benefits and limitations, how the approach could fulfill CA firms’ expectations, provision of teacher-training and interaction period, and finally, how they would make this teaching approach a success.

Our interview began by seeking the academics’ understanding of the PWP approach to teaching. The interviewees were vaguely aware of this approach; hence, we provided them with a brief overview. One of the academics commented that overseas universities do use such teaching mechanisms but the approach may be termed differently. However, all interviewees agreed on the fact that SOAF has never used this approach.

We then questioned the interviewees on their willingness to collaborate with CA firms under this approach. Three of the four academics interviewed did not see any reason as to why they would not be willing to do so. However, one of the academics stated that given the workload of the partners, there would be “difficulties in actually getting them to teach.” The authors noted that while the academics were mindful of the partners’ heavy workload in a small economy like Fiji, such assumptions would have been the cause of SOAF’s reluctance in adopting an innovative teaching method such as this one. We progressed with the interviews on the premise that both the stakeholders, that is, the academics and the CA partners were willing to collaborate with each other under the PWP approach.

The next issue we dealt with was the areas of accounting where the academics saw a critical need for this approach. The interviewees highlighted some specific areas of accounting such as auditing, corporate accounting, managerial accounting, insolvency and incorporation issues, which generally came under the ambit of CA firms.

Our interviews then gathered the academics' views on the perceived benefits and limitations of this approach. According to the interviewees, the PWP approach had significant benefits for the students in terms of providing greater exposure on CA firm culture, enhancing students' understanding with the use of case studies from the field and filling in the knowledge gap that arises due to sole reliance on theory. One of the academics commented as follows:

“...some exposure will be given about the practice firm being ruthless...when we teach as academics; we are largely academic-oriented...”

The academics also foresaw some benefits for the University. Amongst the suggested benefits was the ability of USP to compete relatively well with other local universities. The academics believed that the University is currently theory-focused and adopting this approach will “complete the picture” and “add to the image” of USP. Additionally, this approach would help the University to create a better relationship with the practitioners in terms of mutual exchange of ideas and skill sets. Both parties believed that frequent interactions would ensure fulfillment of each other's expectations. Moreover, the academics agreed on the fact that the universities are usually “divorced from the practice.” The PWP approach could become the medium through which the University and the practice could work hand-in-hand resulting in more knowledge sharing.

In terms of the benefits to CA firms, the academics generally believed that it would help the profession to recruit quality graduates who could enhance firm performance. One of the academics commented that CA firms do not need any additional publicity to recruit graduates given their well-established presence in Fiji. Therefore, the partners' major motivation for participating in this approach may not necessarily be to promote their firms but rather to instill the graduate attributes in students whom they would possibly recruit later.

Like a two-sided coin, the academics perceived a few limitations of adopting the PWP approach. These included the low level of relevance of implementing the PWP approach at the undergraduate level, the conflicting perspectives of a practice-oriented person with that of a theory-oriented person and the risk of the University losing sight of its objectives as a tertiary institution as opposed to a vocational institute. On the latter issue, the view of one of the academics was that:

“...Universities are supposed to develop students intellectually. By using PWP approach, we will end up doing vocational teaching, know how teaching. Learning know-how is good but learning know-why is even better and we cannot surpass this.”

One of the four academics was of the view that the PWP approach would be more relevant at the Postgraduate level of studies. Students at this level would have had exposure to practice and could benefit from this approach to enhance their professional expertise.

The academics also embarked upon the issues of remuneration, control over course delivery and the demanding workload of partners. The interview results revealed that SOAF would need to carry out a “cost-benefit analysis” before adopting the PWP approach. The academics were concerned that an attractive package would need to be provided to the teaching partners in order “to buy their commitment” to participate in the PWP approach.

Issues of control over a particular course in the University teaching environment was of great concern to the academics. We noted that the academics wished to maintain their dominance in the education environment. The academics feared the undermining of their roles “should the practitioners be given superiority.” One of the academics made the following statement:

“To maintain the integrity of the University we have to demonstrate that we need their help but when it comes to our home we are the leaders.”

The academics believed that the major limitation and challenge lies with the partners’ busy workloads. They observed that the partners’ first priority would be their “primary job” which may cause disruptions to their teaching schedules. By way of example, one academic noted:

“People at senior positions in CA firms are notoriously unreliable...not because they do not want to do the work, but because they have to work unusual hours at their primary job...they just cannot commit to it.”

Given the above benefits and despite the limitations, all the interviewees showed great support to adopting the PWP approach. We noted that both the stakeholders are interdependent on each other, “be it for research or equipping graduates with the necessary knowledge base prior to being absorbed into practice.” This led us to question the academics as to whether the PWP approach can assist in producing quality graduates that meets the expectations of the CA firms.

The academics did agree that the students would gain new knowledge through practitioners’ involvement; however, they were cognizant of the fact that not all SOAF graduates would be absorbed in CA firms. Thus, there was a need to prepare students for a variety of careers. “Some will become academics or financial analysts or consider other careers.” In choosing the CA firms to participate in the PWP approach, SOAF would run the risk of limiting students’ scope in terms of their career options. The partners would want to instill into students what the firm expects of them, thus “narrowing the mindset of students.” As a result, the consensus of the academics was that the University could not prepare “tailored” graduates to suit specific markets. The academics only saw it as their responsibility to provide a “generic product”- an accounting graduate. The PWP approach will only help to give the students a fair idea of how the theory applies to practice but it would not fully prepare them for every process in practice.

We also gathered responses on how frequently the academics would want to interact with their co-partners in teaching a course and their willingness to provide teacher training. A majority of the academics agreed to have frequent interactions with the exception of one, who believed that greater interaction would only occur in the initial stages of using the approach. This academic believed that the level of interaction would gradually reduce as the teaching progresses and as partners become more familiar with the process over the period. Three from the four academics opted to provide teacher training to their co-partners in the initial stages. The remaining interviewee provided a valid justification for not providing any form of teacher training. According to him, SOAF should not try to mold practitioners into teachers, as “we do not want them to be same as us” and that there was a “need for the students to see the difference.”

The final issue on which we obtained the academics’ views was how they would make the PWP approach a successful and an interesting one. The interviewees provided suggestions such as constant interactions with both the students and the co-partners during the teaching semester, using informative course guides that would brief students on the course modules and staffing, increased use of local and practical case studies, reviewing lectures conducted by co-partners and providing relevant feedback, as well as scheduling informal gatherings with teaching partners before the teaching relationship could be formalized.

Overall, we noted that the academics were for the idea of participating in the PWP approach despite its perceived limitations. However, one academic gave a critical view of this approach stating, “...we do not

live in an ideal world and something that has been proven to be a success in a different environment, may not necessarily work in our country.”

## CONCLUSION

The objective of this research was to determine the viability of the PWP approach to teaching accounting in SOAF. Our results show that both the academics and the CA partners are willing to collaborate in the delivery of accounting courses via this approach. Both the parties perceived benefits and limitations of adopting this approach.

The major benefits noted for the students was that they would be exposed to practical case studies, learn from real life experiences of practitioners, become familiarized with firm operations, get an opportunity to interact with practitioners, conceptualize how theory works in practice and make informed career choices. The University would gain from this approach, as it would help fill the practical knowledge gap on the part of the academics, allow USP to compete with other local universities, enhance the relationship between the practitioners and academics as well as produce quality graduates through delivery of quality education via quality teaching method. The CA firms could also benefit from this approach, as it would give them an opportunity to fulfill their CSR, to instill graduate attributes into students in order to recruit quality graduates later and foster a better relationship with the University. In terms of limitations, both the parties agreed that the demanding workload of partners would be an issue. It would also be a challenge to select appropriate personnel to design and deliver courses to avoid confusions amongst students and misinterpretation of course content. There is also the need to safeguard CA firms' client confidentiality. The University would also be at a risk of losing sight of its objectives and be equated to a vocational institute if care is not taken in implementing PWP approach.

This paper has several implications. Firstly, it can encourage SOAF as well as the accounting departments of other universities in the Pacific to conduct a feasibility study of adopting the PWP teaching approach. Secondly, it will also help the accounting firms to realize their value and their role in contributing towards the delivery of accounting courses at USP, which could benefit both the academics and our future jewels, the accounting students. Thirdly, the approach could serve as a powerful tool in conducting accounting courses to capture student interests, build their intellectual capacity and develop a solid foundation for accounting education at the University. Finally, it could assist USP to tap into readily available teaching faculty at a lesser cost than what it would take to employ a full time faculty.

The overall results of this study showed that both stakeholders were receptive of the PWP approach to teaching and were willing to co-operate with each other should the University initiate its use in future. We therefore recommend that the stakeholders engage in further discussion on this teaching approach to consider implementing it in future. The approach could also address senior staff shortage issues as well as share the workload of existing academic staff to allow the academics room for research engagement. This paper had its limitations. Authors were only able to collect data from four senior academics and four partners of CA firms and therefore one should not solely rely on these findings in deciding the viability of the PWP approach. There is a need to carry out further research on a larger scale in future on this approach by possibly interviewing partners of local CA firms as well as other university academics. This research however marks a pioneer initiative in the PICs.

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# THE TEACHER TURNOVER CRISIS. EVIDENCE FROM SOUTH AFRICA

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## ABSTRACT

*In spite of numerous strategic interventions by the department of basic education to retain educators in the profession, there continues to be a high number of educators leaving the profession. This attrition of skilled personnel has had an adverse effect on the capacity of the state to realize its millennium development goals. These goals include achieving universal primary education by 2014. A key focus of the South African government strategic objective is to ensure the country has skilled expertise in various fields i.e. commerce, education, industry, science and technology etc. This goal can only be achieved in an environment of sustained investment in human capital development by the government. In the arena of education a significant contribution of the country's focus has been directed to teacher development. Despite these gargantuan efforts on the part of government, there continues to be a brain drain with high educator turnover. A tacit indication of this massive investment in education is the fact that of the R165 billion budgeted for education, R2.7 billion has been earmarked for teacher development. This clearly points out to the strategic importance of leadership and human capital development as critical areas for broad human resource development goals of the state.*

**JEL:** A2

**KEYWORDS:** Teacher Turnover, South Africa

## INTRODUCTION

This article examines the crisis of teacher turnover in South Africa, by providing a brief overview of the available literature on the subject and outlining causal factors leading to the problem. The table below gives an indication of the magnitude of the problem particularly since the post apartheid era.

The Cape Professional Teachers Association is an employee body that looks after the conditions of service of educators argued that up to twenty thousand teachers leave the profession every year (IOL News: 2008). In a reply to a parliamentary question, the Minister of Basic Education indicated that “between 2005 and 2008, 24,750 teachers left the profession”. She further said that “South Africa is only producing 8000 teachers annually when about 20 000 teacher graduates are needed” (IOL News, 2010). A significant number of these teachers are poached by overseas countries with promises of better working conditions and in particular better salaries. Of concern is the fact that South Africa is losing the best teachers in scarce skill areas such as mathematics, science, technology and languages. One teacher Dudley Stuurman who is qualified to teach mathematics up to Grade 12 pointed out that he is leaving the country to teach in Bahrain in view of the fact that “the R6500.00 I get after tax is not enough for me to pay for a bond and a car”.

The existing literature on leadership, power and influence processes provides a theoretical basis for understanding the leadership process in formal organizations (Jacobs, 1970:1). Literature supporting leadership and effective leadership in particular is ever increasing. This implies the success of any institution, or any group within an institution, depends largely on the quality of its leadership. In general it is critically important that individuals are positively influenced towards the achievement of goals for the success of the institution. The relevance of this statement lies in the fact that in order to achieve the goals of quality education in South Africa, it is a *sine qua non* that educators be treated as professionals, with

dignity and respect, which is hardly the norm. The section below provides a conceptual overview of literature in the area of employee turnover. The remainder of the article will provide a comprehensive synopsis of the factors in South Africa that have contributed to the problem of high teacher turnover and the recommendations that can be considered to remedy the problem. Table 1 shows the percentage of terminations from 1997-2004

Table 1: Percentage Terminations by Cause for Educators 1997/98 to 2003/4

Year	Termination Cause Excluding Contract Expiry						
	Deceased	Dismissal/Desertion	Medical Reason	Resigned	Retirement	Severance Package	Transfer
1997/98	7.0%	9.1%	4.6%	43.1%	6.5%	28.4%	1.3%
1998/99	12.7%	3.4%	7.5%	44.3%	13.0%	15.8%	3.3%
1999/00	15.5%	4.6%	9.9%	48.2%	15.9%	4.9%	0.9%
2000/01	15.9%	3.6%	9.5%	51.1%	16.7%	2.5%	0.6%
2001/02	15.6%	3.4%	8.6%	48.3%	14.1%	9.4%	0.5%
2002/03	17.4%	3.2%	8.3%	53.6%	16.1%	0.9%	0.4%
2003/04	17.7%	2.2%	8.7%	53.1%	17.7%	0.2%	0.3%

*This table shows the percentage of terminations in South Africa from 1997-2004. Source: MTT study*

## LITERATURE REVIEW

Wisegeeek website (2012) describes employee turnover as the ratio of the number of employees a company must replace in a given time period to the average number total employees. Employee turnover occurs when employees leave their jobs and must be replaced. High employee turnover is prevalent in an environment where there is high dissatisfaction within the work environment. Replacing existing employees is costly to organizations and is destructive to service delivery (Samuel & Chipunza, 2009: 411).

The available literature posits that factors causing employee turnover are common in different industries. Some of these factors (particularly with relevance to the teaching profession) are the following: 1.) The economy, relating to the availability of other higher paying jobs. 2.) The performance of the organization where an organization perceived to be in economic difficulty will raise the specter of impending layoffs leading to workers seeking alternative employment 3.) The organizational culture involving the reward system, the strength of leadership, the ability of the organization to elicit a sense of commitment on the part of workers, and its development of a sense of shared goals amongst others will influence such indices of job satisfaction as turnover intentions and turnover rates. 4.) The characteristics of the job because some jobs are intrinsically more attractive than others. A job’s attractiveness will be affected by many characteristics, including its repetitiveness, challenge, danger, perceived importance, and capacity to elicit a sense of accomplishment. A jobs’ status is also important, as are many other factors. Source: (SIGMA Assessment systems.com).

Bennel and Akyempong (2007:4) point out Maslow’s hierarchy of needs as one motivational theory that postulates human needs that must be met. There are five ‘levels’ of need, namely physiological (thirst, sex, hunger), safety (security, stability and protection), love and belongingness, self-esteem and self-actualization. A key proposition is that if the lower level needs remain unmet, the higher level needs cannot be fulfilled. This theory is particularly relevant to teachers because meeting the basic survival needs for food and shelter as well as security in conflict situations are the daily major challenges for teachers in many countries One of the famed points of Maslow’s hierarchy of needs theory refers to the inextricable relationship between high and low order needs. This means that as much as employees can achieve self-actualization, it is equally pertinent that low order needs pertaining to remuneration, job satisfaction be satisfactorily addressed.

Research reveals that institutions in South Africa periodically assess their employee's needs and levels of needs satisfaction. They follow a "one size fits all" approach (Robbins, Odendaal, Roodt, 2003:131). The attendant effect of this approach has had the invariable effect of demotivating and demoralizing employees to an extent that productivity levels are negatively affected. Celep (2003) in Xaba (2008: 288) posits that teachers levels of commitment is determined by their beliefs and acceptance of the school organization's goals and values, the willingness to exert effort on behalf of the school and a strong desire to keep up membership in the organization. Lower commitment to the school organization affects both the effectiveness of the school and causes teachers to be less successful or leave the profession. The human capital labor choice and compensation theories argue that individual choice of profession and their derived utility is not only affected by pecuniary rewards (monetary incentive earnings) but also by its non-pecuniary rewards (status of the profession, probability of being employed, opportunity costs and more holidays ( SACE, 2010:4).

Poor levels of commitment invariably lead to low morale which Ngambi (2011: 763) points out can gradually destroy employees' commitment, adversely affect the product or service they offer and alienate clients and customers. Employee's satisfaction within the work environment is related to physical, psycho-social, emotional and economic factors (George, Louw & Badenhorst, 2008:1).

A major source of teacher dissatisfaction arises from disparities between the teaching profession and other professions with respect to the time, mode of payment of salaries, fringe benefits, promotion prospects and working conditions (Adelabu, (2005:10). This dissatisfaction invariably results in brain drain, which is defined by Shinn (2002) in Semela & the Institute of Education, Research & Training (2011), as a term coined by the 'British Royal Society' to describe the outflow of scientists to the US and Canada in the 1950's and 60's.

Dissatisfaction with working conditions invariably influences the psyche of teachers to the extent that they become radical. However teacher radicalism can become muted once the national system of education is institutionalized. On the other hand Samoff, 1994; & Carnoy, 1996, 1996) in Chisolm ( 1999,: 112) postulate that, there is growing literature which lists teachers' resistance at the workplace as manifested in high levels of absenteeism to the introduction of new controls brought about by structural austerity measures. In some aspects, teachers are regarded in the same way as other economic migrants in Africa in that they are often separated from their spouse and families due to the lack of suitable housing, the reluctance of spouse and children to live in rural areas and other economic and social factors ( Bennel, 2003: 494). Teachers are according to Jansen (1998:28) also expected to reorganize the curriculum, increase the amount of time allocated to monitoring individual student progress against outcomes, administer appropriate forums of assessment and maintain comprehensive records. This places an inordinate burden on teachers' capacity to provide effective teaching, resulting in high resignation from the profession particularly since these demands are not balanced by a concomitant improvement in salary and fringe benefits.

Jansen (2001: 560) argues that there is a national obsession with educational outputs which diverts attention away from the educational inputs required to redress the historical inequalities that continue to bedevil the educational system after apartheid in South Africa. This along with many different interrelated factors have thwarted recent efforts at quality improvements including the rapid expansion in enrolment rates and the absence of classrooms and teaching and learning resources ( Davidson, 2007: 158).

Teachers teach and work in schools that are usually administered by managers, who are known as principals or headmasters. The conditions of teachers' working life is influenced to a greater extent by the administration and leadership provided by principals, and it is widely assumed that school leadership directly influences the effectiveness of teachers and the achievement of outcomes of learners (Harlinger and Murphy: 1986) in (OECD, 2001:1). Principals are supposed to be dynamic and organic individuals

able to motivate teachers to ensure that the goal of quality education and leadership is provided to learners and their immediate communities. The objective conditions however demonstrate that a number of these managers are found wanting in so far as the provision of dynamic leadership is concerned.

The Mathew Goniwe School of Leadership has been made available for principals to undertake leadership and management training. This institution provides strategic management training to school managers. Strategic management and planning requires a radical shift for schools that previously focused on short term tasks and adopted a culture of dependency. The reality is that despite these interventions, there is limited evidence of a strategic approach to school management (Moloi, 2008: 466).

The overview outlined in the preceding paragraphs is meant to provide a contextual analysis of the situation prevalent in the schools and its attendant contribution to the problem of teachers leaving the profession in droves. Hall, Altman, Nkomo et al. (2005) postulate that the process to change one's job is preceded by a process of job evaluation and determining alternative employment opportunities. Dissatisfaction with the workplace can be a very strong incentive to seek alternative employment opportunities elsewhere. This implies that leaving one's place of employment is not a decision to be taken lightly particularly in the context of the tough economic conditions in South Africa and globally especially in the past two years of the global economic meltdown.

## THE SOUTH AFRICAN EXPERIENCE

South Africa continues to experience a situation where teachers are resigning from the profession in droves. The following factors although not exhaustive are amongst some of the fundamental reasons behind the high turnover rate of teachers from the profession.

Educator workload is one of the main challenges facing the teaching fraternity today. The advent of the new curriculum of education, the Outcomes Based Education and the National Curriculum Statement (NSC) has implies the erosion of instructional time into the programs of teachers and schools (Chisholm, Hoadley, Kivulu et al. 2005). Teachers are now burdened with additional administrative responsibilities that in the past were the preserve of clerks employed by schools. These administrative responsibilities amongst others include the capturing of learner marks (Continuous Assessment /CASS), filling of learner portfolios without the attendant provision of office space, preparing learner reports, compiling data on learners progress on a quarterly basis which form the basis of the progress reports, preparing reports on learners social and family background, pastoral duties, professional duties like meetings, workshops, seminars, conferences and countless other responsibilities as enshrined in Chapter 3 3.1 (b) of the *Employment of Educators Act* (Act 76 of 1998).

Over and above this, teachers are expected to serve on committees which can number up to fifteen. These committees, range from Learners-Teacher Support Material, Sports, Fundraising, Exam etc. These committees take away from time teachers are supposed to spend in the classroom. For instance the government declaration that a majority of schools in townships and rural areas are to become "no fee schools" as reflected in the *Education Laws Amendment Act* (Act 24 of 2005) has placed the management of these schools with an additional responsibility to source funding for activities other than those that have to do with teaching and learning. This is because the Act only makes provision for funding of activities related to teaching and learning i.e. learner teacher support material and infrastructural development. This requires teachers, parents and learners to utilize precious teaching time to organize activities like beauty pageants in order to supplement the meager funds the school has in its kitty.

The amount of time that teachers spend on planning for lessons is disproportionate to the time spent presenting lessons in class. Department heads occasionally check teacher files with the main focus being whether the teachers has daily, weekly and quarterly lesson preparation forms for his/her subjects. On

average teachers spent 43-46% of their time in the classroom teaching. The national policy expects teachers to spend between 64% -79% of the 35 hour weekly schooling period, on actual teaching *Employment of Educators Act, 1998*(Act 76 of 1998). In some schools hardly any teaching takes place after lunch on Fridays. This trend is also reflected on pay days when educators receive their salaries. The situation is much more acute in rural areas where banks are situated far from places of work, forcing educators to leave work early on month end, navigate treacherous roads in an effort to access financial institutions like banks.

Most educators feel stressed because their inability to cope with this workload. Studies reveal that a significant number of teachers are absent from work as a result of psychological factors, fatigue, physical illness necessitated by being overworked. Yet evidence from previous research (Buwalda & Kok, 1991; Mwamwenda, Monyooe & Glencross, 1997) in Milner and Khoza (2008: 4) reveal that teachers stress levels in South Africa is extremely high and little appears to be done in the education sector to combat or ameliorate this issue. This coupled with the fact that there is still a significant number of vacant posts in the profession clearly points out to the need for hiring more teachers. It also implies workload problem will continue unabated for the foreseeable future. It is within this context that many educators resign from the profession for other perceived greener pastures.

Other critical factors leading to increased workload is the historical inequality in pupil teacher ratios. At one stage it was reported that Kwazulu Natal Provincial Department of Education had the highest teacher-pupil ratio at 38:1(Jarvis: 1999). Personal experience has been that in certain classes a teacher would have up to 51 learners in class. International comparative studies reveal the trend in some countries like the UK is 18:1 with countries in North Africa standing at an average of 19:1 (Huebler, 2008: 1). School Governing Bodies (SGB's) at historically advantaged institutions are able to use their massive budgets to employ additional teachers to alleviate the problem of high teacher-pupil ratios. Sadly the same privilege cannot be enjoyed by schools in historically disadvantaged areas owing to lack of finance.

The goal of universal education for all young people is being pursued at the expense of teachers whose labor is being exploited with little regard to their well-being. The end result is teacher inability to provide individual attention to slow learners. The consequent effect is adversely affecting the provision of quality education, which is needed if South Africa is to be a competitive player in the global world of commerce, technology culture, international political institutions and the economy.

Lost prestige is also a reason leading to the mass exodus from the profession. Most studies undertaken by researchers, casually glance at matters of education and general observation reveals the prestige the teaching profession enjoyed in the period before 1990 has largely degenerated. Kayuni and Tambulasi (2007: 91) point out that in the 1940s' to 1970s' teachers were seen as bringers of progress, modernity and development and were rewarded and respected accordingly. The profession which produced educators of note like the esteemed Zephania Mothopeng, T.W. Khambule amongst other luminaries, has now become the last resort amongst students when they enroll at institutions of higher learning. Teachers were the considered the *crème de la crème* of society. Unfortunately the professional prestige associated with teaching has declined at an alarming rate. If you can randomly enter any classroom in a South African school and ask learners their careers of choice, the likelihood of finding a learner interested in pursuing teaching as a profession is minimal.

In an effort to arrest this malaise, The Department of Basic Education has made available the Funza Lushaka Bursary Scheme to entice students to enroll in teaching programs at universities in South Africa. Recipients of the bursary are required to teach at a school for the same number of years that they receive the bursary (Department of Basic Education, 2008). Preliminary studies reveal that a number of students apply for the bursary scheme not because of the attraction to teaching as a profession but rather as a result of the broader socio economic situation in South Africa. To avoid the likelihood of sitting at home

without any prospects of employment, young people consider enrolling for a teaching qualification as better than nothing. “At least you are guaranteed that you will find work after completion of your studies” is a popular mantra amongst young South Africans. The same cannot be said about millions of young South African who are unemployed and with no foreseeable prospects of getting money to enroll at institutions of learning. Extensive studies are however yet to be conducted to ascertain the extent this intervention of the Funda Lushaka bursary scheme has assisted in restoring the attractiveness of the profession to young people.

The general decay in the moral fiber of society has to a larger extent also contributed to the degeneration of the teaching profession invariably contributing to many educators leaving the profession. The profession is generally perceived to have gone to the dogs. Learners at schools are generally disobedient, ill-disciplined and have no regard for authority. Bullying is only regarded as a Grade 2 offence in the Code of Conduct (2007:16) drafted by the Department of Education. This means that unlike Grade 4 offences which can be reported to the SAPS, bullying is largely considered a minor offence even though its effect has contributed to lady teachers fearing for their safety at schools. The promulgation of legislation outlawing corporal punishment has left teachers powerless to deal authoritatively with growing acts of intimidation associated with bullies in schools. The principle of *in loco parentis* is no longer the cornerstone of teacher-learner relations in schools owing to the fact that learners have all the rights and power to determine the school agenda as they deem fit.

Nonexistent security in schools has left teachers vulnerable to gun toting learners and their friends in surrounding communities who are able to enter school yards at will and terrorize teachers. Instances of learners physically attacking teachers have been widely reported in the media to the extent they are no longer deemed newsworthy. Teachers have become numb and are used to this phenomenon. The South African Police Service conducts regular searches at schools and illegal weapons ranging from guns, dagga, knives and drugs have been found on learners (Looklocal newspaper: 2011).

Attrition rates in any profession are invariably linked to the issue of remuneration. Beardwell and Holden (2001:514) explained that the salary of a particular job reflected beliefs about the worth of jobs based on scope, level of responsibility, skill requirements, objectionableness of duties, commercial worth and strategic relevance. Over and above that Bull (2005:22) postulates that job satisfaction is an important area of research because it is correlated to enhanced job performance, positive work values, high levels of employee motivation and lower levels of absenteeism, turnover and burnout. The trifle remuneration enjoyed by teachers in the public sector has seriously compromised organizational performance. This goes against the grain of provisions of the *White Paper on the Transformation of Public Service Delivery (1997)* (Batho Pele) in particular section 3 (8) value for money which require public servants to provide services economically, effectively and efficiently. This principle cannot be achieved on the kind of salaries teachers are paid.

Recruitment agencies have reported that they receive up to 250 calls a month from teachers interested in being placed on their waiting list for possible opportunities to teach abroad where they are likely to receive up to three times the salary they receive in South Africa (Footprint Recruiting; 2009). The Department of Basic Education is now recruiting educators from countries such as Zimbabwe and Cuba particularly in areas such as mathematics, science and technology. This practice defeats the country's skills development agenda given the fact that after the contracted period of work the expatriate teachers simply pack their bags and leave for their homelands without having transferred the requisite skills to local teachers. It is therefore not surprising to see a significant number of educators leaving the profession for better job avenues elsewhere.

The Department of Basic Education has introduced a performance based reward system called the Integrated Quality Management System (IQMS) in an effort to enhance quality assurance in the teaching



fraternity. The public was informed that “IQMS signals a new approach to performance evaluation in the South African school system” (Report on the IQMS: 2006). Teachers were to be remunerated in accordance with their performance in and outside of the classroom. However for teachers to be adequately rewarded for their performance, there is a need for the performance evaluation process to be conducted by properly trained managers which is not currently happening in schools.

The reality in South Africa is that Development Support Groups (DSG’s) consisting of the teachers’ immediate supervisor the Head of Department (HoD) and a peer educator have been found wanting with regard to capacity in implementing the basic principles of the IQMS (The Voice- SADTU: 2009). The end result has been that almost all educators in the system have been receiving the 1% once off annual amount based on performance irrespective of whether the teachers have been providing a quality service. Results for the national senior certificate in South Africa have been progressively declining in quality over the years coupled with the poor performance of learners in mathematics and science, and in international literacy assessments compared with their peers internationally (City Press, 3 July 2011). This is indicative of the general discontent of educators with their condition of service and in particular this suspect performance management evaluation system.

One fundamental reason behind the massive migratory movement of teachers from the professions has been demonstrated over the years by the high number of teacher’s strikes over poor salaries. Haffajee and Bisseker (2002: 30-32) point out that teacher widespread demonstrations, picketing and strikes has been the order the order of the day in South Africa. Almost every year teachers in the public service engage in organized and wildcat strikes over the conditions that they find themselves in. More often than not the strikes end not because teachers are happy with the outcome of salary negotiations, but rather because they feel the pinch of the salary deductions that are to be effected on their salaries in line with the principle of no work, no pay as enshrined in the *Labour Relation Act* (Act 66 of 1995).

Teacher’s strikes have become an annual ritual with the issue of salaries always at the center of the dispute between the employer and the employees. In an effort to provide their kids with quality education, many parents are taking their children out of the public schooling system and enrolling them in private schools despite the exorbitant costs of doing so. This signals a motion of no confidence in the public schooling sector largely as a result of the unending teacher strikes bedeviling this sector. Bernstein (2010) argues that these strikes have highlighted the government’s failure to improve apartheid era education levels that have South Africa behind the other societies in the world. A doubling of the education budget to R165.1 billion (\$22.4 billion) in the last five years has failed to reverse a decline in the number of educators leaving the profession.

One grave feature which cannot be overlooked is the sensitive issue of deployment of teachers to schools. In allocating staff to classes, account should be taken of the qualities, experience and expertise of teachers and matching these to curricular objectives. Where applicable, the redeployment of teachers should be carefully planned and regularly reviewed (IIEP, 2009). With the advent of democracy it was hoped that teachers in historically advantaged schools would be willing to contribute to the democratic project by offering to be redeployed to historically disadvantaged schools with high intake of learners and a poor resource base. The intention was also to achieve a reasonable ratio of one teacher to 30-35 learners. However, a negligible number of teachers took up this offer. This has left a bitter taste for predominantly African (black) teachers who have not seen the fruits of integration as envisaged by the democratic project.

Many disillusioned teachers left the profession and opted to take severance packages. Included in this group were some of the most experienced members of the profession. With the subsequent exodus of teachers from the profession, the government was compelled to rehire retired teachers and lure them back to the profession. This led to the negotiation of compromises which included offering these retired

teachers senior management positions in the schools (Chudnovsky, 1998:1). This move generated a great deal of bitterness amongst teachers left in the profession and led to subsequent resignations owing to the perception that they were not taken seriously as working professionals.

Teacher disillusionment has also been caused by what is referred to as cadre deployment, where members of the ruling party in government get preference over promotional posts. While other teachers with the requisite skills, experience and qualification may spend their entire career as Post level one educators (entry level). Members and leaders of the South African Democratic Union (SADTU) which is an alliance partner to the ruling party, the African National Congress (ANC) get preferential treatment when it comes to promotional posts in the public sector. This occurs irrespective of whether these members are qualified or not (News24:2011). A lot of teachers and, civil society and members of the public have bemoaned this practice as part of the spoils system the ruling party is renowned for. The practice has had an attendant effect of demoralizing and demotivating committed and competent teachers who are ultimately lost to the profession because they cannot stomach this blatant system of patronage and being overlooked despite their competency.

The legacy of apartheid has left the profession in dire straits. Hopes that the advent of democracy will tilt the scale in favor of professionalization of the teaching profession have not materialized as expected. The massive financial injection in education has not been met with concomitant investment in the teacher as the most fundamental constituent part of the education milieu. In order to halt high teacher turnover, the following recommendations are provided: 1.) Decisive measures over and above the Fundza Lushaka bursary scheme need to be commissioned to market teaching as a profession. 2.) Competitive remuneration packages have to be offered to teachers almost equal to those offered by independent schools to halt this migration. 3.) The professionalization of teaching not as a theory but rather in practical terms. 4.) Incentives for teachers who continuously produce good results is necessary in order to motivate and inspire them to remain in the profession. 5.) Massive investment in infrastructure development seeing that one of the causal factors of high pupil-teacher ratio is the shortage of schools particularly in rural areas. 6.) Enforcement of strict disciplinary measures on learners will restore the confidence of teachers in the profession and make them buoyant to go an extra mile in providing quality education to learners. 7.) To seriously invest in the area of teacher training and development unlike the current trend where teachers are trained in the implementation of a new curriculum in 5 days and be expected to be competent. 8.) Reopening of teacher training colleges to cope with the increased demand for teachers.

## **RECOMMENDATIONS FOR THE FUTURE**

This study has some limitations which can be addressed in future research. One shortcoming of the study is reliance mainly on literature review and document study as a research methodology. Over and above this is the problem of obtaining reliable data on the number of teachers resigning from the teaching profession. It is difficult to obtain reliable statistics on the actual extent of the problem. This can be attributed to the highly sensitive political environment in South Africa around the actual usage of statistical data. Employee organizations like SADTU do not have reliable data on the magnitude of the problem and other data may be outdated. A new area of study for future research (which is very relevant the topic) could be the reasons behind the closure of a large number of schools in townships/suburbs.

## **CONCLUDING COMMENTS**

The findings in this study are pertinent in assisting to understand political, social, cultural and economic context underpinning the high teacher turnover from the teaching profession in South Africa. The article further outlines comprehensively the literature available on the subject of employee turnover and the causal factors that are compelling teachers to resign from the profession in numbers. The study is able to point out that one of the fundamental reasons that cause employee resignations is adverse conditions of

service of educators in the workplace. The article was able to provide available data that demonstrate the extent of the problem. This data was obtained from the Department of Basic Education, research institutions and the literature available on the subject from secondary sources. The data proved conclusively that there is a disproportion between the number of teachers joining the profession and those leaving the profession with the scales heavily tilted in favor of those resigning from teaching. The article contributes in understanding a critical issue that if left unattended might undermine the socio-economic strides that South Africa has made since the advent of democracy in 1994.

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# FACTORS THAT INFLUENCE CANADIAN STUDENTS' CHOICE OF HIGHER EDUCATION INSTITUTIONS IN THE UNITED STATES

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## ABSTRACT

*This study seeks to explain the factors influencing Canadian students' motivation for studying in the United States. The United States has continuously been the leader in international students, but is now facing increasing competition from other nations around the world. As one of the top senders of international students to the United States, Canada is of special interest to institutions of higher education in the United States due to the close social, economic, and political ties. International student mobility is influenced by push-pull factors that influence a student's decision to study abroad, and ultimately pull factors from host nations that student's find favorable. To understand Canadian students' motivation for studying in the United States, a study was conducted with a sample of 411 Canadian students at a small private college in Buffalo, New York. The study found statistically significant differences in the importance placed on reasons for not remaining in Canada for higher education, the factors that influence the selection of the United States as a study destination, and student preferences for institutions of higher education in the United States. The study concluded that there are separate push-pull factors influencing Canadian higher education students on the Canada-U.S. border, and that Canadian students are their own distinct group that are neither truly like international nor domestic students.*

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**KEYWORDS:** International education, Canadian students, higher education.

## INTRODUCTION

Student mobility trends in the past decades have led to an increased number of students participating in international education. Today, more students are studying abroad than ever and there has been an ever increasing competition for international students. The United States has been leading the way as a destination for international students in higher education with 22% of the international student market (Verbik & Lasanowski, 2007). While the United States has always been a leader in international student enrollment, the nation is now facing increasing competition from other well positioned nations like UK (13%), Australia (8%), Germany (7%), and France (9%). To maintain their competitive advantage educators and administrators in the United States must understand their international student markets and develop appropriate strategies to attract and maintain students. One of the largest segments of international students in the United States comes from Canada. In 2009/2010, the number of international students studying in the United States reached 690,923 students, of which 28,145 students were from Canada (Open Doors, 2010). Canada sends more of their students to the United States than to any other country, and has been continuously one of the United State's top ten source countries for international students. With our close cultural, economic, and geographical ties, why is the United States a destination for so many Canadian students? The answer to this question has critical implications for educators on both sides of the border.

International students, in general, study abroad for a variety of different reasons, these reasons include a home country that cannot meet demand for higher education, students seeking institutions with more prestige or power, or other nations that have institutions that specialize in a desired area of study. Students, especially from developing countries, have found that their country may lack the supply of quality opportunities in higher education that they demand, and they must travel abroad to developed nations for their education. Students from developed nations choose to study abroad due to the increase in globalization and the need for students with a global perspective and experiences (Altbach, 2004). More than 90% of international students are enrolled in countries that belong to the Organization for Economic Co-operation and Development (OECD) such as the United States, the United Kingdom, and Australia, who attract approximately 45% of the total amount of foreign students worldwide (Verbik & Lasanowski, 2007). Studying abroad has become more accessible due to decreased transportation costs and innovations in communications technology. Governments have also realized the economic potential of international students, and have allocated more funds to improve higher education in their country and to increase the number of international students (Altbach, 2004). These skilled and educated students also provide a local labor force that can contribute to research and innovation, and also in any skilled labor shortages (Gribble, 2008).

International students are also often influenced to study abroad by "push-pull" factors (Altbach, 2004; Li & Bray, 2007; Maringe & Carter, 2007; Mazzarol & Soutar, 2002). Students are "pushed" abroad due to factors in their home country, and students are then "pulled" by factors in the host country that make it an attractive place to study. Students can be pushed from their home country due to an inability to study in local universities caused by competition or because another country's institutions specialize in a desired program. Students are pulled to the United States as a destination for international study because of the country's reputation as one of the world's best, and most prestigious, academic systems (Mazzarol & Soutar, 2002).

In an effort to understand the factors that influence a Canadian student to specifically select the United States as a study abroad destination this study used a quantitative method to discover the main factors influencing the migration of Canadian students and the specific "push-pull" dynamic between the two nations.

Set against this backdrop four interlinked questions are addressed in the empirical analysis which follows. First, what are the most important "push" factors influencing the movement of Canadian students out of Canada? Second, what are the most influential factors "pulling" Canadian students specifically to the United States as a host country for their higher education? Third, what factors do Canadian students find the most important when choosing an institution to study at in the United States? And fourth, will the Canadian students' decision making process in regards to choice of institution resemble that of a domestic student or an international student.

On this note, the remainder of our paper is organized as follows: The next section discusses the literature review on globalization of higher education. The next section describes the data and methodology and gives a descriptive snapshot of the main characteristics of the sample followed by the results of the survey on Canadian student population. This paper concludes with a brief discussion of the implications of the survey results, research limitations, and future research.

## **LITERATURE REVIEW**

Cross border education has become an important mode for globalizing higher education, while knowledge has become an international good that can transcend national boundaries. Higher education has become a service to be traded across borders and attracts a market from all over the world. Demand for cross border education has increased because of globalization and the increasing employment opportunities in



multinational corporations and foreign countries (Varghese, 2007). Varghese (2007) notes that institutions of higher education are institutions with dual characteristics; they are both national and international. The content and knowledge shared is universal and international, while the ownership, organization, and culture have always been national. Globalization in education can take many forms. First, there can be a cross-border supply of educational services, like online distance education programs, where students do not even need to leave their country. Another form of globalization is the consumption of educational services abroad, which is what this study focuses on, where students physically cross the border for educational purposes. The commercial presence of a provider in another country, such as in the form of branch campuses, is another aspect of international education. Twinning and franchising arrangements between institutions in the developing and developed world are collaborations that institutions are considering to increase their international impact. Finally, globalization in higher education can be seen in the exchange and mobility of professors and employees from one nation to another through academic partnerships or to teaching opportunities at branch campuses (Varghese, 2007).

The international market for higher education has many variables that affect international student mobility. There are strategies employed by home governments to organize this flow of students seeking to study outside their home nation (Bourke, 2000). Some of these strategies include funding arrangements, accreditation and new educational offerings. Since some nations lack the capacity for certain higher education opportunities, governments may select to fund students to study in a specific country. Accreditation is another important aspect of international higher education, since the recognition of the host country's credentials is a vitally important factor when deciding to study abroad. Accreditation is a tool used by home governments to have an influence on student flows. Accreditation and the recognition of education degrees from overseas institutions are blurred by political circumstances and can significantly impact the flow of students from one country to another (Bourke, 2000).

Currently there are many factors influencing student flows in international education. Some of the most prominent factors include cost of education, academic superiority in host nation, student experience, language proficiency, employment opportunities, and lack of educational opportunities in home country. (Varghese, 2007; Verbik & Lasanowski, 2007; Mpinganjira, 2009) Varghese (2007) found that influential factors for international education include cost of education, since some countries have higher tuition levels applied to international students compared to domestic students.

Language proficiency, another important factor, may explain why regional flows may be high, especially in North America and Western Europe. Perceived academic superiority of the institution in the host country is seen as a significant factor since international students traditionally move from less developed countries to more developed countries for their education. Many students also find the acquisition of foreign language and culture an influential factor in deciding to study abroad. The opportunity for employment is a major reason to study abroad; whether because study abroad enhances credentials, or the student plans on staying in the host country after completion of their study.

Research conducted by Cubillo *et al.*, (2006); Chen, (2008); Soutar & Turner, (2002); Shanka *et al.*, (2005), has found that international student's have an extensive and complex decision making process when deciding to study abroad. The decision making process consists of personal reasons and motivations for studying in a foreign country, encouragement from significant others, country image effect, proximity of host institution, the institution's image, recommendations from friends and colleagues, and an evaluation of the program. Many studies (Chen, 2008; Cubillo *et al.*, 2006; Mazzarol & Soutar, 2002; Shanlm *et al.*, 2005; Soutar & Turner, 2002) have looked at why international students decide to study abroad, and the factors that influence their choice of institution, but few have looked at the migration of students from one specific country to another. While the United States and Canada share a border, strong economic ties, and cultural similarities, there have been surprisingly few comparative studies in education that center on these two nations. It may have been previously thought that these

nations were too similar, that a study between the two would not be useful (Skolnik & Jones, 1992). With the largest percentage of Canadian international students going to the United States, it would be imperative for those on both the American and Canadian sides of the border to understand why this movement occurs. American colleges and universities must identify the factors that contribute to Canadian student movements to the United States and employ this information in their strategic policies to attract and retain such students. Internationalization and the use of international marketing have had great influence on students' choices of study abroad destinations (Chen, 2008), so by segmenting the market, American universities can tailor their marketing approach to Canadian students more effectively. Canadian colleges and universities can use such a study to understand how they can retain students.

A "push-pull" model has been developed to understand student mobility trends. Push factors are those that operate within a student's home nation and initiate a student's decision making process to study abroad. Pull factors operate in the host country and make the country more attractive to international students (Mazzarol & Soutar, 2002). The theory was developed by McMahon (1992) in a study of international student's from 18 developing nations and their movement to develop in the 1960s and 1970s. The push model suggested that student flows were dependent on economic factors and the degree of involvement of the sending nation in the world economy, educational opportunities found in the home nation, and social and cultural factors like the priority the developing country puts on education.

The pull model from the study suggests that the student is pulled to a nation due to the size of the host country's economy relative to that of the one in the home nation, economic links between the two nations, and political factors like the host nation's political ties to the home nation. Mazzarol and Soutar (2002) identified six push-pull factors that have an impact on the decision to study abroad. These factors include knowledge and awareness, recommendations from family and friends, cost issues, environment issues, social links, and geographical proximity. Knowledge and awareness was measured by four items that included student's access to information on the host country, level of knowledge student has of the host country, quality of education of host country, and the recognition of host country's qualifications.

The decision to study abroad is an involved process that includes the initial reason to study abroad, the choice of host country, and the choice of institution. Cubillo et al. (2006) set forth a theoretical framework that analyzed the different dimensions of the international student's decision making process. The main factors the study identified in the international student choice process included personal reasons, country image effect, institution image, and program evaluation. Country image which includes cultural distance, social reputation, academic reputation, cost of living, immigration procedures, and time to earn a degree, had a direct and positive relationship with the purchase intention of the student. It is clear that there exists a well-defined body of evidence on students' choice decision and offer insights into the problems of consumer choice models, however, insufficient research exists on the challenges faced by small private institutions in recruiting and attracting foreign students in the United States. The main purpose of this study is to understand the controllable and uncontrollable factors influencing Canadian students choice of a small private institution given the high involvement nature of college choice decisions.

## **DATA AND METHODOLOGY**

In light of the foregoing literature, the overall study objective was to determine the key factors in the decision process of selecting a higher education institution in the United States by Canadian students. The research subjects were comprised of Canadian students enrolled at D'Youville College, a small private institution located in Buffalo, New York which is located within half a mile of the border between United States and Canada. Convenience sampling of 411 Canadian students enrolled in the various programs offered at D'Youville College was utilized.

The entire population of Canadian students at D'Youville College was invited to participate in the study through campus email. The email contained a link to a landing page with a web survey. Follow up emails were sent one and two weeks after the initial email with the survey invitation to remind potential participants of the survey to obtain an acceptable response rate. The purpose of the study was to understand factors influencing Canadian students' decision to study in institutions of higher education in the United States. The survey was designed to examine the various influences, including any push-pull dynamic. The survey, in three different sections, looked at factors influencing Canadian students' choice not to study in Canada, factors influencing their decision to study in the United States, and factors influencing their choice of institution in the United States.

In each section of the survey, participants rated certain factors known to affect student mobility, derived from the literature review, on how important they were in their decision making process. The survey had response categories based on a four-point Likert Scale from 1 (not considered in decision) to 4 (very important to my decision). In each section, the participants were asked to select the most influential factor in their decision, and an open-ended question was employed to discover any additional factors that may have been considered when choosing the study at an institution in the United States rather than one in Canada.

To analyze the data collected from the survey, this study employed the Chi-Square Goodness of Fit test to evaluate whether there were statistically significant differences between the identified factors. Frequency tables were used to illustrate respondents' responses to each question. SPSS was employed to collect, organize, and calculate the data. The survey was started by 104 respondents, with 87 useable complete surveys, which resulted in a 21 % response rate.

By academic level, 23% of respondents were undergraduate, 54% were graduate students, 21% of students were in professional programs, and 2% were doctoral students. The mean age of the respondents was 31.4 years of age with 75% of respondents female and 25% of respondents male. Education, Nursing and other Health related majors were the majority of responses (See Table 1).

Table 1: Majors of Survey Respondents

<b>Major</b>	<b>Respondents %</b>
Education	39.0%
Nursing	17.1%
Physical Therapy	14.9%
Occupational Therapy	6.8%
Interdisciplinary Studies	4.5%
Dietetics	3.3%
Business	2.2%
Physician Assistant	2.2%
Doctoral	2.2%
<b>Biology</b>	<b>2.1%</b>

*This table shows the major of the survey respondents with education, nursing and health related majors being the majority of the responses.*

## RESULTS

From the results of the survey, we can see that Canadian students have their own distinct reasons for leaving Canada, and choosing to come to the United States for educational purposes. The factors that were most important in the Canadian students' decision to study outside Canada revolved around the issue of competitive entry requirements in Canada, broadening personal experience, lack of university places or the inability to get a place in a course the student wanted to study at home (See Table 2). These results are consistent with previous studies including Mazarol and Souter (2002) which found that difficulty finding entry into institutions at home were significant "push" factors in international students' decision to pursue their higher education outside their home country (See Table 2). Like a study conducted by

Mpinganjira (2009), the results of the survey indicated that the enhancement of future employment prospects also was an important reason for studying outside of Canada.

Regarding the decision to study in the United States, the most important factor reported by Canadian students was that the qualifications were recognized in their home country (See Table 3). This result is consistent with the study conducted by Mpinganjira (2009) where students indicated the most important factor when deciding to study abroad was that students were seeking qualifications with worldwide recognition.

The second most important reason for coming to the United States for Canadian students was related to geographical proximity and the ability to commute or easily travel to the United States. This is similar to findings by Wiers-Jenssen (2003) in a study of Norwegian students who studied in linguistically and geographically peripheral European countries, where students indicated that geographical proximity was a significant factor in their choice process. While not one of the most important factors in the selection of the United States as a study destination, knowledge of someone who has studied in the United States was seen as a key factor in students' decision making (See Table 4).

The survey also found that a favorable image of the United States was not particularly important in their decision to study in the United States, and only 1 % of respondents indicated that it was the most important factor in their decision. This seems to conflict with the literature that indicates the significance of country image, though when survey takers were asked if they considered any other countries when looking to study outside of Canada, 86% of respondents answered "no". This indicates that while country image was not consciously an important factor, many students did not consider any other country when deciding to study outside of Canada.

A chi-square test of goodness of fit was performed to determine whether certain factors were relatively more important than others. Preference for the factors in Table 3 was not equally distributed according to our chi-square goodness of fit test,  $\chi^2(10, N=87)=217.586, p<.01$ . The results of our chi-square test indicate that certain factors received higher rankings statistically significantly more often than others at the  $p<.01$  level. This result is interesting because a portion of participants indicated that each factor was very important to the decision process at some level (see table 4) but ultimately, certain factors were statistically significantly more important than others (see table 3).

Table 2: Factors in Decision to Study Outside Canada

Factors	Not Considered	Not Important	Somewhat Important	Very Important
Unavailability of course at home	32.2%	18.9%	25.6%	23.3%
Broaden personal experience	27.8%	24.4%	32.2%	15.6%
Competitive entry requirements in home country	11.2%	12.4%	20.2%	56.2%
Lack of university places	20.0%	16.7%	32.2%	31.1%
Inability to get a place in course one wanted to study at home	21.1%	13.3%	26.7%	38.95%
Enhance future employment prospects	19.1%	13.5%	28.1%	39.3%
Absence of equivalent domestic Opportunities	35.2%	19.3%	19.3%	26.2%
<b>Other</b>	<b>25.0%</b>	<b>15.0%</b>	<b>20.0%</b>	<b>40.0%</b>

*This table presents the factors that Canadian students either consider to be "very important" to "not considered" in the decision process to study outside Canada.*

Table 3: Most Important Factors in Decision to Study in the United States

<b>Factors</b>	<b>Response (%)</b>
Qualifications recognized at home	51%
Geographical Proximity	14%
Ability to commute or travel easily to the United States	13%
Vale of degree in economic market	10%
Know someone who studied there	5%
Intention to migrate to United States after degree completion	5%
Favorable image of higher education in the United States	1%
Common language	0%
Prior connection or historical ties to country	0%
Ease of visa formalities	0%
<b>Other</b>	<b>1%</b>

*This table shows the most important factor in the Canadian students' decision making process to study in the United States. Responses were statistically significantly different from a uniform distribution at the  $p < .01$  level.*

Table 4: Factors in Decision to Study in United States

<b>Factors</b>	<b>Not Considered</b>	<b>Not Important</b>	<b>Somewhat Important</b>	<b>Very Important</b>
Favorable image of higher education in the US	37.5%	20.5%	29.5%	12.5%
Common Language	29.1%	12.8%	31.4%	26.7%
Geographical Proximity	3.5%	7.0%	27.1%	62.4%
Know someone who studied there	17.4%	15.1%	40.8%	26.7%
Qualifications recognized in home market	2.3%	2.3%	21.8%	73.6%
Value of degree in economic market	11.7%	8.1%	29.1%	51.1%
Prior connection or historical ties to the country	64.0%	20.9%	7%	8.1%
Intention to migrate to U.S. after degree completion	53.5%	19.8%	17.4%	9.3%
Ability to commute or travel easily to U.S.	6.9%	4.6%	25.3%	63.2%
Ease of visa formalities	25.6%	9.3%	31.4%	33.7%
<b>Other</b>	<b>62.5%</b>	<b>0%</b>	<b>0%</b>	<b>37.5%</b>

*This table shows the factors Canadian students' consider to be "very important" to "not considered" as part of their decision to study in the United States.*

Regarding selection of an institution, the respondents indicated that the institution having the desired program of study was the most important factor, with another significant factor being the quality of education (See Table 5). A chi-square test of goodness of fit was performed. Preference for the factors in Table 5 was not equally distributed,  $\chi^2(8, N=87)=63.651, p < .01$ . The results of our chi-square test indicate that certain factors received higher rankings statistically significantly more often than others at the  $p < .01$  level. The second most important factor in choice of institution was location of the institution. While not selected as the most important factor in their selection of a particular institution, a significant number of respondents indicated that favorable scheduling options and grade requirements were key factors in their decision making process (See Table 6).

Table 5: Most Important Factor in Choice of Institution

<b>Factors</b>	<b>Response (%)</b>
Have desired program of study	34%
Location	16%
Have favorable scheduling options	15%
Quality of education	14%
Grade requirements	8%
Reputation	3%
Interaction with faculty and staff	3%
Recommendation from family and friends	3%
Availability of financial aid	2%
<b>Other</b>	<b>0%</b>

*This table presents the most important factor considered by Canadian students' consider to be most important in their choice of institution. Responses were statistically significantly different from a uniform distribution at the  $p < .01$  level.*

Table 6: Factors in Decision to Study at D'Youville College

Factors	Not Considered	Not Important	Somewhat Important	Very Important
Have desired program of study	2.3%	1.1%	5.7%	90.1%
Reputation	10.3%	5.7%	31.1%	52.9%
Have favorable scheduling options	14.9%	8.1%	21.8%	55.2%
Availability of financial aid	47.8%	24.2%	14%	14%
Interaction with faculty and staff	30.2%	8.2%	30.2%	31.4%
Location	4.5%	2.3%	19.3%	73.9%
Quality of Education	3.4%	1.2%	26.4%	69%
Grade Requirements	9.3%	2.3%	37.2%	51.2%
Recommendations from family and friends	20.9%	9.3%	32.6%	37.2%
<b>Other</b>	<b>77.8%</b>	<b>0%</b>	<b>11.1%</b>	<b>11.1%</b>

*This table shows the factors Canadian students consider to be either "very important" to "not considered" in their decision process to study at D'Youville College.*

Canadian students do resemble international students. Canadian students face similar push factors to other international students identified in the literature review. The push factors that are motivating many of the Canadian students are similar push factors to students from other nations studying abroad. These push factors include competition and lack of space in desired program of study. Also, Canadian students are mainly concerned about whether their qualifications obtained in the United States would be recognized in their home market, which is distinctly an international student perspective. On some factors, Canadian students did not resemble international students. Canadian students were not overly concerned with having a common language or the image of higher education in the United States. While these factors were important, they were not selected as most important, where these factors had been identified in the literature review as decisive factors. On other factors, Canadian students took more of a domestic student approach, especially when it came down to choice of institution. The importance placed by the Canadian students on things like location, scheduling options, and grade requirements were all factors more likely to be a main concern for a domestic student. Studies of domestic students choice of institution found that program of study was the most important factor in the choice of institution, which we also found in this study. From the results of this survey we can see that the Canadian students studying in the United States resemble both international and domestic students.

## CONCLUDING COMMENTS

In this paper, we have attempted to understand the various factors influencing Canadian students' decision process in their selection of colleges and universities in the United States. Evidence from a sample of 87 Canadian students at a small private college in Buffalo, New York suggests that the unavailability of desired programs at home, availability of desired programs and the qualification being recognized in the student's home country are critical decision factors in the choice of institutions.

Furthermore, this study indicates that Canadian students are not like traditional international students, nor do they share the same concerns as domestic students. Canadian students studying in the United States are their own distinct group, with unique concerns and trends. Institutions of higher education looking to market towards Canadian students should understand that traditional marketing materials aimed at international students may not be fully appropriate for the Canadian audience. Materials used in the institution's home market for domestic students would not be suitable either. Students on bordering regions may need their own exclusive set of materials tailored to their specific concerns.

The topic of student mobility is one of many possibilities of study. Further study of Canadian students in other bordering regions would add more depth to the subject of student mobility between the countries of the United States and Canada. Other research on student mobility trends between two nations with significant student flows in other parts of the world would greatly add to the literature on globalization in higher education. Student mobility trends differ from country to country and understanding the

movement of students from one country to another will give administrators and marketers in higher education more knowledge of how to meet the needs of their unique student populations.

A limitation of this study is the use of convenience sampling employed during data collection. The data collection was limited to one institution located near the border of the United States and Canada. To obtain results it can be generalized on the factors influencing student mobility between the United States and Canada in border areas, a wider survey, with multiple institutions located in bordering regions should be conducted.

## APPENDIX

### Appendix A: Survey

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**The questions below were on a Likert Scale using the following values**  
**1. Not consider in my decision 2. Not an important factor in my decision 3. Somewhat important factor in my decision 4. Very important factor in my decision**

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**Factors influencing decision to study outside Canada**

1	Unavailability of course at home
2	Broaden personal experience
3	Competitive entry requirements in home country
4	Lack of university places
5	Inability to get a place in course one wanted to study at home
6	Enhance future employment prospects
7	Absence of equivalent domestic opportunities

Overall what was the most important factor in your decision to study outside Canada?  
 Were there any other factors that were not included that influenced your decision to study outside of Canada?

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**Factors influencing decision to study in the United States**

1	Favorable image of higher education in the United States
2	Common language
3	Geographical proximity
4	Know someone who studied there
5	Qualifications recognized at home
6	Value of degree in economic market
7	Prior connection or historical ties to the country
9	Intention to migrate to the United States after degree completion
9	Ability to commute or travel easily to United States
10	Ease of visa formalities

Overall, what was the most important factor in your decision to study in the United States?  
 Were there any other factors that were not included that influenced your decision to study in the United States?  
 Did you look at countries other than the United States when deciding to study outside of Canada? Yes No

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**Factors influencing choice of institution**

1	Have desired program of study
2	Reputation
3	Have favorable scheduling options
4	Availability of financial aid
5	Interaction with faculty and staff
6	Location
7	Quality of education
8	Grade requirements
9	Recommendations from family and friends

Overall, what was the most important factor in your choice of institution in the United States?  
 Were there any other factors that were not included that influenced your choice of institution in the United States?

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**Demographic Data**

Age
Gender
Year of Study
Country of Origin
Field of Study

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# **A ROBUST AND COST-EFFECTIVE DATABASE APPROACH TO MANAGING AND REPORTING ASSESSMENT DATA**

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## **ABSTRACT**

*Schools of Business are diverse in their approach to meeting the Association to Advance Collegiate Schools of Business (AACSB) standards for assurance of learning. Developing a comprehensive assessment plan that includes a process for managing, collecting, analyzing, and reporting student-level assessment data is a daunting task. Assuring the process is faculty driven is even more difficult. Through the creation and evolution of a relatively simple Microsoft Access database, this University was able to develop, implement and manage an assessment plan that meets the AACSB assurance of learning standards, engages the majority of faculty, facilitates the data collection process, generates real-time student-outcome data and trends curriculum improvements over time.*

**JEL:** C44, C81, C88, D78, M00, M10, Y1

**KEYWORDS:** Accreditation, Assessment, Assurance of Learning, Outcomes Data

## **INTRODUCTION**

Continuous quality improvement has been at the forefront of businesses for decades. Business leaders track industry trends, organizational outcomes, customer preferences, financial indicators and more, in search of information demonstrating organization performance and identifying improvement opportunities. Historically, academia has been removed from such self-analysis; that is, until the recent decade when accrediting bodies began to change their focus from process based data to outcome based data (Gardiner, et al., 2010).

In 2005, the Association to Advance Collegiate Schools of Business (AACSB), in accrediting colleges of business, required schools of business to demonstrate student learning. These ‘assurance of learning’ (AOL) standards are comprised of two primary objectives. The first objective includes defining and measuring outcome goals for each degree program offered by the school. To meet these requirements the use of direct measures, such as course-embedded assignments, projects, and exam questions, is required (AACSB, 2011a). Course-embedded measures, because of their ease and usefulness, ranked very highly among department chairs (Miles et al., 2004) and are one of the top knowledge acquisition assessments reported being used by colleges of business (Pringle & Michel, 2007). “CEA (course embedded assessment) investigations provide one of the most specific, targeted methods of assessing student learning, and the results can lead to changes in course materials, presentations, assignments, pedagogies, examination questions, required prerequisites, reading materials, or course structure” (McConnell, Hoover & Miller, 2008).

The second objective of the AOL standards includes the identification and continuous improvement of the learning process. Establishing a culture of continuous improvement of learning is as a top issue facing academic professionals (Campbell, Olinger, & Colleagues, 2007). AACSB refers to this process as ‘closing the loop’. Betters-Reed et al. (2008) have argued that closing the loop is one of the biggest problems in institutionalizing AACSB AOL programs. They discuss the need for faculty work collectively and frequently to review and react to the assessment outcomes. LaFleur et. al. (2009) describe

the AOL process as one that focuses on an in-depth and reflective analyses of the curriculum which can lead to a cultural shift about learning. Kilpatrick et al. (2008) point to the AOL challenge of creating uniformity across courses, both in content and delivery, and across professors who bring different teaching and thinking styles to the business school curriculum. Clearly, closing the loop requires a new approach to faculty collaboration - an approach that fosters the collective review of assessment outcome data by multiple faculty members. A review that will inevitably lead to improved teaching methods and enhanced student learning.

This article describes the development of a database to house, analyze, and report assessment data that is easy to use and does not burden faculty. The first two sections describe the state of affairs and the AOL developmental process at the study University. The next section describes the database structure followed by a description of the analyses and report capability of the system. Finally, we discuss how the described database meets the six best practices for achieving a sustainable AOL assessment program.

## LITERATURE REVIEW

Designing a successful assessment plan to meet the AACSB requirements is multi-faceted. Stivers and Phillips (2009) outline the necessary components of successful assessment plans that include identifying assessment procedures, including multiple measures, describing the people, committees, and processes involved, and specifying plans for using assessment data. This manuscript details the rationale, development, implementation, and success of using a school-wide database as the platform for developing and sustaining a successful assessment plan. With curriculum committees, student workers and a designated faculty volunteer, a comprehensive and robust Microsoft database evolved to meet and sustain the ever-changing demands of the school's assessment plan.

Harper and Harder (2009), in developing an AOL system for a MIS program, created a database to track student progression in four competency areas: technical, analytical, communicative, and managerial. "A simple, web-enabled database has been developed for data entry and tracking. At the end of each semester, each faculty member enters the credits for each student on each KLA (key learning activity) in his or her course" (Harper & Harder, 2009, p. 498). Moskal et al., (2008) discuss their university's current efforts at developing a database for assessing student learning. These authors discuss a database application for entering, organizing and maintaining student assessments. The use of database applications for collecting data is not novel; however the development of a database structure that is robust enough to both collect the required data and also provide useful reports which facilitate the assurance of learning seems to be quite innovative. The purpose of this article is to present the development of our University's AOL database management system in enough detail that others can both learn from our successes and (potentially) adapt our methodologies.

## METHODS

The study University consists of 62 School of Business faculty teaching 1260 undergraduate and 1000 graduate students. There are eight undergraduate business degree programs and seven graduate business degree programs. Approximately 8% of undergraduates are seeking a degree in general business, while 51% of graduates are pursuing an MBA or joint degree MBA. Prior to 2005, the Dean's office handled most of the AACSB assessment requirements with some input from the University-level planning and assessment office. The Southern Association of Colleges and Schools (SACS) accredit the University; required SACS assessment data is handled at the University level. Direct faculty involvement in AACSB and/or SACS assessment was minimal, that is until 2005.

AACSB's 2005 implementation of the AOL goals marked a period of cultural change within the faculty. Our University was not alone in its reaction to the AOL focus on faculty collaboration, data

collection/analysis, and improved student outcomes. Betters-Reed et al. (2008) reported the programmatic view required by program-level assessment is “truly a cultural shift for faculty”. The authors assert that “programmatic review requires faculty to share ownership of the program offering of their institutions and to be responsible for the quality of the program as a whole, not just their courses P. 238”).

### Our Beginning

The School of Business Dean asked the ‘CORE’ curriculum committee and MBA committee to take ownership for the collection, analysis and reporting of student level outcomes data. The use of embedded measures at the course-level was encouraged. The CORE Committee represented the undergraduate degrees, while the MBA committee represented the MBA and joint MBA degrees. The Committees accepted this challenge and designed a faculty-driven system that maximizes faculty input on data utilization, collaboration, and improvements, while minimizing faculty time spent on data collection. The initial assessment program design predominately focused on input from the defined group of MBA and CORE committee members; this was imperative to the long-term success of our assessment program because “leadership and the formation of a powerful coalition to create the vision are important. The members of the coalition can make or break the effort” (Betters-Reed, et al., 2008). Thus, for MBA level courses, the MBA committee spearheaded the efforts and for undergraduate courses, the CORE committee took a lead role. The MBA committee consists of six professors who together represent all of the required disciplines. Many of the MBA committee members are responsible for teaching multiple sections of the required core courses. Similarly, the CORE committee is comprised of eight faculty members with representation from all disciplines, and with many of the faculty members responsible for teaching a large portion of the undergraduate core courses. At the committee level, the general competencies required of graduate and undergraduate students were deliberated. Each committee member was responsible for working with their respective discipline-level faculty to finalize the competency statements and to get buy-in for the use of embedded measures within individual courses. Once the competencies and use of embedded measured was discussed within each discipline, the MBA and CORE committee took responsibility for assuring the assessment plan was comprehensive; that is, that it included multiple courses, all disciplines, and a majority of students. The goal of the assessment plan was to consider the achievement of all students so that “insight can be gained into how well the curriculum is facilitating intellectual growth and actual ability” (Harper & Harder, 2009).

As the MBA committee and CORE committee set forth to devise a comprehensive assessment plan, many concerns became apparent. Course embedded measures required course-level and student-level data collection. Although all of the embedded measures would be a graded part of the course, it was clear that only some assignments or exam questions would be included in the formal AOL assessment. Faculty members were concerned with both the collection process itself, as well as, the workload for analyzing and disseminating the assessment results. Who will be responsible for reporting the data? How will the results be analyzed and reported? Where will the mounds of student assessments be stored? Could different faculty use different measures to assess the same concepts? To whom will assessment results be given? How will specialized degrees such as the Masters in Healthcare or joint MHA-MBA be handled? As these questions arose, it became apparent that the assessment planning process was complex and; therefore, needed to start with a defined plan that included a robust archive and reporting structure.

The second challenge for the School of Business faculty was the AOL requirement to ‘close the loop’. This requirement entailed faculty working together to review assessment outcome data and to make improvements in student learning and/or the assessment process. This was a fundamental change in the current state of affairs where faculty were solely responsible for the content within their course and only informal, if any, communication existed for sharing teaching methods and identifying improvement opportunities across the curriculum. The 2005 culture was not conducive to collection, analyzing and sharing student-level data, all of which are needed to successfully meet the AOL standards (Pritchard, et

al., 2010). In fact, faculty expressed concern regarding how assessment outcomes would be reported and communicated. Who will use the outcome data? How will outcomes be reported back to faculty? Will individual courses (faculty) be assessed or will it be aggregated? What will be the process for closing the loop? Who will be responsible for assuring the ‘loop’ is closed? How will teaching/course improvements be tracked? These questions, coupled with the Dean’s office request to have real-time access to the assessment results and improvements, reinforced the need for a defined assessment plan with a robust archive and reporting structure.

Defining the Plan, Creating the Structure

Initially, the MBA and CORE committees worked independently to define an assessment plan at the graduate and undergraduate level, respectively. The MBA committee approached the task by assigning various committee members the responsibility of working with their faculty to assess and report the agreed set of core competencies. The CORE committee established a comprehensive exam, covering multiple topical areas, administered during the capstone class. The CORE committee also included a writing and technical competency course in their assessment approach. Table 1 describes the initial assessment plan and faculty involvement.

Although a few of the faculty took ownership for collecting the assessment data, analyzing these data, and creating summary reports, the majority of these faculty were committee members with few other faculty engaged in the process. The assessment results were shared among MBA and CORE committee members, with most of the AOL improvements being made by the committee members themselves. This was a good start; and because the committees were cross-functional it afforded a number of short term gains for the assessment plan while keeping the necessary momentum. However, it became clear that a defined data collection, analysis, and reporting plan was needed and that it should include the majority of faculty. It was within the MBA committee that a solution evolved.

Table 1: Initial Assessment Plan

<b>Core Competency</b>	<b>Faculty Involvement</b>
MBA: General Knowledge	4-5 MBA Committee members, independently
MBA: Team Building	1 MBA Committee member
MBA: Global Awareness	1 MBA Committee member
MBA: Critical Thinking	3 MBA Committee members, collectively
CORE: Common Body of Knowledge	4-5 CORE Committee members, independently
CORE: Written Communication	Non-business writing faculty
CORE: Technical Competency	1 CORE Committee member
CORE: Ethics	1-2 CORE Committee members

*This table shows the initial assessment plan developed to begin the AOL process and describes faculty and committee involvement.*

Database Solution

The MBA committee agreed to participate in the development of an ‘assessment’ database that would house all of the assessment data, at the course and student-level. This assessment database would eliminate the need for years of student-level assessments to be stored. It would include a feature that allowed for easily uploading assessment data, again at the course and student-level, which would encourage the participation of multiple faculty members. The assessment database would include a reporting function that was flexible, allowing assessment goals to easily be changed and/or embedded measures to be updated at the request of faculty and/or departments. This would allow for individual faculty teaching the same course to use similar, but unique, assessment measures. In essence, the assessment database was expected to standardize both the data collection process and the analysis and reporting process, while remaining adaptable to faculty and administrator requests. Access to the assessment database would be restrictive, so that exam questions, assignments, and student results were

only accessible to authorized users. Assessment database access would be given to the faculty assessment coordinator, the Dean’s office, and departmental chairs, with the departmental chairs having limited access to their respective disciplines. Assessment reports were to be generated in real-time, allowing data to be added throughout the semester. If thoughtfully designed the assessment database should provide the needed impetus to increase faculty involvement (due to ease of use), facilitate assurance of learning (through better analysis and reporting) and encourage course/curriculum improvements (by tracking actions and results over time). The assessment database should allow all disciplines to gather data, in different formats, and generate reports for multiple accrediting agencies such as AACSB and SACS. There was only one caveat; there was little funding for this initiative.

Developing the Database

The first step towards the development of a robust assessment database was to find a developer. A member of the MBA committee (and lead author of this paper) agreed to hire a student worker who was versed in database programming and to take responsibility for the database development. The student needed to come from outside the School of Business because they would be privy to (presumably) exam questions and other graded course materials.

The second step in the development of assessment database included defining the requirements and expected outcomes of the database. The faculty developer, programmer and MBA committee worked together to list the assessment database requirements and create a proto-type report. The assessment database fields needed to include a unique identifier that would link records. The unique identifier chosen was the individual student ID. Similarly, the course number and section was used to differentiate between classes. Adjunct faculty taught some of the MBA and CORE course, some at night, and some online. The committees agreed that analysis between these dimensions might be necessary and including the course section permitted this level of analysis. A number of the department chairs expressed an interest in using the data collected in the core level courses as part of their degree-level assessment. Thus, it was necessary to extract specific majors from the overall assessment results. Adding a field for student major was necessary. Last, faculty did not want to keep all of the hard copies that were part of the assessment process, so it was decided that a ‘detailed’ level report would be available which included an exact replica of the assessment questions/assignments. Thus, if the Dean’s office or assessment advisors wanted to view copies of student results this was possible by using the ‘detailed’ level report and/or selecting various student IDs. Table 2 shows a summary of the database fields and rationale for inclusion.

Table 2: Database requirements

<b>Data Variables</b>	<b>Rationale</b>
Student ID	Eliminate the need to keep volumes of hard copy assessment data.
Course ID/Section	Ability to analyze data by professor/adjunct/modality (face-to-face, web-enhanced, online)
Student Major	Ability to compare and report data at the major level (major level analysis is required by SACS)
Assessment detail/description (i.e. Exam question/project description)	Ability to track assessment questions/projects over time; eliminate the need to keep hard copies of assessment questions; allow for assessments to be changed over time
Student answer/outcome	Ability to analyze students performing poorly by analyzing incorrect answer choices

*This table shows a summary of the database fields and the rationale for their inclusion.*

Outcomes Reporting

The assessment reports needed to serve two functions. First, the reports needed to aggregate all of the data across students, classes and majors, thus providing the assessment outcome results at a high level. These ‘overall’ reports would be used for reporting assessment data to AACSB, as well as other accrediting programs. Second, reports were needed to identify opportunities for improvement and/or deficiencies in learning. These ‘detail’ level reports needed to include item (measure) level data so that faculty could identify poor measures, learning deficiencies, and opportunities for course/curriculum improvement.

Two proto-type reports were created and reviewed by the MBA committee. The first report, ‘Overall’, included the course number and name, the overall high-level assessment objective and results, and the ‘content-specific’ objectives. The overall objective included all of the embedded assessment measures, such as “Eighty percent of students will successfully pass eighty percent of the assessment measures (exam questions)”. The content specific objectives further defined the overall objective by grouping the assessment measures (exam questions) based on content. Typically, the content specific objective was similar to the overall objective; however, the overall objective included the total number of embedded measures (exam questions) while the content specific objective included a subset. Figures 1 and 2 show the Overall and Detail-level proto-type reports for an MBA level accounting course.

Figure 1: Proto-type assessment report: Overall

<b>EXCERPT FROM: Assessment Report: ACCT 5131/Accounting for Administration Fall 2006</b>				
	<b># in Sample</b>	<b># Achieving Goal</b>	<b>Overall Assessment Goal:</b>	<b>Percentage</b>
<b>Overall Assessment Objective:</b> <i>Students will demonstrate knowledge of Product Costing, Planning and Decision Making, and Performance Measures.</i>	53	49	80% of students will score 80% or higher across the 15 ACCT questions representing the 3 key areas	92
<b>Content-Specific Assessment Objective:</b> Recognize managerial cost terms and concepts, their definitions, conceptual application, and/or examples; specifically with respect to Performance Measures	53	45	<b>Content-Specific Assessment Goal:</b> 80% of the students will score 80% or higher on questions pertaining to Performance Measures	85
<b>Content-Specific Assessment Objective:</b> Recognize managerial cost terms and concepts, their definitions, or conceptual application, and/or examples; specifically with respect to Planning and Decision Making	53	51	<b>Content-Specific Assessment Goal:</b> 80% of the students will score 80% higher on questions pertaining to Planning and Decision Making	96
<b>Content-Specific Assessment Objective:</b> Recognize managerial cost terms and concepts, their definitions, conceptual application, and/or examples; specifically with respect to Product Costing	53	52	<b>Content-Specific Assessment Goal:</b> 80% of the students will score 80% or higher on questions pertaining to Product Costing	98

Figure 1 shows the overall assessment report for one course. It reports the assessment objectives – both overall and content-specific - in the first column and the assessment goal in the second column. Under each is the number of students assessed, the number achieving the goal, and the percentage achieving the goal.

The initial proto-type reports included the course number and semester, but not course section. This was subsequently added so that assessment data could be compared between full-time/adjunct faculty, night/daytime students, and online/face-to-face courses. The Committee also added a field for ‘remarks’ to the reports so that faculty members could document any changes and/or improvements to the measures (questions) directly on the assessment reports.

## RESULTS

### Database Structure

It took approximately one year for the initial database to be developed, which included obtaining faculty agreement on the content-level objectives and actual assessment measures. This initial database included the assessment data from seven MBA-level courses. (At this time the CORE committee was using a single exam to assess student learning and one faculty member was responsible for collecting, analyzing,



and reporting the data). As the database evolved, so did its ability to handle a variety of assessment measures. In the beginning, most of the courses used multiple choice assessment questions for the embedded measures, which were easily handled by the database. Over time, multiple courses decided to use projects for assessment. These projects were graded using a 0 to 100 scale, a 1 to 10 scale and/or using a rubric scale. With minor programming changes, the database was able to handle all of the faculty requests. Moreover, as assessment measures (presumably) evolve to include behavioral instruments, performance skill indicators and higher order thinking tasks, the assessment database will easily adapt. For example, business faculty are now exploring many innovative pedagogical methods such as class projects (Weldy & Turnipseed, 2010), role-playing (Libin et. al., 2010), action research (Raelin, 2006), business games (Anderson & Lawton, 2009; Eduardo et. al., 2009), and service projects and internships (Narayanan et. al., 2010) which incorporate behavioral and performance skills as well as enhance higher-order learning. The assessment database is prepared to accommodate this evolution.

Figure 2: Proto-type assessment report: Detail

<b>Excerpt from Assessment Measures Detail: ACCT 5131 Accounting for Administration Fall 2006</b>			
<b>Content –specific Objective</b>		<b>Content-specific Criteria</b>	
Recognize managerial cost terms and concepts, their definition, conceptual application, and/or example; specifically with respect to Product Costing		80% of the students will score 80% or higher on questions pertaining to Product Costing	
<b># in Sample</b> 53	<b># Achieving Goal</b> 52	<b>Percentage</b> 98	<b># in Sample</b>
<b>Content Specific Measure</b>	<b># in Sample</b>	<b># Answered Correctly</b>	<b>Percentage</b>
What is cost of goods sold given the data below?	53	51	96
What is operating income using the variable product costing method?	53	52	98
What is operating income using the absorption product costing method?	53	52	98
Before disposing of the manufacturing overhead variance, the current period	53	41	77
Satum produces several products, one of which is Product Q...	53	48	91

*Figure 2 is the detailed report for the same class presented in Figure 1. For each content-specific objective, the objective and goal are stated across the top of the report. The number of students assessed, number achieving the goal, and the percentage achieving the goal are stated in the next row. The next section of the report is the specific measure or test question used for assessment. This section includes the number of students who received/ answered the assessment question, the number who answered each question correct and the percentage of students successfully answering each question.*

After the first year, the MBA committee was able to report the assessment results using the assessment database. These reports were given to individual committee members to share within their respective disciplines. The results were also shared in a general faculty meeting. Overall, faculty members were impressed with the reporting capabilities and the Dean’s office was excited about the prospect of having real-time assessment data easily retrievable. The CORE committee became interested in using the database for collecting and reporting data on the undergraduate common body of knowledge measures. Their decision to eliminate the single exam assessment and move to embedded measures within numerous required courses helped this decision. During the second year of implementation, departmental chairs were beginning to consider using the database for assessment data collection and reporting. The accounting program was the first to begin to submit data, followed by management, marketing, finance, and economics. By year three, the assessment database had become fully integrated into the School of Business and even the specialized degrees were beginning to use it. There were eight required MBA level courses, 11 required undergraduate courses, and approximately 20 program specific courses submitting data for inclusion in the database. Figures 3 and 4 depict the complexity of the ever-evolving database.

Inputting Student Level Data

In the beginning, the embedded measures were extracted from various assignments/exams and manually entered into the database. With numerous courses submitting data, it was labor intensive. Most faculty members involved in the MBA assessment process used student assistants to assist with inputting the data, but it was clear a better solution was needed. Working with the (student worker) database developer,

an import feature was added to the database. To successfully import student level data required a universal format. Microsoft excel was selected as the preferred format and faculty were given specific instructions on how to format the submitted data (Figure 5).

Figure 3: Database Structure – First Level with Homepage and Direct Links

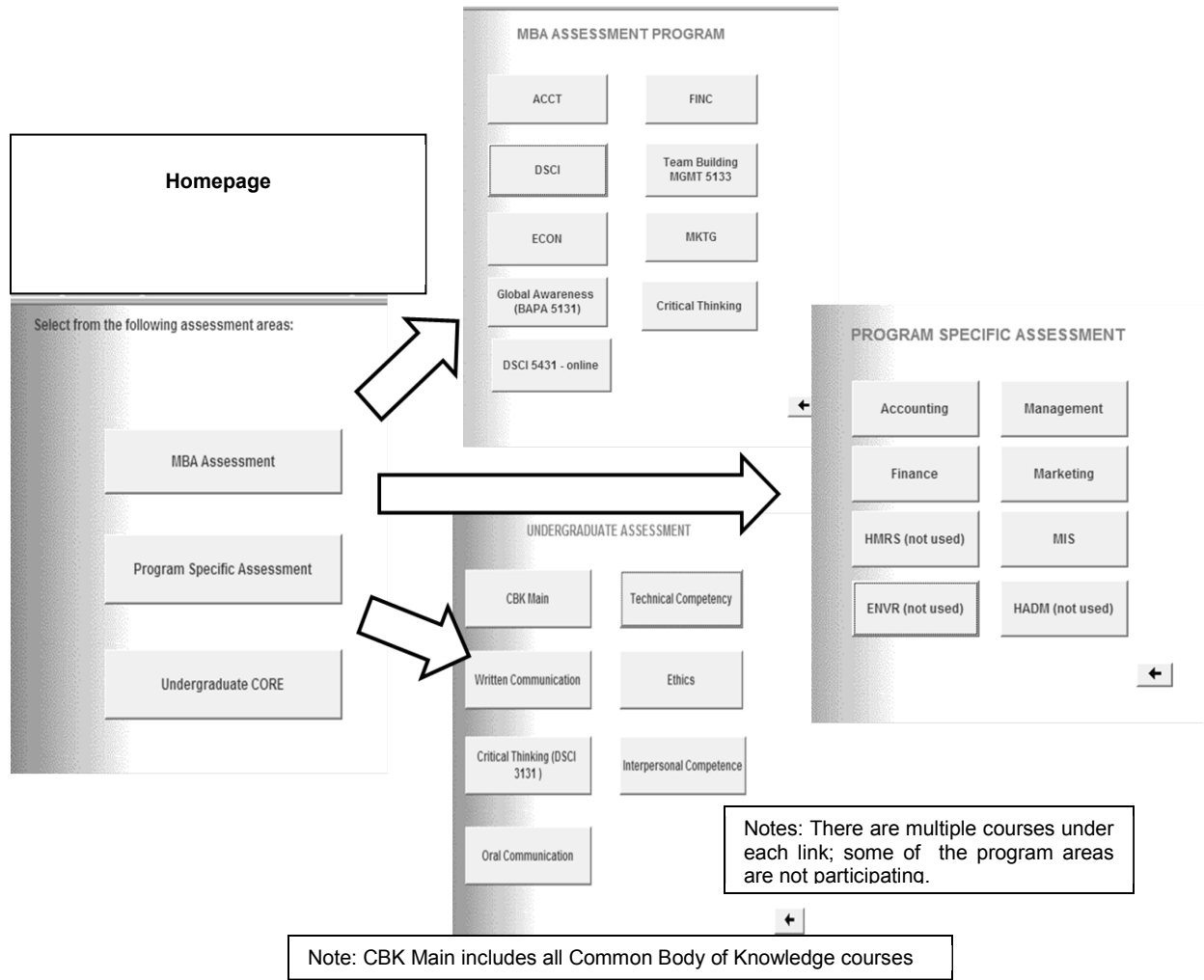


Figure 3 shows the structure of the database. The left part of the figure is the initial homepage shown. The arrows depict where each button will take the user: the MBA assessment data by objective, the undergraduate assessment data by objective, or data by program.

Many faculty members used Scantrons to collect assessment data, so the computer services department developed a solution to provide the Scantron results on a USB. These data were imported into Microsoft Excel and reformatted per the instructions shown in Figure 5. Instructors using hardcopy exams, or projects, for collecting assessment data were instructed how to appropriately format a Microsoft Excel spreadsheet with their assessment data. Because student ID and major were needed by the database, a process for downloading class rosters from the University-wide system was identified. The final obstacle was collecting assessment data from the online course management system, Blackboard. Blackboard itself has two purchasable solutions for collecting and reporting assessment data: Blackboard Learn™ for Outcomes Assessment and Blackboard Analytics™ (Blackboard, 2011). However, our University has not purchased these components, thus the faculty faced the challenge of extracting assessment data from Blackboard’s primary system. Using downloadable reports from the grade book area, faculty extracted

individual user and assessment measure data in a Microsoft Excel format. At present, the process for submitting data requires faculty to either provide a USB drive or Microsoft Excel file with all of the student level assessment data, as well as a soft copy of the class roster. The database developer is responsible for importing this data. The import feature has dramatically reduced the workload for getting data into the database, while the use of Microsoft Excel for data collection has been well received by most faculty members.

Figure 4: Database Structure – Second Level under Undergraduate Assessment

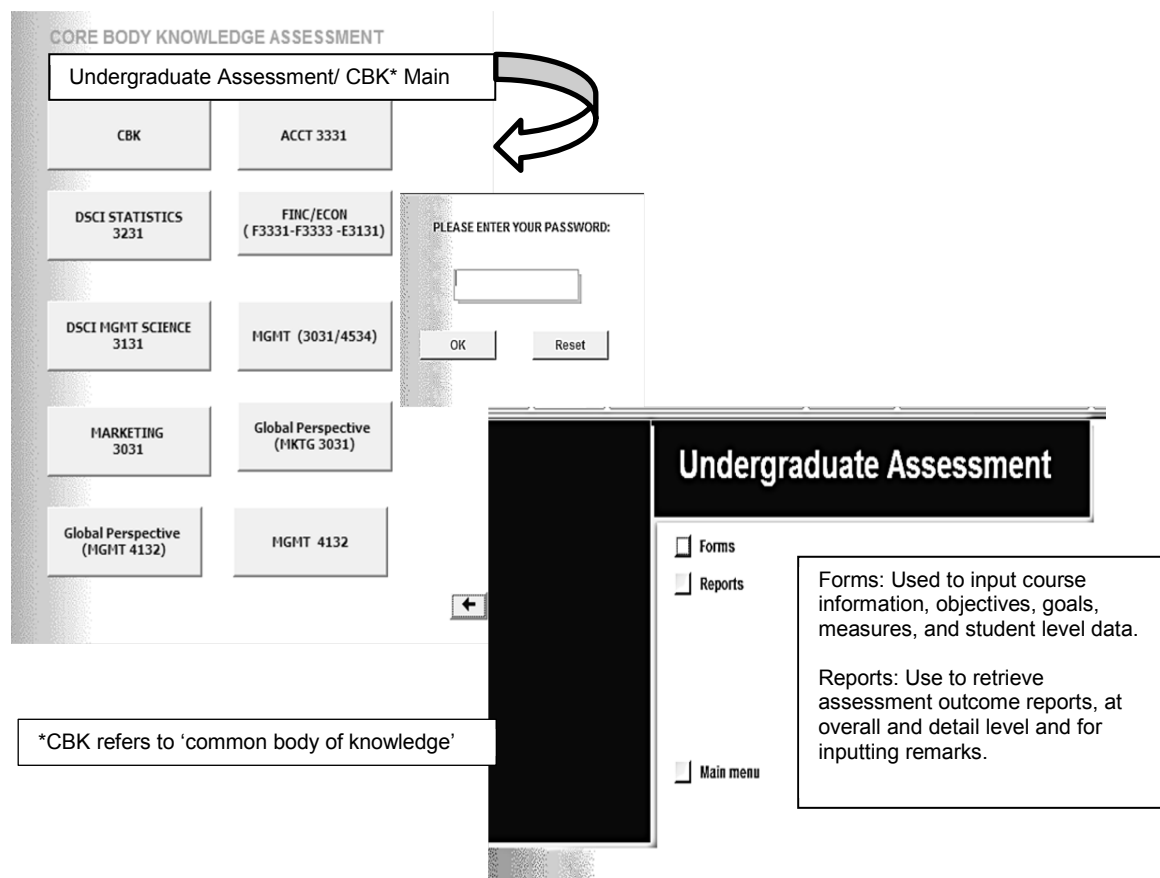


Figure 4 shows the structure of the database at the second next level. It assumes one went to the undergraduate assessment page shown in Figure 3 and selected CBK Main. The left part of the figure is a list of all the undergraduate common body of knowledge assessments. Once a course is selected, the user is prompted to log in; after logging in, the user selects either forms (inputting data) or reports (retrieving outcomes).

### Reports

The database produces two types of reports; Overall and Detail. Remarks for the overall assessment objective and/or the content specific objective can be added (optional feature) and tracked using the database. These remarks are printed on both the Overall and Detail-level reports. Figure 6 depicts the input tool for selecting assessment outcome reports, while Figure 7 shows the resulting output. The ‘Overall’ report shown in Figure 7 is for the fall 2010 undergraduate statistics course and only includes students with a general business major. Had the Detailed report been run, the embedded assessment measures (in this case exam questions) would appear with the percent of students mastering each question given.

Figure 5: Faculty Directions for Submitting Assessment Data

For Multiple-Choice Exams:							
ID	Student ID	Major ID	Section	Answer 1	Answer 2	Answer 3	Answer 4
	1000	ACCTNGMS	1	A	B	C	D
	1111	ACCTNGMS	2	A	C	C	A
	2222	FINANCEMS	3	B	B	C	A
	3333	FINANCEMS	2	B	C	C	D
	4444	ACCTNGBS	3	A	B	C	A
	5555	ACCTNGBS	2	B	C	C	A
	6666	ACCTNGBS	2	A	B	C	A
	7777	ACCTNGBS	2	C	C	C	D
For non Multiple-Choice Exams:							
ID	Student ID	Major ID	Section	Answer 1	Answer 2	Answer 3	Answer 4
	1000	ACCTNGMS	1	2	2	2	1
	1111	ACCTNGMS	2	1	2	1	2
	2222	FINANCEMS	3	3	2	2	2
	3333	FINANCEMS	2	3	3	2	3
	4444	ACCTNGBS	3	2	3	3	3
	5555	ACCTNGBS	2	2	3	2	3
	6666	ACCTNGBS	2	1	3	1	3
	7777	ACCTNGBS	2	2	2	2	3

If you are using a Scantron: You will need to 'map' certain scantron fields to the data that are needed.

- 1 Use 'Identification Number' to map to student ID.
- 2 Use 'Birthdate' (the Day) to map to your section.
- 3 Use 'special codes' to map to the students major (see below for major id#s)

**DON'T FORGET TO TAKE A JUMP DRIVE WITH YOU WHEN YOU DROP OFF THE SCANTRONS**

Major ID	Description
1	ACCTNGMS
2	BPANONDEGR
3	FINANCEMS
4	HLTCRADMHA

Figure 5 shows the instructions to faculty for preparing assessment data for ease of uploading into the database.

### Changing Assessment Measures

Over time, faculty have made changes to (improved/replaced) many of the embedded assessment measures. This includes altering the courses in which learning goals are assessed, changing assessment questions, adding content-specific objectives, increasing goals, adding/removing assessment criteria, and updating projects/assignments. The database is robust and able to handle all of these changes. Under the 'Forms' area of the database, the user is able to input a new course or assessment tool (i.e., new project, rubric), input a new objective for an existing course/goal or for a new course/goal, and enter a new assessment measure (Figure 8). The existing course, goals, and measures remain a permanent part of the database; older questions or assignments are simply 'ended' or no longer in use. This is typically noted in the Remarks section of the report, but can also be found under the 'New Measure (Question)' function.

### Closing the Loop

A strong focus of AACSB's AOL standards is on 'closing the loop'. "Measures of learning have little value in and of themselves. They should make a difference in the operations of the school. Schools should show how (AOL) results impact the life of the school. Such demonstration can include uses to inform and motivate individual students and uses to generate changes in curricula, pedagogy, and teaching and learning materials" (AACSB, 2011b). In summary, AACSB expects Schools of Business to use their assessment data to improve learning. As discussed previously, the assessment database has a report generation feature that shows the percent of students achieving the stated learning outcomes. These reports are shared within the CORE and MBA committee, as well as with the department chairs. Learning goal outcomes that measure topic/content specific knowledge are predominately discussed at the department level, with each department working to close the loop. Close the loop activities have been described by Martell (2007) as including, but not limited to, offering new or modified courses, creating a

Figure 6: Input Screen for Report Selection

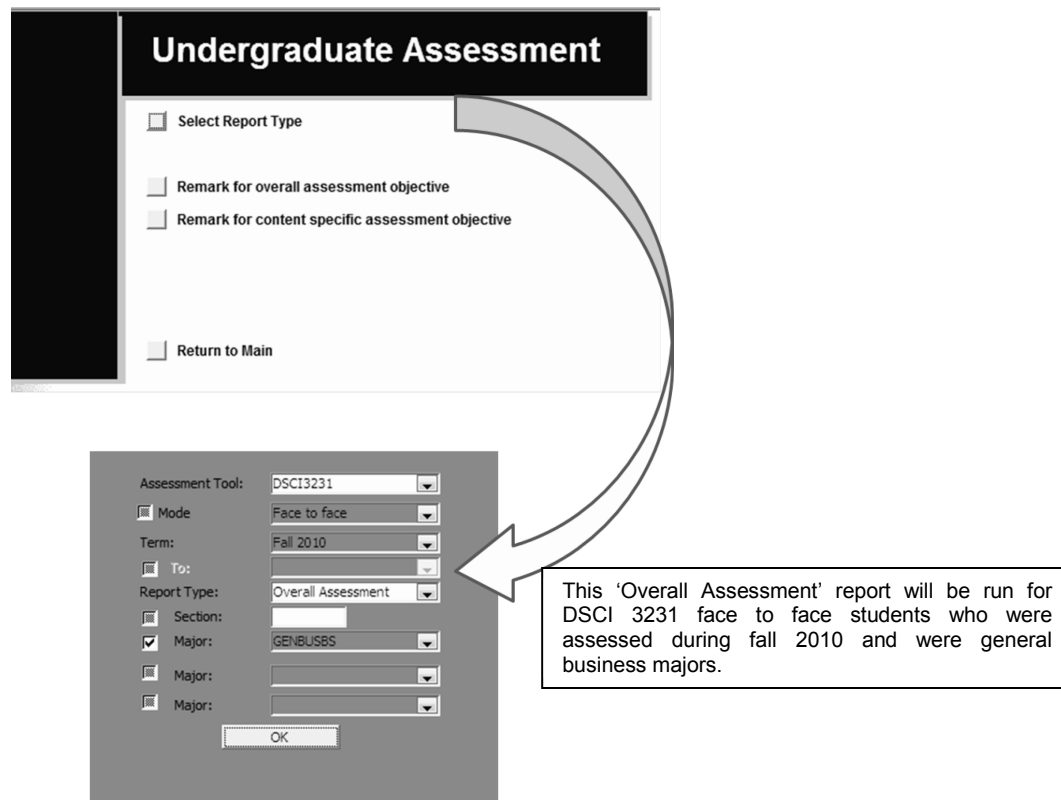


Figure 6 shows how a user interfaces with the database to run an 'Overall' report by major.

Figure 7: Overall Report Output

<b>Overall Assessment Objective:</b>		<b>Overall Assessment Goal:</b>	
The students will be able to determine the appropriate level of measurement for given data, apply the empirical rule, use a p-value to make a decision in hypothesis testing, understand the concepts of type I and type II error, and write null and alternative hypotheses.		75 % students get 6 out 9 questions correct	
Objective	# in Sample	# Achieving Goal	Percentage
	131	86	66
<b>Remark:</b> 2007: The CBK assessment questions were discussed in the area meeting on 09/27/07. Consensus was reached to continue using these measures. Assessment will occur in selected DSCI 3231 this academic year. 2008: Focus will be on assessing in additional sections, including those taught by adjuncts. We will then revisit content areas that show deficiencies. The stronger emphasis was placed when teaching Type I and II errors, more attention was given to p-values, additional assignments were given in these areas. 2009 : The area met to evaluate specific content objective (see detailed report) and two questions will be added... critical value and confidence intervals. FY 09: The exam includes two questions on ethics. Students are assessed on ethics in management classes and that is not the focus of Statistics, so the question were removed from assessment to make room for a new question on confidence intervals. One question on data measurement was deemed confusing and reworded. The two questions on the empirical rule are likely giving students with weak algebra skills difficulty. Algebra is a prerequisite for Statistics but it was not stated in the catalogue. Algebra will be listed in the catalogue as a prerequisite and this will be enforced more carefully by faculty. The question on p-value is consistently missed by students; however, it is not clear if they are missing it due to a lack of understanding on hypothesis testing or on critical values. The question will be reworded to test their understanding of hypothesis testing and a second question on critical value will be added.			

Figure 7 shows the resulting output obtained by the selection criteria given in Figure 6. The report also shows the Remark area which states the improvements and/ or changes made in the class.

different approach to teaching the content, improving coordination among sections of core courses, faculty development activities, and/or enhanced out-of classroom experiences. Cross-curriculum learning goals, such as those for teamwork, critical thinking, and written communication, are discussed both at the CORE and MBA committee level as well as at the department level. Activities designed to improve on

these learning goals are spearheaded with the committee, discussed within departmental meetings, and carried out by various faculty. Table 3 details a sample of some of the learning goals and the ‘close the loop activities’ that have resulted from the database’s collecting and reporting processes.

Figure 8: Input Screen for Updating Assessment Tools, Objectives, and Measures

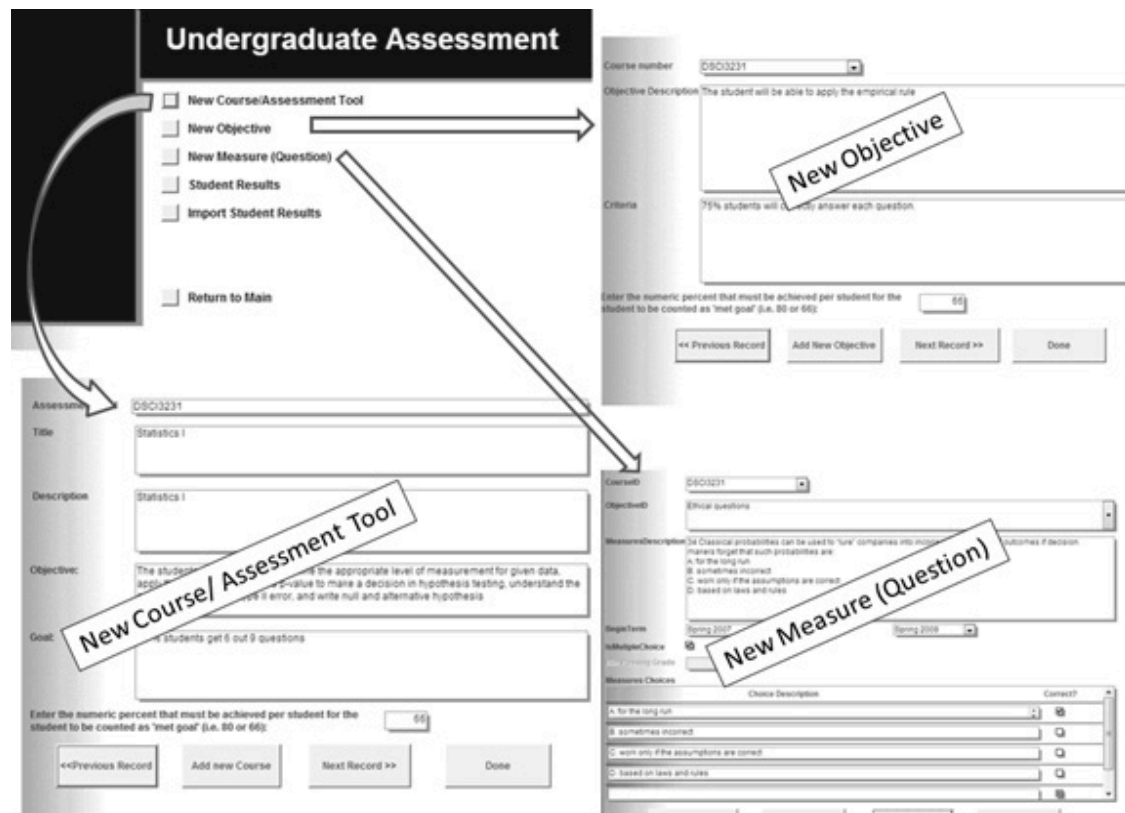


Figure 8 shows how a committee, program area, or faculty member would add a new objective, add a new course or a new assessment tool, or add a new measure or question to an objective.

Perhaps one of the most significant ways in which the assessment database is used to ‘close the loop’ is through its ease of integration with the University-wide assessment efforts. Campus-wide, our University uses an online portal, called AIM, for all academic (and non-academic) programs to report their efforts on assessment. The purpose of AIM is to aggregate all assessment data so that the Office of Assessment and Planning can effectively respond to accrediting bodies such as Southern Association of Colleges and Schools (SACS). The Office of Assessment and Planning, and individual Schools are required to meet the stated deadlines for reporting assessment activities. In developing the assessment database, consideration was given to the AIM requirements. The AIM system requires each program to develop learning goals, state the assessment methods, determine the criteria for success, report the results, and detail the use of the results. Table 4 shows an excerpt from the AIM system for our undergraduate business degree students.

In Table 4, the data inputs required by the AIM system are shown. These are directly in line with the School of Business’ assessment database. The ‘Learning Outcomes’ are defined areas in the assessment database. The ‘Assessment Methods’ are the courses in which data are collected; the ‘Criteria for Success’ is used by the assessment database to generate the analytical reports. The ‘Assessment Results’ are taken directly from the assessment database reports, and the ‘Use of Results’ details the actions taken as a result of the database analysis.

Table 3: Closing the Loop Activities

<b>Learning Goal</b>	<b>Database Analysis</b>	<b>Results: Close the Loop Activities</b>
Teamwork	In Spring 2010, 92 students in Teams course (MGMT) were assessed with 75% scoring 70% or higher on 5 knowledge plans and individual development plan. Although the goal was met; faculty continue to report a deficient in the students' ability to perform well within a team.	The MBA committee formed an ad hoc committee of faculty to discuss teamwork across the curriculum. The ad hoc committee created online resources/activities which faculty can incorporate into any course to promote effective team. Rubrics for measuring team effectiveness and peer-to-peer assessment were also created and made accessible to the faculty at large.
Written Communication	In Spring 2009, 56 undergraduate business students were assessed. The percent of students meeting the established goal by content area was: Organization - 66%; Style/Tone - 71%, Mechanics - 66%; Critical Thinking Skills - 62%; Research Literacy Skills - 61%; Ability to Convey Business Information Through Visual Aids - 77%.	More short reports and written summaries of research materials were required which encouraged students to spend more time with library resources. An additional assessment of critical thinking was added to DSCI 3331.
Finance	In Fall 2009, 8 MBA students were assessed with 6 (75%) meeting the overall goal. For knowledge of derivatives, 88% met the goal, for knowledge or primary markets 50% met the goal, for knowledge of evaluating project risk 62% met the goal, for capital budgeting 100% met the goal and for knowledge of cost of capital 88% met the goal.	More focus was given to Primary Markets such as audiovisual presentations. In addition, cases were implemented with a stronger focus on project risk and the time allotted to teaching cost of capital increased by 33%.
Management Science	In Fall 2009, 47 MBA students were assessed with 81% meeting the overall goal of scoring 75% or higher on 21 multiple-choice questions. Analysis at the content specific level showed linear programming (LP) to be the lowest scoring area.	The DSCI faculty discussed student's limited knowledge of graphical LP solutions and integer LP and determined there was too much variation in time dedicated to each topic between teaching faculties. Consistency in topic coverage is sought.
Statistics	In Fall 2009, 111 undergraduate business students were assessed with 78% meeting the goal. Analysis at the content specific level showed deficiencies in Type I and II errors and p-values.	A stronger emphasis was placed when teaching Type I and II errors and more attention was given to p-values. Additional assignments, homework and test questions were given in these areas.

*Table 3 is a sample of some of the learning goals and the 'close the loop activities' that have resulted from the database's collecting and reporting processes. The first column is the area of the learning goal, the second shows the analysis for the objective derived from the database, and the last column shows what activities were done to 'close the loop'.*

### CONCLUDING COMMENTS

The purpose of this article is to present the development of our University's AOL database management system in enough detail that others can both learn from our successes and (potentially) adapt our methodologies. The paper describes the design of a faculty-driven AOL system that maximizes faculty input on data utilization, collaboration, and improvements, while minimizing faculty time spent on data collection. We start by describing faculty concerns, requirements of AACSB, and constraints of data collection. The database devised to solve these problems is described in detail with sample reports for 'closing the loop' in the assessment process. The assessment database includes a reporting function that is flexible, allowing assessment goals to be easily changed and/or embedded measures to be updated at the request of faculty and/or departments. Access to the assessment database is somewhat restricted, yet the assessment database allows all disciplines to gather data, in different formats, and generate reports for multiple accrediting agencies such as AACSB and SACS. How the system handles faculty concerns, needed reports, closing the loop activities, cost constraints, and School-wide curriculum improvements is discussed.

A survey of 420 deans at AACSB accredited business schools was conducted and the results detail six best practices for achieving a sustainable assessment program (Kelly, Tong and Choi, 2010). These six best practices can all be found within our University; as a direct result of the efforts undertaken to develop the School's assessment database. The first best practice requires defining objectives of the assessment program. Through the CORE and MBA committees, and with the Dean's leadership, the assessment program was defined. The database provided a structure and required a defined approach to data

collection. The second best practice, assigning responsibility for the implementation, has been demonstrated by the unyielding commitment of the CORE and MBA committee to the development of a robust database. As assessment measures have evolved so too has the database. As closing the loop activities become more complex, the committees work to initiate and implement cross-curriculum improvements. Securing faculty commitment was the third best practice and continues to be demonstrated through both the data collection processes (which included a majority of the courses and faculty), as well as with the closing the loop activities which engage entire departments and foster collegiality. The fourth best practice is perhaps the largest achievement of the assessment database - allocating appropriate resources to assessment programs. The creation of the database has been relatively inexpensive (graduate student pay and faculty summer release), yet it has achieved assessment integration, faculty communication, and campus-wide acceptance. Designing the assessment program and closing the loop are the fifth and sixth best practices. The nature of the database required both the committees and individual departments to have a thoughtful and deliberate approach to assessment. It negated the subjective approach toward student learning assessment by requiring faculty to have defined assignments, rubrics and/or measures for student learning. The assessment database facilitates closing the loop through its detailed reports and ease of integration with the campus-wide AIM system.

Table 4: Campus-wide AIM System Inputs

Learning Outcomes Assessment				
Learning Outcomes	Assessment Methods	Criteria for Success	Assessment Results	Use of Results
Our students will have technical competence.	Students will demonstrate technical competence on an objective test over technical skills and concepts. Assessment will be done in ISAM 3033.	Students will demonstrate technical competence by scoring 70% or higher on exam	110 students were assessed in Fall 2009 with 86% of students meeting the goal. 138 students were assessed in Spring 2010 with 86% of students meeting the goal.	All sections of the technical competency course (including online) will be assessed, which significantly increases the number of faculty involved in assessment. A faculty discussion regarding the key topics that should be included in future assessments will commence. Questions will be evaluated for relevancy and alignment with identified key topic
Our students will demonstrate competency in oral communication	Students in MGMT 4132 will demonstrate oral communication skills on a project-based presentation	80% of students will have an average score of 'meets' or 'exceeds' expectations.	This assessment occurred in MGMT 4534. In Spring 2010, 92 students were assessed and 90 % achieved the goal.	This is the first semester that students have been assessed in oral communication. The results were remarkably good. Faculty will continue to assess using the same rubric to assure reliability of the results.
Our students will demonstrate critical thinking.	Students in DSCI 3131 will demonstrate critical thinking skills as evaluated by a case/project.	80% of students will have an average score of 'meets' or 'exceeds' expectations.	94 students were assessed in Spring 2010 with 52 % meeting the goal.	Critical thinking was piloted last semester. The faculty discussed the measures and results and agreed to continue to use the current measures in a larger number of sections.

*Table 4 shows an excerpt from the University-wide assessment portal, called AIM, for our undergraduate business degree students. The purpose of AIM is to aggregate all assessment data of the University (academic and non-academic). The AIM system requires each program to develop learning goals, state the assessment methods, determine the criteria for success, report the results, and detail the use of the results.*

The School of Business assessment database has not only shown to be a best practice approach to assurance of learning, but it also demonstrates how a common structure can make great strides in assessment. Using databases to collect and report data is not novel; however, using a cross-functional committee to develop a database for assurance of learning turned out to be novel for our School of Business. It allowed assessment to migrate throughout the faculty, in a seemingly unobtrusive way. It encouraged within and between-department communication. It provided an easy forum for faculty to become involved, even the faculty who initially objected to the idea of student assessment. The assessment database has quietly created a cultural shift; a shift away from independent faculty who rarely share



course knowledge to one of consistent communication aimed at advancing student knowledge. And best of all, this database is robust enough to tackle the future assessment demands – both from within the faculty and outside accrediting bodies.

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## **BIOGRAPHY**

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# **AN ARCHITECTURE FOR DYNAMIC E-LEARNING ENVIRONMENTS BASED ON STUDENT ACTIVITY AND LEARNING STYLES**

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## **ABSTRACT**

*Using e-learning systems, computer assisted technologies, or learning management systems to supplement or replace the classroom experience is becoming more common in education. The use of these technologies generates a large volume of transactional data that record how each student progressed through the learning materials in the e-learning system. This data, which is currently underutilized, could be used to understand student learning behaviors, and to help both the instructor and the student benefit more from the course content. This paper describes an architecture using business intelligence methodology for using the data captured by e-learning systems to understand what students are doing (or not doing) in the e-learning system, and thereby to make changes that enhance student learning.*

**JEL:** C88, I21, M00, M19, Z00

**KEYWORDS:** E-learning, Learning Management Systems, Business Intelligence, Business Education, Business Education Research

## **INTRODUCTION**

Learning technologies encompass a broad range of communication, information, and related technologies that can be used to support learning, teaching, and assessment. Learning technologies are common in the education industry as parents, students, and teachers use the technologies to try to promote and improve learning. The use of learning technologies in higher education has grown significantly over the years, ostensibly because the use of learning technologies, particularly learning management systems (LMSs), provides opportunities for instructors to have a flexible learning environment for students. LMSs provide an opportunity for instructors to allow students to access course content 24-7; this content can range from quizzes and exams to online lectures to a wide variety of learning experiences limited only by the technology and the instructor's creativity.

According to U.S. Department of Education, National Center for Education Statistics 2008 (2011), 97 percent of public 2-year universities offered web-based learning programs, followed by public 4-year institutions at 89 percent. The majority of the students enrolled in online learning courses was students with some type of personal responsibility such as a spouse or child, were older, employed, or had mobile disabilities. The students were more likely to access the learning system during non-traditional hours such as after 5PM or before 8AM when people, including faculty, typically work. While the flexibility in the online access provides opportunities for students to complete a class at any time, the challenge is that the instructor is not always available to help them when they might need it most. Thus, there needs to be a support system that can be available to the student whenever they might choose to engage in the learning system.

A yet underutilized component of the LMS is the transactional data captured through the use of the system. The use of LMSs to manage course content allows for the capture of student behaviors such as accessing reading materials and teaching notes, when students start online assignments, how long students

take to complete the assignments, and productivity in discussion forums. Some LMSs also capture how often and how long students log into the system. While many LMSs capture this information, little is known about how to appropriately use this information to better understand student behaviors or e-learning usage patterns, and how to use the information to create a better learning environment for the student. This paper describes an architecture for understanding students' e-learning usage pattern, and how to utilize that information to improve how LMSs can be used to improve student learning.

This paper specifically discusses an approach to using the data available through an LMS to provide students with information that can improve their performance and their learning. The paper shows that by using the data captured by an LMS, the LMS environment can be enriched, and student learning can be enhanced, by using a combination of historical data and automated learning consultants that use business intelligence methodology to help encourage students through their learning activities.

The next section of the paper provides a literature review that shows existing research on LMSs focus on the development of LMSs and how they are used. We find that the literature does not currently examine how the detailed transaction-level data about what students do in the LMS can be used to enhance learning. Then we outline our proposed architecture for monitoring student activities in a LMS. The Data and Methodology section describes the development of metrics that measure student activity in the LMS and the use of business intelligence methods to automate the provision of timely feedback to the students as they progress through the learning activities in the LMS. The Results section presents examples of the application of our proposed architecture. The last section of the paper provides some concluding remarks.

## LITERATURE REVIEW

Because of the rapid increase in the use of the Internet, the delivery of computer based learning programs has rapidly shifted from local desktop to online-based applications. The online learning applications allow the instructor to make modifications to the learning content in one place at one time, and the revised content is then made available immediately to all students rather than waiting for the next time the course is offered, thus saving both time and costs (Naidu, 2006; Cavus, 2011). Online computer based learning systems, or simply learning management systems (LMSs), are software applications that comprise a suite of tools for learning and teaching online.

An advantage to online learning from the learner's perspective is that they get access to the learning content 24-7 (Cavus, 2011). Much research has been done on the convenience and flexibility, and the concomitant user satisfaction, with LMSs, especially among non-traditional students (Naidu, 2006). Research on LMSs has also examined the user adoption of the technology (Yu and Yu, 2010), and the development of the LMS applications and systems (Fontela et al, 2010).

In terms of convenience and flexibility, researchers consistently point to results that show many students prefer, and in some cases even expect, instructors to use LMSs to enhance the learning experience. Revere and Kovach (2011) state in their study, "[T]he effectiveness of course design and student engagement remains uncertain. To deliver the highest quality online education, students should be engaged in learning exercises. Appropriately integrated technology can be used to foster student engagement, build a learner-centered environment, and make course content come alive." They discuss the use of technologies such as discussion boards, chat sessions, blogs, Twitter, Skype, YouTube, and others, to provide guidance to educators interested in integrating these tools within their online learning environment. They show that instructors who effectively incorporate technology as learning tools in their online courses can expect to achieve enhanced student engagement as well as higher levels of learning and more efficient classroom management (Revere and Kovach, 2011).

A study by Yu and Yu (2010) examined the adoption of LMSs. They discuss factors related to the adoption of LMS, and determined that three independent variables associated with theories of planned behavior contributed to student use and to student attitudes toward the use of the technology: attitudes, subject norms, and perceived behavior controls (Yu and Yu, 2010). Other studies, such as Barki et al. (2007), Goodhue and Thompson (1995), McGill and Hobbs (2008), McGill and Klobas (2009), Staples and Seddon (2004), and Pagani (2006), have suggested that learner technology fit regarding the system is associated with positive attitudes toward LMSs; user satisfaction encourages use, which in turn encourages active participation in the learning environment.

An example of the development research can be found in Fontela et al. (2010). In their paper, they describe an architecture for LMSs that overcomes the problem of trying to use both a hosting system's LMS (such as Blackboard or WebCt) and a content provider's LMS (such as the publisher Wiley's online content). Using both systems typically requires the instructor to manually integrate, or basically collect student performance data in one system and then manually transfer the results to the other system, to get the full picture of the student's performance. Creating a "hard" integration of third-party tools allows the primary LMS to have tighter control over external tools and provides an opportunity for the instructor to manage different issues needed to better understand and control what the student is doing and when (e.g. events, permissions, and sessions).

LMSs can collect a wide variety of transactional data concerning how students navigate the LMS and how students use (or fail to use) the learning content in the LMS. The data can include whether a particular student accessed a particular piece of learning content, how long the student accessed the content, and the results of any assessments of student learning based on the content.

While the existing literature examines how to develop LMSs, how people adapt to them, and user performance when using them, a limitation of the literature is that it has not examined how to use the student transactional data from the LMSs. In particular, the literature has not yet described a methodology to identify particular student behaviors that successful students engage in while in the LMS, and then how to use that information to guide other students towards a better learning experience that would result in better student performance and higher student knowledge retention.

A reason for this gap in the research on LMSs is in part due to the difficulty of conducting conclusive studies suggesting that a student would not have performed as well, or as poorly, in a non-online environment as in an on-line environment because all conditions for learning would have to be exactly the same, including the student. Thus, the ability to conduct a pure impact study is limited to pre-test/post-test analyses for learning within the class, and a post-post test analysis for knowledge at an even later period.

As Van Nijlen and Janssen (2011) reported, mastery is essential when monitoring student progress and is crucial for instructional interventions to deal with learning difficulties. Even more important, instructors cannot always detect when students are having difficulty in the online environment unless the student specifically tells the instructor that such is happening. When a student is studying and the student begins to have trouble, only when the instructor is available is the student able to ask the instructor for directions for improvement. The difference in the online learning environment is that the student could have this corrective intervention without the instructor if the system is able to identify the student is having a problem based on his or her series of recent actions and activities, and if the system has the intelligence built into the system to recommend to the struggling student a corrective course of action.

## **A PROPOSED ARCHITECTURE**

The use of e-learning technologies such as LMSs has strengths and weaknesses. One possible strength is in the ability to manage and grade large numbers of assignments, thus making larger classes a bit more

manageable for instructors. Another possible strength is that LMSs centralize access to learning materials, assignments, discussion forums, and learning assessments; thus, LMSs allow for learning materials to be available to students 24/7, and for the materials to be easily updated and instantly distributed.

LMSs also can collect detailed data on how student progress through the learning content and assessments. The instructor potentially has a rich dataset of transactions that capture student behaviors in the LMS, including information about when the student logs in to the system, what the student did while logged in, and the results of assessments. Some learning platforms can tell the instructor the proximity of IP addresses of students; some can show the instructor what other websites the student accessed while the student was logged in to the LMS. For example, the instructor could determine which websites outside of the LMS that a student accessed while the student was logged onto the LMS and presumably working on the learning content: Where those websites relevant to the LMS learning activity, or did the student spend most of the time accessing websites unrelated to the learning activity (e.g., Facebook)?

The weakness of this LMS data is that an instructor might be perceived as invading a student's privacy. A student may not want the instructor to know how frequently they logged in and what they were doing while logged in. While the data generated can help the instructor better understand and identify behaviors of the student while online, students may not appreciate the instructor knowing so much about them, especially if the student does not know the instructor well and does not trust that the instructor is using the information to benefit the student.

Despite the capabilities of learning management systems to report information that could aid in the management of classes and student behavior, some LMS only offer minor reporting. As an example, a typical LMS offers a series of student activity reports that include information related to student login, checklist, content, discussion, dropbox, grades, quizzes, and surveys. The instructor can see how many times a student has accessed each area of the learning environment. These reports simply give a list of relevant activities by the student and some summary statistics. For example, the login report for a student presents a list of time stamps and IP address locations from which the student logged in.

Few of the standard reports offer more than either raw data or a superficial summary of the student activity. The reports do not indicate when the student began the assignments, how long it took for the student to complete the assignment, or the time differences between attempts. Also, there is no provision for analyzing all of the student data to find patterns, unless the instructor is willing to download assignment or discussion forum data details for additional analysis outside of the LMS. The reports and the reporting are both limited and limiting. Instructors can at best do a cursory analysis of where the problems are in the course and with the students. The data, though, could be collected and made available to the instructor by the LMS. Doing so would allow the instructor to perform a more in-depth analysis and potentially enrich the online experience for the student if there were tools available to more easily access the data and generate reports that are helpful to both the student and the instructor.

In the architecture described in this paper, several ideas and motivations were borrowed from Google Analytics (GA). GA is a free facility provided by Google to assist web developers and administrators in analyzing and understanding website traffic patterns. A partial list of the functionality included in GA include page view statistics, visitor path analysis, campaign conversion, goal tracking, time on page, location of visitor, and exit properties. The interested reader can learn more about GA at EPM1 (2010) and EPM2 (2010). GA does an excellent job presenting a large amount of data in an accessible way through a Business Intelligence (BI) based dashboard. This dashboard displays traffic information in a variety of different graphical ways: trend lines, bar charts, pie chart, maps, and so forth. A series of GA screen shots may be found at GA0 (2012), GA1 (2012), GA2 (2012), and GA3 (2012). GA allows users to investigate different aspects of web traffic patterns; each part of the dashboard is clickable, which allows users to drill-down for a series of more detail reports.

GA allows a website administrator to set up campaigns with conversion goals. These goals center on various performance measures for the website such as increased sales of a certain product, increased traffic coming from certain sources or resulting from certain keyword searches, increased time on page, and so forth. Once the goal is set, GA tracks the site's performance towards that goal. These goals become a metric of performance through which success of the website site may be measured. EPM2 (2010) provides a brief overview of this goal functionality contained in GA

We incorporate many of these ideas from GA into our architecture. We re-focus the ideas taken from GA towards a higher education student population. In the architecture highlighted in this paper, special care is spent on detailed page-to-page activity tracking, robust reporting tools, and analysis of the alignment of the learner activity and the learning goals set by the instructor.

At the heart of the architecture is the collection of detailed activity information of how the learner is doing within the LMS and how the learner is interacting with the learning content. It should be noted that the collection of the detailed activity data does in no way represent a compromise of either the LMS's or the browser's security protocols. All of the information obtained is readily available to any web based application. Most applications simply choose to ignore this source of information. The coarsest level of data retained in support of the current architecture is page level information such as which learning content is view by which student at what time for how long and from what physical location. The data is very similar to that retained by most current LMS systems as well as by GA.

At the core of the raw data generation subsystem is the event-based programming environment supported by virtually all modern web browsers. At its core, this environment allows web applications to detect and react to users as they interact with the system. For example, when a user types something into an input box on a web form, each keystroke is signaled to the browser as an event. Many applications will capture this event for helpful purposes, such as automated input completion, error checking, or interactive form generation. There are many events recorded by most browsers. A somewhat nontechnical explanation of event programming is available at Bergen (2010).

For the purposes of the architecture outlined in this paper, an extensive list of events are captured and retained. All student keyboard and mouse activity is retained. The events are associated with an element within a given piece of learning content. A careful tracking of the hyperlinks that were clicked on the page is maintained. Also retained is a characterization of the student's screen. The architecture records what portion of the learning content is viewable on the user's screen at a given time, how long did that portion stay viewable, and did the learner view the bottom of the page.

This raw data generation scheme is a general framework. Implementation details will vary based on the learning environment under consideration. Two partial examples of the potential of this framework have been implemented within the Aspen LMS. The examples were developed using data from business courses. The examples are based on approximately 200,000 transactional level data generated by approximately 400 students over a period of one month. A visual inspection of even a small subset of the data quickly overwhelms the viewer. More importantly, without a performance metric to compare the data against, deriving meaning conclusions from the data is difficult. We therefore next discuss schemes of how to generate these metrics and one set of possible analysis tools that can be employed.

## **DATA AND METHODOLOGY**

There is typically an expected order in which students and instructors alike expect courses to be taught and hence how the student is supposed to learn. Instructors place learning activities and learning assessments into a sequence that the instructor believes will enhance learning. Instructors set specific

deadlines for learning activities and assessments, and the student is assessed on the activities based on their performance at that specific time even though something later in the class may provide the student an opportunity to understand the content better. Some instructors accommodate the possibility that subsequent learning activities improve the students' understanding of previous learning activities by giving students the opportunity to complete a comprehensive exam or some other type of assessment that can improve the grade.

But there is an inherent assumption based in how courses are taught that many instructors believe that students must follow and complete course material in lock-step with the instructor's plan or the student will not do well in the class. LMSs make it possible to see if students are accessing learning materials on the specified date or just before the assignment deadline. IP addresses can indicate if the student is working alone or as part of a group. Details from the assignment, such as when it was opened by the student, when it was submitted, overall performance scores, and information from individual questions, can also indicate whether or not the assignment was rigorous enough, what material the class as a whole grasped well, and so forth.

Ascribing meaning to the raw data generated is impossible without a benchmark to measure the activity against. For example, suppose the activity data indicates that during a portion of the course student online activity has dramatically dipped. From a learning perspective, what is the meaning of this finding? It is very difficult to tell. The lack of online activity may have been caused by many reasons: the course is engaged in non-online content or activities, or the students are on a break. Student activity only has meaning when coupled with the expectations of the instructor. For example, the dip in activity is an area of concern only if the course is at a point where the instructor would expect the students to be heavily engaged with the online content.

Building these activity benchmarks are equivalent to the GA's conversion goals that we briefly described previously. Just as GA's goals become a metric of performance through which success on of the website may be measured, the activity benchmarks provide meaning to the learner activity. These benchmarks allow the instructor to communicate with the system what the instructor's expectation for the learner is. This is a key component because it allows measurements for the alignment of learner activity and instructor expectations. For example, when an instructor is working on an activity within the course, one would expect that the student traffic patterns on the supporting materials for that activity to dramatically increase. If this increase fails to occur, this would be a misalignment of the student activity with the instructor's expectations and would be an area of concern. This alignment can be measured, which provides a means of tracking the student's progress through the learning activity.

These benchmarks are particularly helpful to those instructors who regularly teach the same course. These benchmarks are maintained across terms and may be statistically correlated with other performance measures within the course. For activities that are repeated across terms, the students' activity patterns may be correlated with their final activity score recorded in the gradebook, and may be correlated with their final letter grade in the course. For large class sizes, statistical significance of these correlations tend to happen quickly. Also, the combination of the benchmark performance coupled with the student activity provides a knowledge base for a wide variety of data mining tools.

It should be noted that this benchmark-activity alignment does not guarantee any performance outcome for a specific student or for a specific course. The intention of this alignment is not to attempt to predict the future; it cannot tell an instructor what final grade a student will likely receive on an assignment or in the course. Rather this alignment provides statistical statements only, indicating the propensity of a student or class to perform in a certain manner based on facts. The alignment makes possible statistical statements similar to the following example: 75% of the students who started the assignment the night



before the due date did not complete the assignment. Those that did complete the assignment spent an average of 15 hours completing it.

The benchmarks should be refined over time as the course curriculum evolves or as the instructor's expectations change. Misalignments between the benchmark and the student activity can drive a continuous improvement process for the curriculum. If disappointing alignment results are seen repeatedly across terms, this may be an indicator of a potential area for curriculum improvement.

For a concrete example, one of the authors of this paper teaches a very large (250 students) Introduction to Management Information Systems class using the Aspen LMS. The class has a series of large, complex, multi-week projects. The instructor regularly shares the alignment information in class with the students. Thus, for example, the instructor tells students before the due date how long students in previous terms took to complete the assignment and the failure rate on the assignment for students who try to do the assignment the night before the due date.

Repeatedly over the past four terms, the instructor has noticed a spike in student desirable activity immediately after the reports are shown in class. In addition, inter-term performance of the class activities continues to improve. More students appear to heed the instructor's warning to start the assignments early and to work consistently on them over time. These findings are heuristic only; other factors may be influencing these performance changes.

One of the perceived advantages of teaching in a small classroom environment is that the instructor has the opportunity to gain firsthand understanding of each student in the class. The instructor will get a sense of the student's perceived intelligence, ability to work in teams versus independently, commitment to the course, level of understanding of the material covered, and so forth. Then, based on these perceptions, instructors frequently subconsciously adjust the volume and detail of advice given to the students. In essence, the instructor builds an informal user rating metric for their students; the instructor's interaction with the students is in part determined by this metric. Over the duration of the course, this user metric can be adjusted as the instructor has further interaction with the student.

Building such a metric is feasible in a small classroom environment where an instructor may have direct, firsthand interaction with the students. Unfortunately, this does not scale to a large classroom environment where instructors typically have very little or no firsthand knowledge of their students. In such cases, customizing the delivery of the course material to meet the needs of an individual learner is a very difficult proposition.

The architecture outlined in this paper attempts to parallel the construction of the user rating metric through electronic means. Using the raw student activity data and the instructor driven benchmark, a user rating score is derived. This score is computed as an affine calculation based on a student's performance on a series of scorecard items. To be direct, these scorecard items are *not* elements from the course gradebook. Rather these items are measurable, binary performance activities that may be observed in the activity logs. These scorecard items should be easily extensible and will vary from environment to environment.

To help clarify this mechanism, we cite an example of such a user rating mechanism that has been implemented by one of the authors into a commercially available business simulation game known as Micromatic (OakTree, 2010). The goal of the user rating with respect to the simulation is to provide some measure of the student's understanding of the simulation and their ability to manage the complex interactions of the various functional areas of the simulated business environment.

The User Rating developed for the simulation contains over 50 scorecard items. One such item included in this User Rating metric is the student's consistency in researching current market conditions within the industry before recording their decisions for their simulated company. If a student frequently makes decisions "blind" to the market, it reflects poorly on their management style and their understanding of marketing. The item is set based on the percentage of times the student "blindly" makes their decision; if this percent is above a threshold level, the scorecard item is set to one.

As with the informal, intuitive metric, this formalized user rating is recalculated repeatedly over time. By retaining these values, a time series tracking of the student progress is possible. Once a reliable, formalized user rating has been developed for the content, a large number of uses become apparent. Since the user rating for the learners may be tracked overtime, at-risk students may be quickly identified if a dramatic negative change in their user rating occurs. These students can then be automatically referred to an advising function within the university or college. Based on the students User Rating score, intelligent agents may be built that will customize on a mass scale the delivery of content and advice based on the current student's needs.

If the scorecard items are categorized into sub-topic areas, a more detailed picture of student's strengths and weaknesses may be derived. This may be used to deliver more focused remediation to the student. At a macro, programmatic level, statistical profiles of all students in a program, department, or college may be derived as evidence of program outcomes and of potential weaknesses in those programs that should be addressed. This provides an automated way of generating program assessment reports and continuous improvement feedback loops that are required by many program or college accrediting organizations.

Business Intelligence (BI) is defined as "a system for analyzing collected data, with the purpose of providing a better view of an organization's operations to ultimately improve and enhance decision-making, agility and performance" (Stiffler, 2010). For faculty who teach and use LMSs, the data generated by the LMS can be extensive. For example, 400 student users of the Micromatic business simulation generate roughly 200,000 transactions in one month. The transaction level data is very detailed, consisting of a variety of information including IP addresses, login time, log out time, decisions made, and so forth. Because the data is transactional, it is associated with a particular student.

Thus, the instructor (or the system) has the ability to associate behaviors with traditional assessments (such as grades) and provide automated prompts to potentially improve student behaviors and hence learning outcomes. For example, if the data from the LMS shows that the average time it has taken students in previous terms to complete a learning activity is 15 hours and that 75% of the students who start the assignment the night before the due date fail to complete the assignment, then the BI we propose to be built into the LMS could automatically warn students who have not started the assignment by a particular time of the problem. The data in the LMS can also provide both the instructor and the students with a global view of the "average student" as well as identify outliers (such as students who have never logged in to the system or students who have already looked at most of the course materials).

## RESULTS

We present early stage results from two partial implementations of the proposed student activity monitoring architecture. With both implementations, all client coding is done with code that is native to most commercially available browsers; no plug-ins or other third party software is needed on the student's computers. As mentioned previously, no modification to any security related browser settings is required. Unless the instructor chooses to inform the students of the presence of the tracking, the students are unaware of its presence.

Both implementations are incomplete in that they only employ portions of the above architecture. Future plans for both systems center around analyzing the performance of the current implementation of the student activity subsystems and then modifying and increasing the robustness of the architecture's implementation.

The learning environment for both implementations is business education. We believe that the technological architecture may be extensible to other disciplines. Producing similar systems for other disciplines is left as an area of future research. The first example implementation of our proposed architecture involves a LMS. In particular, one of the authors has implemented parts of the architecture in a LMS known as Aspen (Kaliski, 2010). For the Aspen example, the results shown in this paper originate from a large (250 student) Introduction to Management Information Systems (MIS) class at a mid-sized public university. The author has taught this course for over 15 years; for the past 4 years the author has taught this course using the large section format. The student activity monitoring has been in place for the most recent 4 semesters. The course is a project-based course only; there are no objective exams in the course. Rather the students work either individually or in teams on a series of large, complex, multi-week MIS-related projects. The vast majority of learning content is delivered through the Aspen LMS.

At the beginning of each semester, the author informs the students that the activity monitoring is in place. In this discussion, the students are told what type of activity is tracked and are shown sample reports from previous semesters. The typical initial student reaction to the monitoring is a feeling of unease; the students express concern that this activity monitoring is an invasion of their privacy. At weekly intervals during the student's work on the various projects, the author will show in class course-level activity reports for the current project. The students are reminded that their individual activity can be charted as well and that the author is willing to do so for the student during office hours.

The second example implementation of our proposed architecture involves a business simulation game. In particular, parts of the student activity monitoring architecture have also been implemented into the latest version release of Micromatic (OakTree, 2010). Micromatic is a commercially available business simulation that is in use at many colleges of business internationally. The typical courses that employ the simulation are Business Policy and Strategy and Principals of Management.

Micromatic offers a wide series of activity monitoring to the instructors. MM0 (2012), MM1 (2012), MM2 (2012) show several examples of screen shots from these reports; the examples are "live" in that they were taken from simulations played by actual students enrolled in actual courses. All identifying markers for the students have been removed for privacy reasons. These reports are intended to provide the instructors with insights of student participation in the simulation. The reports go well beyond monitoring the amount of time or effort the students are spending. The reports help the instructor to understand which parts of the simulation the students focus on, and where their strengths and weaknesses lie. Each report contains a course level section; the reports allow the instructor to drill down to an individual student.

The activity monitoring built into Micromatic also has a direct effect on the student's play of the simulation. The activity monitoring in Micromatic feeds into a business intelligence system called a Business Consultant. In particular, the Business Consultant (BC) is an intelligent agent built into the simulation that watches the student's play and then offers helpful tips or questions based on the student's play. The goal of the BC is to provide the type of guidance to a player that a well-informed instructor would provide, thereby reducing (but not eliminating) the need for human-based experts to run the simulation. At the instructor's discretion, the BC agent is available to the students at all times. Table 1 shows some examples of the kinds of advice that is automatically generated by Micromatic's BC.

Table 1: Examples of “Business Consultant” Advice from Micromatic

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I am your business consultant and I am here to help you make your managerial decisions. As you proceed through the simulation, watch this area for the comments I will leave you. My comments will relate to the quarter just processed and the current quarter.

As the exercise progresses, I will withdraw my advice as the game progresses. After 8 quarters, I will withdraw from the game.

You are stocking out on some of your sales. This upsets both your customers and your salesforce. Should you raise your prices, produce more, or continue to lose your salesforce?

Your stock price is in serious shape. Should you sell off assets to get some cash to get back into the market?  
Your finished goods inventory appears to be unnecessarily building up. Are you overproducing? Are you overestimating your sales?

Your cash forecasting needs improvement. Be careful not to run out of cash! What happens if your sales don't meet forecast sales?

You are experiencing a significant loss from operations for the most recent two quarters. Are there operating expenses you can save to get you in a better financial position?

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*Table 1 shows the text of a conversation with a student playing the Micromatic business simulation game. These sample statements are automatically generated based the student's activity, perceived understanding of business in the simulation, and current performance in the simulation.*

The goal of the BC agent is to assist in the student's learning. The BC's advice must be as relevant and current as possible. With that in mind, the BC heavily references the student's User Rating (described previously) to deliver advice that is accessible to the student at their current level of development. The number, detail, and level of helpfulness of the hints generated by the BC are directly impacted by the student's User Rating. This makes the BC agent adaptive on a mass scale to the status of the participants.

## CONCLUDING COMMENTS

This paper outlines a potential model and use for the transactional data available in learning management systems (LMSs). Effective use of LMS transactional data can potentially increase student retention, especially when the students are bombarded with large classes in their first few years of college level enrollment. Retaining students is concomitant with retaining a loyal customer — that is one less seat that the admissions department does not have to identify a transfer student for replacement, thus saving the college or university significant dollars.

We consider the architecture outlined in this paper as being at an early stage of development and it is only one possible way the activity monitoring could be accomplished. This architecture will likely evolve over time. The implementation of the architecture will also grow as product plans come to fruition. The goal of the architecture is to find and solve problems involving student learning sooner than has been possible before and on a much larger scale. Having access of this information modifies the behavior of both the instructor and the students. Furthermore, for LMS vendors that decide to implement robust activity monitoring subsystems into their products, this subsystem will be a strategic product differentiator.

But there is a potential downside. The use of the transactional data must be carefully examined. Using agents to inform students of certain behaviors may help them do better in the class, but is it appropriate to use the data in this way? Is there an infringement on the individual's personal freedoms? Does it matter if the “system” rather than instructor is monitoring the student at the transactional level?

There are a daunting number of non-technical questions to be explored concerning this research. At this point, the societal and ethical impacts of this technology are unclear. Who should have access to this information? What are the privacy and security concerns? What are the implications to the students? What are the implications to advising? What are the implications to the instructor's evaluation and tenure? What are the implications to a program's or college's accreditation efforts? These are some important questions to be answered by future research.

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## BIOGRAPHY

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