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Editor
Lander University

Charles Emery
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LETTER FROM THE EDITORS

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

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

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AND YOU THOUGHT IT WAS THE APPLE: A STUDY OF JOB SATISFACTION AMONG TEACHERS

Wanda R. Tillman, North Greenville University
C. Justice Tillman, Lander University

ABSTRACT

Teachers are an integral component in providing a strong foundation for enhancement of the United States infrastructure. During the past decade, an enormous amount of time and research have been dedicated to the mission of "No Child Left Behind" initiatives. This paper attempts to explore, are our teachers being left behind?

Using a nonparametric (distribution-free) rank statistic this study sought to examine the relationship length of service, salary, and supervision have on job satisfaction of teachers. The population for this sample was selected through convenience sampling and included 81 certified teachers in Upstate South Carolina. The principal hypothesis provided no significant support for teacher length of service and the six satisfaction scores. Teacher length of service was not positively correlated with job satisfaction. None of the six related correlations provided support for hypothesis two which predicted teacher salary would be negatively correlated with job satisfaction. Hypothesis three was confirmed. Supervision was positively correlated with teacher job satisfaction. Implications of this study for teachers, administrators and human resource professionals in schools are discussed.

INTRODUCTION

Job satisfaction has been defined as "the attitude of an employee toward a job, sometimes expressed as a hedonic response of liking or disliking the work itself, the rewards pay, promotions, recognition), or the context (working conditions, benefits)" (Corsini, 1999, p. 516). Job satisfaction and the variables that impact it have been the focus of researchers and management scholars for more than seven decades. The topic has captured the interdisciplinary attention of people involved in the areas of human resources, organizational behavior, and industrial psychology since the days of Elton Mayo and the Hawthorne studies of the late 1920s. However, researchers are still struggling to make the connection due to the many variables associated with job satisfaction, the individual and their circumstance (Mitchell, Ortiz & Mitchell, 1987). Job satisfaction remains a prominent topic among supervisors of profit, non-profit, and mutual benefit organizations because it has been linked to organizational effectiveness and bottom-line results. It is suggested that

employees who experience greater levels of dissatisfaction at work are more likely to have increased incidents of absences or more likely to leave the organization completely. Greenberg & Baron (1995) states that organizations lose $247 to $537 per employee because of absenteeism. Employee turnover can cost organizations millions of dollars each year due to recruiting, relocation, and training.

The United States is currently being challenged to recruit and retain high-quality teachers (Mobley, 1982; Perie, Baker, & Whitener 1997; Price, 1989; Rosenholtz, 1989). Researchers predict that to keep up with the nations enormous demand for teachers, the profession will need to hire over 2 million teachers within the next two years (Darling-Hammond, Berry, Haselkorn, & Fideler, 1999; Oakes, Franke, Quartz, & Rogers, 2002). The extreme need for teachers is due to an increased student enrollment, retirement, and high levels of attrition (Darling-Hammond, Berry, Haselkorn, & Fideler, 1999; Oakes, Franke, Quartz, & Rogers, 2002). Ingersoll (2001) conducted an analysis of the National Schools and Staffing Survey and Teacher Follow Up Survey and found that during the first 3 years, one third of the new teachers leave the profession and within 5 years at least one half leave.

Teacher retention is an epidemic that researchers and schools are trying to control through understanding the problem of job satisfaction. A teacher's satisfaction may influence whether or not teachers choose to stay or leave the profession (Bacharach & Baumberger, 1990; Bluedorn, 1982; Chapman, 1983; Heyns, 1988; Mueller & Price, 1990). Historically, researchers and practitioners in the field of organizational behavior have attributed an individual's low levels of job satisfaction to be the central cause of turnover. Teachers, like other professionals will become dejected with the psychological contract and began to explore better opportunities. While job satisfaction is a sentiment that tends to be shaped with time, thus leading to turnover, recent arguments suggest there are precipitating events, referred to as "shock events" These events can range from decisions of a supervisor that are perceived as unfair to a major conflict with a co-worker. Wherever these events are positioned on the continuum they elicit emotions causing individuals to consider leaving an employer (Mitchell, Holtom, and Lee, 2001)

STATEMENT OF THE PROBLEM

Studies have concluded that teachers are more motivated by intrinsic rewards than extrinsic, however, teachers with lower salaries, as well as those who have fewer resources and are in more difficult assignments, are more likely to express dissatisfaction or leave the teaching profession (Billingsley, 1993; Boe, Bobbitt, & Cook, 1997; Conley, Bas-Isaac, & Brandon, 1998; Heck & Wolcott, 1997; Heyns, 1988, Murnane, Singer, Willett, Kemple & Olsen, 1991; Perie et al., 1997; Rumberger, 1987; Stinebrickner, 1998; Theobald, 1990) Pastor (1982) conducted a study which determined that teachers perceive their needs and measure their job satisfaction by factors such as participation in decision-making, use of valued skills, freedom and independence, challenge,

expression of creativity, and opportunity for learning. The study further suggest that high internal motivation, work satisfaction, and high quality performance depend on four psychological states which include: experience, meaningfulness, responsibility for outcomes, and knowledge of results.

This study examined the relationship length of service, salary and supervision has on the job satisfaction of teachers in a school in Upstate South Carolina. The retention crisis of teachers' world wide created the investigation of job satisfaction of teachers in Upstate South Carolina. The specific factors of length of service, salary, and supervision appeared repeatedly in the literature as reasons teachers are dissatisfied nationally.

Retention rates are different for teachers in Upstate South Carolina than other groups in different locations. It is important to document and understand the similarities and differences of workplace conditions for different groups of teachers (Singh & Billingsley, 1996).

> *Greenville County Schools are located ...*
> *"in the Piedmont region of South Carolina in the foothills of the Blue Ridge Mountains. The area commonly referred to as the Upstate, includes Greenville, Spartanburg, Anderson, Pickens and Cherokee Counties and the cities of Anderson, Clemson, Greenville, Simpsonville, Greer, and Spartanburg" (Greenville, SC USA).*

The school district made changes to improve job satisfaction for its teachers in the 2005-2006 school year. The Greenville County School Board approved a 2% salary increase for all its employees who qualify. The salary increase became effective August 26, 2005 (Greenville Schools Teacher's Page, 2005). For these reasons, the job satisfaction of teacher's in Greenville County Schools may be effected.

PURPOSE OF THE STUDY

The purpose of the study was to examine the relationship length of service, salary, and supervision has on the job satisfaction of teachers in Upstate South Carolina. The dependent variable, job satisfaction, was generally defined as an individual's perception of whether or not their needs on the job are met (Evans, 1997). The independent variables, length of service, salary, and supervision, are defined as follows: Length of service is the amount of time an individual has worked on the job. An individual's annual income is defined as salary. And supervision is the decisions that are made on behalf of teachers without their input. These decisions can come from the school board or district office. The control and moderating (intervening) variables include gender, educational level, and geographic region were statistically controlled in the study.

The need for attracting and retaining teachers in the 21st century will steadily increase. Studies have shown that teachers within the first few years of teaching will leave the profession

(Darling-Hammond & Sclan, 1996; Heyns, 1988; Murnane, 1987; Murnane, Singer, & Willett, 1988; Schlechty& Vance, 1981; Singer, 1992, 1993).

The high attrition rates have created low morale, high costs, and lower effectiveness among teachers (Mobley, 1982; Perie et al., 1997; Price, 1989; Rosenholtz, 1989). Job satisfaction is particularly important in a teacher's perception of the school's culture and their influence over a school's policy (Ingersoll, 2001). The supervision a teacher receives affects the performance and satisfaction of teachers. Teachers are more committed and work harder when they are supported by the school's administration (Riehl & Sipple, 1996; Singh & Billingsley, 1998).

Another factor that affects a school's culture is the collaboration with peers. The socialization of teachers increases the opportunity to learn from each other, strategize student learning, and offer support (Lortie, 1975). Teachers are more committed when (Riehler & Sipple, 1996; Singh & Billingsley, 1998), they work harder (Firestone & Pennell, 1993; and are more satisfied (Littrell, Billingsley, & Cross, 1994).

The final link between job satisfaction and school's culture is salary. The effect of salary on satisfaction is quite unclear. Research shows that teachers that are committed to their jobs are not necessarily dissatisfied with their salary (Riehl & Sipple, 1996).

RATIONALE

Job satisfaction has been studied in many groups of teachers; however, none of the studies have linked length of service, salary, and supervision to an Upstate school located in South Carolina. Identifying the key factors that create job satisfaction is important to a teacher's retention. The relationship job satisfaction has on length of service, salary, and supervision will help us understand the issues teachers face in the workplace. However, previous research link the variables of teacher satisfaction to gender, culture, perception, length of service, class size, salary, induction and administration policy. However, studies analyzing a teacher's satisfaction with length of service, salary and supervision are deficit.

The purpose of this study was to examine the relationship length of service, salary, and supervision has on the job satisfaction of teachers in a school in Upstate South Carolina.

RESEARCH QUESTIONS

More specially, this research will attempt to answer the following questions:

- What is the relationship between lengths of service on job satisfaction?
- What is the relationship between salary on job satisfaction?
- What is the relationship between supervision on job satisfaction?

- What is the relationship of non-work related variables (e.g. age, ethnicity, and level of education)?

RESEARCH HYPOTHESES

The primary hypotheses of the study are as follows:

Primary Hypothesis 1: *It is hypothesized that teacher length of service will be positively correlated with job satisfaction.*

Primary Hypothesis 2: *It is hypothesize that teacher salary will be positively correlated with job satisfaction.*

Primary Hypothesis 3: *It is hypothesized that supervision will be positively correlated with teacher job satisfaction.*

REVIEW OF RELATED LITERATURE

Recruiting New Teachers, Inc. (cited by the Urban Teacher Collaborative, 2000), "captured public belief that improving the quality of teachers was the most important issue facing public schools, next to school safety" (p.7). Research findings also substantiate the belief that quality teachers have an impact on improving student performance (Darling-Hammond, 1999; Haberman & Post, 1998). Federal legislation is forcing schools to improve the performance of students through the No Child Left Behind Act. The job satisfaction of teachers can have a significant impact on the preparedness of the students and the overall career of the teachers.

Salary

Concerns with teacher compensation and pay may be primary. Poor salaries are one of the principal reasons for withdrawal from the profession due to dissatisfaction in urban, high-poverty schools and attrition due to dissatisfaction for teachers in small private schools (Ingersoll, 2001; Perie et al., 1997). Schlechty and Vance (1983) also assert that below average salaries and scanty salary scales are also among the main elements that account for the most academically able – those with the most alternative career options – leaving the profession.

A teacher's salary is a concern not only for teachers, but to the school board, school district, and the public. Teacher salaries are a concern because teachers consist of the largest employee group and comprise the largest part of the districts operating budget (Young, Delli, Miller-Smith,

& Buster, 2004). Annual increases or contract renewals affect a teacher's salary which in turn increases the public's taxes (Young, et al., 2004).

Teachers are affected by the school board decisions regarding salary. Salary dictates a quality of life and to most teachers fulfills a perception of self-worth (Gerhart & Milkovich, 1992. The school board's stake in a teacher's salary happens to be two-fold due to their duty as an officer. School board members, by law, are responsible for the expenditure of funds on behalf of the public. In addition to being fiscally responsible for public funds they are challenged with maintaining quality teachers within the district (Young, et al., 2004).

Researchers have suggested that through job enhancement studies a teacher's duties could increase horizontal and vertical to increase a teacher's salary (Young, et al., 2004). Horizontal expansion would expand a teacher's skills as they relate to a normal work load. A vertical expansion will expand current duties (Firestone, 1995).

Supervision

The school's administrative policy or teacher supervision is a major part of the culture of a school. A school's management policy has shown to influence a teacher's satisfaction and retention. Teachers are more satisfied when they are a part of the school decision-making, control over their classroom, more effective administrators, and a mentoring system that provides support for teachers entering into the profession (Billingsley, 1993; Bryk et al., 1990; Colbert & Wolff, 1992; Darling-Hammond & Sclan, 1996; Ingersoll, 2001; Ma & Macmillan, 1999; Newmann et al., 1989; Perie et al., 1997; Rosenholtz, 1989; Whitener, Gruber, Lynch, Tingos, Perona, & Fondelier, 1997).

The importance of administrative policy on the competency of teachers is imperative. Joki (1982) suggest that school boards should be the foundation for improving the quality of teachers by writing strong policies on administrative accountability; on teacher recruitment, supervision, and evaluation, and on in-service training for administrators and teachers. In order for principals to comply with the increase work responsibility, principals should be given assistance with their clerical duties to free their time for classroom observation, clinical supervision, demonstration teaching, and staff development (Joki, 1982).

Job Satisfaction

Job satisfaction is another variable that can determine a teacher's commitment to their jobs. There has been a considerable amount of research on various groups that has reported the relationship between job satisfaction and an individual's propensity to remain with the organization (Porter, Steers, Mowday, & Boulian, 1974).

Studies have revealed that a teacher's job satisfaction increases with their age and tenure (Dewar & Werbel, 1979; Parasuraman, 1982). Younger teachers have been shown to be more likely

to leave than older teachers (Ingersoll, 2001; Murnane, 1987; Perie et al., 1997) Another alarming concern is the support for findings that suggest that better qualified teachers tend to be more dissatisfied than less qualified teachers, and thus are likely to leave the profession (Darling-Hammond, 1984; Schlechty & Vance, 1983). The leadership behavior of the principal also influences the job satisfaction of teacher's (Chapman & Hutcheson, 1982; Knoop, 1981).

A small portion of the research linked the geographic region of the teacher's assignment to their satisfaction. Some studies have found that a higher rate of attrition has been linked to urban areas (Billingsley, 1993), some authors conclude that the problem is more acute in suburban areas (Heyns, 1988), and others have suggested that the problem is in rural areas (Bull & Hyle, 1989).

The literature surrounding gender and job satisfaction was conflicting. Some reports find that women have a higher job satisfaction. Some studies find that men are more satisfied and other studies find that there's no significant difference (Quinn, Staines and McCullough, 1974). However, in the more recent research we have tended to find that women are more satisfied than men (Chapman & Lowther, 1982; Ma & MacMillian, 1999).

Quinn, Staines, and McCullough (1974) produced one of the most often-cited studies of gender differences in job satisfaction. The researchers conducted five national studies that concluded in three of the surveys that men were more satisfied, and in the remaining two surveys women were more satisfied. The results of the survey concluded that there is no overall difference in job satisfaction by gender (Quinn, Staines, and McCullough, 1974.

Other studies showed that white middle-class females often find themselves outside their element when given a teaching assignment. These individuals grow up in small towns and attend college within 100 miles of where they live and end up teaching in a small town or suburban school (American Association of Colleges for Teacher Education, 1987) These students typically do not interact with individuals differently than themselves until after college. In a study of rural pre-service teachers 40% had a slight personal or social interaction with someone from another race or culture. The study further indicated that 25% of the teachers had the opportunity to interact with the diverse population on campus chose not to do so. Of the group surveyed 70% did not think it was necessary to interact with other minority groups (Gilbert, 1995).

METHODOLOGY

The methodology and research design of the study utilized quantitative statistical analysis of the primary hypotheses and subsidiary questions. The study is structured to provide a correlational research design, in which a statistical relationship among the variables was investigated. Correlational studies only suggest relationships between the variables.

Independent Variables

Length of service, salary, and supervision served as independent variables in the study.

Dependent Variable

Job satisfaction (Job in General: JIG) is the dependent variable in the study and was explored along with the relationship to the independent variables.

Characteristics and Size of Sample

A survey was used to generalize the population of teachers to make inferences about characteristics, attitudes, and/or behavior (Babbie, 1990). In this study, a survey was the preferred method of collecting the data. Survey designs make it easier to collect and analyze the data. A survey has been created on SurveyMonkey.com to collect the data at one time.

The sample will be taken from one of the largest school districts in South Carolina with in excess of 57,000 students (Greenville, SC USA). Greenville is the most urban city in the Upstate with more than 350,000 residents (Greenville, SC USA). The population of the study included eighty-one certified teachers in Upstate South Carolina. The stratification of the study represented everyone in the population (both males and females) in order to produce a true picture of the population (Fowler, 1988). The teachers were contacted by e-mail and asked to participate in the study. However, the population is a convenient sample. They were chosen based on their availability.

Instrumentation

The Job in General (JIG) survey is an 18-item global measure of the overall job satisfaction. A unitary concept of measuring job satisfaction is not ideal because a job is interrelated with tasks, relationships, and roles that an employee will perform within the job (Locke, 1976). The JDI was chosen because of its' 40 years of research application in measuring job satisfaction (DeMeuse, 1985; Zedeck, 1987). The Job In General (JIG) scale of the Job Descriptive Index (JDI) (1997) have been previously tested and evaluated in collecting data relevant to job satisfaction. The Job Descriptive Index (JDI) will be used to measure teacher's satisfaction with their jobs. The Job Descriptive Index measures five variables related to job satisfaction: work on present job, present pay, and opportunities for promotion, supervision, and coworkers.

The objective of the JIG (The Job in General) is to evaluate the overall job satisfaction with their job (Ironson, Smith, Brannick, Gibson, & Paul, 1989). The JDI measures the overall job satisfaction, both surveys are used together.

DATA ANALYSIS

Table 1 displays the demographics of the sample. Most teachers (82.8%) were Caucasian with the median age in the sample being 44.5 years. Teacher tenure ranged from 1 to 28 years (M = 12.45, SD = 8.24). Thirty-one percent of the respondents had no children (M = 1.48, SD = 1.27). Over half (62.1%) were married. Median salary was $42,500/year with all but one teacher (3.4%) earning less than $55,000/year. Sixty-two percent had at least a Master's degree (Table 1).

Table 2 displays the psychometric characteristics for the six satisfaction scores. All scales had Cronbach reliability coefficients of at least r = .70 suggesting adequate internal reliability (Table 2). Specific reliability coefficients ranged from r = .76 to r = .92 with a median coefficient of r = .83. The six satisfaction scores were sorted from highest to lowest in Table 2. Using Wilcoxon Matched Pairs tests, that the mean Satisfaction with Supervisor score was significantly higher (p = .05) than for any of the other five scale scores. The two lowest scores, Satisfaction with Pay (M = 1.52) and Satisfaction with Promotion Opportunities (M = 1.65) were both significantly lower than the other four scales (Table 3).

Hypothesis One

Hypothesis One stated that, "teacher length of service will be positively correlated with job satisfaction." Table 3 displays the Spearman Rank-Order correlations between teacher tenure and the six satisfaction scores. None of the six correlations were significant at the p = .15 level which provided no support for Hypothesis One.

Hypothesis Two

Hypothesis Two stated that, "teacher salary will be negatively correlated with job satisfaction." None of the six related correlations were significant at the p = .15 level which provided no support for Hypothesis Two.

Hypothesis Three

Hypothesis Three stated that, "supervision will be positively correlated with teacher job satisfaction." Satisfaction with Supervisor was positively correlated with Work Satisfaction (r = .41, p = .03), Satisfaction with Staff (r = .28, p = .15) and Job in General Satisfaction (r = .28, p = .15). These findings provided some support for Hypothesis Three.

Other Findings

Also in Table 3, four other Spearman Rank-Ordered correlations were significant at the $p = .15$ level. Married teachers had significantly higher Work Satisfaction ($r = .29$, $p = .13$) and higher Job in General Satisfaction ($r = .30$, $p = .11$). Teachers with more children were less satisfied with their supervisor ($r = -.35$, $p = .06$). Teachers with more education had less Staff Satisfaction ($r = -.39$, $p = .04$) (Table 3).

Table 1: Demographics of the Sample (N = 29)

		n	%
Gender			
	Female	29	100.0
Race/Ethnicity			
	Caucasian	24	82.8
	Black or African-American	4	13.8
	Hispanic or Latino	1	3.4
Age			
	21-29 years	6	20.7
	30-39 years	7	24.1
	40-49 years	10	34.5
	50-59 years	5	17.2
	60-69 years	1	3.4
Years as Teacher [a]			
	1-4 years	8	27.6
	5-9 years	3	10.3
	10-19 years	12	41.4
	20-28 years	6	20.7
Number of Children [b]			
	None	9	31.0
	1 - 2 children	15	51.7
	3 - 5 children	5	17.3
Marital Status			
	Single	5	17.2
	Married	18	62.1
	Divorced	3	10.3

Table 1: Demographics of the Sample (N = 29)			
		n	%
	Widowed	3	10.3
Current Salary Range			
	$25-29,000	1	3.4
	$30-34,999	6	20.7
	$35-39,999	7	24.1
	$40-49,999	4	13.8
	$45-49,999	7	24.1
	$50-54,999	3	10.3
	$55,000 and over	1	3.4
Current educational level			
	Bachelor's degree	9	31.0
	Bachelors + 30 units	2	6.9
	Masters Degree	11	37.9
	Masters + 30 units	6	20.7
	Educational Specialist	1	3.4

[a] Years: $M = 12.45$, $SD = 8.24$
[b] Children: $M = 1.48$, $SD = 1.27$

Table 2: Psychometric Characteristics for the Satisfaction Scale Scores. Wilcoxon Matched Pairs Tests (N = 29)

Satisfaction Scale	Items	*M* [a]	*SD*	Low	High	Alpha
1. Satisfaction with Supervisor	18	2.84	0.25	1.89	3.00	.85
2. Satisfaction with Work	18	2.70	0.26	1.89	3.00	.76
3. Job in General Satisfaction	18	2.62	0.41	1.44	3.00	.91
4. Satisfaction with Co-Workers	18	2.43	0.51	1.00	3.00	.92
5. Satisfaction with PromotionOpportunities	9	1.65	0.43	1.00	2.78	.77
6. Satisfaction with Pay	9	1.52	0.47	1.00	2.78	.81

[a] Rating: 1 = *Unfavorable* to 3 = *Favorable*
[b] Wilcoxon Tests (different at $p = .05$): 1 > 2, 3, 4, 5 and 6
[c] Wilcoxon Tests (different at $p = .05$): 2 > 4, 5 and 6
[d] Wilcoxon Tests (different at $p = .05$): 3 > 5 and 6
[e] Wilcoxon Tests (different at $p = .05$): 4 > 5 and 6

Table 3: Spearman Rank-Ordered Correlations Between Satisfaction Scores and Selected Demographic Variables (N = 29)

	Work	Pay	Opportunity	Supervisor	Staff	Job in General
Caucasian [a]	.04	.14	-.06	-.26	-.04	.06
Married [a]	.29*	.14	.25	.08	.14	.30*
Age	.06	-.12	.01	.05	.06	.07
Number of children	.05	.08	.23	-.35**	-.04	.08
Teacher tenure	.00	-.02	-.03	.04	.03	.14
Current Salary Range	-.07	.13	-.12	.06	-.15	.16
Current educational level	-.19	.09	-.19	-.19	-.39***	.11
Satisfaction with Supervisor	.41***	.06	.18	1.00	.28*	.28*

[a] Point Biserial Correlations: 0 = *No* 1 = *Yes*
* p = .15. ** p = .10. *** p = .05.

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Discussion and Conclusions

Researchers and practitioners are continually funneling energy into studies that provides information about the ability to retain quality teachers. Teachers are an essential part of the educational mix to insure that federal mandates of "No Child Left Behind" are successful. The purpose of this study was to examine the relationship length of service, salary, and supervision has on the job satisfaction of teachers. Identifying the key factors that create job satisfaction is important to teacher retention in order to understand the reasons teachers are leaving the profession. Job satisfaction has been studied in many groups of teachers; however, none of the studies have linked length of service, salary and supervision to an Upstate school located in South Carolina.

We provided the working hypotheses about the factors that influence teacher satisfaction. Statistical analysis of the data collected in relation to the research questions lends support to the impact of supervision and job satisfaction. There was however no support for the relationships between length of service and job satisfaction.

The first hypothesis addressed in this study was whether or not teacher length of service will be positively correlated with job satisfaction. In other words, as teachers continue in the profession, do they tend to become more satisfied? Based on the analysis of data for this research, the conclusions are that none of the six correlations were significant at the p = .15 level which provided

no support for Hypothesis One. Further research is needed in the area of psychological contracts as it relates to job satisfaction.

The second hypothesis addressed in the study stated that, "teacher salary will be negatively correlated with job satisfaction." None of the six related correlations were significant at the p = .15 level which provided no support for Hypothesis Two.

The third hypothesis addressed in the study stated that "supervision will be positively correlated with teacher job satisfaction." Satisfaction with Supervisor was positively correlated with Work Satisfaction (r = .41, p = .03), Satisfaction with Staff (r = .28, p = .15) and Job in General Satisfaction (r = .28, p = .15). These findings provided some support for Hypothesis Three. The literature suggests that the two groups of people in an organization who affect job satisfaction are coworkers and supervisors. A person can be satisfied with these people for a number of reasons.

We believe that these results carry some significant implications. Although certain variables, such as teacher's age and years of experience are related to job satisfaction, they are not nearly as significant in explaining the different levels of satisfaction as are the workplace conditions factors, such as supervision and co-workers. Results highlight the need for further attention to importance of the selection process for supervisors. The results presented here suggest the potential value of further work and the need for additional research on the effects length of service, salary, and supervision has on job satisfaction. Employers want to improve performance through employee retention. The research did not find any conclusive theoretical and empirical evidence that explains each of the variables.

The results of this study add to the body of knowledge on job satisfaction, with a focus on length of service, salary and supervision. The preceding summary and conclusions and subsequent recommendations are derived from the results of a quantitative statistical analysis and are presented in relationship to the primary hypotheses of the study.

Recommendations for Future Research

1. Analyze additional variables which serve to confound the relationship between length of service, salary and supervision.

2. Collect and analyze quantitative and qualitative data in the study of the psychological constructs of length service, salary, and supervision.

3. Examine if the job satisfaction of teachers differ in a traditional school or year-round school. The variables can be extrapolated from the results of the survey.

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COURSE EMBEDDED ASSESSMENT AND ASSURANCE OF LEARNING: EXAMPLES IN BUSINESS DISCIPLINES

Cheryl McConnell, Rockhurst University
Gail Hoover, Rockhurst University
Gerald Miller, Rockhurst University

ABSTRACT

Accrediting bodies, including AACSB, have aggressive standards that require universities to assess student learning. Many institutions initially responded by developing multiple measure plans that assess general satisfaction of instruction within a major, student performance on a nationally normed business knowledge exams, and curriculum content and coverage through the use of focus or stakeholder groups. Unfortunately, these multiple measure plans do not adequately assess student learning goals specific to the university's program, nor do they provide direct information that would help a faculty member improve student learning in his or her course. Because of these drawbacks, many universities are now turning to Course Embedded Assessment (CEA) as their primary method to assess student learning. AACSB standards specifically identify course-embedded measurement of student learning as one of three approaches that can be used to achieve their Assurance of Learning Standards. This paper describes the Course-Embedded Assessment process and provides examples of how it can be used to assess student learning in business disciplines.

INTRODUCTION

> *"Most people think of assessment as a large-scale testing program conducted at institutional or state levels to determine what students have learned in college … I believe that we should be giving more attention to small-scale assessments conducted continuously in college classrooms by discipline-based teachers to determine what students are learning in that class." (Cross, 1998)*

Because of accrediting agency requirements for assessment plans, most schools have responded by developing plans that assess student achievement and satisfaction on a macro level.

These are generally referred to as outcomes assessment measures (Herring and Izard, 1992) and involve using standardized tests and focus groups. However, these plans do not adequately assess student learning goals specific to the university's program, nor do they provide information that would help a faculty member improve student learning in his or her course. "Course-embedded assessment may have strong appeal to faculty who want to engage in a systematic way of reflecting on the relationship between teaching and learning." (Ammons and Mills, 2005)

The AASCB accreditation standards propose using CEA assessment as a means of directly measuring learning goals. In the *AACSB Eligibility Procedures and Accreditation Standards for Business Accreditation*, the Approaches to Assurance of Learning section explains the use of CEA in assessment. "Required courses may expose students to systematic learning experiences designed to produce graduates with the particular knowledge or abilities specified in the school's learning goals. In such cases, the school can establish assessments within the required courses for those learning goals. …The course-embedded measurements must be constructed to demonstrate whether students achieve the school's learning goals." Furthermore, the review process itself will involve examining the school's processes "to see that the information from the course-embedded measurements inform the school's management processes and lead to improvement efforts." (AACSB, 2006)

This paper defines CEA, describes and provides examples of its implementation at both course and program levels, and discusses how a comprehensive implementation at the course and program levels can provide significant assessment information about student learning for both continuous improvement and accreditation purposes.

WHAT IS CEA?

CEA is the process of using artifacts generated through classroom activities to assess achievement of student learning objectives. It builds on the daily work (assignments, tests, projects, etc.) of students and faculty members. Gerretson and Golson point out that the advantage of assessment at the classroom level is that it "uses instructor grading to answer questions about students learning outcomes in a nonintrusive, systematic manner." (2004) According to Ammons and Mills, one of the benefits of CEA offers is that "the instruments can be derived from assignments already planned as part of the course, data collection time can be reduced" (2005). CEA can be used at the course level to help individual faculty members determine to what extent their course learning objectives are being met, and it can be used at the program level to assist in measuring to what degree program level learning goals are being met. As previous articles have indicated, CEA is not just of interest to the faculty member teaching the course, but also to other faculty in the program whose courses use the competencies learned in the course. (Baker, 1994; Ammons and Mills, 2005) When comprehensively implemented, a combination of course-level and

program-level CEA can be used as the primary assessment measure of student learning for business programs.

Although CEA may use some of the same student-work artifacts that faculty members use to assign student grades, the grades that students achieve in the course are not valid assessment measures of whether students are achieving specific learning objectives. Student grades are a holistic measure of how students performed on all exams, papers, presentations, or other graded work. Without significant examination and deconstruction, they do not provide meaningful or specific information about how to improve teaching and learning.

USING CEA AT THE COURSE LEVEL

> *"The advantage of thinking small in assessment is that the classroom is the scene of the action in education. If the ultimate purpose of assessment is to improve teaching and learning, then the results of a successful assessment must eventually bear directly on the actions of teachers in their classrooms. This means that the feedback from any assessment must reach classroom teachers and be perceived by them as relevant to the way they do their jobs. One way to do that, albeit not the only way, is to start in the classroom collecting assessment data that teachers consider relevant." (Cross, 1998)*

Student learning primarily takes place at the course level, and as Cross and Angelo stated in their assumptions for classroom research models "the quality of students learning is directly … related to the quality of the classroom teaching… The research most likely to improve teaching and learning is that conducted by teachers on questions they themselves have formulated in response to problems or issues in their own teaching." (1993) Yet, many university assessment plans focus on assessing student learning at the end of a program using such methods as standardized tests and focus groups. While the results often provide broad information about student learning, it is not timely information for continuous improvement purposes. "The beauty of course-embedded assessment is … assessment and the consequent improvement of teachings and learning is in the hands of the instructor rather than an … outside testing agency… It yields data on students' achievement that can be used to improve instruction. Moreover it replaces standardized testing." (Gerrtson and Golson, 2005) For example, if an end-of-program assessment instrument shows that students are not as successful as desired on basic accounting skills or economic analysis, graduating students took those courses two to three years ago. A discipline will discuss the assessment results, and any changes proposed to improve assessment outcomes will be implemented in those introductory courses. Therefore, the comparison assessment results on the same end-of-program measures will not be available for two to three years when the introductory students take the instruments upon graduation. With course embedded assessment, the faculty member is able to

assess essential learning objectives of his or her course, use the information to measure student learning, and make timely modifications for continuous improvement.

The process of measuring student learning at the course level can be basically be broken down into four steps. (Walvoord and Anderson, 1995; Gerretson and Golson, 2005; Ammons and Mills, 2005) The first step requires the instructor to clearly define the learning objectives that he or she wants to measure. Once the learning objective has been defined, the second step is to identify the course learning activities and artifacts that will best provide evidence that the student has achieved the learning objective. The third step is to develop a measurement plan that appropriately captures, measures, and summarizes student performance on the chosen learning objective. The final step is to use the results for improvement.

CLEARLY DEFINE LEARNING OBJECTIVES

According to Bass and Geary, "Student assessments should be a central experience in the learning process. A teacher should first identify what actual performances a students should master and then design "tests" of those performances." (1997) Drafting clear, measurable learning objectives is one of the most difficult tasks for many faculty members. Often, faculty members speak broadly about what they want students to achieve – critical thinking and decision-making skills, or that they want students to "understand" a particular topic or concept. These are good, worthy goals, but they must be made much more specific if they are to be used to measure whether student learning has occurred. Common errors faculty members make include writing unfocused learning objectives, or writing learning objectives focused on what they will do in class rather than what students will achieve. These errors are shown when a faculty member uses words such as 'understand', 'appreciate', 'study', 'examine', or 'cover' in their learning objectives. As an instructor clarifies the learning objectives, he or she will need to take these unfocused verbs and change them to the specific outcomes the students are to be able to achieve by the end of the course.

Clear, effective learning objectives have the following characteristics:

1. They are focused on what the students should be able to achieve, not what the faculty will do or what content will be covered.
2. They are stated in clear terms, using action verbs that describe the specific abilities or knowledge wanted from students. Bloom's Taxonomy is a good source that offers appropriate verb choices for different levels of learning objectives. (Bloom, 1956) Appendix A provides a useful table to assist in matching action verbs with Bloom's learning levels, and it is a valuable resource when attempting to make learning objectives as clear as possible.
3. They state any relevant conditions under which the student will be performing the work, such as case-based, original research, etc.

Table 1 provides examples of how faculty members can improve unclear course learning objectives and revise them so they can be appropriately measured.

Table 1: Clarifying Learning Objectives

Unclear Learning Objectives By the end of the course, students should be able to …	Improved Learning Objectives By the end of the course, students should be able to …
Demonstrate an understanding of the budgeting process.	Describe common budgeting processes in an organization (Bloom's knowledge level). *Or* Prepare a cash budget (Bloom's application level).
Appreciate the complexity of setting international accounting standards.	Describe how political, cultural, social, and legal issues impact the development of international accounting standards.
Understand the nature of attestation services.	Distinguish between attest and non-attest services (Bloom's comprehension level). *Or* Prepare a flowchart of activities undertaken in a typical audit service (Bloom's application level). *Or* Given a case-based example, determine whether an audit was designed and performed with due professional care (Bloom's evaluation level).
Develop an understanding of the cost of capital, dividend policy and capital structure of an organization.	Calculate the cost of capital, NPV, IRR and payback and use results to identify and make appropriate capital budgeting decisions. Identify and explain the capital structure and dividend policy of a company.
Understand how economic policies impact growth, efficiency, and equity.	Identify economic policy options and assess their impact on economic growth, efficiency and equity.
Appreciate the nature and functioning of the market system.	Identify the role of supply and demand in a market economy, and describe the necessary conditions for market economies to function efficiently.

IDENTIFY THE COURSE ACTIVITIES, EXAMS, OR PROJECTS THAT PROVIDE EVIDENCE OF ACHIEVING THE LEARNING OBJECTIVE

Course level CEA inquiries usually center on investigating how students performed on a specific learning objective, a selected topic, or a broader goal that may cross over several learning objectives. Step 2 requires that faculty members determine what they want to investigate, and then identify the course activities, exams, or projects that might provide appropriate evidence.

For example, if a faculty member wants to investigate how well students are learning one of the major content areas of the course, he or she might determine that there are multiple choice, short-answer and essay questions on the second exam, a component of a course project, and several questions on the comprehensive final exam that relate to the topic. Taken together, these artifacts would be the assessment evidence used to determine the level to which students are achieving the related learning objectives.

For a more focused objective, there may only be one artifact used for evaluation purposes. For example, if a faculty member wanted to assess one of the specific learning objectives in Table 1 above, he or she might have a paper assignment, exam essay question, or oral presentation to analyze. In a well-designed course, all learning objectives should have at least one form of evidence that can be analyzed. Wiggins described eight basic design criteria for assessment developers, including the need to "provide authentic and meaningful tasks;…use genuine, not arbitrary, scoring benchmarks for performance standards; develop feasible and reliable scoring; and report and use all assessment results." (1992)

DEVELOP A MEASUREMENT PLAN

A well-designed measurement plan identifies measurement techniques that match the type of student artifact that has been collected, and describes how the information will be captured, summarized, and analyzed. Table 2 below describes common course-embedded artifacts and the related measurement techniques that an instructor might use.

Table 2

Course-Embedded Artifacts	Measurement Techniques
Multiple choice exam questions	Percent correct, analysis of incorrect responses
Short-answer exam questions Essays Research papers	Level of achievement rubrics
Oral presentations	Oral presentation rubric
Case study reports	Case study rubric
Lab performance	Skills checklist

As noted, rubrics are useful any time students are making a non-objective response. Rubrics are scoring tools that clarify the dimensions to be graded and provide scales or descriptors of student performance. They are used to set standards for grading and to clarify expectations for students. As Ammons and Mills concluded, "a carefully designed rubric is a valuable tool in the assessment process. The steps taken in developing the rubric provide a linkage between learning outcomes an

assessment results." (2005) A CEA investigation described later in this paper provides an example of how a rubric was developed and provides information about its use.

The measurement plan and techniques applied will vary significantly based on what a faculty member wants to investigate and what course-embedded artifacts are available. Some faculty members choose to use the CEA information gathered simply to explore levels of student learning. Others set predetermined targets and compare the achieved results to targeted results. The measurement plan should reflect how the faculty member intends to use the information.

For example, the measurement plan for one of the specific objectives in Table 1 would be as follows:

Learning Objective:	Describe how political, cultural, social, and legal issues impact the development of international accounting standards
Course-Embedded Artifacts:	Essay question on an exam, case study question
Measurement Technique:	Exam question rubric, portion of a case study rubric
Analysis:	Determine whether students achieve an average score of 75% or above on both the exam question and case study question. Review results carefully to detect common error or omission patterns.

USE THE RESULTS FOR CONTINUOUS IMPROVEMENT

CEA results can provide rich information that either validate the faculty member's instructional strategies and assignments, or suggest areas that need attention. Any assessment information should be viewed and examined as one part of a complex learning environment. CEA investigations provide one of the most specific, targeted methods of assessing student learning, and the results can lead to changes in course material, presentations given, assignments made, pedagogies utilized, examination questions chosen, course prerequisites required, reading materials required, or course structure.

One of the most productive uses of CEA results occurs when the CEA investigation is discussed and shared in a department meeting. At the authors' university, these meetings are required, and the discussions about student learning are productive, informative, and collegial. Often, colleagues discover that other faculty members are struggling with similar teaching and learning challenges, and the discussion focuses on finding strategies and solutions for difficult issues.

COMPREHENSIVE COURSE-LEVEL CEA EXAMPLES

Managerial Accounting Course

Description of CEA Investigation

A faculty member was interested in investigating how students were performing on course topics and cognitive levels. This CEA investigation measured performance across several learning objectives, primarily focused on core course content. She began her investigation by reviewing all of her exams, classifying each question as to one of the 13 broad topic areas covered in the course, and as to one of the five cognitive levels described in Bloom's Taxonomy. Student performance was then entered into a spreadsheet that was designed to provide information about achievement levels by topic, cognitive level, and combined topic and cognitive level.

Analysis and Results

Results provided meaningful information about student performance, showing strengths and weaknesses. As expected, students generally performed better on the lower cognitive levels (knowledge and comprehension) than on the higher cognitive levels (application and analysis). However, student performance on the higher levels was within the faculty member's target range. The analysis by topic area showed that student performance on several specific topic areas was lower than desired. During her discussion of the results in the departmental faculty meeting, she noted that this surprised her because she didn't clearly see this element during the semester because several topic areas were combined in a typical exam. The combined topic and cognitive level analyses provided the most useful information. The results showed two areas where students performed well on the knowledge and comprehension level, but were significantly weaker on the application and analysis questions. The faculty member indicated that this is an area that she will target for course modifications – changing teaching methods and assignments to focus on improving student performance at the application and analysis levels for those topics.

Additionally, the faculty member discovered interesting information on her exam coverage. As she expected, she tested more application and analysis questions and relatively fewer knowledge and comprehension level questions. Surprisingly, she also found some combined topic and cognitive areas where she was not testing to her satisfaction. Therefore, the CEA investigation also provided useful, specific information to improve her test coverage and construction.

Statistics Course

Description of CEA Investigation

A business and economics faculty member developed his undergraduate statistics course to prepare students as completely as possible for the successful completion of upper division coursework, in addition to eventual graduate school admission and a business career. The primary vehicle for supplying the necessary statistical and software skills development was a semester-long statistics project done in Microsoft Excel.

The professor, having taught for years in an executive MBA program, was well-aware of the important statistical and spreadsheet skills needed for solid accomplishment in both graduate school and the corporate environment. Statistics students should achieve a college-level understanding of statistical theory, in addition to proper interpretation and application of statistical measures, and be able to calculate such measures and present them in a professional manner according to a set timetable. This faculty member, considering examination results, statistical projects from previous courses and on-going discussions with students, especially regarding their spreadsheet skills, concluded such student results were not being consistently achieved in a uniform fashion at satisfactory levels. He knew what he was desirous of the students accomplishing in the course, but student-demonstrated results were uneven and often failed to meet course expectations. A fellow faculty member suggested that he develop a rubric to help him focus upon and crystallize his course-embedded student learning goals and then identify ways of measuring various levels of student accomplishment of such goals.

Analysis and Results

The statistics professor developed a rubric [see Table 3] for the statistical project. The rubric dealt with identification of the course-embedded student achievement goals, the measurement of the level of achievement, and the recognition that course goals had differing degrees of foundational importance to the overall success of the students.

The faculty member first identified student achievement goals in three areas: statistical analysis, presentation and timetable. Content [development, interpretation, application and appropriate commentary upon statistical measures] was defined as a Level 3 [most important] goal; as such, statistical analysis is the very knowledge foundation of the statistical project. Presentation [formatting and displaying statistical results in a spreadsheet format] was defined as a Level 2 goal; that is, it is important to the project that the student can design professional-looking worksheets to inform others of the results of the statistical analysis. Timetable [meeting project milestones] was defined as a Level 1 [least important] goal. The ability of the student to meet project milestones consistently is an ability valued in both the academic and corporate environments.

Table 3: Statistics Project Evaluation Rubric			
Content Criteria [Level 3]			
COVERAGE	Fails to meet minimum requirements for production and order of worksheets [0] or produces substandard worksheets in incorrect order [1]	All worksheets created in proper order/meets average standards by repetition of classroom direction only	Beyond assignment with additional enhancing worksheets demonstrating fuller Excel functionality [3] to a true level of excellence/professionalism [4]
	0 | 1	**2**	**3 | 4**
CONTENT ANALYSIS/DEPTH	No analysis/commentary [0] or incorrect statistics referenced with substandard and faulty analysis [1]	Average level of statistical analysis/meets average standards by repetition of classroom direction only	Deeper commentary reflecting considered analysis [3] to true level of excellence/professionalism [4]
	0 | 1	**2**	**3 | 4**
Presentation Criteria [Level 2]			
FORMATTING	All worksheets are Excel defaults [0] or substandard/unprofessional formatting [1]	Average level of formatting of worksheets—functional but uninspired/meets average standards by repetition of classroom direction only	Creativity exhibited in formatting reflecting worksheet thematic and unity with colors, fonts and styles [3] to true level of excellence/professionalism [4]
	0 | 1	**2**	**3 | 4**
PRESENTATION ANALYSIS/DEPTH	All worksheets are Excel defaults [0] or substandard use of presentation for purposes of analysis [1]	All worksheets integrate basic attention-directing features [arrows, text boxes, highlighting]/meets average standards by repetition of classroom direction only	Thoughtful/original presentation techniques [full use of drawing and forms toolbars, digital photography] that enhance analysis [3] to true level of excellence/professionalism [4]
	0 | 1	**2**	**3 | 4**
Timetable Criteria [Level 1]			
PROJECT INVOLVEMENT	Misses all due dates and project classes [0] or misses due dates/project classes often [1]	Attends most project classes and completes most assignments by due dates only	Attends all project classes and completes all assignments on/before due dates [3] or in time to allow comment/correction before due dates [4]
	0 | 1	**2**	**3 | 4**
SUMMARY SCORE & COMMENTS	Comments		

Next, achievement rankings were defined through measurement along a continuum [see Table 3] ranging from substandard [0-1], to average level accomplishment [2], to more professional [academic and corporate] levels of accomplishment [3-4]. True levels of excellence and professionalism were used to describe results beyond meeting the minimal standards to pass the course; namely, results that demonstrate the level of understanding and presentation used by actual professionals in the fields of business and economics.

The development of the rubric for the semester-long statistical project helped the professor more clearly identify various aspects of his CEA, including: giving specificity to what he was hoping to accomplish in terms of analysis and depth in the areas of statistics, spreadsheets and timeliness; providing him the tools to rank levels of student achievement in a more objective and understandable manner; and supplying him an instrument with which to more closely orient the students' understanding of his goals for the statistical project. After using the rubric in his next statistics course, he will use the results for continuous improvement discussions with his colleagues.

Management Course

Description of CEA Investigation

A faculty member investigated student performance on a decision-making and analysis learning objective. In the related project, students were required to investigate a company and its industry, identify internal strengths and weaknesses, identify external threats and opportunities, and prepare a strategic recommendation for the organization. The faculty member developed a rubric for the assignment, and he shared the rubric with the students to assist in developing clear expectations for the project. The project reports served as the assessment artifact, and the faculty member analyzed the rubric results to determine how well the learning objectives were achieved.

Analysis and Results

By analyzing the frequency and levels of errors shown in the rubric scores, the faculty member determined that students were strong in identifying internal strengths and external opportunities. However, student performance indicated that they performed below expectations in identifying external threats, and that their strategic recommendations were not strongly connected to the data and evidence that was gathered. Additionally, the faculty member found that the students needed further assistance in identifying sources to determine internal weaknesses – they tended not to search beyond internal company information sources which can be biased and overly favorable to the company. Based on the information from the CEA investigation, the faculty member prepared several classroom exercises to help students in the weaker areas, and he used additional classroom

time to discuss potential additional information sources and analysis techniques to help students determine internal company weaknesses.

USING CEA AT THE PROGRAM LEVEL

Using CEA at the course level provides useful information about assessing student learning in specific courses. To use CEA as the primary measure of student learning for a university or unit, two additional components must be operational: 1) there must be CEA investigations at the program level to assess broader program level goals or learning objectives, and 2) there must be a culture of course-level CEA occurring, supported by the organization's review and reward structure.

Performing program level CEA is similar to course level CEA with a few modifications. The learning objective chosen for analysis would be a broader, program level learning objective or goal. For example, many universities measure student performance on a decision-making objective or an oral or written communications objective in a capstone course. Additionally, because program level CEA results are relied upon by many faculty members, program level CEA investigations should have multiple reviewers to increase reliability.

For example, if a university wanted to measure an oral communications learning objective in their MBA program, they would follow similar steps described in the earlier sections of this paper. The program level learning objective would be clearly written, an appropriate oral communication assignment would be selected from an MBA course, the artifact would be gathered (probably electronically for an oral communications objective), results would be scored using an approved program level oral communications rubric, and the results would be broadly shared for continuous improvement discussions. The difference between course level and program level CEA in this example is that multiple faculty members would be trained to use a common rubric, and the results would be shared more broadly than just in a department meeting.

Culture of CEA

The combination of program level and course level investigation provides powerful, direct evidence of student learning. Isolated course level CEA investigations do not provide sufficient evidence for an entire program, and isolated program level CEA investigations leave many important learning objectives unmeasured. At the authors' university, CEA is supported at the university and School of Business level, and its use has been validated through clean assessment accreditation reports by the university and School of Business accrediting bodies.

At the university level, CEA is supported through summer workshops. Faculty members receive small stipends to design a course level CEA investigation. Half of the stipend is paid upon completion of the workshop, and the other half is paid upon completion of the investigation. To date, over half of our university's faculty members have completed summer CEA workshops.

At the School of Business level, CEA is supported through the review and reward structure. To meet minimal teaching expectations, all faculty members must complete a course level CEA investigation each year and report their results in a department meeting. Failure to meet minimal teaching expectations impacts faculty salary and rewards. As stated earlier, the sharing of results at departmental meetings is a positive experience, with faculty members engaging in useful discussions about teaching and learning.

CONCLUSIONS

CEA is an effective method to assess student learning that can provide direct, timely information for continuous improvement. It can be used as the primary measure of student learning, and should be combined with other assessment methods as part of a comprehensive assessment strategy. When used at the course level, it is particularly effective in providing direct information regarding the achievement of learning objectives. Where appropriate, faculty members can implement changes and improve instruction and student performance within the same academic year. At the program level, CEA is effective in developing a shared understanding of program goals and expectations, and the use of multiple evaluators increases the reliability of results. When successfully implemented, CEA can be part of a culture that supports and improves teaching, learning, and program outcomes.

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Appendix A – Bloom's Cognitive Domain

Descriptions of the Major Categories in the Cognitive Domain	***Illustrative General Institutional Objectives***	***Illustrative Behavioral Terms for Stating Specific Learning Outcomes***	***"Stem" Words for Question Categories***	***Types of Class Activities***	***Types of Pedagogies***
1. Knowledge. Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information.	● Knows common terms ● Knows specific facts ● Knows methods and procedures ● Knows basic concepts ● Knows principles	Defines, describes, identifies, labels, lists, matches, names, outlines, reproduces, selects, states	● Recall facts ● List terms ● Name items ● Define concepts ● Describe principles	● Remembering ● Memorizing ● Recognizing ● Recalling identification ● Recalling information ● Who ● What ● When ● Where ● How	● Question and answer sessions ● Workbooks or worksheets ● Programmed instruction ● Games and puzzles ● Information search ● Reading assignments ● Drill and practice ● Finding definitions ● Memory games or quizzes

Appendix A – Bloom's Cognitive Domain					
2. Comprehension. Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.	● Understands facts and principles ● Interprets verbal material ● Interprets charges and graphs ● Translates verbal material to mathematical formulas ● Estimates future consequences implied in data ● Justifies methods and procedures	Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts rewrites, summarizes	● Explain… ● Interpret… ● Summarize … ● Give examples… ● Predict… ● Translate…	● Interpreting ● Translating from one medium to another ● Describing in one's own words ● Organizing and selecting facts and ideas	● Debate ● Dramatization ● "Just suppose" ● Peer teaching ● Show and tell ● Small group ● Projects ● Making predictions or estimates ● Giving examples ● Paraphrasing
3. Application. Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.	● Applies concepts and principles to new situations ● Applies laws and theories to practical situations ● Solves mathematical problems ● Constructs charts and graphs ● Demonstrates correct usage of a method or procedure	Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses	● Compute… ● Solve… ● Apply… ● Modify… ● Construct…	● Problem solving ● Applying information to produce some result ● Use of facts, rules and principles ● How is…an example of…? ● How is…related to…? ● Why is…significant?	● Simulation activities ● Role playing and role reversal ● Producing newspaper stories, ads, etc. ● Model building ● Interviewing ● Class or group presentation ● Conducting experiments
4. Analysis. Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material	● Recognizes unstated assumptions ● Recognizes logical fallacies in reasoning ● Distinguishes between facts and inferences ● Evaluates the relevancy of data ● Analyzes the organizational structure of a work (art, music, writing)	Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides	● How does…apply ? ● Does…work ? ● How does…relate to…? ● What distinctions can be made about…and …?	● Subdividing something to show how it is put together ● Finding the underlying structure of a communication ● Identifying motives ● Separating a whole into component parts ● What are the parts or features of…? ● Classify…according to…. ● Outline/diagram…. ● How does…compare/contrast with…? What evidence can you list for…?	● Generating criteria for evaluation (brainstorming) ● Morphological analysis/checkerboard techniques ● Attribute listing ● Problem identification ● Outlining written material ● Making deductions ● Comparing and contrasting

Appendix A – Bloom's Cognitive Domain					
Descriptions of the Major Categories in the Cognitive Domain	***Illustrative General Institutional Objectives***	***Illustrative Behavioral Terms for Stating Specific Learning Outcomes***	***"Stem" Words for Question Categories***	***Types of Class Activities***	***Types of Pedagogies***
5. Synthesis. Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of *new* patterns or structures.	● Writes a well-organized theme ● Gives a well-organized speech ● Writes a creative short story (or poem, or music) ● Proposes a plan for an experiment ● Integrates learning from different areas into a plan for solving a problem ● Formulates a new scheme for classifying objects (or events, or ideas)	Categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes	● How does the data support…? ● How would you design and experiment which investigates … ? ● What predictions can you make based upon the data?	● Creating a unique, original product that may be in verbal form or may be a physical object ● Combining ideas to form a new whole ● What would you predict/infer from…? ● What ideas can you add to…? ● How would you create/design a new…? ● What might happen if you combined…? ● What solutions would you suggest for…?	● Procuring an original plan ● Defining the problem, identifying goals and objectives ● Organizing and conducting an original product ● Showing how some idea or product might be changed ● Finding new combinations
6. Evaluation. Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.	● Judges the logical consistency of written material ● Judges the adequacy with which conclusions are supported by data ● Judges the value of a work (art, music, writing) by use of internal criteria ● Judges the value of a work (art, music, writing) by use of external standards of excellence	Appraises, compares, concludes, contrasts, criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports	● What judgments can you make about…? ● Compare and contrast…criteria for?	● Making value decisions about issues ● Resolving controversies or differences of opinion ● Developing opinions, judgments or decisions ● Do you agree that…? ● What do you think about…? ● What is the most important…? ● Place the following in order of priority… ● How would you decide about…? ● What criteria would you use to assess…?	● Making evaluations of peer projects and presentations ● Evaluating data, given criteria to apply ● Evaluating one's own products and ideas

DEMAND FOR ENGINEERING GRADUATES IN WESTERN ILLINOIS, SOUTHEAST IOWA AND NORTHEAST MISSOURI: ASSESSMENTS AND FORECASTS

Adee Athiyaman, Western Illinois University

ABSTRACT

This research is part of a new product planning exercise for a higher education institution. The study forecasts total market demand for general engineers in the Western Illinois, Southeast Iowa, and Northeast Missouri region. Then, it discusses the attraction of a planned, bachelor's degree in general engineering. A deterministic model was utilized to forecast total demand, and a stochastic model was employed to assess the attractiveness of the new product in the marketplace. The methodology of the paper should be of interest to practitioners in higher education.

INTRODUCTION

Reports from engineering trends research studies (see for example, the Bureau of Labor Statistics' Occupational Outlook Handbook, 2006-07) suggest that job opportunities in engineering are on the rise and expected to grow at a rate of 9% to 14% over the years leading up to 2014. To service the growing demand for engineers, organizations such as the Institute of Electrical and Electronics Engineers, Inc. (IEEE) are bringing together representatives from industry, government, and academia to develop an action plan for engineering education (see the planning document for IEEE conference, 2007 at www.ieee.com). In general, the view among engineering professionals is that an engineering career requires a broad education that includes the ability to perform on multidisciplinary teams and communicate effectively (American Society for Engineering Education, 2007; Hannon, 2003).

Realizing the societal need for engineers with a broad knowledge, a higher education institution in Illinois has embarked upon a strategy to offer a bachelors degree program in "general engineering. Briefly, the plan is to prepare graduates to provide cross discipline design solutions for the wide range of demands encountered by today's practicing engineers in consulting offices, manufacturing businesses, industrial companies, and government agencies.

This report provides the background information required to further develop the strategy. Specifically, the report offers two types of information for the decision maker:

1. Analysis of demand for engineers / general engineers, and
2. Analysis of the attractiveness of the general engineering degree in the marketplace.

At a macro level, this report addresses the question, "Would businesses in Western Illinois, Southeast Iowa and Northeast Missouri, hire a general engineering graduate from the focal university?" (See Appendix 1 for a listing of counties in the study area).

THEORETICAL PERSPECTIVE

Planning for a product requires quantitative assessment of present and future demand for the product. Conceptually, market demand for a product at time *t* is the total volume that would be bought by a defined customer group in a defined geographical area.

Market demand for a product is often categorized into primary demand and secondary demand (Kotler et al. 2007). Primary demand is the total demand for a class of product, for instance, a bachelor's degree in business management, and secondary demand is the demand for a specific brand, for instance, demand for a specific university's bachelor's degree in business management. As translated to the problem at hand, primary demand for engineering graduates at time *t* (P_t) can be expressed as the product of number of businesses (N_t) and the average rate of engineering employment in those businesses (R_t). Thus,

$$P_t = N_t \, x \, R_t \qquad \textit{Formula (1)}$$

An explanation of R_t is offered by the theory of purchasing agent's behavior (Douglas, 1975). The theory posits that purchasing agents follow fluctuations in demand and prices of factors of the company's production to optimize purchases. For instance, during times of recession, they delay purchases in anticipation of lower prices. Similarly, during economic upturns, they stock-up to avoid later, costly purchases. Because purchasing agents and their firms usually attend to similar sources of information about factor markets, it is reasonable to conclude that firms delay hiring in anticipation of a downturn and speed up the hiring process in a prospective upturn. Hence, the model in Eq. 2 can be used to explain R_t.

$$R_t = \alpha \, (Y_t / N_t)^{\hat{a}1} \, K_t^{-\hat{a}2} \qquad \textit{Formula (2)}$$

where, Y_t = sales revenue

K_t = general price index at time *t*, a proxy for state of the economy

P_t and N_t as defined earlier in Eq. 1.

To model secondary demand, we utilize the theory of the attraction model:

$$C_i = A_i / \sum_{i=1 \text{ to } n} A_i \qquad \textit{Formula (3)}$$

where, C_i is consumer preference for brand *i*, and
A_i denotes the attraction of brand *i* in the marketplace.

We assume that attractiveness of brands can be assessed using a set of attributes; technically, evaluative criteria (see Ben-Akiva & Lerman, 1985). For instance, the attractiveness of employing a university graduate can be modeled using attributes such as "quality of teaching staff at the university", and "quality of research".

In line with extant literature on attraction models (for instance, Cooper & Nakanishi, 1988), we use the following functional form to estimate C_i:

$$C_i = exp(\beta' X_i) / [exp(\beta' X_{ij}) + exp(\beta' X_i)] \qquad \textit{Formula (4)}$$

where, **X** contains the evaluative criteria or attribute values for brand *i*. Note that P_t and C_i combine to result in secondary demand. Thus, secondary demand for brand *i* can be expressed as:

$$S_i = P_t \, x \, C_i \qquad \textit{Formula (5)}$$

METHODOLOGY

In order to estimate P_t and S_i, we relied on a combination of mail survey, and published, census data on occupations. Published data on employment from the US Department of Labor were utilized to estimate primary demand (P_t) for engineering occupations in the study area for the 2007 to 2010 time period. A simple differential equation was fit to the 2001 to 2006 engineering occupational numbers to estimate the 2007 demand and to forecast the 2008-2010 numbers (Eq. 6).

$$dP/dt = \alpha P \qquad \textit{Formula (6)}$$

The focal university's attraction in the marketplace; the general engineering degree's attraction (C_i), was assessed using a questionnaire survey of engineering-related businesses listed in the Dun & Bradstreet's "MarketPlace" directory (a copy of the questionnaire can be obtained from the author.). The directory had 753 businesses classified as "engineering and related services". All 753 firms were surveyed. In addition, a stratified random sampling procedure was employed to survey 1,714 mining, construction, and manufacturing firms (Table 1). Note that our sample survey covers all relevant businesses for the study; that is, businesses that could employ engineers.

Table 1: Primary Data: Industries Surveyed		
(i) Engineering Related Sectors: Population		
Industry	Number of Firms in the Region	Percent of Total
Engineering services	180	24%
Architectural services	49	6%
Surveying services	27	4%
Commercial physical research	36	5%
Commercial non-physical research	32	4%
Noncommercial research organizations	32	4%
Testing laboratories	27	4%
Facilities support services	11	1%
Business consulting	329	47%
Total	753	100%
(ii) Stratified Sampling Details: Mining, Construction, and Manufacturing Firms		
Geographical Location	Number of Firms in Location (Population)	Number in Sample
Illinois	2,221	1,426
Iowa	966	277
Missouri	187	11
Total	3,374	1,714

The questionnaire contained measures related to perceptions about engineering skills in the region, beliefs about labor market conditions, and opinions about the focal university and eight other universities. Respondents, mostly CEOs, were also queried about their intentions to hire general engineers in the future. The initial mailing of the questionnaire in May 2007 was followed by a second-wave of mailing in June 2007.

RESULTS

Response Rate and Numbers

The Dun & Bradstreet's mailing list had a 12% coverage error; 307 questionnaires were returned undelivered. In addition, 4% of the targeted businesses refused to participate in the study citing reasons such as "no longer active in the business", "do not have any need for engineers", etc.

Of the 647 engineering businesses that received the questionnaire, ~10% provided usable responses. The responses from mining, construction, and manufacturing firms stood at 58. In all, 121 businesses responded to the mail survey. Table 2 and Figures 1 and 2 profile the firms.

Table 2: Demographics of the Responding Firms

(i) Size and Location of Responding Firms

State	Percent of Firms	Size of Responding Firm (Employees)		
		1-49	50-249	>250
Illinois	68% (n = 77)	91%	3%	6%
Iowa	29% (n = 33)	90%	7%	3%
Missouri	3% (n = 3)	100%	--	--
Total	100% (n = 113)	91%	3%	6%

(ii) Industry Affiliation

Industry	Percent of Firms
Engineering services	26% (n = 29)
Business consulting	14% (n = 16)
Architectural services	5% (n = 6)
Surveying services	5% (n = 6)
Commercial physical and nonphysical research	3% (n = 3)
Water supply	3% (n = 3)
Air, water, and solid waste management	2% (n = 2)
Commercial printing - lithographic	2% (n = 2)
Construction machinery	2% (n = 2)
Industrial building and warehouses	2%(n = 2)
Other	34% (n = 42)
Total	100% (n = 113)

Figure 1: Median Number of Employees in the Firms

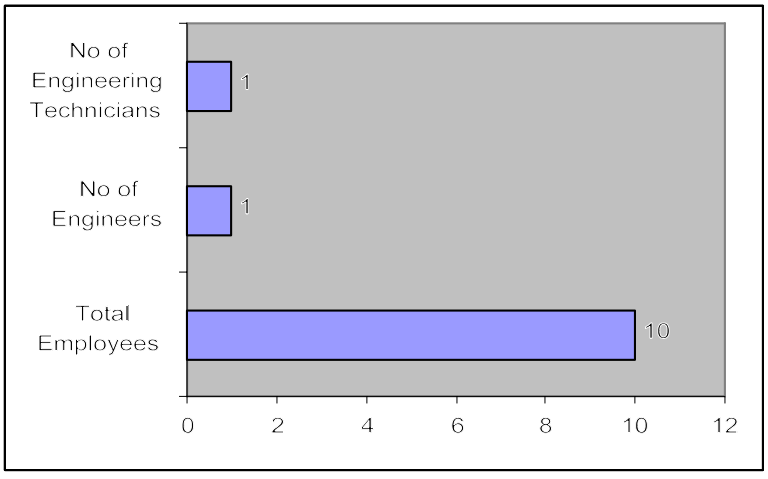
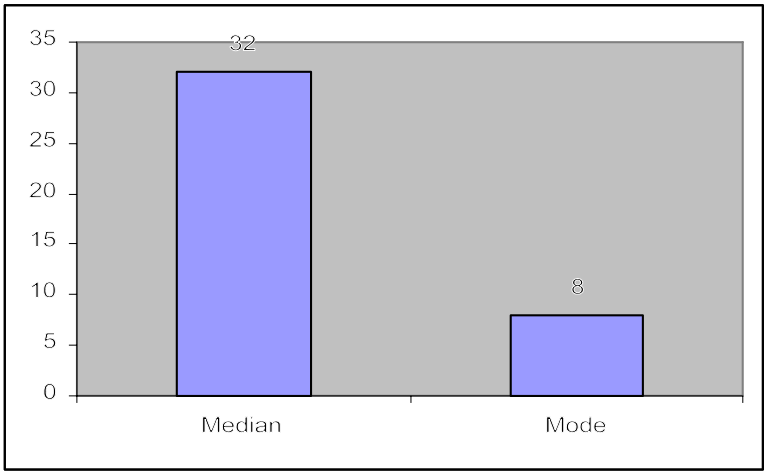


Figure 2: Number of Years in Business



Non-Response Bias

To check for non-response bias, we compared the responses of early respondents to that of the late respondents. The theory is, late respondents behave like non-respondents therefore differences in responses between early and late respondents indicate non-response error. Early respondents were defined as those responding to the survey on or before June 11, 2007 (53% of the respondents) and late respondents as those responding after June 11, 2007 (47%).

One of the issues that this research aims to address relates to assessing the probability of general engineering employment in the region. Any differences in likelihood of hiring general engineering graduates between early and late respondents would cast doubt on the validity of the research. Figure 3 shows the probability estimates provided by both the early respondents and the late respondents for hiring general engineers.

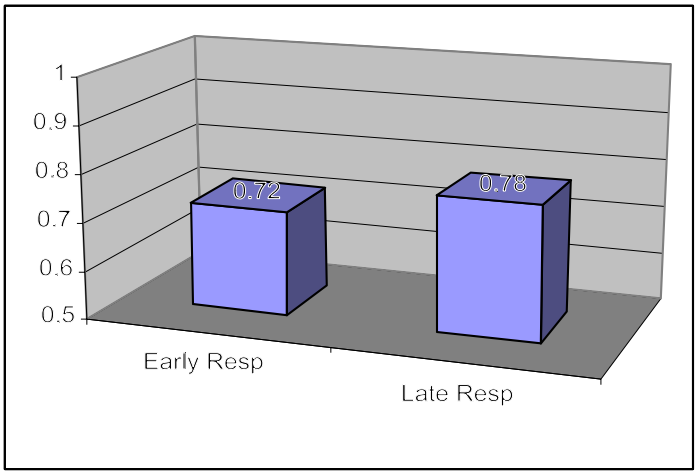
Check for Non-Response Bias: Early versus late Responses

The question read, "If you were going to hire an engineer in the next three years, how likely would you be to hire a general engineer?

Note that Figure 3 suggests that a low response rate doesn't invalidate the results of the study (Group means are statistically insignificant: $Z= (.721-.781-0)/[(2.7)^2/57 + (2.79)^2/47]^{1/2} = -.09$ ($p = .93$)). In other words, the research exhibits little or no non-response error.

Having established the validity of the survey results, we now turn to analyzing the primary demand for engineering graduates. This is followed by an analysis of secondary demand for the new product.

Figure 3: Check for Non-Response Bias



Note: the .7 to .8 probability translates into "fair possibility" to "some possibility".

PRIMARY DEMAND ANALYSIS

The US Department of Labor publishes engineering employment figures for counties. We sourced time series data for the counties listed in Appendix 1, and estimated P_{2007} as follows:

dP/dt = αP
dP/P = α dt
∫ dP/P = ∫ α dt
Ln P = αt + C
*P = exp(αt) * exp(C)*
Let exp(C) = a
P =a exp(αt)

Set t = 0 at year =2001.
*Hence, $P_{2007} = P_{2001}$*exp(α5)*

Data Table: Primary Demand for Engineers in the "Core" Market Area

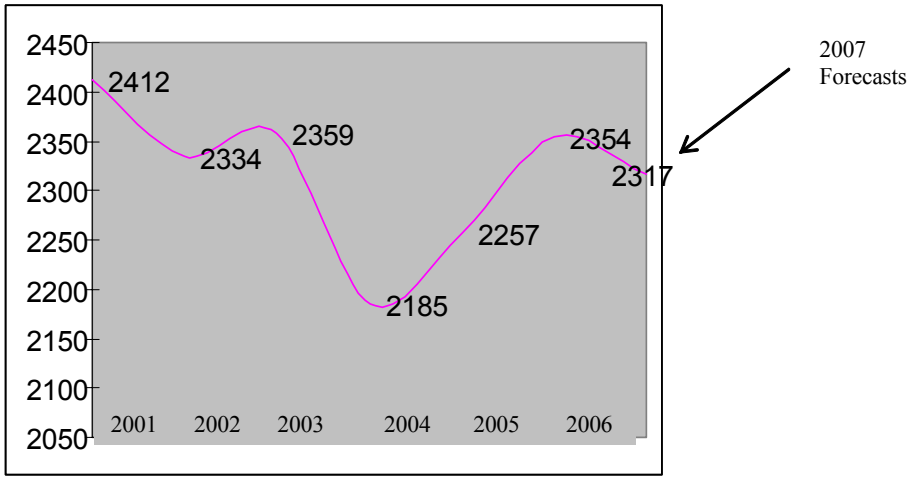
Year	Employment			
	Engineering	%Δ	All Industry	%Δ
2001	2,412		568,756	
2002	2,334	-2.9	553,320	-2.7
2003	2,359	1.1	545,394	-1.4
2004	2,185	-7.4	549,471	0.7
2005	2,257	3.3	556,558	1.3
2006	2,354	4.3	558,546	0.4

Note: Appendix 2 contains information for the market area categorized into "total demand" and "MSA demand".

Since α = -0.004868054, P_{2007} = (2412) exp(-0.004868064 x 6) = 2343, a 2.86% decline in demand for engineering occupations from 2006. Forecasts using simple moving averages, predicts a 3.93% decline in demand (Figure 4; computationally, $S_{t+1} = 1/N \sum_{(i=t-N+1 \text{ to } t)} X_i$ provides the moving

average forecast for the period t + 1). Note that for short to medium-term planning purposes, models such as the exponential growth and simple moving average provide reliable forecasts (Athiyaman & Robertson, 1992).

Figure 4: Simple Moving Average Forecast for 2007



Note: Other than the 2007 forecasts, all values are actual demand for engineering occupations during the 2001 to 2006 time period (see Appendix 2).

The estimated demand in 2007 does not distinguish between existing positions and new job openings. For new product planning purposes, we require information about new (including replacement) engineering positions. To source these numbers, we utilize primary data.

To the question, "Please indicate the number of new full-time persons expected to be hired to perform engineering-related work during the years 2007-2008 to 2010", respondents provided numbers ranging from 0 to 400. The average responses ranged from 7.94 for the 2007-08 period to 8.56 for 2010 (Table 3). We use these numbers to estimate the number of new positions.

To illustrate, the responding firms had an average of 152 engineering positions. They expect to hire eight new engineering positions in 2007-08. Thus, the proportion of new hires to existing engineers is .0520. This "weight" was then applied to the 2007 total demand of 2343 engineers to arrive at 122 new engineering positions (2343 x .0520 = 122). Table 3 details the computations involved in estimating the primary demand for engineering graduates for the years leading up to 2010.

Table 3: Primary Demand for Engineers: The Exponential Model				
Year (A)	Total Demand (B)	Mean Expected New Hires (C)	Weight (Column C/Avg. Engineering Employment = 152.64) (D)	Demand for New Engineering Positions (Column B x Column D) (E)
2007	2354	7.94	0.0520	122
2008	2343	7.94	0.0520	122
2009	2331	8.16	0.05345	125
2010	2320	8.56	0.05607	130

Demand for General Engineers

Table 3 highlights the demand for new engineering positions. What are the chances that these positions could be filled by broadly educated, general engineers?

Thirty percent of the respondents stated the likelihood of hiring a general engineer as "0", no chance. Of the remaining, 35% reported a 30% chance of hiring a general engineer. In all, only 8% of the respondents believe that they are "almost sure" or "practically certain" to hiring a general engineer (Table 4).

Table 4: Likelihood of Hiring a general Engineer (n=108).		
Scale Label	Scale Probability	Percent of Respondents
Practically certain	0.99	2%
Almost sure	0.90	6%
Very probable	0.8	6%
Probable	0.7	6%
Good possibility	0.6	6%
Fairly good possibility	0.5	6%
Fair possibility	0.4	3%
Some possibility	0.3	16%
Slight possibility	0.2	19%
Almost no chance	0	30
Note: Mean Score for the 1-10 scale = 7.42. This indicates a "fair" to "some possibility" of hiring a general engineer; Median = 8, signifies "some possibility", and Mode = 10, "almost no chance".		

A normative prescription in market segmentation suggests firms to target customers with neutral and positive attitude towards the product (Kotler, *et al*., 2007). The theory is that it is easier to influence the neutral and positive attitude segments to purchase the product. Applied to the data

in Table 4, the segmentation theory suggests that respondents with ≥ 0.5 probability (32% of the respondents) are likely to hire a general engineer. Therefore, we use a 0.32 "weight" to data in Table 3 to arrive at primary demand estimates for general engineers (Table 5).

Table 5: Primary Demand for General Engineers	
Year	Demand for General Engineers = [Demand for New Engineers] x [Proportion of Firms Likely to Hire a General Engineer]
2007	122 x 0.32 = 39
2008	122 x 0.32 = 39
2009	125 x 0.32 = 40
2010	130 x 0.32 = 42

Summary of Primary Demand Analysis

This section assessed the demand for general engineering graduates using the techniques of chain-ratio method (Ackoff, 1970). Specifically, we combined the separate components of general engineering demand to arrive at forecasts for the 2007 to 2010 time period.

The first component, primary demand for engineers, was forecast using an exponential growth model. Then, we estimated the proportion of new hires using a weighting scheme. Finally, the demand for general engineers was computed as the product of "demand for new engineers" and the "likelihood of hiring a general engineer".

Our models suggest that the total demand for engineering occupations to vary around 2,300 positions per year. Of these, approximately 5%, or around 120 to 130 occupations, will be new and/or replacement positions. Finally, we expect demand for "new" general engineers to be around 40 positions per year.

SECONDARY DEMAND

In order to compute the probable market share for the new product, respondents were asked to read a description of the proposed bachelor's degree in general engineering, and then state whether they would consider hiring a graduate of the program. Eighty-three percent of the respondents said "yes". From this, a qualitative variable was constructed:

Consider hiring the focal university's graduate? 1 if yes; 0 otherwise.

Next, for each individual, a response function was defined as follows:

$$\Pi_i = F(\beta x_i) = 1 / [1 + exp(-\beta x_i)] \qquad i = 1 \text{ to } n \qquad \text{Formula (7)}$$

where, Π_i = true probability that the *i*th respondent is positive that she would hire the graduate, and x_i = vector of observations on predictor variables.

In all, six predictor variables were used in the analysis: five benefit beliefs about universities in the region, and number of employees (an indicator for "firm size"). The benefit beliefs include: accommodates requests for course modifications, provides business advice, trains personnel, treats all firms (small, medium, and large) pretty much the same, and understands industry needs. Respondents rated a set of nine universities, on each benefit, using a three-step, "none", "little", and "great extent" scale. Table 6 provides descriptive statistics for the predictor variables.

Table 6: Descriptive Statistics for Predictor Variables: Mean and Standard Deviation

Variable	$\hat{\mu}(\hat{\sigma})$								
	Bradley University (BU)	Iowa State University (ISU)	Northern Illinois University (NIU)	Southern Illinois University (SIU)	Truman State University (TSU)	University of Illinois (UOIL)	University of Iowa (UOIO)	University of Northern Iowa (UNI)	Focal University
x_1: Accommodates requests for course modifications	2.25(.84)	2.36(.76)	2.12(.8)	2.21(.87)	1.73(.88)	2.27(.7)	2.34(.72)	2.19(.8)	2.33(.64)
x_2: Provides business advice	2.41(.72)	2.45(.75)	2.18(.79)	2.24(.88)	1.89(.91)	2.43(.67)	2.51(.69)	2.3(.82)	2.52(.68)
x_3: Trains personnel	2.44(.73)	2.55(.73)	2.17(.75)	2.27(.80)	1.89(.94)	2.49(.67)	2.48(.74)	2.24(.83)	2.45(.71)
x_4: Treat all firms pretty much the same	2.5(.68)	2.54(.73)	2.48(.68)	2.53(.77)	2.15(.9)	2.4(.61)	2.48(.63)	2.45(.74)	2.6(.66)
x_5: Understands industry needs	2.46(.73)	2.57(.71)	2.48(.68)	2.41(.74)	2.06(.83)	2.53(.69)	2.45(.68)	2.26(.77)	2.28(.75)

We used the relationship given in Eq. (7) to define a likelihood function of the observations:

$$L(y_1,\ldots,y_n;\ x_1,\ldots,\ x_n) = \Pi_{(i=1\ to\ n)}\ F(\beta x_i)^{yi}\ x\ [1 - F(\beta x_i)]^{(1-yi)} \qquad \textit{Formula (8)}$$

where, $y_i = 0, 1$ response variable.

Then, we transformed Eq. 8 using logs, and maximized the resulting log likelihood function to estimate the βs. Table 7 provides the results of this exercise.

Table 7: Estimation Results for the Binary Model

Variable	Coefficient Estimate	Asymptotic Std. Error	*t* Statistic
β_o: Alternative Specific Constant	2.84	.74	3.83*
x_1: Accommodates Requests for Course Modifications	0.58	0.91	0.64
x_2: Provides Business Advice	1.96	1.0	1.96*
x_3: Trains Personnel	0.67	0.69	0.97
x_4: Treats All Firms Pretty Much the Same	2.11	1.1	1.92**
x_5: Understands Industry Needs	-2.44	1.3	1.87**
x_6: Firm Size	.0029	.0041	0.70

Note: * Significant at the ≤ 0.05 level; ** Significant at the ≤ 0.06 level; *** Significant at the ≤ 0.07 level

The model is exploratory; theoretical arguments were not put forward to justify the predictor variables. We use alpha = 0.1 for hypothesis testing purposes.

Table 7 shows that the likelihood of hiring the focal university's general engineering graduate is influenced by perceptions that the University:

1. provides business advice;
2. treats small, medium, and large firms pretty much the same, and
3. does little to understand industry needs ($\hat{\beta}_5 = -2.44$)

The goodness-of-fit of the model, assessed using a measure similar to R^2 in regression, is 0.64. Appendix 3 provides relevant summary statistics for the model. The model suggests that the attraction for the focal university's engineering graduates in the marketplace is 0.87. The 95% confidence interval for the point estimate ranges from a low 0.83 (LCI) to a high 0.91 (UCI). These "attraction" probabilities enable us to estimate secondary demand for the new product (Table 8):

Table 8: Secondary Demand for Focal University's General Engineering Graduates			
Year	Primary Demand for General Engineering Graduates (# of Places)	Demand for the New Product (Estimate Based on 0.83 LCI)	Demand for the New Product (Estimate Based on 0.91 UCI)
2007	39	32	35
2008	39	32	35
2009	40	33	36
2010	42	35	38

Summary of Secondary Demand Analysis

The proposed bachelor's degree in general engineering is perceived as an attractive offering in the marketplace; the likelihood of hiring a general engineering graduate is 0.87. This "attraction" is determined by marketplace beliefs that the focal university provides business advice, and treats all firms equally. While previous exposure to the University graduates could have shaped this perception, this bias is unlikely since most of the respondents have not hired the focal university's graduates in the past (57% (n=110)). On the negative side, the less than perfect attraction can be attributed to the marketplace belief that the university does little to understand industry needs.

SUMMARY AND RECOMMENDATION

The Research Problem

The research explored the need for general engineering graduates among businesses in Western Illinois, Southeast Iowa, and Northeast Missouri (Appendix 1).

Fact Gathering

To address the problem, we first categorized demand for a product into primary or total demand, and secondary demand or demand for a specific brand. The major analytical model used to assess primary demand was the exponential growth model. Similarly, a qualitative, binary model was used to estimate secondary demand.

Data were obtained from both published sources (for instance, US Department of Labor data), and questionnaire survey among engineering, mining, construction, and manufacturing firms. Questionnaires were sent by mail to 753 engineering firms and a sample of 1,714 mining, construction, and manufacturing firms. The original mailing in May 2007 was followed by a second-

wave of mailing to all non-respondents in June 2007. In all, 121 firms responded to the survey. Check for non-response bias did not reveal threats to the validity of research results.

Findings

Primary Demand:

(i) The total engineering occupations in the region is estimated at 2300 positions per year;
(ii) Approximately, 5% of the total positions, 120 to 130 positions per year, are new / replacement positions, and
(iii) The primary demand for general engineers is expected to be around 40 positions per year.

Secondary Demand:

(i) The proposed engineering degree is attractive to the marketplace;
(ii) The likelihood of hiring the focal university's general engineering graduate ranges from 0.83 to 0.91, and
(iii) The University can expect to service 32 to 38 general engineering places, per year.

Overall Recommendation

Launch the bachelor's degree in general engineering. The University will be the market leader in the product category; it has a positive image among all types of businesses.

Specific Recommendations

Increase Category Attitude: In the new economy, engineers are expected to understand the impact of engineering solutions in a global context. This requires a broad education in topics ranging from engineering design to culture. If businesses are reminded about the value of a general engineering position, it is plausible to increase the demand for new general engineers. In other words, the focal university should explore the possibility of enhancing business attitude towards "general engineering" education. It is assumed that a positive attitude towards the category would increase primary demand for general engineering graduates.

Enhance Business Attitude towards the Focal University: Marketing communications from the University should highlight its "business-friendly" nature; particularly, that it treats all firms pretty much the same. In addition, the University should attempt to alter the belief that it does not understand industry needs. This strategy should help the focal university to enhance and/or maintain market share.

Limitations of the Study

The response for the questionnaire survey was approximately 10%. While checks for non-response bias did not reveal any serious threats to the validity of the research, caution should be exercised in using point-estimates of demand. The recommended approach to interpreting demand assessments is to use the interval estimates given in Table 8. Note that the probability sampling procedure employed in this study assures the validity of interval estimates (Krosnick, 1999).

The study modeled the number of engineering occupations in the marketplace. Lack of published, census data on university-trained engineering positions prevented us from assessing graduate demand directly. However, it is assumed that engineering occupations will be filled by university-trained engineers.

As regards question wording, the concept testing was based on the following description about the new product:

> ___ is exploring the possibility of starting a bachelor's degree program in Engineering. The purpose for this program is to address the need for broadly educated engineers who have a strong grounding in multidisciplinary engineering fundamentals. This integrated course of study will prepare graduates to provide cross discipline design solutions for the wide range of demands encountered by today's practicing engineers in consulting offices, manufacturing businesses, industrial companies, and government agencies.

If a respondent perceives the information incomplete, then she may add "dimensions" to satisfy the need for "clos1ure". This could result in each respondent perceiving the idea differently. For instance, respondents could assume that the graduate would have completed the Fundamentals of Engineering Exam (FE), or that the program is not an ABET accredited program, and so forth. While pre-tests of the instrument did not reveal such threats, it is plausible that the "need for closure" may have impacted the results of the study.

Finally, no attempt was made to model the attractiveness of competitors' products. A consideration set that contains all the universities general engineering graduates could produce "attraction" probabilities different from the ones presented here. However, as shown in Table 6, the focal university has a positive image in the market place and this suggests that it could be the "lead firm" in the region for general engineering education.

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Appendix 1: Counties in the Study Area

State No.	Illinois	Iowa	Missouri
1.	Adams		
2.	Brown		
3.	Bureau		
4.	Carroll		
5.	Cass		
6.	Fulton		
7.	Hancock		

Appendix 1: Counties in the Study Area			
State No.	Illinois	Iowa	Missouri
8.	Henderson		
9.	Henry		
10.	Knox		
11.	Lee		
12.	Marshall		
13.	Mason		
14.	McDonough		
15.	Mercer		
16.	Peoria		
17.	Pike		
18.	Putnam		
19.	Rock Island		
20.	Schuyler		
21.	Stark		
22.	Warren		
23.	Whiteside		
24.		Clinton	
25.		Des Moines	
26.		Lee	
27.		Louisa	
28.		Muscatine	
29.		Scott	
30.			Clark
31.			Lewis
32.			Marion
33.			Pike

Appendix 2
US Department of Labor's Statistics about Engineering Occupations in the Market Area

Engineering and Total Employment[1] from U.S. Department of Labor

Year	Number	Annual Pct. Chg.	Number	Annual Pct. Chg.	Number	Annual Pct. Chg.	Number	Annual Pct. Chg.	Number	P
Engineering Services (NAICS 54133)										
2001	25,294	--	42,203	--	844,169	--	2,412	--	1,112	
2002	24,052	-4.9	40,489	-4.1	819,378	-2.9	2,334	-3.2	986	
2003	23,086	-4.0	39,189	-3.2	805,467	-1.7	2,359	1.1	1,116	
2004	23,373	1.2	39,167	-0.1	843,139	4.7	2,185	-7.4	1,059	
2005	24,654	5.5	40,872	4.4	882,745	4.7	2,257	3.3	1,082	
2006	25,876	5.0	43,831	7.2	911,535	3.3	2,354	4.3	1,165	
All Industries										
2001	5,886,248	--	9,968,667	--	129,635,800	--	568,756	--	182,772	
2002	5,771,132	-2.0	9,810,417	-1.6	128,233,919	-1.1	553,320	-2.7	178,925	
2003	5,698,184	-1.3	9,718,409	-0.9	127,795,827	-0.3	545,394	-1.4	177,823	
2004	5,700,643	0.0	9,750,498	0.3	129,278,176	1.2	549,471	0.7	180,251	
2005	5,748,355	0.8	9,859,370	1.1	131,571,623	1.8	556,558	1.3	184,134	
2006[4]	5,776,821	0.5	9,928,914	0.7	133,039,297	1.1	558,546			

1 Includes private sector along with the federal,state and local governement employment.

2 County-level data was used to develop Study Area numbers and due to disclosure issues, the counties varied by year on the number of employees.

3 Counties: Scott, IA; Mercer, IL; Rock Island, IL; and Henry, IL

4 Preliminary monthly average; January through June.

Source: U.S. Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employent and Wages. Available www.bls.vgov, downloaded 1/19/2007. 2006Engineering Services numbers downloaded 7/30/2007.

Appendix 3: Summary Statistics for the Qualitative, Maximum Likelihood, Logistic Model

(i) Number of observations = 64

(ii) $\ell(0) = -44.36$: This is the value of the log likelihood function when parameters are zero. This is a naïve model in that it assumes that the probabilities are .5 for each of the options (the "yes" and "no" response).

(iii) $\ell(c) = -26.37$: This model assumes that only β_0 is relevant. Another assumption of the model is that the probability of choosing a response is equal to the observed frequencies; 0.87 for the "yes" response.

(iv) $\ell(\beta) = -16.01$: This is the value of the maximum likelihood function at its maximum

(v) $-2[\ell(0)-\ell(B)] = 56.689223$: This statistic is used to test the null hypothesis that all parameters are zero. It is distributed as χ^2 with 1 degree of freedom. In our case, the null hypothesis can be rejected at the 0.01 level of significance.

(vi) $-2[\ell(c)-\ell(B)] = 20.715540$: This test statistic tests the null hypothesis that all parameters other than β_0 are zero. It is distributed as χ^2 with 1 degree of freedom. Again, the null hypothesis is rejected at the 0.01 level of significance.

(vii) $\rho^2 = 0.64$: It is similar to R^2 in regression; it is a goodness-of-fit measure.

INTRODUCING DIGIT ANALYSIS WITH AN INTERACTIVE CLASS EXERCISE

Mark Linville, Kansas State University

ABSTRACT

Instruction is always the most effective with motivated students. This pedagogical technique begins by requiring the students to create fictitious data which the instructor will demonstrate is false. Students invariably are intrigued by how the instructor can prove the data is false. This curiosity is satisfied by a discussion of digit analysis and Benford's Law. Students are then given an assignment in which they learn that the application of digit analysis is a relatively simple application of basic statistics. Once completed, students have a very good understanding of digit analysis (including its limitations) and are very competent in the application of digit analysis.

INTRODUCING DIGIT ANALYSIS WITH AN INTERACTIVE CLASS EXERCISE

Auditors often use digit analysis to review large data sets and make a general determination as to the data set's apparent reliability (Banyard 2000, Nigrini 1999a, Tapp and Burg 2000). By identifying data that does not fit with predetermined expectations, the auditor can be alerted to the presence of data which is corrupted, either deliberately or accidentally (Lowe 2000a, b). This provides the auditor a potentially valuable tool in detection of fraud and is useful to help the auditor discharge the responsibilities of SAS #99 (AICPA, 2002). Given the scarcity of good diagnostic tools to detect fraud, digit analysis is something of which every auditor should be aware and should have a basic understanding in its proper application.

While digit analysis is not a normal topic for an undergraduate auditing class, it is commonly taught in classes on forensic accounting, graduate auditing, and internal auditing. Basic information about this technique can be found in most forensic accounting texts such as Albrecht (2002), Robertson (2002), or Hopwood, et al. (2008). There is no reason, perhaps other than time constraints, why digit analysis could not be taught in an undergraduate auditing class. Undergraduate auditing students have the necessary technical skills (understanding of basic statistics and spreadsheet applications) and the necessary conceptual understanding of auditing to recognize the usefulness of digit analysis.

The purpose of this paper is to share with other instructors a teaching technique which I have used to introduce digit analysis. I have found the technique to be a stimulating and effective way to introduce this topic. The technique involves the students in an interactive exercise which stimulates

their curiosity. This teaching technique makes the usefulness of the digit analysis techniques abundantly clear to the students without the necessity of instructor emphasis. Once the value of the technique is clearly demonstrated to the students, I have found that subsequent lectures and discussions into digit analysis techniques have been particularly fruitful and several students have requested more information about the topic which went well beyond class requirements.

This paper is organized in this manner. The next section provides some background information about digit analysis. That is followed by a discussion of the pedagogical approach employed. In that section, the learning objectives are listed, the initial curiosity-creating exercise and basic lecture information are discussed, and the out-of-class assignments are presented. The paper concludes by summarizing the methodology and suggesting additional ideas for teaching this interesting topic.

DIGIT ANALYSIS

Conceptually, digit analysis is a straight-forward process. First, the data is prepared by tabulating how frequently each digit appears in each digit spot. Second, this actual data is totaled and then compared to an expectation. The expectation is determined by a relatively unknown mathematical law. Finally, the actual occurrence of the digit appearance rates is compared to the expectations and simple statistical analysis is performed. Each of these steps is described in more detail in the following paragraphs.

Step One: Preparing the Data.

When applying digit analysis, each number needs to be seen as series of digits where the auditor decomposes numerical amounts into digits. The first digit is the leftmost *non-zero* digit in the number, the second digit is the second leftmost digit (which now may include a zero) in the number, and so on. The amount $368.41 would be viewed this way: the digit "3" appears in the first digit space, the digit "6" appears in the second digit space, the digit "8" is in the third digit space, the "4" is in the fourth digit space, and the "1" is in the fifth digit space. This process is similar to how children are taught to understand numbers by decomposing numbers by groups of ones, tens, hundreds, thousands, etc. The frequency of each digit (0, 1, 2 … 9) in each digit place is recorded for the entire data set. This gives the auditor the actual frequency of digit occurrence by digit space.

Step Two: Forming the Expectation.

The actual frequency of digit occurrence will be compared to its expected occurrence as predicted by a mathematical law known as Benford's Law. This law applies to naturally-occurring numbers which measure a size-related phenomenon which would include all dollar amounts

examined by auditors (Nigrini 1999b, York 2000). The main finding of Benford's Law is a somewhat counter-intuitive one. Most people expect that digits would appear in the various columns of a number in a random fashion (i. e., each digit would have an approximately equal chance of appearing in each digit spot). However, as seen in Table 1, the smaller digits are more likely to appear in the leftmost columns of a number than larger digits. For example, the digit "1" is about 6.5 times more likely to appear in the first digit space as is the digit "9" (30.103% vs. 4.576%, respectively). As one moves to the right in the digits forming the numbers, the more randomly the digits appear. As seen in Table 1, in the fourth digit column, each of the ten possible digits have approximately a 10% chance of appearing.

Table 1: Expected Digit Frequencies from Benford's Law

	Position in Number			
Digit	1st	2nd	3rd	4th
0		0.11968	0.10178	0.10018
1	0.30103	0.11389	0.10138	0.10014
2	0.17609	0.10882	0.10097	0.10010
3	0.12494	0.10433	0.10057	0.10006
4	0.09691	0.10031	0.10018	0.10002
5	0.07918	0.09668	0.09979	0.09998
6	0.06695	0.09337	0.09940	0.09994
7	0.05799	0.09035	0.09902	0.09990
8	0.05115	0.08757	0.09864	0.09986
9	0.04576	0.08500	0.09827	0.09982

The number 147 has three digits, with a 1 as the first digit, a 4 as the second digit, and a 7 as the third digit. The table shows that under Benford's Law the expected proportion of numbers with a first digit 1 is 0.30103 and the expected proportion of numbers with a third digit of 7 is 0.09902.

Source: Nigrini, Mark J., 1996. A taxpayer compliance application of Benford's Law. *The Journal of the American Taxation Association* 18 (Spring): 72-91.

Benford's Law is applicable if the following conditions are met:

1. The data represents the sizes of similar naturally-occurring phenomena.
2. The data has no built-in minimums or maximums, other than a minimum of zero.

3. The data does not represent assigned numbers used as descriptions or identifiers such as serial numbers or other man-made sequences.

So to calculate the expected frequency of the digit "2" appearing in the second digit spot, you would multiple the Benford's Law percentage (0.11389) times the number of total digits appearing in the second digit spot.

Step 3: Perform Analysis of Differences between Actual and Predicted Occurrences.

Once the actual count of digits in each digit place is obtained, it is compared to the expected count of digits in each digit place and a difference is calculated. The statistical significance of the difference is determined by a calculating a z-score:

$$Z = (\text{actual} - \text{predicted}) / \text{square root}\,[n * \% * (1-\%)]$$

Where n = total number of digits in the digit spot and % = the Benford's Law percentage for this particular digit in this particular digit spot.

This is a straight-forward application of basic statistics, specifically in this case, a test of proportions. Once the z-score is obtained, it can be compared to a standard z-score for the appropriate probability level to determine if the observation is statistically significant. The z-score follows a normal distribution. The critical value for a 10% level of significance is 1.645 and for the 5% level of significance 1.96. Of course, any z-score with an absolute value greater than or equal to the critical value is assumed to be statistically significant. I emphasize to students that a statistically significant outcome is not satisfactorily explained as a random event, particularly as the number of them increase. The tests are two-tail tests as the actual could be either greater than or less than the predicted. Alternatively, a p-value can be directly determined which specifies the probability of observing the obtained outcome simply by random chance. With this information, the auditor using professional judgment can determine whether or not the data should be relied upon.

Assuming that digit analysis has been extended out to four digit spots, there would be 39 separate tests performed. I inform students about a common rule of thumb for determining if "too many" significant events are observed and therefore, it is proper to conclude that a problem exists. If a 10% level of significance is selected, then I could expect that at most 4 (10% times the 39 cells) cells could be expected to be significant simply by random chance. I caution them not to apply that rule of thumb too woodenly but to use professional judgment particularly if a number of cells are close to but not quite at the critical value. At this point, I usually discuss the idea that statistical analysis is often as much art as it is science.

PEDAGOGICAL APPROACH

I approach the topic of digit analysis with five specific learning objectives. At the conclusion of the classroom exercises, I would expect a student to be able to:

1. Identify the strengths and weaknesses of digit analysis techniques and understand when the techniques are applicable.
2. Perform an analysis of a data set and determine if the data correspond to expectations.
3. Understand the basic statistical techniques needed to apply digit analysis.
4. Apply basic spreadsheet skills to manage the data and automate the process where possible.
5. Understand the similarity of digit analysis to analytical procedures.

The pedagogical method that I use to teach digit analysis takes about 75 minutes of class time, typically spread over parts of three class periods. The pedagogical method has three main parts: the initial class exercise, lecture and discussion of digit analysis, and application. Each part of the method will be discussed in turn.

Initial Class Exercise

In the last 15-20 minutes of the class period before I plan to discuss digit analysis, I pass out an in-class exercise (see Appendix A). The students are not told the purpose of the exercise. If a student asks (and one usually does), I tell them to wait until next class period. The instructions are self-explanatory, although I do go through them to make sure everyone understands what is expected of them. Understanding *why* the exercise is being done is not necessary for its proper completion. In fact, keeping the students in the dark at this point only adds to their curiosity.

The exercise asks the students to pretend that they are part of a fraud which involves reporting false sales. The students are asked to make up 25 false sales amounts. The case includes a list of false amounts provided by a supervisor which deliberately shows a large range in the amounts consistent with the type of customers the business has. The students are provided no explicit limitations on the amounts they can report. They are told that auditors may review the amounts so they should not create something that they would feel would arouse undue suspicion. The students are also asked to provide their name. This was done to assure accountability so that each takes this exercise seriously and for administrative purposes if questions about the instrument might later arise (such as illegible handwriting).

The biggest concern that I initially had when trying this method was whether I could detect fictitious data in the student data. The data that I have gotten from the students have never failed to reveal significant differences between the actual occurrences and the predicted occurrences. This should not be surprising if digit analysis has any usefulness as a fraud detection tool. Although the

numbers of observations may be small (25 times the number of students in the class), the data is entirely fictitious. Additionally, the students do not know the exact purpose of the exercise so that they are not consciously trying to create data which comply with Benford's Law. Only once has a student had prior knowledge of digit analysis or Benford's Law.

Of course, not every cell tested was significant but enough were significant that any auditor's suspicion would have been aroused. The smallest class that I have done this analysis in had 18 students. I'm not confident that the method would work if the class was very small despite the fact that all the data is fictitious. If I were confronted with an extremely small class I would have the students provide me more fictitious sales figures so the sample size would at least 500. If I did not achieve significant results in a class of any size, I would make the students redo the in-class exercise and either use the second set or combine the two whichever would give me significant results.

After class, I take the data and input into a spreadsheet. Admittedly, this is a little tedious. I will describe how to analyze the data in an Excel spreadsheet even though commercial digit analysis software is available (initial input is often still required). When I enter the data, I don't include the decimal point. Once the data is inputted, I copy the data into another column so I do not lose the initial inputted data. In this copied column, I use the "text to column" function to spread the digits into the digit spots. Once that is done, I use the "countif" function to tabulate the number of occurrences of each digit in each digit space. This information I put into a table with the digits forming the rows and the digit spots forming the columns.

I then create another column using the initial data and multiplying it by .01 to re-establish the dollar amounts with cents. I total occurrences of each pair of digits appearing at the end of the amount and table the information so I capture the "cents" information. This data is used if alternative digit analysis tests using ending digits is calculated.

With the total counts tabulated, I then perform the tests described above. To do this, I create additional tables mirroring the previously-created tables except the cells contain the expected number of digits (or digit pair for endings) in each digit spot. This information is then compared to actual occurrences and a z-score is calculated. Using relational formulas, you will only need to input the calculation once and then can copy the function into the other cells to complete the tables.

I create an overhead to report this information to the class in the next class period.

Lecture on Digit Analysis

The lecture on digit analysis could take on several different forms depending on several factors including the instructor's preferences, the needs of the students, time constraints, supplementary materials prepared, etc. I outline my approach to presenting this information as one possible way of presentation. As much as possible, I make the lecture interactive so I include a large number of questions, often very leading to guide the students to where I want the lecture to go.

On day two, I prepare a lecture on digit analysis. For those of us that have some "ham" in us, this is a wonderful opportunity to have some fun with the class. More than once, I have come to this class with a solemn façade and began a tirade about how disappointed I was in their unethical behavior without specifying exactly what I was disappointed in. Then once tension is raised to appropriate levels, I inform them that I caught them in a lie on the exercise that I ask them to lie on and they realize the joke is on them.

To begin the lecture, I present the results of my analysis of their reported sales amounts. I show the students that I can conclusively show that the data they gave me in the last class period is highly suspicious, probably fraudulent. The students are immediately interested in knowing how I can prove that assertion. Now that the students are motivated to learn about digit analysis after seeing an example of how effective it can be in certain circumstances, I'll begin the lecture.

I chose to lecture on this material primarily because it is unfamiliar to the students. I supplement the lecture with written material but the lecture is the primary instructional tool. Given the students' motivation level and the straight-forward nature of the material, digit analysis can be covered easily in a 50 minute lecture including lots of questions from the instructor to provide student interaction.

The lecture that I perform follows this pattern. First, I pose the problem that confronts the auditor: Are the data in the database reliable? Then relying on their knowledge of analytical procedures, I suggest that we could examine the pattern of digits which *actually* occur in the database to the pattern of digits which would be *expected* to occur. I then suggest that the method I'm discussing is valid only if the expectations are reliable which leads me into the discussion of Benford's Law (specifics of the discussion are listed below). Once I convince the students that Benford's Law yields reliable expectations, I then show the students how to decompose a number into its digits in order to determine the actual occurrence of specific digits in the appropriate digit spots. Students are then shown how to determine expectations of digits in each digit spot using the percentages of occurrence provided by Benford's Law. The summary information can be easily placed into a table for statistical analysis.

The statistical analysis is a straightforward application of a test of proportions. I usually review some basic statistical concepts gauging the "depth" of the discussion by the students' responses to fairly basic statistically questions. I always discuss the use of a significance "threshold" or critical value and how to interpret the results. I emphasize the need for professional judgment in these interpretations and warn the students not become too dogmatic in the use of rules of thumb. I usually also discuss the advantage of converting the z-score to a p-score in analyzing the data.

When I discuss Benford's Law, I emphasize when it is assumed to be applicable. There are three primary criteria. First, the numbers appearing must be reporting size-related phenomena. Second, the numbers must have no artificial minimums (other than zero) or maximums. Third, the numbers must be naturally occurring and not part of an identification coding (such as a serial

number). I lead a class discussion on whether or not the sales invoices the class created in the previous class period comply with these criteria (they do).

Additional Lecture Material: Basics for Digit Analysis Using Numerical Endings

If I have time, I will usually lecture about another use of digit analysis. This technique is useful and provides the students an opportunity to see how adaptive digit analysis techniques can be. I usually spend time encouraging students to think creatively in the use of these techniques.

It is sometime fruitful to investigate the endings of numerical amounts (the cents portion of the amounts). The only difference between testing the numerical endings and the digit occurrence in digit spots is the expectations. Since most of these endings are going to be in the higher digit spots, Benford's Law is generally not applicable. Instead, the assumption is that the endings two digits (00, 01, 02 … 99) should be distributed randomly (in other words, each should appear about 1% of the time). If the amounts are less than $10.00, the cents portion of the amounts is not distributed normally according to Benford's Law. However, the difference between the distribution according to Benford's Law and a random distribution is negligible. In addition, the amounts less than $10.00 are likely to be combined with many amounts whose cents portions are more normally distributed (amounts greater than $100.00, $1,000.00, $10,000.00, etc.). I instruct the students to be aware of this potential problem but in most cases, they can assume the cents are distributed randomly.

Out-of-Class Assignment

In order to reinforce the lecture, I provide the students an out-of-class assignment due in the next class period (See Appendix B). The assignment has several objectives. First, determination of the appropriate expectation and performance of the statistical tests on the data provided. Second, students must provide their professional judgment to the statistical results in a deliberately ambiguous situation. Finally, the students are required to identify limitations in the use of digit analysis by auditors. In doing so, they are forced to think carefully about what they are doing and seek out other sources of information about digit analysis.

Suggested Solutions to the Out-of-Class Exercise

This example could be easily modified by the instructor. I provide solutions to the questions that I raised but the instructor adopting this method are encouraged to create your own assignments to emphasize issues that you feel are important.

The calculations necessary to answer Question 1 in this example are provided in Table 2, Panel A.

Table 2: Suggested Solutions to Out-of-Class Exercise				
Panel A: Solutions to Question 1				
Digit	**Actual count**	**Predicted**	**Z – Score**	**Statistically Significant?**
0	-	-	-	-
1	279	301	-1.519	No
2	194	176	1.495	No
3	131	125	0.580	No
4	112	97	1.613	No
5	66	79	-1.544	No
6	54	67	-1.644	No
7	46	58	-1.622	No
8	62	51	1.557	No
9	56	46	1.550	No
Panel B: Solutions to Question 2				
00	2	10	-2.543	Yes
18	46	10	11.442	Yes
Ends in 4s	158	100	6.114	Yes

No significant results (at the 10% level) are noted in the nine tests conducted. However, the fact the three other z-scores are just barely below the critical value and several others are relatively close would make a normally skeptical auditor suspicious. This question is designed to see if the students carefully consider the data or just apply a rule-of-thumb without too much thought. Statistical theory would suggest that this is a highly improbable result due just random chance and warrants further investigation (Busta and Weinberg 1998, Nigrini and Mittermaier 1997).

The calculations necessary to answer Question 2 in this example are provided in Table 2, Panel B. Clearly, this data should be investigated further. Each item has a statistically significant difference between the actual and predicted frequencies. The low frequency of .00 endings is indicative of a messy digits bias which sometimes indicates a deliberate attempt by someone to falsify data. Thinking that an even ending such as .00 might look suspicious, fraudsters have been known to frequently avoid these types of endings.

Question three asks the student how to proceed based on the data. In this data, if fraud is suspected, the items ending in .18 should be examined. There appears to be too many of such occurrences. The auditor should examine these items and supporting documentation to see if anything else looks suspicious. Similar thing could be done with items which end in 4 and which begin with 2. Evidence suggests an unusually high occurrence of items with these digits. The purpose of this

question is to help the students to understand that digit analysis only indicates the possibility of suspicious data but it does not directly identify which items, if any, are actually false.

Question four expands on the limitations of digit analysis. Besides the limitation noted in Question 3, digit analysis requires large data bases (Wallace, 2002). It may not be a suitable tool for the auditor of a smaller client where the number of observations is limited. Digit analysis may not be effective in cases where a small amount of false data is comingled with a large amount of legitimate data (Linville, 2008). Any unidentified situation which causes the frequencies to vary from the Benford's Law expectations in the occurrence of digits or from random in the case of the last two digits may have the auditor chasing "ghosts" and wasting valuable audit efforts. An example of this would if the client's pricing scheme made certain endings to amounts unlikely to result.

Suggestions for Other Digit Analysis Exercises

Digit analysis provides opportunities for the instructor to meet some diverse learning objectives. Since digit analysis lends itself to spreadsheet applications, an assignment could have students create their own macros and then given data to analyze in order to test their applications. Another computer-based assignment could have the students provide detailed step-by-step instructions as to how to input data into a spreadsheet and then analyze the data using the spreadsheet's functions wherever possible. Such documentation skills are important for any accountant who designs processes to be followed by others. A digit analysis assignment could also involve internet using by making students do internet research on questions related to digit analysis.

Other possibilities for assignments include having students explain why Benford's Law works. This requires them to explain exponential growth and is quite challenging to state in ordinary language. Students could be challenged to think of areas in an external or internal auditing situation where digit analysis could be useful. Bonus points are assigned for particularly imaginative, although plausible, applications. I have also given an assignment where I ask students to compare and contrast digit analysis with analytical procedures. Of course, I do not discuss the similarities in class if I give this assignment.

On occasion, I have given the students an additional in-class exercise. After finishing all the discussions on digit analysis and Benford's Law and after the students have completed their out-of-class assignment, I give the initial in-class exercise again. What I have found is that students have learned their lesson and make sure that there are a lot of smaller digits in the earlier digit spots. However, I can still show that the data is fictitious because they overcompensate and provide too many small numbers. This outcome is probably due to the fact that the students are not allowed to communicate with each other and coordinate their responses. Additionally, they probably do not remember the exact percentages from Benford's Law. I have used this as an example to show students that frauds can be difficult to conceal and fraud is often detected through things that the fraudster has never considered. This exercise also reinforces the validity of digit analysis techniques.

CONCLUSION

In this case, I describe the methodology which I use to introduce the subject of digit analysis. Normally, I do this exercise in a graduate auditing class when we discuss auditing accounts receivable with fraud-awareness, a place where this tool could conceivably be used to detect the presence of fictitious data. This is also before we discuss auditing inventory, another place where digit analysis could be used to detect fictitious data, and before we discuss auditing employee reimbursements as part of the payroll cycle, again another place where this tool has proven itself to be useful in detecting fraudulent reimbursements.

I have found that students respond favorably to this pedagogy. The enthusiasm in the class during these presentations has always been high and several students have positively commented on this exercise in my student evaluations. Certainly, this pedagogy could be modified successfully to emphasize different aspects of digit analysis or to provide more depth to the presentation. I would encourage instructors to try a similar methodology to introduce an interesting topic to your students.

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APPENDIX A
In-Class Exercise

Scenario:

HomeTown Hardware Stores is a chain of home improvement stores located in the Midwest. HomeTown presents itself as the hardware store for the do-it-yourselfer and the professional contractor. Because of this diverse customer base, the individual purchases range widely in value. A customer spending a few dollars to purchase a single item to complete a simple task may be followed by a contractor buying all the supplies needed for a major construction job and spending several thousand dollars.

You and several other members of management (including top management) have been involved in several schemes to improve the reported profitability of HomeTown. One of the schemes involves fictitious sales. Each month you and your supervisor create approximately 50 fictitious transactions to increase your store's profitability. Your supervisor has created 20 fictitious sales (which are listed on the next page) that will be included with the much more numerous legitimate sales. If needed, all necessary documentation will be forged to support the fictitious sales.

Each month the external auditors come to HomeTown and perform interim testing of transactions. They ask for a listing of sales transactions and select several for detailed testing. The sample selection uses a good deal of judgmental sampling so it is important to create fictitious values that will not arouse the auditor's suspicion.

Instructions:

Put your name on the attached sheet. This is for administrative purposes. There are no right or wrong answers.

1. Make up sales amounts for all 25 customers (including cents).
2. Keep in mind that your objective is to create amounts that avoid arousing auditor suspicion. Your supervisor has created several amounts that she believes will not arouse the auditor's suspicion. These are listed on the next page.
3. Please write neatly.

Customer	Amount
George Gibson	$5,718.40
Roger Connor	59.77
Michelle Cochrane	235.44
Holly Hollingshead	1,277.24
Bob Unglaub	7,103.68
Ellie Tappe	352.63
Leah Elia	868.30
Olaf Henriksen	948.51
Bobbi Balcena	22,166.61
Jim Mosolf	69.92
Ruby Hulswitt	172.77
Monty Basgall	102.06
Sal Madrid	8,858.35
Lauren Babe	70.62
Deanne McGarvey	7,413.44
John Hummel	17.52
Jo Nossek	596.28
Christine Arnold	316.68
Clay Perry	1,857.85
Shelley LeJeune	8,464.53

Your name:	
Customer or Contract Person	**Amount**
Paula Wilmet	
Pat Tobin	
Patti Carroll	
Bill Steen	
Andrea Reese	
Elle Riddle	
Zeke Bonura	
Marty O'Toole	
Chad Kinsey	
Joan Bucha	
Mary Callaghan	
George Mohart	
Earl Huckleberry	
Steve Christmas	
Franki Foutz	
Roy Joiner	
Bunny Fabrique	
Dawn Heffner	
Christy Jones	
Howie Goss	
Edy Hogan	
Roberta Reeves	
Abie Kruger	
Corky Valentine	
Emil Huhn	

APPENDIX B
Out-of-Class Assignment

As an auditor, you have been asked to help determine whether or not a fraud is occurring in the client's reimbursements of the employees' travel expenses. You have decided to apply digit analysis. Assume the population of reimbursements is 1,000 items. Assume that a probability value of less than 0.10 (with an associated Z-score of 1.645) is statistically significant for your purposes. The frequency of the digits appearing in the first position is listed below:

Digit	Actual count	Predicted	Z – Score	Statistically Significant?
0	-			
1	279			
2	194			
3	131			
4	112			
5	66			
6	54			
7	46			
8	62			
9	56			

Q1: (Answer on a separate piece of paper) Based on your results from just the above, should this data be investigated further? Why or why not?

Now consider the ending digits (the cents portion of the amount). Assume that the outcomes are distributed randomly so that each two-digit pair is equally likely to occur. Use the same level of statistical significance as before.

Digits	Actual count	Predicted	Z – Score	Statistically Significant?
00	2			
18	46			
Ends in 4s	158			

Q2: Based on just the ending digits, should this data be investigated further? Why or why not?

Q3: Assume you feel the information is worthy of further investigation. List and briefly describe how you would proceed with this investigation.

Q4: While digit analysis is a valuable tool for the auditor to use, it is not without its limitations. List and briefly describe some of those limitations.

REASSESSING ACCOUNTING FACULTY SCHOLARLY EXPECTATIONS: JOURNAL CLASSIFICATION BY AUTHOR AFFILIATION

Alan N. Attaway, University of Louisville
Sidney J. Baxendale, University of Louisville
Benjamin P. Foster, University of Louisville
Julia N. Karcher, University of Louisville

ABSTRACT

An extensive literature exists that determines accounting journal rankings and top research producers both individually and by program. While this research stream provides valuable insights to the Association to Advance Collegiate Schools of Business International (AACSB) accredited programs and to programs working to achieve such accreditation, it frequently is based on quality perceptions or considers top-rated programs only. This study extends previous research by reviewing authorship by faculty at a wider range of institutions. The results of this study suggest that lists based on the "top" journals may be unrealistic for many institutions. The information provided in this manuscript should assist programs, program leaders, and faculty members address AACSB accreditation issues, promotion and tenure decisions, and annual faculty evaluations.

INTRODUCTION

Accounting faculty members continue to be interested in the most recent rankings of accounting journals and the productivity of faculty members at various levels and types of schools. Accounting faculty members use research in this area to provide guidance regarding the most appropriate journal to target for manuscript submission and/or to support their research performance for annual evaluations and tenure/promotion packages.

Administrators of accounting programs are also interested in the most recent journal rankings to assist them in evaluating research in annual performance reviews and tenure/promotion recommendations. Also, college promotion and tenure committees rely on rankings when evaluating accounting faculty. Given the current Association to Advance Collegiate Schools of Business International (AACSB) mission-driven approach to accreditation and the need for schools to designate peer and aspirational schools, this type of research is even more in demand. Our research builds on the current literature by exploring publication outlets for faculty at a wider range of schools,

as well as providing information about the types of schools whose faculty provide authorship for articles in various journals.

Much of the current literature has focused on ranking the top journals and/or analyzing the productivity of faculty at highly ranked schools. Most accounting faculty members have received questionnaires from researchers who seek to rank accounting-related journals. The questionnaires typically list many of these journals and then ask the respondent to rank, or score, them in terms of quality of scholarship evidenced by each journal. The summarized results of responses are then used to rank the journals. Some examples of these studies include Herron and Hall (2004), Brown and Huefner (1994), Hull and Wright (1990), Howard and Nikolai (1983), and Benjamin and Brenner (1974). One of the most recent (Lowensohn and Samelson, 2006) provides information about perceived quality in five specialized areas – behavioral, tax, managerial, government and nonprofit, and information systems.

Numerous other disciplines have their own tradition of journal ranking literature. See for example: DuBois and Reeb (2000) international business journals; Oltheten, Theoharakis and Travlos (2005) finance journals; Theoharakis, et al (2007) Production and Operations Management; Mingers and Harzing (2007) business and management journals; Rogers et al (2007) business and management communications; Azar (2007) behavioral economics and socio-economics journals; Mylonopoulos and Theoharakis (2001) information systems journals; and Theoharakis and Hirst (2002) marketing journals.

One of this paper's authors has participated as an AACSB peer review team member for several accounting programs. That author has observed that some programs use the published rankings to create a list of preferred publications for their own faculties. As a possible consequence of the focus on highly ranked journals and programs, some schools have created target lists emphasizing the highly ranked journals even when the available resources are inadequate to support that level of scholarly activity.

Accounting faculty members in these programs undoubtedly make mental adjustments to the list when considering the promotion and tenure cases of colleagues. However, those outside the program, including colleagues in the other business disciplines, external reviewers or institutional promotion and tenure committees will not necessarily understand the need for such "mental adjustments." Consequently inappropriate journal lists may be a negative factor for individual accounting faculty members and accounting programs as a whole. Swanson *et al.* (2006) found that significantly fewer accounting faculty members hold the rank of full professor (37.21%) than in finance (39.9%), management (41.02%) or marketing (41.02%). Based on their data, they argue that "a substantial portion of this underperformance is due to a lower number of major-journal-article authors in accounting and a relatively high concentration in authorship" (2006, 4).

For programs where research is either not the top priority or is not adequately funded, publication lists of the top ten or top twenty journals as preferred targets would not appear in line with the AACSB's mission-based approach. We believe that this paper will help faculty understand

the typical author profile of many accounting journals. This information will also help programs develop more realistic sets of preferred research outlets based on their available resources and that more closely match their missions. This study could also help administrations that aspire to move their accounting programs to a higher research level identify appropriate target journals.

The rest of this paper reviews previous literature, discusses our research methods and findings, and offers our conclusions.

LITERATURE REVIEW

Quantity and quality measures are equally necessary for accounting programs to select benchmark and aspirational schools. Reinstein and Hasselback (1997) review the literature examining faculty productivity. They include an extensive discussion of the characteristics that future productivity studies should contain, and recommend some combination of quantity and quality assessment.

Much previous research focused on relatively few, "quality" journals or relatively highly ranked accounting programs. For example, Hasselback, *et al.* (2000) looked at publications in the top 40 accounting journals by Ph.D. graduates by year, to calculate benchmark standards for authorship in quality journals. They found much variation in the quantity and quality of publications by graduating Ph.Ds. In similar fashion (using top ranked journals), Glover *et al*. (2006) studied the research records of faculty members who were promoted at the top 75 accounting research programs. Based on the rankings in Treischmann, *et al.* (2000), Glover *et al.* (2006) split the schools into five groups and used the publication records of faculty at those schools to analyze the productivity required for tenure and promotion. Not surprisingly, the more highly ranked schools had higher average publication records in the top 25 accounting and top 35 business journals classification, while the 'all other publications' average increased as school rank decreased. Research productivity studies in an international context (Chan *et al.*, 2005; Chan *et al.*, 2004; Jones and Roberts, 2005; Mathieu and McConomy, 2003) produced similar findings.

Some programs may want objective criteria for setting research expectations. However, most previous articles that provide journal rankings base those rankings on accounting faculty perceptions of journal quality indicated by respondents to surveys. (For examples see: Lowensohn and Samelson, 2006; Herron and Hall, 2004; Brown and Huefner, 1994; Hull and Wright, 1990; Howard and Nikolai, 1983; and Benjamin and Brenner, 1974). Although hampered by a small sample size, Reinstein and Calderon (2006) find a general consensus among accounting faculty about the top journals. However, several specialty journals (i.e., *Journal of Intelligent Systems in Accounting, Finance and Management* and *Auditing: A Journal of Practice and Theory*) were more highly rated by departments with doctoral programs compared to other departments. Their results indicate some inconsistency in perceptions of quality between accounting programs and among journals not rated among the very elite.

Other disciplines have also attempted to move beyond perceptions and citation indices. Polonsky and Whitelaw (2005) explored whether marketing journals are evaluated differently based on location or type of institution. They found no statistical differences between regions, but did find that doctoral granting institutions weighted journal quality criteria differently than non-doctoral granting institutions. Gorman and Kanet (2005) use an author-affiliation index to rank journals in operations management. In their study, quality was implied by the percent of a journal's authors who are affiliated with top U.S. research institutions.

Administrators and faculty need information about the scholarship efforts of similar programs and those programs they aspire to emulate. Glover *et al.* (2006), provides significant information on the publication records of those promoted or tenured at the top 75 accounting programs. Currently, 168 accounting programs are AACSB accredited; thus, 93 accredited programs were not included in the Glover *et al.* (2006) study. Glover *et al.* (2006) examined institutions that have doctoral programs in accounting or could be considered elite accounting programs. However, the concentration on the top programs and the ranking of the top academic journals does not provide sufficient information for use by other accounting programs. For example, Hasselback *et al.*'s (2000, p. 86) Exhibit 2a shows that a relatively small percentage of accounting faculty consistently publish in the top 40 journals. Zivney and Bertin (1992) report similar findings for finance professors. While the publication records of the top schools are of interest, attaining those results with higher teaching loads and fewer resources would be problematic at best.

Some research focuses on the concentration of scholars who publish in the premier journals. For example, Trieschmann, *et al.* (2000, p.1135) report: "The top 10 schools accounted for 25.5 percent of the total pages in these journals; the top 25 schools accounted for 48.0 percent; the top 50 for 69.5 percent; and the top 100, for 87.2 percent". Likewise, Borokhovich *et al.* (1995) found that 40 educational institutions account for over 50 percent of all articles in 16 leading finance journals and that 66 schools account for two-thirds of those articles. Chan *et al*. (2004) studied research productivity across European universities and researchers based on articles published in 15 finance journals. They found the same concentrations as Borokhovich *et al.* (1995). Swanson *et al.* (2006) reviewed 14 highly ranked academic business journals and found that while accounting scholars who published in the top journals had published on average a larger number of articles than their peers in finance, marketing, and management, fewer accounting faculty members publish in those outlets.

Research considering publications by all faculty reveals a disparate publication pattern. Beattie and Goodacre (2003) reviewed the publication records of UK and Irish accounting and finance faculty members and found that one-half of the research output of the group is in non-academic outlets. Only 17% of these faculty members publish in the 60 top accounting and finance journals. This result would seem to support a stream of research that raises questions about the opportunity for publication in top accounting research journals by all accounting faculty and the propriety of all faculty attempting to publish in those journals. In fact, Heck and Jensen (2006, 9) note that 99% of the articles accepted in *The Accounting Review* over the last 20 years contain

mathematical equations and/or multivariate statistical inference models. (Also see Reiter and Williams, 2002; Rodgers, 1996; Williams, 1985 and 2003; Lee and Williams, 1999; and Williams and Rodgers 1995.)

Some researchers compared the opportunity for publication in accounting research journals to the opportunity to publish in finance journals. Heck and Jenson (2005, 12) compare the number of articles published in two leading accounting journals (*The Accounting Review* and *Accounting Horizons*) to the number in two leading finance journals (*Journal of Finance* and *Financial Management*) and find that publication opportunity is roughly three times as great for the finance journals (12). Jones and Roberts' (2005, 1114), found similar results when comparing six UK and six US highly-ranked accounting and finance academic journals: "In both the UK and the US, it is noteworthy that a finance journal published a disproportionate number of articles. In the UK, [*Journal of Business Finance and Accounting*] published 302 articles (34% of the total of the six UK journals), while in the US, [*Journal of Finance*] published 396 articles (40% of the total of the six US journals)".

Schools may place unrealistic expectations on their research faculty as they define or fine-tune their missions. For example, respondents to a questionnaire (Cargile and Bublitz 1986) indicated that academic accountants perceived that the three most important factors conducive to research and publication activity were technology-, time- and people-related. Levitan and Ray (1992) found that differences in research productivity were somewhat explained by differences in work factors such as hours of teaching compared to hours available for research, the researcher's motivations for topic selection, the journals read by the researchers, and professional meetings attended. Hanna et al (2005, 53) suggested that an absence of proper research support can lead to "a group of dissatisfied faculty members who feel helpless, and blame the system for their lack of progress."

As they prepare articles for publication, accounting faculty members, themselves, also may be overly optimistic when choosing target journals for submission. The focus of accounting faculty scholarly output on top-ranked accounting journals that may publish a relatively limited number of articles per year and the concentration of articles appearing in these journals authored by faculty from a limited number of programs, indicate that our research may provide valuable information for many stakeholders. This study extends previous research by reviewing authorship in a larger sample of accounting-related journals by faculty at a wider range of academic institutions. It should also assist programs, program leaders, and faculty members with AACSB accreditation issues, promotion and tenure decisions, and annual faculty evaluations.

METHODOLOGY

In our attempt to bring more objectivity to the process of characterizing accounting-related journals, we chose to characterize those journals by the affiliation of the authors of recent articles in

those journals. The journal articles are classified based on each author's affiliation into the following categories:

US Universities Granting Doctoral Degrees in Accounting (USDG)
US Non-Accounting Doctoral Granting College or University (USN)
Non-US Universities (NUS)
Business, Government, Association, or Other Institution (OTHER)

Those categories were selected based on the assumption that authors affiliated with accounting doctoral granting universities would be held to a higher scholarly standard in tenure, promotion, and annual evaluation processes than authors with other affiliations. To support research productivity, accounting faculty members at such institutions typically have reduced teaching loads, research support resources such as databases and statistical packages and assistance, graduate assistants with research skills, networking opportunities presented by research workshops conducted for the benefit of doctoral students and faculty, and support for research-related travel. Additionally, faculty members at doctoral granting universities often have the opportunity for co-authorship with their programs' current and former doctoral students.

Eight-eight journals listed in three separate rankings of journals classified as outlets for accounting faculty (Hasselback *et al.*, 2000; Hasselback and Reinstein, 1995; and Hull and Wright, 1990) plus 14 other accounting related journals identified by the accounting faculty at the authors' employing university (U.S.non-doctoral degree granting in accounting) were initially considered for analysis. We removed almost all journals that did not mainly focus on accounting or an area of accounting. For each remaining journal, we attempted to obtain the affiliation of authors of articles published in years 2003 and 2004.

Forty journals for which author affiliation information was available for both years 2003 and 2004 were selected. Some journals/serials in which accounting professors publish are not included because they were not highly ranked or because information was not available for both years. (This list is not meant to be exhaustive.) We excluded authors of editorials, letters to the editor, book reviews, reviews of current events, and other items written by the editor or editors from our analysis. For each author identified, we sought to characterize the author in terms of employer affiliation. The identification of employer affiliation was accomplished by reference to each article's abstract in the Business Source Premier on-line database for the year 2004 and for a portion of the year 2003 (Business Source Premier only began identifying each author's employer affiliation in the middle of the year 2003). Therefore, for many of the articles in the year 2003, we referred to the hard copy of the journal or to a "full-text" version of each article in either the Business Source Premier or ABI/INFORM on-line databases.

The employer affiliation categories and the related rules for classification are shown below:

US Universities Granting Doctoral Degrees in Accounting (USDG)

– Authors in this category identified their employer as being a university in the United States of America (US) that offered a doctoral degree in accounting. US universities offering doctoral degrees in accounting were determined by reference to Hasselback (2004) which lists US universities that have granted doctoral degrees in accounting. Only universities that have granted accounting doctoral degrees in the ten-year period prior to the year 2003 were regarded as accounting doctoral degree granting universities.

US Non-Accounting Doctoral Granting Colleges or Universities (USN)

– Authors in this category identified their employer as a US college or university that does not grant doctoral degrees in accounting.

Non-US Colleges or Universities (NUS)

– Authors in this category identified their employer as a non-US college or university

Business, Government, Association or Other Institution (Other)

- If the author identified his or her employer as other than an academic institution, the author's employer was placed in this classification. This classification includes both US and non-US employers.

Other classification guidelines included the following: (1) We distinguished between authors employed at universities in a state system where not all campuses offered a doctoral degree. Only those employed at a campus in the system where an accounting doctoral degree is located were considered in the USDG category. (2) If an author indicates an affiliation with more than one organization, the first organization listed was regarded as the employer for this study. (3) If the employer was an academic institution and the author identified himself or herself as an adjunct professor, the author was classified as being employed by Business, Government, Association or Other Institution.

DATA ANALYSIS

As previously mentioned, the authors of articles appearing in each journal were classified based on their affiliation. To understand journals' patterns of authorship, we first examined the authorship of each of the 40 journals.

Table 1 lists each journal included in this study alphabetically, and provides the percentage of authors in 2003 and 2004 by our four categories: USDG, USN, NUS, and Other. The information

in Table 1 should provide much useful information to accounting educator stakeholders. Not surprisingly, most of the top rated academic journals are dominated by authors from USDG institutions.

Table 1 – Journal Listing

Journal Name	USDG%	USN%	NUS%	Other%
Abacus	7.2%	8.7%	81.2%	2.9%
Accounting & Finance	5.7%	1.1%	86.2%	6.9%
Accounting and Business Research	0.0%	1.8%	98.2%	0.0%
Accounting Forum	12.7%	22.2%	60.3%	4.8%
Accounting Horizons	51.4%	29.0%	6.5%	13.1%
Accounting, Auditing and Accountability	2.0%	2.0%	92.1%	4.0%
Accounting, Organizations and Society	32.6%	6.7%	55.1%	5.6%
Advances in Taxation	43.3%	53.3%	3.3%	0.0%
Auditing: A Journal of Practice & Theory	39.0%	33.1%	25.4%	2.5%
Behavioral Research in Accounting	46.9%	31.3%	18.8%	3.1%
Contemporary Accounting Research	58.7%	14.7%	23.9%	2.8%
Cost Management (Formerly Journal of Cost Management)	3.4%	26.9%	12.6%	57.1%
Critical Perspectives on Accounting	9.4%	19.7%	70.9%	0.0%
Information Systems Research	52.4%	25.0%	22.6%	0.0%
International Tax Journal	6.9%	26.4%	22.3%	44.4%
Issues in Accounting Education	27.0%	60.0%	11.3%	1.7%
Journal of Accountancy	18.7%	43.1%	0.0%	38.2%
Journal of Accounting and Economics	84.1%	8.7%	6.5%	0.7%
Journal of Accounting and Public Policy	58.2%	19.4%	19.4%	3.0%
Journal of Accounting Education	27.6%	62.1%	8.6%	1.7%
Journal of Accounting Literature	30.4%	39.1%	30.4%	0.0%
Journal of Accounting Research	79.3%	10.0%	10.7%	0.0%
Journal of Accounting, Auditing and Finance	64.5%	22.4%	11.2%	1.9%
Journal of Applied Business Research	13.3%	75.2%	8.5%	3.0%
Journal of Business, Finance and Accounting	10.4%	20.9%	65.6%	3.1%
Journal of Government Financial Management (Formerly The Govt. Accts Jrnl)	14.1%	21.9%	1.6%	62.5%
Journal of Management Accounting Research	62.2%	11.1%	26.7%	0.0%
Journal of Taxation	4.1%	9.5%	0.0%	86.5%
Journal of the American Taxation Association	62.5%	32.8%	3.1%	1.6%

Table 1 – Journal Listing				
Journal Name	**USDG%**	**USN%**	**NUS%**	**Other%**
Management Accounting Quarterly	11.6%	73.3%	2.3%	12.8%
Management Accounting Research	21.7%	5.2%	69.6%	3.5%
MIS Quarterly	50.5%	22.8%	26.7%	0.0%
National Public Accountant	1.8%	54.4%	0.0%	43.9%
National Tax Journal	41.2%	9.9%	3.1%	45.8%
Practical Tax Strategies (Formerly Taxation for Accountants)	5.5%	35.5%	0.0%	59.1%
Strategic Finance (Formerly Management Accounting)	3.1%	43.3%	5.2%	48.5%
Tax Advisor	6.1%	36.4%	0.0%	57.6%
The Accounting Review	55.2%	9.3%	35.0%	0.5%
The Internal Auditor	9.4%	16.0%	3.8%	70.8%
The Journal of Information Systems	59.3%	32.7%	1.8%	6.2%

Table 2 is presented to provide accounting stakeholders with additional useful information. Panel A includes publications with the highest percentage of authors from US doctoral granting colleges and universities, while Panel B includes publications with the highest percentage of authors from US non-accounting doctoral granting educational institutions. Panel C includes publications with the highest percentage of authors from non-US universities/colleges. We also present the journals with the highest percentage of authorship from the Other category in Panel D of Table 2. (Percentages related to the particular group are bolded, and each journal has a bolded percentage in one of the panels.)

Table 2				
Journal Name	**USDG%**	**USN%**	**NUS%**	**Other%**
Panel A: Highest authorship from US Accounting Doctoral Granting Educational Institutions				
Journal of Accounting and Economics	**84.1%**	8.7%	6.5%	0.7%
Journal of Accounting Research	**79.3%**	10.0%	10.7%	0.0%
Journal of Accounting, Auditing and Finance	**64.5%**	22.4%	11.2%	1.9%
Journal of the American Taxation Association	**62.5%**	32.8%	3.1%	1.6%
Journal of Management Accounting Research	**62.2%**	11.1%	26.7%	0.0%
The Journal of Information Systems	**59.3%**	32.7%	1.8%	6.2%
Contemporary Accounting Research	**58.7%**	14.7%	23.9%	2.8%
Journal of Accounting and Public Policy	**58.2%**	19.4%	19.4%	3.0%
The Accounting Review	**55.2%**	9.3%	35.0%	0.5%
Information Systems Research	**52.4%**	25.0%	22.6%	0.0%

Table 2				
Journal Name	**USDG%**	**USN%**	**NUS%**	**Other%**
Accounting Horizons	**51.4%**	29.0%	6.5%	13.1%
MIS Quarterly	**50.5%**	22.8%	26.7%	0.0%
Behavioral Research in Accounting	**46.9%**	31.3%	18.8%	3.1%
Auditing: A Journal of Practice & Theory	**39.0%**	33.1%	25.4%	2.5%
Panel B: Highest authorship from US Non-accounting Doctoral Granting Educational Institutions				
Journal of Applied Business Research	13.3%	**75.2%**	8.5%	3.0%
Management Accounting Quarterly	11.6%	**73.3%**	2.3%	12.8%
Journal of Accounting Education	27.6%	**62.1%**	8.6%	1.7%
Issues in Accounting Education	27.0%	**60.0%**	11.3%	1.7%
National Public Accountant	1.8%	**54.4%**	0.0%	43.9%
Advances in Taxation	43.3%	**53.3%**	3.3%	0.0%
Journal of Accountancy	18.7%	**43.1%**	0.0%	38.2%
Journal of Accounting Literature	30.4%	**39.1%**	30.4%	0.0%
Panel C: Highest authorship from Non-US Educational Institutions				
Accounting and Business Research	0.0%	1.8%	**98.2%**	0.0%
Accounting, Auditing and Accountability	2.0%	2.0%	**92.1%**	4.0%
Accounting & Finance	5.7%	1.1%	**86.2%**	6.9%
Abacus	7.2%	8.7%	**81.2%**	2.9%
Critical Perspectives on Accounting	9.4%	19.7%	**70.9%**	0.0%
Management Accounting Research	21.7%	5.2%	**69.6%**	3.5%
Journal of Business, Finance and Accounting	10.4%	20.9%	**65.6%**	3.1%
Accounting Forum	12.7%	22.2%	**60.3%**	4.8%
Accounting, Organizations and Society	32.6%	6.7%	**55.1%**	5.6%
Panel D: Highest authorship from Non-educational Institutions				
Journal of Taxation	4.1%	9.5%	0.0%	**86.5%**
The Internal Auditor	9.4%	16.0%	3.8%	**70.8%**
Journal of Government Financial Management (Formerly The Govt. Accts Jrnl)	14.1%	21.9%	1.6%	**62.5%**
Practical Tax Strategies (Formerly Taxation for Accountants)	5.5%	35.5%	0.0%	**59.1%**
Tax Advisor	6.1%	36.4%	0.0%	**57.6%**
Cost Management (Formerly Journal of Cost Management)	3.4%	26.9%	12.6%	**57.1%**
Strategic Finance (Formerly Management Accounting)	3.1%	43.3%	5.2%	**48.5%**
National Tax Journal	41.2%	9.9%	3.1%	**45.8%**
International Tax Journal	6.9%	26.4%	22.3%	**44.4%**

Administrators and faculty at schools within each group could view these lists to indicate appropriate outlets for publication. A school in the USN category could examine Table 2, Panel B to identify journals where faculty could expect to publish. Table 2, Panel D also provides information about several journals that may be appropriate targets for faculty at non-accounting doctoral-granting institutions who wish to emphasize practitioner-oriented research. Table 2, Panels A and C, could provide non-accounting doctoral granting schools with a list of target journals if they aspire to research goals similar to US accounting doctoral granting institutions or offer higher rewards based on specific publication outlets. Also, such schools should insure that their acceptable publication list does not over-emphasize journals from the top of the USDG and NUS lists.

Also, Table 2, Panel A provides doctoral granting institutions with additional information about article authorship in the top journals. The NUS column may provide previously unknown information to faculty and administrators at all US accounting programs.

The authors of the articles appearing in the various journals were employed by a wide array of organizations. The faculty members who published in the three journals that had the highest authorship from US Accounting Doctoral Granting Educational Institutions (the first three journals in Table 2, Panel A) were employed by the following United States universities (in order of number of authors affiliated with the university):

University of Chicago
Harvard University
University of Pennsylvania
University of Minnesota
Northwestern University
University of California – Los Angeles (UCLA)
Massachusetts Institute of Technology (MIT)
University of Southern California
University of Arizona
University of Florida
Indiana University
University of Kansas
University of North Carolina
New York University

The authors affiliated with US Non-accounting Doctoral Granting Educational Institutions (Table 2, Panel B) were from a wide range of colleges and universities with the larger institutions being predominant. In general, the authors of articles in the journals in Table 2, Panel B were typically employed by colleges and universities that were accredited by AACSB and offered a Master of Business Administration degree and/or a Master of Accountancy degree.

The faculty members who published in the three journals that had the highest authorship from Non-US Educational Institutions (the first three journals in Table 2, Panel C) were employed by the following Non-United States universities (in order of number of authors affiliated with the university):

Cardiff University – Wales, United Kingdom
University of New South Wales – Australia
Macquarie University – Australia
Monash University – Australia
University of London
University of Newcastle – Australia
Canterbury University – Australia
Deakin University – Australia
University of Exeter – United Kingdom
Glasgow University – Scotland, United Kingdom
University of Northumbria – United Kingdom
University of Sydney – Australia
University of New England – Australia
University of Technology, Sydney – Australia

The authors affiliated with organizations other than educational institutions (Table 2, Panel D) were employed by a multitude of government and business organizations. Authors who were employees of law firms and CPA firms tended to be frequent contributors to journals that focused on taxation issues. Employees of CPA firms were also frequent contributors to journals that featured articles of interest to practicing accountants. The journals that appealed to accountants in industry tended to attract authors who were accountants employed in industry. Accountants employed by governmental entities were the primary contributors to the *Journal of Government Financial Management* and bank employees were frequent contributors to *Bank Accounting and Finance*.

CONCLUSION

Reinstein and Calderon (2006) find that schools with accounting Ph.D. programs and/or with separately accredited accounting programs are more likely to have internal lists of target journals than those programs with neither distinction. However, many accounting programs (at both doctoral granting and non-doctoral granting schools) create internal lists based on published "top" journal lists that we have cited. Our results show that such internal lists might be unrealistic for some accounting programs. Consequently, these lists could cause difficulty in the promotion and tenure process when

academic evaluators from outside the accounting discipline compare a faculty member's publications to the internal top journal list.

This is not to say that faculty members should not strive to publish in the highest quality outlets. If recent efforts to expand the types of research accepted by some journals, primarily *The Accounting Review* (Rayburn, 2006) are successful, publication rates for scholars outside the top research schools may increase. However, administrators and faculty members working on mission statements should not ignore research allocation differences. Mission driven accreditation allows accounting programs to create intellectual contribution expectations that are aligned with the teaching loads and research support available at their institution. We hope that this paper provides a basis for those programs to craft mission statements that reflect the reality of their institutional environment.

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STUDENT ATTITUDES TOWARD INTERNATIONAL BUSINESS AND THE INTERNET: AN EXPLORATORY STUDY

Thuhang T. Tran, Middle Tennessee State University
Cheryl B. Ward, Middle Tennessee State University

ABSTRACT

The Internet as a learning tool in the International Business (IB) curriculum is becoming more widespread because of its informational and multimedia benefits. This research explores the relationship between student attitude toward the Internet and toward IB with four performance measures (i.e., objective, expected, behavioral, and attitudinal) and affect toward international learning to determine the effectiveness of Internet-based assignments. The results indicate that Internet attitude did not have a significant impact on any of the performance measures and had a negative significant relationship with international learning affect. However IB attitude had a significant positive relationship with expected IB grade, assignment enjoyment, and international learning affect as well as a significant negative relationship with assignment finishing time. The interaction effect of the two attitude measures was only positively related to assignment enjoyment. This study shows that student IB attitude is more pertinent than their Internet attitude when applied to student performance and international learning affect. At best, a positive Internet attitude can amplify an existing positive IB attitude, and at worst, it may dampen international learning affect.

INTRODUCTION

The pace of globalization has made an International Business (IB) curriculum a vital component of a business education (Fugate & Jefferson, 2001), but how to infuse this curriculum in a meaningful way with budgetary and time constraints has been a challenge for educators. In response, the Internet has been used as a low-cost alternative that can enable student learning through information gathering, access to marketing information, and communications with foreign experts (Siegel, 1996).

Although the Internet can provide new ways of teaching and learning, it does not guarantee that learning objectives will be met (Kirkwood & Price, 2005). Several researchers have examined student attitudes toward Internet usage and its benefits to international business education (e.g., Alon, 2003; Greene & Zimmer, 2003). Our study contributes to this growing body of research by exploring

student attitudes not only toward the Internet but also toward IB and the interaction of these two attitudes on student performance and affect toward international learning. Furthermore, performance is tested from four different perspectives: objective, expected, behavioral, and attitudinal. Given the myriad possible applications for the Internet and the corresponding learning objectives to be met in a course, exploring the effectiveness of Internet applications in coursework can provide useful insights for pedagogy.

LITERATURE REVIEW AND RESEARCH QUESTIONS

The extant literature on Internet technology in the classroom has established that students are receptive to Internet usage for information and learning (Lundgren & Nantz, 2003). It can also enhance research skills and cross-cultural learning by providing a better understanding of foreign countries and cultural differences as well as enhance students' cross-cultural communication skills (Greene & Zimmer, 2003; Lawson, White, & Dimitriadis, 1998). Career benefits include an increased interest in an international business career or graduate studies (Greene & Zimmer, 2003) and perceived improvement in career opportunities and future job performance (Clarke, Flaherty & Mottner, 2001) as a result of using Internet assignments. Although students may gain additional international business skills and abilities, they may find the assignments too difficult or not entirely enjoyable (Alon, 2003).

Peng, Tsai, & Wu (2006), found that students' Internet attitude was influenced by gender, self-efficacy, and perceived Internet utility. While most students indicated a positive attitude toward the Internet and adequate Internet usage skills, males tended to have a more positive attitude than females. However, this gender gap is narrowing (End, et al., 2000) and the gap may be non-existent for the "Net generation," those born after 1977 (Tapscott, 1997). The majority of the students tended to view the Internet as a functional tool, but those who saw the Internet as a leisure tool had a more positive attitude toward the Internet and demonstrated better communication skills.

The extant research on Internet usage confirms that students tend to have a positive Internet attitude, but research has not focused on student attitude toward IB. Given the role that attitudes play in student learning and their receptiveness to new ideas and concepts (Peng et al., 2006), this oversight should be addressed. Student attitude toward IB may have an influence on what and how much they learn and consequently affect their class performance. In addition, Internet usage in an IB class setting may lead to an interaction between the two attitudes since learning context can play a role in shaping student attitudes and performance. A study by Nahl (1998) found that student attitudes toward an Internet assignment as well as the Internet improved as their Internet skill level improved enhancing their comfort with and confidence in using the Internet. The Internet may provide a "safe" environment for students to explore and learn about foreign concepts and ideas without requiring direct interaction or producing any negative feedback (Winnicott, 1962). Conversely, students with a prior interest in IB who may have felt stymied by the limitations of the

classroom may be encouraged by the access to international resources that the Internet can provide (Lawson et al., 1998). The literature also highlights the fact that there is a wide range of applications and situations for Internet usage in the classroom. However, its efficacy can vary depending on the desired learning objectives and student learning measurements (Kirkwood & Price, 2005). In this study, we address these gaps in the literature by examining the impact of student attitude toward IB and the Internet and their interactive effect on four learning performance measures: objective, expected, behavior, and attitudinal.

Objective measures of learning are desirable because they are irrefutable in that the student either answered the question correctly or not. Barring a lucky guess, an objective measure can gauge student mastery of a learning goal. Expected performance is less tangible because it looks at future intentions and goals. Although student expectations can quantify student aspirations, it may also measure students' self image if expectations are unrealistically high or low relative to their abilities. Behavioral performance measures the actual actions that a student takes and provides concrete evidence of performance under "real-world" conditions. Attitudinal performance can point to potential future behaviors since students with a positive attitude toward an experience are more likely to want to do more with the subject. Each performance measure captures a different aspect of learning. Thus, this study will explore the following research questions.

Research Question 1:	*Do student attitudes toward the Internet and toward International Business (IB) affect student performance (objective, expected, behavioral, and attitudinal)?*
Research Question 1a:	*Is there an interaction effect between student attitudes toward the Internet and IB with regard to student performance (objective, expected, behavioral, and attitudinal)?*

Ultimately, the goal of teaching IB is to better prepare students for the global work environment. One way to do this is to increase students' multicultural knowledge and awareness since most of the challenges found in international management and marketing stems from a lack of cultural knowledge or appreciation. Because of its multimedia nature, low cost, and limitless information availability, the Internet may empower students to learn more about other cultures. Although the Internet is currently limited to visual and auditory information, the lack of direct knowledge may encourage learners to seek additional information. Exposure to the information provided on the Internet can also increase student curiosity about the topic. Contrarily, the vast amount of information found on the Internet may either overwhelm students or give them a false sense of international knowledge leading them to withdraw from further international studies. As a result, we are interested in finding answers to the following questions.

Research Question 2:	*Does student attitude toward the Internet influence attitude toward international learning?*
Research Question 2a:	*Is there an interaction effect between student attitudes toward the Internet and IB with regard to international learning?*

RESEARCH METHOD

The sample is comprised of 112 students enrolled in the International Business course at a large southeastern U.S. public university. The demographic results revealed the following distributions: mean age 24.6 years; mean income $39,520; 91% (102) Seniors; 54% (59) female; 79% (87) only spoke one language even though 91% (102) had taken a foreign language course. On average, the students used the internet 2.2 hours daily for 8.85 years. The majority of students reported usage of the Internet in a variety of places including the home (88.4%, 99 students), school (97.3%, 109), and work (41%, 46). A majority of the students surveyed used the Internet for multiple purposes including information (97.3, 109 students), communication (82.1%, 92), entertainment and shopping (both 75.9%, 85).

For this study, students were asked to use the Internet to plan for a business trip to Europe and answer five requests for information related to the proposed trip. First, students had to find the proper mailing address for a hotel in Germany leading them to the hotel's website or a comparable website. Second, students had to find the meaning of a German word (*wassterturm*) using an online language translator or use visual clues from the hotel's website. The third question asked students to visit www.amazon.de to find a book price to experience shopping on a foreign website. For the remaining two questions, students were directed to www.bahn.de, the German rail system website, to find effective dates and price for a discount train ticket for a trip from Germany to England and possible denominations for a frequent-user *bahn* rail card. These tasks were used because they involve elements common to international business etiquette, transactions, and travel. Unfortunately, a software error created data losses for Questions 3 & 4 so only three of the original five questions yielded usable data. Upon completion of the tasks, students completed an online survey questionnaire using a Likert-type scale [strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1)] to determine their attitudes toward IB and the Internet.

For research questions 1 and 1a, four measures were used for the dependent variable, Performance. First, an objective performance measure, Score, was taken as the sum of the number of questions the student answered correctly (0= no questions; 3= all questions). Since the study was conducted during the IB course, students were asked for their expected grade for the IB course to measure expected performance, IB_Grade. Behavioral performance, Fin_Time, was taken as the

number of minutes to complete the exercise as reported by the students. Finally, an affective performance measure (Enjoyest) was taken by asking students to identify the tasks they found to be the most enjoyable (from 0 = none of the tasks to 4 = all of the tasks). To determine if the students' attitude toward multicultural learning, LearnMore, had changed after the exercise, students were asked to rate their agreement with the following statement: "I want to learn more about other cultures after this exercise" using the Likert-type scale mentioned previously.

A survey instrument containing 25 questions (ten related to IB attitudes, nine related to Internet attitudes, and six related to self attitudes) was used to collect the attitude measures. A factor analysis using principal components with a Varimax rotation yielded three factors with eigenvalues greater than 2.0 (i.e. Net_Att, IB_Att, and Self_Att). Factor scores using the regression method were calculated for the factors identified from the survey. The independent variables included Internet attitude, Net_Att (7 items) and attitude toward IB, IB_Att (6 items). A reliability analysis of the factor items yielded a Cronbach's alpha of 0.73, which is marginally acceptable. The interaction effect between student IB and Internet attitudes was calculated by multiplying IB_Att and Net_Att = IBXNet. Self_Att (4 items) was originally intended as a control variable, but it did not contribute to the model and was removed for parsimony. The control variables used in the regression model included Age, Sex (0=Male, 1=Female), Income, Rank (0=Junior, 1=Senior), and daily Net_Use.

RESULTS

The results of the Pearson correlation analysis along with the descriptive statistics are summarized in Table 1. Of note, the correlation between Age and Fin_Time (r-squared = 0.19*) is positively significant indicating that older students reported taking a longer time to finish the exercise. One possible explanation may be that older students may not be as comfortable or conversant with the capabilities of the Internet, and consequently, spent more time to find the necessary information. Although the average age of the students was approximately 25 years, student age ranged from 19 to 52 years. Fin_Time was also significantly correlated with IB_Att (r-squared = -0.20*), but in a negative direction. In this case, students who have a positive IB attitude may have spent less time on the exercise perhaps because of familiarity, or spending more time doing the exercise led students to have a lower attitude toward IB because they were frustrated with the length of time it took to complete the exercise. Student IB attitude is positively significantly correlated to IB_Grade (r-squared = 0.28**) suggesting that students who have a positive IB attitude expect to earn higher grades, or students have a positive IB attitude because they expect a higher grade.

The correlation results for Learn_More show that students who wanted to learn more about other cultures tended to be ones who enjoyed the exercise more (r-squared = 0.23*), seniors (r-squared = 0.22*), as well as those who used the Internet more (r-squared = 0.19*). As expected, IB attitude was positively correlated with Learn_More (r-squared = 0.26**) while the opposite was the

case for Internet attitude (r-squared= -.24*), which is discussed below. However, when Internet and IB attitudes interact, the correlation of the interaction and Learn_More is positive (r-squared = 0.20*) suggesting that a positive attitude toward IB may override the negative impact of the Internet attitude when it is applied to students desire for multicultural learning.

Table 1: Descriptive Statistics and Pearson Correlations

Vari-able	Mean	S.D.	Score	IB_ Grade	Fin_ Time	Enjoy-est	Age	Rank	Sex	In-come	Net_ Use	Net_ Att	IB_ Att	IBX-Net
1. Score	1.84	0.81												
2. IB_ Grade	3.31	0.63	0.03											
3. Fin_ Time	22.00	11.24	0.05	-0.14										
4. Enjoy-est	1.07	1.09	0.08	0.16	-0.09									
5. Age	24.61	5.90	-0.12	0.04	0.19*	0.00								
6. Rank	0.91	0.29	-0.02	-0.09	0.08	-0.09	0.10							
7. Sex	0.54	0.50	0.10	-0.01	-0.08	0.08	-0.13	0.13						
8. In-come	39.5K	43.0K	-0.02	0.06	-0.12	-0.01	0.02	0.02	-0.11					
9. Net_ Use	2.20	1.54	0.11	0.04	-0.03	0.18	0.08	0.14	0.14	0.07				
10. Net_ Att	0.00	1.00	0.09	0.08	0.07	0.06	-0.15	0.06	0.16	-0.10	0.11			
11. IB_Att	0.00	1.00	-0.05	0.28**	-0.20*	0.33***	0.03	-0.12	-0.06	0.06	0.14	0.00		
12. IBX Net	0.00	1.07	0.02	0.09	0.04	0.20*	0.12	0.07	0.07	-0.12	0.09	-0.16	0.01	
13. LearnM ore	3.07	0.81	-0.03	-0.04	0.04	0.23*	0.02	0.22*	0.11	-0.12	0.19*	-0.24*	0.26**	0.20*

N = 104 to 112; ***p<0.001, **p<0.01; *p<0.05

Multiple linear regression analysis was performed on the four performance variables; however, only Enjoyest yielded significant models. All of the models shown in Table 2 have significant F-values, and the variables used explain 18-28% of the variance in their respective models. From Model 1 of Table 2, the results show that while Net_Att was not significant, students' Rank (b = -0.28**), daily Net_Use (b = 0.24*), and IB_Att (b = 0.27**) did significantly predict the level of enjoyment in the exercise. In other words, students that tended to enjoy the more challenging

activities were Juniors, students with high daily Internet usage, and students who had a more positive IB attitude.

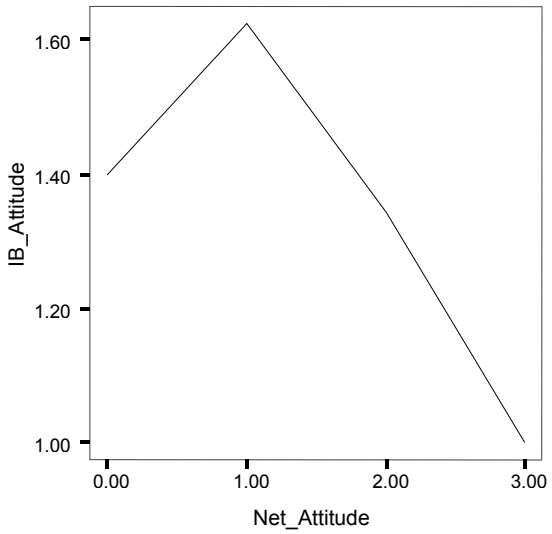
The interaction effect between IB_Att and Net_Att (b = 0.22*; r-square change = 0.041*) was found to be positively significant in Model 2, suggesting Internet attitude has a positive interaction effect with IB_Att when applied to students' enjoyment of the exercise. A plot of the interaction between IB and Internet attitudes (see Figure 1) show that the two have a quadratic, curvilinear relationship. IB_Att increases with an increase in Net_Att until Net_Att reaches a value of approximately 1.00, at which point IB_Att decreases with an increase in Net_Att. These results support the arguments developed earlier and suggest that the appeal of the Internet and its multimedia usage transfers to IB, but after a certain point, the Internet may supplant the need for IB. Students may feel that the vast resources and connections provided by the Internet to be more useful than IB education. In response to Research Questions 1 and 1a, student Internet attitude had no effect on their performance while student attitude toward IB had a positive effect on their enjoyment and expected IB grade, but a negative effect on finishing time. There is also an interaction effect for enjoyment.

Table 2: Multiple Linear Regression Results

	Dependent Variable = Enjoyest		Dependent Variable = LearnMore		
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	---***	---***	---***	---***	---***
	(0.88)	(0.87)	(0.65)	(0.64)	(0.64)
Age	-0.12	-0.15	-0.09	-0.10	-0.11
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
Rank	**-0.28****	**-0.28****	0.18	**0.21***	**0.21***
	(0.57)	(0.56)	(0.42)	(0.41)	(0.41)
Major	-0.03	-0.04	-0.10	-0.09	-0.10
	(0.21)	(0.21)	(0.16)	(0.15)	(0.15)
Sex	0.08	0.07	0.11	0.13	0.12
	(0.23)	(0.23)	(0.17)	(0.17)	(0.17)
Income	-0.11	-0.08	-0.17	-0.19	-0.17
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Net_Use	**0.24***	**0.22***	0.16	0.15	0.14
	(0.09)	(0.09)	(0.07)	(0.06)	(0.06)
Net_Att	0.04	0.09	**-0.35*****	**-0.35*****	**-0.32****
	(0.11)	(0.11)	(0.08)	(0.08)	(0.08)

Table 2: Multiple Linear Regression Results					
	Dependent Variable = Enjoyest		Dependent Variable = LearnMore		
Variable	Model 1	Model 2	Model 3	Model 4	Model 5
IB_Att	**0.27****	**0.28****		**0.25****	**0.25****
	(0.11)	(0.11)		(0.08)	(0.08)
IBXNet		**0.22***			0.12
		(0.10)			(0.07)
N	91	91	91	91	91
R-squared	0.24	0.28	0.18	0.24	0.25
F-value	3.16**	3.47***	2.64*	3.26**	3.05**
Deg. of Freedom	(8,82)	(9,81)	(7,83)	(8,82)	(9,81)
***p<0.001; **p<0.01; *p<0.05 Standardized coefficients reported; standard errors in parentheses.					

Figure 1: Plot of Interaction between IB_Attitude and Net_Attitude



To answer Research Questions 2 and 2a, Model 3 examined the impact of Net_Att on students' affect for international learning and surprisingly found that there was a significant negative result (b = -0.35***) that was consistent across models 3-5 in Table 2. One possible explanation for this finding is that students may be frustrated by the information limitations of the Internet, and as a result, may want to learn more to make up for the deficiency. Another possibility is that students

who have a more positive Internet attitude may feel that it adequately connects them to the world or meets their informational needs, and so they have a lower affect toward multicultural learning.

The addition of IB_Att in Model 4 shows that IB_Att (b = 0.25**) and Rank (0.21*) are positively significant. The result for IB_Att is expected given that multicultural learning is a core element of IB; however, the Rank results are in the opposite direction from the results of Models 1 and 2. Taken together, the results show Seniors are more likely to pursue multicultural learning even though they enjoyed the assignment less than their Junior counterparts, possibly because Seniors are more conscious of globalization's impact on their future career goals. The interaction effect, shown in Model 5, was not a significant factor in predicting multicultural learning intentions. Thus, the answers to Research Questions 2 and 2a are that Net_Att does impact multicultural learning but in a negative direction, and the interaction of Net_Att and IB_Att has no significant influence on multicultural learning.

CONCLUSIONS

In conclusion, student attitude toward the Internet and the interaction of student attitudes toward the Internet and IB had a significant impact on whether or not they enjoyed the Internet assignment, but they did not influence objective, expected, or behavioral performance measures while student attitude toward IB had a positive significant relationship with their expected, behavioral, and attitudinal (Enjoyment) performance. Contrary to expectations, student attitude toward the Internet had a negative significant relationship with the desire for more multicultural learning. This suggests that students may gain a false sense of knowledge or learning from the Internet or the limitations of the Internet may spur students to seek additional international knowledge. The interaction of student attitudes toward the Internet and IB had no significant impact on the desire for more multicultural learning.

There are some acknowledged limitations to this study. First, generalizability of these results may be limited by the sample size (N=91 for the regression analyses) which may not represent the U.S. student body since a majority of the students are from one region of the U.S. A second problem with the study is the data for Score was severely truncated because of software error. If full data had been retained for all 5 questions (instead of just 3), the regression analysis for the objective performance measure may have yielded significant results. A third issue may arise from the nature of the Internet assignment which asked students to search for information both in English and German as well as navigate through a foreign-based website. Although these activities create a problem for students to solve and expose students to foreign customs and norms, they do not require in-depth involvement, analysis or critical thinking, and the students may not have found these activities to be very interesting. Fourth, the study may have a common method bias since a common survey instrument was used to collect data for both the independent and dependent variables at the same time. This may create an inflated correlation between the independent and dependent

perceptual variables because of an item priming effect (Podsakoff et al., 2003). Future studies on this topic would need to incorporate a larger, more representative sample, additional objective performance measures, and assignments that are more engaging or requiring deeper levels of interaction and learning.

Although prior research has focused on student attitude toward the Internet as influential factors in IB education because of the novelty of this educational tool, our study shows that student attitude toward IB is more relevant than their attitude toward the Internet in relation to student performance and affect for future learning. At best, a positive student attitude toward the Internet can amplify an existing positive attitude toward IB, and at worst, it may dampen the desire for additional international learning because it may give students an unrealistic sense of international knowledge and understanding. Given the effects that IB_Att has on student performance and desire for more multicultural learning, more research is needed to examine the factors that would influence students' attitude toward IB.

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TEACHING AND ASSESSING BASIC CONCEPTS TO ADVANCED APPLICATIONS: USING BLOOM'S TAXONOMY TO INFORM GRADUATE COURSE DESIGN

Stephen C. Betts, William Paterson University

ABSTRACT

Graduate students expect to draw on their experience and expertise to participate in high level discussions and engage in advanced applications of the course material. However the varied backgrounds of the students frequently necessitate a review of the basic concepts in order for the class to have a common understanding and vocabulary. The instructor's challenge is to design a course that can progress from basic concepts to advanced applications within a single semester. In this paper, Bloom's Taxonomy of educational objectives is utilized to guide course design and assessment considerations. The development of a core MBA level organizational behavior course will serve as an example.

INTRODUCTION

Graduate programs are an important part of our universities mix of offerings. The lead graduate program associated with business education is the MBA degree. Typical MBA programs have a number of core courses that are part of every student's curriculum regardless of concentration. Although some courses can be waived for some students, many students cannot meet the criteria to be waived and most programs have 'upper core' courses that cannot be waived. Given the wide range of knowledge, skills and abilities of students taking these courses it is necessary to start with the basics in core courses. The primary challenge for the instructor is to move from delivery of basic knowledge to sophisticated meaningful discussion in the time span of a single semester, and the secondary challenge is to assess the steps along the way. This paper starts with a brief discussion of these challenges. Next will be a description of Bloom's Taxonomy of Educational Objectives, which is used as a guide for the next section – an approach to designing a course. A graduate level organizational behavior course will be used as an example. The paper concludes with a suggestion that this approach can be used for designing other college courses and perhaps entire curricula.

THE CHALLENGE OF TEACHING AT MANY LEVELS

Some graduate programs require students to have a significant background in the discipline before being accepted into the program. Other programs including many MBA programs, accept students that do not have a significant prior background in the discipline. When the student body has mixed knowledge, skills, abilities and experience, the challenge to the course/curriculum designer is to play 'catch-up' and bring the deficient students through a range of information and skills, while keeping the course worthwhile and meaningful to better prepared students.

There are several ways to deal with this challenge. One way is to avoid the situation by either requiring a requisite amount of basic business knowledge before acceptance or limiting basic knowledge to lower core courses that can be waived by students with the knowledge, skills, abilities and/or experience. Another approach is to simplify things and omit potentially important issues. A third approach is to carefully design the course this challenge in mind. Such an approach will be explained shortly, but first we need to review the learning concepts that will form the basis of our design approach.

BLOOM'S TAXONOMY

In 1956, a group headed by Benjamin S. Bloom, after working on a project since 1949, finally published what is now known as 'Bloom's Taxonomy' (Bloom, 1956). It was originally intended to help instructors measure learning by providing guidelines as to what can be expected from instruction. The taxonomy (Appendix 1) has six levels - Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation. The typology was originally meant to help develop rubrics and measure learning (Bloom, 1956; Krathwohl, 2002). It is still used in its original form, however there are occasional modifications (i.e. Christopher, Thomas & Tallent-Runnels, 2004), revisions (i.e. Krathwohl, 2002) and alternative typologies proposed (i.e. Lytras & Pouloudi, 2006). The typology is still used in evaluation (Bissell & Lemons, 2006; Lipscomb, 1985; Barker & Hapkiewicz, 1979; Athanassiou, McNett & Harvey, 2003); however it has found great use in course and curriculum development and design (Christopher, Thomas & Tallent-Runnels, 2004; Foote, 1998; Noble, 2004; Chyung, & Stepich, 2003). Bloom's typology has even found use in supervision (Granello), graduate work (Granello, 2001) and with such contemporary methods as discussion boards (Christopher, Thomas & Tallent-Runnels, 2004) and online instruction (Chyung & Stepich, 2003).

Table 1: Levels of Thinking – Adaptation of Bloom's Taxonomy		
Low level	Knowledge or Understanding	Behaviors that emphasize recall or memory or indicate a literal understanding
Medium level	Application or Analysis	Behaviors that require students to use what they have learned in a new way or that break down knowledge into its component parts
High level	Synthesis or Evaluation	Behaviors that combine elements of learning into a new whole or that assess the value of particular ideas or solutions
(Adapted from Christopher, Thomas & Tallent-Runnels, 2004)		

DESIGN APPROACH USING BLOOM"S TAXONOMY

Our approach to course design uses a modification of Bloom's Taxonomy (Christopher, Thomas & Tallent-Runnels, 2004). We reduced the taxonomy to three levels (Table 1). The basic approach involves three ideas. First, class time should be used primarily for the middle level. Second, course elements need to correspond to and address course learning outcomes and the third consideration is that the course elements (and learning outcomes) can be assessed. Many techniques or 'course elements' can be used in designing a course. Table 2 shows the course elements used in a graduate level organizational behavior course. The same table shows the degree to which each element addresses topics at the three levels of learning. For example, online multiple choice questions deal with basic material, therefore are rated 'high' on the first level of learning. Some questions do beyond the basic material, so a rating of 'medium' is given for the second level of learning. Synthesis and evaluation is not possible in online multiple choice quizzes, therefore 'low' is indicated. Online quizzes are not a teaching/learning method. The more complete description is 'online quizzes of book material', whereas reading and studying the textbook is the learning activity and the quiz itself is a grading and assessment vehicle. Table 2 shows a variety of course elements and how they correspond to Bloom's taxonomy.

Optimal use of class time was part of the primary challenge. The prescription was to use time outside of class for lower level and higher level learning. Presenting basic material in class is a poor use of the limited resource of class time. Textbooks provide adequate coverage of basic material and can be read and studied outside of class. Students with weaker backgrounds will spend more time learning the basics and knowledgeable students can breeze through it. Minimal class time is devoted to basic knowledge. The exception is the occasional supplemental lecture in class to address materials inadequately addressed in the text.

In-class discussions and exercises can span the entire spectrum. These activities are where the instructor can make adjustments. The instructor can choose discussion topics and exercises that fit the needs of the class. If the class seems on top of the material and ready for more substantive work, then complex exercises or sophisticated discussion topics can be used. For example, if an essay test question showed that students had a great interest and understand of an area, an exercise

that explored the nuances of the area could be used in class. Conversely, if the class is generally at a lower level of learning, the exercises and discussion topics chosen can address more basic issues. If an essay question revealed a pattern of misunderstanding about a topic, a class discussion could fill in that gap.

Table 2: Course Element Correspondence to Bloom's Taxonomy

Course Element	Knowledge/Understanding	Application/Analysis	Synthesis/Evaluation
Online Quizzes	high	medium	low
Supplemental Lectures	high	medium	medium
In-Class Discussions	medium	medium	medium
In-Class Exercises	medium	medium	medium
Discussion Board	medium	high	medium
Essay Quizzes	medium	high	medium
Individual Project	low	medium	high
Group Project	low	medium	high
Management Portfolio	low	high	high

Discussion boards and at-home essay quizzes encourage thinking about the course content and develop writing skills. They also save class time and give the instructor an indication of the level of understanding of the course material. The discussion board can be used in various ways. For example, the instructor can be passive or active. When the instructor actively participates, the class often 'follows the leader' and the discussion centers on what the instructor posts. The instructor can keep the discussion on track and maximize the value in exploring certain concepts. When the instructor does not frequently post, the discussion follows its own path and unexpected directions and themes emerge. A free flowing discussion provides insight into the class and allows students a sense of power and freedom. Like in-class discussions and exercises, seed questions and forum topics can be chosen in response to feedback such as essay quizzes in ways that supplement or compliment other course elements.

The individual and group projects and the management portfolio are at the level of synthesis and evaluation. They are also primarily conducted outside of class. These activities require research, writing and individualized feedback, none of which takes up valuable class time. The only two exceptions are occasionally allowing individuals or groups to use class time for getting feedback on projects, and giving presentations of individual projects. Course elements can also be used in concert, such as setting up forums for individual or group project discussions.

Table 3: Course Element Coverage of Learning Objectives				
Course Element	**Basic Theories/ Facts**	**Personal Stances**	**Real Life Applications**	**Communication**
Online Quizzes	high	low	low	low
Supplemental Lectures	high	low	low	low
In-Class Discussions	medium	medium	medium	medium
In-Class Exercises	medium	medium	medium	medium
Discussion Board	medium	high	medium	medium
Essay Quizzes	medium	high	high	medium
Individual Project	low	medium	high	high
Group Project	low	low	medium	high
Management Portfolio	low	high	high	high

LEARNING OUTCOMES AND ASSESSMENT

Covering learning outcomes is very important in course design. The mix of course elements should adequately address the learning outcomes. If learning outcomes are not adequately covered, then the specific elements need to be adjusted, new elements added and/or ineffective elements removed. Appendix 2 contains the learning outcomes for our example course. Table 3 illustrates an evaluation of coverage of the learning outcomes. In this particular course there is a wide variety of course elements. Some were added because deficiencies in coverage of one or more learning outcomes were revealed by analysis and feedback. For example the management portfolio was added to provide higher level learning and to address the 'personal stances' and 'written communications' outcomes. Discussion boards were added to facilitate development of personal stances on organizational issues; however other outcomes are also being met such as clarification of basic concepts and development of written communication. Discussion boards also span from basic knowledge and understanding to synthesis and evaluation, although most of the discussion is at the application and analysis level.

Course level assessment of learning outcomes is essential in establishing, maintaining and developing high quality programs of study. Table 3 provides a basis for conducting the evaluation of learning outcomes. It evaluates how each outcome is covered in the course. A discussion of the difference between grading student work and assessing class performance, is beyond the scope of this paper, however graded elements can be uses for course level assessment. Evaluation of student performance in the specific course elements are then used to evaluate the effectiveness of coverage of course learning outcomes.

CONCLUSIONS

In this paper I propose a simple approach to designing a graduate course. The approach allows for various levels of learning and the different knowledge, skills, abilities and experience that students bring to the course. It addresses the coverage and assessment of learning outcomes, which are essential for high quality programs. The key ideas are to use a variety of methods and techniques, use the classroom for analysis and application level learning, have basic knowledge and understanding (low level learning), and synthesis and evaluation (high level learning) covered outside of class, and to develop tables such as those presented to help in the development and assessment processes.

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Appendix 1 - Structure of the Original Taxonomy of Educational Objectives

1.0 Knowledge

- 1.10 Knowledge of specifics
  - 1.11 Knowledge of terminology
  - 1.12 Knowledge of specific facts
- 1.20 Knowledge of ways and means of dealing with specifics
  - 1.21 Knowledge of conventions
  - 1.22 Knowledge of trends and sequences
  - 1.23 Knowledge of classifications and categories
  - 1.24 Knowledge of criteria
  - 1.25 Knowledge of methodology
- 1.30 Knowledge of universals and abstractions in a field
  - 1.31 Knowledge of principles and generalizations
  - 1.32 Knowledge of theories and structures

2.0 Comprehension

- 2.1 Translation
- 2.2 Interpretation
- 2.3 Extrapolation

3.0 Application

4.0 Analysis

- 4.1 Analysis of elements
- 4.2 Analysis of relationships
- 4.3 Analysis of organizational principles

5.0 Synthesis

- 5.1 Production of a unique communication
- 5.2 Production of a plan, or proposed set of operations
- 5.3 Derivation of a set of abstract relations

6.0 Evaluation

- 6.1 Evaluation in terms of internal evidence
- 6.2 Judgments in terms of external criteria

Appendix 2 - Learning Outcomes and Means of Learning Assessment for MGT 616 – Organizational Behavior and Communication

Student Learning Outcomes:

Upon completing the course, students will be able to:

- Explain the theoretical foundations and basic facts of organizational behavior, including those associated with motivation, job satisfaction, power, leadership, communication, stress, and organizational structure.
- Articulate well-justified personal stances regarding organizational behavior issues such as ethical behavior and cultural diversity in organizations.
- Be able to apply knowledge of organizational phenomena to various real-life organizational situations.
- Show progress in developing skills in presenting ideas to others, both orally and in writing.

Means of Learning Assessment:

Course Involvement The success of the course depends on your active involvement. Course involvement will be evaluated on attendance, preparation, and participation both in-class and outside. Participation includes being involved in-class discussions, offering unique insights, and actively participating in group activities. Like anything, class involvement can be productive, nonproductive, and even counter-productive, and the responsibility of channeling it lies with both the instructor and the student.

Management Portfolio Each student will develop a management portfolio. During the portfolio development process, each student will identify, research, reflecting upon, and write about critical management topics, as well as identifying areas of personal importance to him/herself as a manager. Each student will formulate and articulate coherent stances, determine how these stances can be translated into practice, indicate ways to evaluate their effectiveness and set goals and plan actions for improvement in each area.

Individual Project Each student will submit a 1500-2500 word paper and give an 15-20 minute professional presentation using PowerPoint. The topic can be anything related to Organizational Behavior. Topics and format will be discussed in class, and guidelines posted on blackboard.

Group Project The class will be divided into 4 groups. Each group is to design, prepare and run a seminar on an organizational behavior topic. The seminar is to be presented to an undergraduate audience and are to last from 30 to 45 minutes. The topic is to fall within the following general topic areas: leadership, motivation, group dynamics, business communication, or professionalism. The group will determine the exact focus, goals and manner of presentation for the seminar.

Quizzes There will be baseline and final comprehensive quizzes, and 6 online chapter quizzes. The top 5 quiz grades will be counted, and the rest dropped. The baseline and final comprehensive quizzes must be taken even if they are to be dropped.

Discussion Board The discussion board on blackboard will be used for commenting on the readings and course material. The standards for participation will be posted on blackboard.

HURRICANE KATRINA'S AFTERMATH: THE ADVANCEMENT OF E-LEARNING

Adnan Omar, Southern University at New Orleans
Ada Kwanbunbumpen, Southern University at New Orleans

ABSTRACT

The rapid advancements of technology in the 21st century have directly impacted every facet of life. Moreover, it has enhanced the delivery of higher education throughout the world. The integration of education and technology has created the existence of mobile learning, also known as, Electronic learning or E-learning. For the past several years, universities considered E-learning as a means to meet the needs of their students, thereby increasing enrollment, retention, and the quality of education at a low cost. However, after the devastation of Hurricane Katrina, Southern University at New Orleans (SUNO) depended on E-learning as a means to provide basic education to their students. SUNO is now a testimony for the necessity of E-learning as the school's survival. Prior to Katrina approximately 9% of the SUNO student body participated in on-line courses. In the spring 2006 semester, that number rose to 41%. E-learning has not only given SUNO the opportunity to keep its doors open, but it has also allowed the school to move forward with its mission to provide higher education to students from diverse backgrounds outside the boundaries of Louisiana.

Key Words: e-learning, enrollment, disaster, displaced, Katrina, recruiting, retention.

INTRODUCTION

The existence of E-learning is a high priority for many institutions for a variety of reasons. For some institutions, the emergence of E-learning programs is an institutional response to evolving faculty interest to apply technology to instruction. For other institutions, this phenomenon is a part of the overall institutional strategic vision to enhance the learning experience and reach a dispersed population or increase enrollment. It is also a response to the increased student demand for convenience as a logical extension of earlier distance learning programs offered through video or satellite television. The introduction of course management systems also increases penetration rates of E-learning across campuses (Arabasz and Baker, 2003).

The current emphasis on E-learning at SUNO is fueled by five major events: the prevalence of natural disasters, the convergence of communication and computing technologies, the constant need for workers in all sectors of the economy to remain knowledgeable and highly skilled without

interrupting work service for extended periods of time, the favorable economics of E-learning, and the fierce competition among institutions, colleges, and universities (Taylor, 2004).

The new demand of New Orleans' business industry ensures a role for SUNO's students in a vibrant and recovering economic environment. Therefore, SUNO faces the following performance challenges:

- Surviving/growing as a tuition-dependent, private institution.
- Retaining/increasing the current level of Full Time Enrollment (FTE)-based public funding.
- Improving retention rates.
- Increasing the proportion of degree-holders in the citizenry.
- Helping students complete degree programs.
- Increasing the supply of graduates in programs aimed at workforce and economic development goals, specifically, social workers, teachers, science and technology professionals.

Since Hurricanes Katrina and Rita the Louisiana Board of Regents, the state's coordinating board for higher education, has hosted regular meetings of the Louisiana Higher Education Response Team (LaHERT). LaHERT is composed of system presidents, university presidents/chancellors, campus representatives, and invited guests who address the many issues facing higher education as a result of the two hurricanes. More than 80,000 of Louisiana's public and private college students and 10,000 of the faculty and staff were displaced by the two storms. "The impact of the storms on postsecondary education in Louisiana has been both broad and deep" (www.regents.state.la.us).

In the wake of Hurricane Katrina during the 2005 fall semester, SUNO students were displaced from the severely damaged university and were forced to continue their education through E-learning or attend another institution. SUNO's main campus was severely damaged by the flood. The University is currently housed in a temporary modular campus, in which both on-line and traditional face-to-face classes are offered (Figures 1 and 2).

LITERATURE REVIEW

An open and flexible definition for e-learning is "the use of Internet and digital technologies to create experiences that educate our fellow human beings" (Horton, 2001). Most American universities and businesses have heavily invested in programs using E-learning. Many of the developed countries have also followed this same initiative. A much more student-centered approach is necessary to fit this new learning opportunity into a coherent provision that is educational (Smith, 2000).

The power of on-line learning lies in its ability to enable all those interested to have equal access to available educational materials regardless of time and place. The opportunities and applications E-learning offers include reaching a wider student audience, conferring with experts around the world, linking students from different cultural and economic backgrounds, facilitating new research, and providing access to knowledge and experiences which otherwise would not be available (Kinnaman, 1995). Furthermore, it provides educational opportunities in the workplace, community, or the home for those unable to attend school or college because of cultural, economic, geographical, or social barriers.

Figure 1: Pre-Katrina Main Campus

In the hands of abled teachers, E-learning plays a prominent role in fostering the development of important skills in students such as critical thinking, problem solving, written communication, and the ability to work collaboratively. Thus, teachers can encourage students to employ all available technology with the goal of enabling them to weigh evidence, judge the authenticity of data, compare different view points on issues, analyze and synthesize diverse sources of information, and construct their own understanding of the topic at hand. By doing so, students will be well on their way to developing invaluable critical thinking and problem solving skills (Weinstein, 1997).

Figure 2: Post-Katrina Modular Campus

Students who successfully complete E-learning programs are generally very motivated, highly disciplined, and goal oriented. Furthermore, successful students tend to be independent leaders and mature adults who are comfortable in the realm of textual materials (Glenn, 2001).

A growing number of physical universities have started to offer a select set of academic degrees and certificate programs via the Internet at various levels in a multitude of disciplines. While some programs require students to attend some campus classes or orientations, many are delivered completely on-line. Many universities also offer on-line student support services, such as on-line advising and registration, E-counseling, on-line textbook purchases, student governments and student newspapers to accommodate E-learning needs.

These universities are characterized by very large student enrollments and use massive communication technology, such as print and broadcasting. Their main goal is to widen access by reaching out to students who cannot attend conventional universities. Distance educational institutions operate nationally and internationally to fulfill their purpose. As a result of high student enrollments, the universities are able to offer cheaper admission costs to their students as opposed to conventional campus-based institutions or even-dual mode education operations.

E-learning offers many advantages including access to educational resources from outside the institution on a global and instant basis; flexible interaction between faculty and students through e-mail and discussion forums; instant availability of course notes, diagrams, reading lists, and other course materials; the ability to combine text, graphics and multimedia, yielding a wide range of educational applications; the availability of professional/subject links on an international basis for research and teaching purposes; the opportunities for international, cross-cultural, and collaborative

learning; the ease of creating materials through low-cost, public software such as Blackboard; and the efficient organization of course materials through on-line portals.

E-learning revolutionized the learning experience by making vital material available on-demand via the web and a company's intranet. Now the same content can be offered using familiar, wireless tools, making the learning experience even more convenient and flexible. (Koschembahr, 2005).

In the aftermath of Katrina, most institutions along the Gulf coast are resorting to a kind of back up system by establishing a virtual presence. Local institutions have moved their computer servers out-of-state, and because they are equipped with Blackboard, a system cannot only set up on-line classes, but can also store records, post documents, and allow text message chats among students and teachers. In an article by John Pope entitled, "UNO Virtual Campus to be used After Storms: Second Life provides on-line classes" the author quotes Merrill Johnson, associate dean of the College of Liberal Arts who presented the system: "If the New Orleans area should be struck by another monster storm that forces students, teachers and administrators to scatter widely for an indefinite period, Second life [name of the system] will let teachers set up on-line classrooms overnight, keeping school functions from shutting down, as they did after Hurricane Katrina, and helping them hold on to students." (Pope, 2007, 5)

E-learning courses make it possible to accommodate the growing needs of professionals to enhance knowledge and skills needed for their expanded roles in a competitive global economy.

STATEMENT OF THE PROBLEM

The impact of Hurricanes Katrina and Rita on SUNO was overwhelmingly devastating. The entire campus was flooded and left in shambles. All classrooms and lecture halls were ruined. As a result, classes are now conducted in Federal Emergency Management Agency (FEMA) modular trailers at various locations. The University's annual enrollment figure was heavily impacted, declining from 3,729 students in the semester preceding the natural disaster to 2,040 students post-Katrina. In the wake of this devastation, state law makers have advocated closing SUNO's doors permanently. SUNO's E-learning program evolved in an effort to sustain the university while continuing to provide quality education.

STATEMENT OF THE OBJECTIVE

With falling enrollment numbers due to displaced students across the nation, an alternative to traditional face-to-face learning was necessary. SUNO's E-learning mission encompassed designing and implementing a model for teaching and learning that met the needs of all learners through the use of the best practices, adaptive technologies and instructional techniques. The SUNO's E-learning model was implemented in five steps:

Step 1:	Establish E-learning department
Step 2:	Hire consultants
Step 3:	Implement Blackboard academic suite
Step 4:	Award faculty incentive
Step 5:	Administer Student skill tests

In despite of Hurricane Katrina, SUNO's immediate objectives were the following: to establish the E-learning department, to evaluate the growth of the E-learning program, to evaluate its impact on student enrollment and retention pre- and post-Katrina, and to recommend ways to improve the E-learning process.

METHODOLOGY

In order for E-learning to become successful, students need uninterrupted access to technology, curriculum, and activities as well as immediate feedback in order to maximize student achievement (Starkman, 2006).

During the wake of Hurricanes Katrina and Rita, the SUNO administration assumed an aggressive approach to reach, retain, and recruit students by establishing the Department of E-learning and implementing on-line curricula. All faculty members were encouraged to implement at least one on-line course in his/her field. Consultants from the Tennessee Board of Regents, specializing in the design of on-line curricula, conducted workshops aimed at teaching SUNO faculty instructional design for on-line courses. A Blackboard academic suite was used for on-line course materials thereby providing students with unlimited access.

Faculty members were awarded wireless laptops and financial incentives for successful course implementation as set forth by the standards and recommendations of the consulting firm. All students enrolled on-line were required to complete the SUNO On-line Orientation and the On-line Knowledge and Skills Mastery Test which assists students in assessing their knowledge, skills, and technical requirements. It also incorporates student services, technical assistance, and a listing of academic resources to support students on-line.

With students displaced from New Orleans and scattered across the nation due to Hurricane Katrina, implementing E-learning on a full scale directly helped SUNO retain and graduate many of its students. Recently, students in California, Georgia, Mississippi, and Texas completed degree work through on-line curricula, an accomplishment that was impossible pre-Katrina.

By implementing E-learning, the number of on-line classes at SUNO increased from 15 courses pre-Katrina to 148 courses post-Katrina (Table 1).

Table 1: On-line Classes Offered at SUNO Pre/Post Katrina	
Semester	Number of Classes
Spring 2005	15
Spring 2006	89
Fall 2006	128
Spring 2007	148

Moreover, the Departments of Criminal Justice, Early Childhood Education, and General Studies have been approved to offer undergraduate degree programs through on-line courses. An on-line graduate degree program in Museum Studies was also approved. Accordingly, E-learning has given displaced students the ability to continue their education at SUNO and has increased the number of students enrolled in on-line courses from 558 (pre-Katrina) to 3117 (post-Katrina).

Table 2: On-line Enrollment Pre/Post-Katrina	
Semester	Number of Students
Spring 2005	558
Spring 2006	2445
Fall 2006	3085
Spring 2007	3117

The E-learning program has also positively impacted university enrollment. Overall, enrollment has increased from a student body of about 700 in the Fall of 2005 (post-Katrina) to 2,040 in the Spring of 2006. Currently, the university has an enrollment of 2344 (Table 3). The data illustrates the positive impact of E-learning on enrollment and retention.

Table 3: Student Enrollment at SUNO Pre/Post-Katrina	
Semester	Number of Students
Fall 2005*	3,729
Fall 2005**	700
Spring 2006	2,040
Fall 2006	2,196
Spring 2007	2,344
* Pre-Katrina **Post-Katrina, Southern University-Baton Rouge	

Perceptions of the Student Body Concerning the Quality of On-line Courses

Active participation and engagement by students is critical to the educational process and success of an E-learning program. Students must be willing to use available academic resources such as communication with professors through chat rooms, discussion boards, e-mails, and messages. They must also be able to self-manage the learning process wisely. Self-efficacy and goal setting have important implications for academic successes. SUNO resources available to students include three comprehensive campus labs as well as free wireless services. The university purchased a license to provide Blackboard service to all students. SUNO has also conducted workshops to facilitate student use of Blackboard. Furthermore, when a student emails an instructor with a question or submits a homework assignment, SUNO faculty must respond within 24 hours. Students in need of administrative advice can seek support from the E-learning department during office hours as well as 24/7 assistance from Blackboard help.

A student survey was conducted to evaluate Management Information Systems (MGIS) 164-Introduction to Information Processing, an on-line literacy course required by the Louisiana State Board of Regents for all students regardless of major. The survey evaluated technical assistance, access to computer resources, student expectations about E-learning, and instructor delivery (Table 4). One hundred and two surveys were administered, of which ninety-one were completed. Of the respondents, 55% were freshman, 24% were sophomores, 15% were juniors, and 6% were seniors. The Likert Scale was employed to collect data based on five statements. Data analysis was accomplished via the arithmetic means: $(X = [X1 + X2 + X3 + \ldots + XN] / N)$ to measure the central tendency of the respondents. Respondents were required to mark strongly agree (SA); agree (A); neither disagree nor agree (N); disagree (D); or strongly disagree (SD) with the following statements:

I. I have full access to a personal computer and internet service 24/7.
II. I understand how to access Blackboard in order to navigate my on-line courses.
III. I have adequate on-line course assistance from my instructor.
IV. I expect a very good grade at the end of this course.
V. I am likely to take another on-line course in the future.

The results of the survey indicate very favorable opinions from students towards the course and SUNO's E-learning efforts. A second survey entitled "Student Satisfaction Survey: Fall 2006" was conducted by the Office of Student Affairs consisting of twenty-six questions. Four hundreds and seven students responded to the survey. Four out of twenty-six questions pertained to E-learning, as listed below (Figures 3-6):

I. How would you rate on-line courses at Southern University at New Orleans?
II. Of the credit hours for which you are registered, how many are on-line?

III. Have you activated your SUNO student email account?
IV. Have you activated your SUNO Blackboard account?

Table 4: Student Response to MGIS 164 On-line Course					
	SA	A	N	D	SD
I	45%	25%	15%	8%	7%
II	62%	30%	2%	4%	2%
III	60%	24%	7%	4%	5%
IV	65%	21%	8%	3%	3%
V	56%	25%	12%	5%	2%
Average	58%	25%	9%	5%	4%

Figure 3: How would you rate On-line Courses?

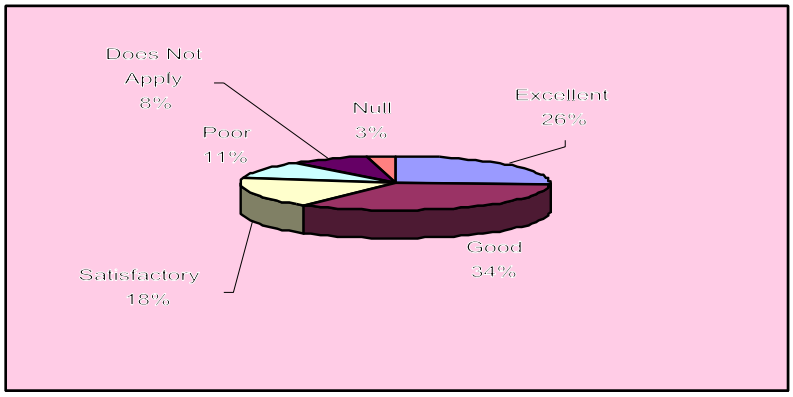

Figure 3 shows that 60 percent of students (n = 407) rated on-line courses as excellent and good.

Figure 4: Of the credit hours for which you are registered, how many are on-line?

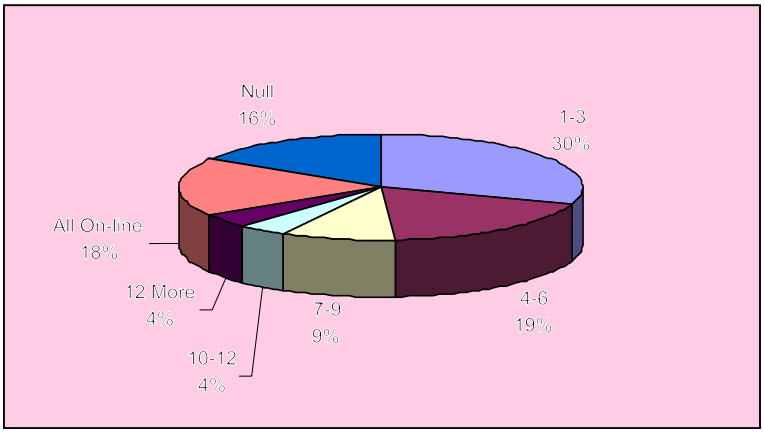

Figure 4 shows that 49 percent of students (n = 407) were enrolled in 1-6 credit hours on-line.

Figure 5: Have you activated your SUNO student e-mail account?

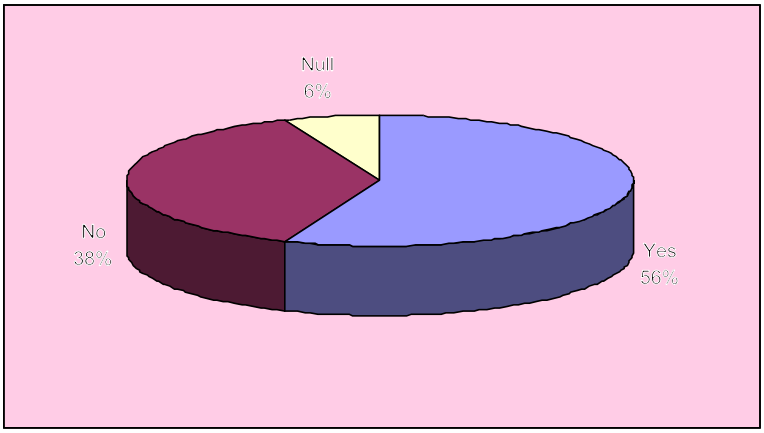

Figure 5 shows that 38 percent of students (n = 407) did not activate their SUNO E-mail accounts.

Figure 6: Have you activated your SUNO Blackboard account?

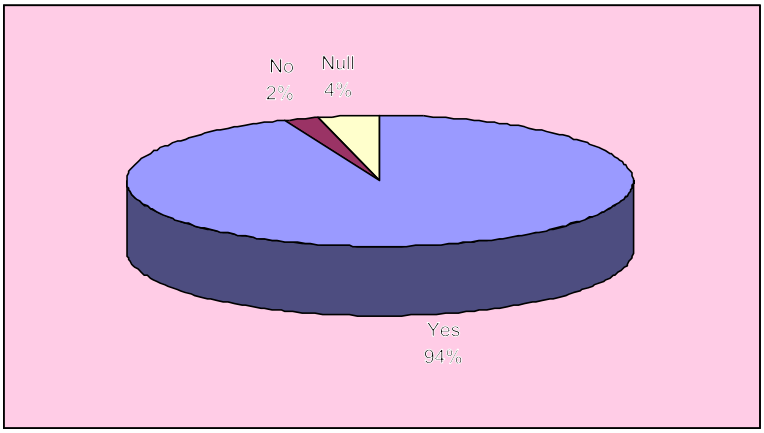

Figure 6 shows that 94 percent of students (n = 407) have activated their SUNO Blackboard accounts.

The results of this survey illustrate the increase of student enrollment and courses in regards to SUNO's E-learning department. The majority of student responses have stated that they are enrolled in at least 1-3 Blackboard course(s) and believe that E-learning is good. However, data in Figure 6 indicates that 38% of students did not activate their E-mail accounts. This deficiency hinders communication and needs to be addressed by the administration.

Perceptions of Faculty Concerning the Quality of On-line Courses

Faculty responsibility and participation is critical to the learning process in an E-learning environment. In order to engage in good teaching practices, faculty must learn general and content-specific pedagogy to improve critical inquiry.

A third survey was administered to faculty who taught on-line courses. The survey instrument composed of the following five statements was submitted:

I. E-learning is a tool to promote retention.
II. E-learning is a tool to promote recruiting.
III. E-learning improves the quality of education.
IV. I am satisfied with on-line instruction.
V. I plan to develop new on-line courses.

Faculty were required to mark strongly agree (SA); agree (A); neither disagree nor agree (N); disagree (D); strongly disagree (SD); or not applicable (N/A). The results of the faculty survey are shown in Table 5.

Table 5: Faculty Response to the Quality of E-learning

	SA	A	N	D	SD	N/A
I	52%	24%	10%	10%	4%	0%
II	72%	19%	7%	2%	0%	0%
III	24%	22%	28%	12%	10%	4%
IV	24%	26%	17%	10%	10%	13%
V	33%	24%	24%	7%	7%	5%
Average	41%	23%	17%	8%	7%	4%

The number of faculty teaching on-line increased from 9 in spring 2005 to 71 in spring 2007. The results of the survey indicate a very favorable opinion of E-learning as a tool for retention and recruiting. The faculty members were also eager to develop additional on-line curricula. However, responses were less favorable concerning faculty satisfaction with on-line instruction and their perceptions of the impact of on-line courses on the quality of the learning experience.

Perhaps, survey participants misinterpreted statement three and may have wrongly compared the quality of education offered by on-line courses to that of traditional classes. Statement three was designed to measure the quality of education for students displaced and unable to attend traditional classes in order to complete their respective degrees. Furthermore, E-learning at SUNO is at an early stage of implementation. Faculty may lack experience in preparing and managing on-line courses. Moreover, teachers fear that on-line courses may encourage plagiarism/cheating. On-line classes may be more time consuming for teachers than traditional classes and offer no substantial monetary incentive. These reasons likely contribute to the responses concerning faculty satisfaction with on-line education.

Table 6: Online Grade Distribution Spring 2005

Class Level	A	B	C	D	F	I	P	W	Total
FR	0	0	0	0	1	1	0	1	3
GR	216	14	1	0	2	0	0	4	237
JR	5	0	5	0	3	4	36	8	61
NF	0	0	0	0	1	0	0	0	1
SO	0	0	1	0	2	7	17	3	30

Table 6: Online Grade Distribution Spring 2005									
Class Level	A	B	C	D	F	I	P	W	Total
SR	46	22	10	1	0	3	105	12	199
SUC	6	8	4	1	1	1	0	6	27
Total	273	44	21	2	10	16	158	34	558

Data Analysis of Students' Passing Rate to Failing Rate for E-learning Courses

Data from E-learning courses were used to examine students' passing rate to failing rate for spring 2005 – spring 2007 semesters as shown in tables 6-9. Passing rate entails A, B, C, and D grades. Failing rate entails F grade. The grades were measured by class level consisting of Freshman (FR), Sophomore (SO), Junior (JR), Senior (SR), Master's Candidate (GR), New Freshman (NF), Special Undergraduate (SPU), who is a student holding a 4-year undergraduate or graduate degree registering for credit to fulfill the Substance Abuse Certification requirements or a student who is holding a 4-year undergraduate degree registering to take pre-requisite courses for a graduate program at SUNO, Special Undergraduate (SUG), who is a student registering for undergraduate credit who holds a 4-year college degree and is presently applying these credits towards an undergraduate degree (2nd undergraduate degree), and Special Graduate (SPG), who is a student holding a 4-year or graduate degree registering for credit and not presently applying it toward another degree. Six paired z-tests were conducted to test the differences between proportions. They were used to establish whether there was a significant difference between the two groups (Table 10). The resulting statistics include the number of students in each semester, the z-statistic (at 0.01 level of confidence), and the critical z-value.

Table 7: Online Grade Distribution Spring 2006									
Class Level	A	B	C	D	F	I	P	W	Total
FR	39	31	29	16	78	4	1	49	247
GR	68	88	11	1	20	4	0	84	276
JR	70	65	37	12	48	2	15	78	327
NF	6	13	17	3	50	0	0	13	102
SO	47	62	45	12	88	4	5	82	345
SPU	2	1	1	0	0	0	0	0	4
SR	200	197	120	22	70	8	49	88	754
SUC	14	21	8	1	11	0	0	11	66
SUG	3	0	7	3	0	1	0	10	24
Total	749	478	275	70	365	23	70	415	2445

Table 8: Online Grade Distribution Fall 2006									
Class Level	A	B	C	D	F	I	P	W	Total
FR	60	65	73	26	215	2	2	89	535
GR	213	64	5	1	4	17	0	23	329
JR	90	86	80	20	150	6	14	102	549
NF	9	6	23	9	66	0	0	17	132
SO	82	80	79	20	170	8	9	124	572
SPU	3	1	1	1	0	0	0	0	6
SR	233	202	144	38	128	3	24	127	899
SUC	17	8	4	1	4	1	0	13	48
SUG	2	5	3	0	3	0	0	2	15
Total	709	517	412	116	740	37	49	497	3085

Table 9: Online Grade Distribution Spring 2007									
Class Level	A	B	C	D	F	I	P	W	Total
FR	51	81	73	27	156	22	2	114	526
GR	179	65	12	0	3	55	0	14	328
JR	114	102	83	28	92	44	18	70	551
NF	6	8	6	4	9	3	0	9	45
SO	92	101	91	29	105	40	8	124	590
SPU	1	1	0	0	0	0	0	0	2
SR	255	220	166	47	96	27	34	99	944
SUC	36	26	8	3	5	6	0	3	87
SUG	9	13	3	0	9	0	0	10	44
Total	743	617	442	138	475	197	62	443	3117

Table 10: Online Students' Passing Rate-Failing Rate Analysis					
Tables	Semesters	N	α	z-statistics	critical z-value
6 & 7	spring 2005	$n_1 = 350$	0.01	7.51	± 2.58
	spring 2006	$n_2 = 1937$			
6 & 8	spring 2005 &	$n_1 = 350$	0.01	10.65	± 2.58
	fall 2006	$n_2 = 2492$			
6 & 9	spring 2005 &	$n_1 = 350$	0.01	7.74	± 2.58
	spring 2007	$n_2 = 2415$			
7 & 8	spring 2006 &	$n_1 = 1937$	0.01	8.4	± 2.58

Table 10: Online Students' Passing Rate-Failing Rate Analysis					
Tables	Semesters	N	α	z-statistics	critical z-value
	fall 2006	$n_2 = 2494$			
7 & 9	spring 2006 &	$n_1 = 1937$	0.01	-8.09	± 2.58
	spring 2007	$n_2 = 2415$			
8 & 9	fall 2006 &	$n_1 = 2494$	0.01	0.84	± 2.58
	spring 2007	$n_2 = 2415$			

The difference between proportions is calculated based on the z-test statistic in table 10. Since the calculated z-statistic exceeded the critical z-value, the null hypothesis--there is significant difference between students' passing rate--was rejected; the alternative hypothesis--there is significant difference between students' passing rate--was accepted only for Tables 6 - 7 to Tables 7 -9.

In tables 8 and 9, the calculated z-statistic (.84) did not exceed the critical z-value (± 2.58) during the fall, 2006 and the spring, 2007 semesters. Therefore, it was concluded that the passing rate of students is different from semester to semester except for Tables 8 – 9.

CONCLUSION AND RECOMMENDATIONS

As technology advances, course developers must plan for interactive collaborations among faculty and students in the most convenient setting. E-learning allows faculty and students to join networks that overcome institutional or geographical boundaries.

Not only did E-Learning play a key role in the survival of SUNO post-Katrina and Rita, but it also revitalized the academic environment with motivated faculty/staff and eager students. SUNO's E-learning program has grown from 15 to 148 courses over an 18-month period, partly out of necessity but also for convenience. The number of students participating in on-line classes has also increased from 558 (pre-Katrina) to approximately 3117 (post-Katrina). These statistics attest to the success and popularity of SUNO's E-learning program and signify the start of a new beginning.

Designing an E-learning program requires various considerations. Faculty should notify the Recruitment and Retention Department of student participation in on-line curricula by the end of the second week of the semester. On-line course content should strictly adhere to course syllabi presented to students. Prompt faculty response to student concerns/questions is critical. Faculty should advise students as to their course loads (traditional and on-line) based on students' commitments and work responsibilities.

Based on its overall positive result, the E-learning program implemented by SUNO may serve as a model for other institutions in regions affected by natural disasters. The implications of this model have shown that teaching and learning as well as attitudes on campus can be positively affected by incorporating E-learning technologies as part of a pedagogical design change.

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CLIENT OR STUDENT

Mark Lewis, Arkansas State University
Jeffrey Pittman, Arkansas State University

ABSTRACT

Discussions between instructors and students occur in and outside the classroom. These discussions may involve areas of law, accounting or tax. The student may be seeking the instructor's assistance with a specific personal problem or issue that could be interpreted by the student as professional advice from the instructor rather than academic instruction. It is important for the instructor to be aware of this potential dual role. There is a growing trend towards litigation against college professors.

INTRODUCTION

Attorneys that provide instruction at institutions of higher education in the legal field address a variety of topics and issues with their students. Discussions between instructor and student regarding legal issues may expand outside of the classroom setting and not be germane to the topics addressed in the academic environment. The diversity of issues may be more emphasized in the basic business law course which is usually classified as a sophomore course and is a pre-requisite for future courses. In addition to attorneys, these discussions may occur between students and professors in other fields such as accounting or tax.

The role of the instructor is to provide information and promote student development from an academic perspective. Many of the aforementioned discussions take a personal turn towards the student's individual circumstances inside and outside the classroom and most often occur in the instructor's office. The student seeks out the instructor because of his or her knowledge regarding the personal issue that the student is addressing and because that instructor may be a licensed legal or accounting professional. It is important for the instructor to be cognizant of this potential dual role. At what point in the discussion with the student does the relationship arguably switch from being one of an instructor to that of a licensed professional providing legal, tax, or accounting advice? Is it possible for the instructor to be liable for malpractice if the wrong advice is given or all of the possible issues are not addressed? Did the instructor mention the statute of limitations, doctrine of laches, or confidentiality of all the information relevant to the issues that were presented by the student?

Regarding legal professionals, the inquiry must obviously focus on whether an attorney/client relationship was established between the attorney and the student, carrying with it all of the fiduciary

responsibilities that an attorney has toward a client. It is imperative that the instructor/attorney recognize the cost of time and money involved in the litigation of such claims. The effect of the student simply alleging the existence of an attorney/client relationship may very well keep the case in litigation for a lengthy period of time while effectively avoiding the appropriate dismissal motions utilized in the pretrial process.

Similar issues potentially are present regarding tax or accounting advice provided by an instructor. The remainder of this article focuses on the issues involved regarding advice given by business law professors to students. To date, there are no cases on point involving student lawsuits against professors for malpractice based on professional advice in other fields such as accounting or tax, for example. However, there is a general growing trend toward litigation against college professors. This trend should cause concern for all disciplines regarding advice provided to students. The American Association of University Professors has recognized this issue:

There has been in recent years a steady growth in lawsuits filed against faculty members over the discharge of their professional responsibilities. Legal actions have been initiated by colleagues, by rejected applicants for faculty positions, by students, and by persons or entities outside the academic community. Litigation has concerned, among numerous issues, admissions standards, grading practices, denial of degrees, denial of reappointment, denial of tenure, dismissals, and allegations of defamation, slander, or personal injury flowing from a faculty member's participation in institutional decisions or from the substance of a faculty member's research and teaching.[1]

LIABILITY FOR LEGAL ADVICE

A lawsuit asserting legal malpractice as the cause of action may be based on a number of different theories, in part, depending on the state where the action is initiated. These theories are negligence, breach of contract and breach of a fiduciary duty.[2] One reason for selecting one cause of action over another may be based on the statute of limitations that is most advantageous to the plaintiff.

Although legal malpractice may be brought based upon multiple theories, most causes of action will involve the following elements:

1. the existence of an attorney-client relationship;
2. attorney's conduct which falls below the generally accepted standard of practice; and
3. damages proximately caused by the attorney's conduct.[3]

Most courts follow this model in determining whether an attorney is liable for legal malpractice. It is important that the elements necessary to prove legal malpractice are commonly accepted among the states; however, it is worth mentioning that there may be variations among the

states. An essential factor in evaluating a malpractice claim must initially turn on the factual issue of whether an attorney-client relationship exists, which is the principle focus of this paper.

ATTORNEY-CLIENT RELATIONSHIP

Generally, an attorney-client relationship begins at the time a person consults with an attorney for the purpose of obtaining legal services or advice.[4] Following this definition, legal advice may even be provided through a brief discussion between the putative client and the attorney. An instructor/attorney therefore should be cognizant of this principle. Brief or lengthy discussions with students regarding the students' personal legal issues may result in an attorney-client relationship.

Discussions with students generally do not involve written contracts or the payment of fees to the instructor/attorney. These factors will not prevent the creation of an attorney-client relationship. A request for legal advice followed by the instructor/attorney furnishing the advice may be sufficient conduct to form an attorney-client relationship. "The relationship of attorney and client rests upon contract. The contract may be either express or it may be from the conduct of the parties."[5] "Well established principles hold that there need be no written contract and the payment of a fee is not a prerequisite to finding a professional relationship, although such a fee will be a strong indicator that such a relationship exists."[6]

The instructor/attorney may manifest their intent to provide legal advice by simply entertaining a specific legal matter from a student and providing a response to the given situation presented by the student. A court will generally look at the totality of the circumstances surrounding the encounter between the attorney/instructor and student to determine the establishment of the attorney-client relationship. There need not be a formal agreement between the attorney/instructor and the student nor a payment of fees for a fiduciary relationship to be established. In most situations there will not be a fee because the instructor is attempting to assist the student and may not be cognizant of the relationship that may have been established.

> *"An attorney-client relationship is established when a party seeks and receives advice and assistance from an attorney on matters pertinent to the legal profession."*[7] *A student is aware of the instructor's education as an attorney and seeks legal advice in hopes of avoiding an encounter with an actively practicing attorney and the potential of attorney's fees. "The existence of an attorney-client relationship turns on the client's subjective belief, it exists and looks to the nature of the work performed and to the circumstances under which confidences are divulged."*[8]

In *Togstad v. Vesely, Otto, Miller and Keefe,*[9] Ms. Togstad consulted attorney Miller regarding a medical malpractice claim after her husband experienced a stroke. Attorney Miller informed her that he did not believe she had a claim even though he did not have any expertise in

medical malpractice. He did not charge her for the consultation and informed her that he would talk to his partner and if his opinion changed he would contact her, which he never did. She filed a lawsuit after consulting with another attorney. Miller had failed to advise her of the statute of limitations. The appellate court upheld the jury verdict of $650,000.

Togstad has reminded lawyers about the problems associated with providing off-the-cuff legal advice and not advising the putative client of all the legal issues involved in a brief conversation. Togstad is an example of providing specific advice in response to a request by a putative client that creates the attorney-client relationship. Even though there was not an attorney-client relationship in the mind of Miller when Ms Togstad left Miller's office, the court found such a relationship to exist from the totality of the circumstances.[10]

The Restatement (Third) of the Law Governing Lawyers addresses the establishment of the attorney-client relationship. A relationship of client and lawyer arises when:

1. a person manifests to a lawyer the person's intent that the lawyer provide legal services for the person; and either
   a. the lawyer manifests to the person consent to do so, or
   b. the lawyer fails to manifest lack of consent to do so, and the lawyer knows or reasonably should know that the person reasonably relies on the lawyer to provide the services, or
2. a tribunal with power to do so appoints the lawyer to provide the service.[11]

The Restatement comments advise that the client's intent, as well as the lawyer's consent, can be explicit or implied from the circumstances. The lawyer does not have to manifest a desire to represent a client if the lawyer knew or should have known that the person would rely upon his or her advice and they do not inform the putative client to the contrary. An attorney-client relationship has potentially been created under these circumstances.[12]

STUDENTS AS LEGAL CLIENTS

When does a student become a client in the course of the educational process? Although many questions from students come after class, some personal legal questions come in the classroom. A student may ask a legal question in class without any indication to the attorney/instructor that the facts personally relate to the student and a legal problem that they are experiencing. The attorney/instructor, without any knowledge of the personal nature of the question, may answer the question without creating an attorney-client relationship. The attorney/instructor was acting in the role of an instructor. However, if the instructor knows of the personal nature of the question and gives the advice, then the student may think that the advice can be relied upon thereby possibly

creating the attorney-client relationship.[13] If the student relies to their detriment, then the attorney/instructor may be facing a legal malpractice claim.

When an individual consults with an attorney for the purpose of obtaining legal advice, the attorney client- relationship is formed. The law student that comes to the professor's office with a specific legal issue that pertains to the student places the instructor in a tenuous position. We are a consumer oriented society. Students view themselves as consumers of education that is offered by the educational institution through the instructor. It is important for the instructor to remember and for the student to be reminded that they are not purchasing legal services simply because they are enrolled in a legal class with an attorney as an instructor.

The instructor/attorney should also remember that a gratuitous offering of advice does not alter the fiduciary relationship that is created by an implied-attorney relationship. "Serving in a gratuitous capacity does not defeat an attorney client relationship nor does it relieve the attorney of his or her responsibility and obligations in representing a client. The attorney-client relationship even if implied is a fiduciary relationship and the attorney must act in the utmost of good faith. The length of the contact, regardless of how brief, even though there is not express contract nor payment of a fee may result in an attorney-client relationship.[14] An attorney, who did not handle malpractice claims, informed potential clients that he would consult another attorney regarding the statute of limitations. The brief time spent with the attorney still resulted in a malpractice action.[15]

The Ohio Supreme Court held that a putative client's reasonable belief that the attorney client relationship was formed validated the relationship.[16] The instructor/attorney must avoid allowing student perceptions that the instructor/attorney is providing legal advice to the students. One of the problems for the instructor/attorney is that he or she may view student inquiries as purely academic and not be cautious in responding. Many issues may be omitted by the attorney/instructor that would be critical to the resolution of the students' problems. In Massachusetts, the court found there was an obligation placed upon the attorney to inform putative clients that there is not an attorney-client relationship, where reliance is possible.[17]

"It has been estimated that lawyers in private practice have a twenty percent chance each year of facing a legal malpractice claim"[18] Although the attorney/instructors may not be involved in the active practice of law, he or she still has the apparent ability to practice law in the eyes of the students. A student inquiring of an instructor/attorney most certainly could be expected to rely on the information presented by the instructor/attorney.

Other pitfalls that the instructor/attorney may encounter could be the unauthorized practice of law. Universities generally do not require a law license for eligibility to teach law classes. Therefore, law professors may not be licensed in the jurisdiction where they reside. When students approach intructors/attorneys for legal opinions, unlicensed instructor/attorneys risk a claim of unauthorized practice of law. Professions who give opinions must understand how unauthorized practice statutes and disciplinary rules may apply.

LITIGATION

If the student reasonably believes that the instructor/attorney has provided legal advice that can be relied on and there is a subsequent problem with that advice, then the attorney/instructor may be facing a malpractice action. If the instructor was not cautious and did not think that they were creating an attorney-client relationship, their response may have been given in a brief period of time without the benefit of any research or thought. In the event of litigation and subsequent to the initial pleadings, the discovery process will begin to take place. The attorney representing the instructor/attorney may file a motion to dismiss. This motion of course will be determined by the specific facts of the case and the appropriateness of the pleadings. The instructor/attorney may challenge the pleadings under Rule 12(b)6, failure to state a claim for which relief can be granted or on other 12(b) grounds.[19] Most attorneys that have dealt with legal malpractice claims know how to artfully draft a complaint that will withstand a motion to dismiss. Therefore the case proceeds from the pleadings stage to discovery and then possibly to consideration by the court of a motion for summary judgment.

A motion for summary judgment is granted when there is no genuine issue as to any material fact.[20] The existence of an attorney-client relationship in the setting of student and instructor/attorney has the potential to present genuine issues of material fact, negating summary judgment. It is apparent that an attorney client relationship exists when there is an express agreement between the attorney and the client. The problem arises when the student comes to the instructor's office alone and asks a specific legal question of the professor. Even if the instructor states that the answer was given to a general set of questions, the contrary interpretation by the student will most probably be that the inquiry was factually specific and the instructor provided legal advice and understood that the motivation for asking was to secure legal advice. There may not be any witnesses so one must look at the overall circumstances relating to the incident and who to believe. This is otherwise known as a fact question that must be determined by the fact finder, whether it be the judge or jury.

Even if the attorney/instructor prevails on the merits of the claim, he or she has experienced the displeasure and expense of being a defendant in a lawsuit. Many states have immunity statutes for negligent actions committed by state employees; however, given the facts set forth herein the conduct of the professor may very well be outside the scope of his authority as an employee of the state. He or she is hired to be involved in academic endeavors including instruction in the classroom. The conference in the office addressing specific issues regarding legal matters that affect the student is usually not within the purview of the employment of a professor.

We know that lawsuits are easy to come by if someone wants to initiate them. An instructor should always be conscious of his or her roll in the classroom and with their relationships with their students and not take chances in attempting to appease a student.

AUTHORS' NOTE

This article is designed to serve as a general discussion of the subject and not as the sole authority. The authors are not qualified to practice law in all jurisdictions and do not state or imply that this article addresses all situations that could arise. The reader acknowledges that any reliance upon such views, opinions and/or statements shall be solely at his/her own risk. This article shall not serve as a substitute for legal counsel and readers should consult counsel to address their specific situation.

ENDNOTES

[1] Kevin Oates, *Professor Defend Thyself: The Failure of Universities to Defend and Indemnify their Faculty*, 39 Willamette L. Rev. 1063, 1064 (2003). *See, e.g.*, Johnson v. Schmitz, 119 F. Supp. 2d. 90 (Conn. 2000) (lawsuit by a college student against a faculty member alleging breach of fiduciary duty, negligence, defamation and unfair trade practices).

[2] H. Keith Morrison, *Legal Malpractice: The Law in Arkansas and Ways to Avoid its Reach*, 55 Ark. L. Rev. 267 (2002).

[3] *Id*. at 267.

[4] *See, e.g.,* Heathcoat v. Santa Fe Int'l Corp., 532 F. Supp. 961, 964 (E. D. Ark. 1982).

[5] Stormon v. Weiss, 65 N.W. 2d 475, 520 (1954). Citing Moe v. Zitek, 75 N.D. 222

[6] Catherine J. Lanctot, Attorney *Client Relationships in Cyberspace: The Perl and the Promise*, 49 Duke L. J. 147 (1999).

[7] Matter of Petrie, 742 P. 2d 796, 800 (Ariz. 1987).

[8] *Id*. at 800-801.

[9] 291 N.W.2d 686 (Minn. 1980).

[10] *See* Catherine J. Lanctot, *Attorney Client Relationships in Cyberspace: The Perl and the Promise*, 49 Duke L. J. 147 (1999).

[11] Restatement (Third) of the Law Governing Lawyers, §14 (2000).

[12] *Id*. at cmt. c.

[13] Graham Brown, *Should Law Professors Practice What They Teach?,* 42 S. Tex. L. R. 316, 322-323 (2001).

[14] Green v. Montgomery County, 784 F. Supp. 841 (M.D. Ala. 1992).

[15] Landis v. Hunt, 610 N.E.2d 554 (Ohio 1992)

[16] Cuyahoga County Bar Association v. Hardiman, 798 N.E.2d 369 (Ohio 2003)

[17] Devaux v. American Home Assurance Co., 444 N.E. 2d 355, 357 (Mass. 1983).

[18] Manuel R. Ramos, *Legal Malpractice: Reforming Lawyers and Law Professors*, 70 Tul. L. Rev. 2583, 2617 (1996).

[19] Fed. R. Civ. P. 12(b).

[20] Fed. R. Civ. P. 56©.