Measuring AIS Course Outcomes: The Relationship Between Knowledge/Skills and Interest/Enjoyment

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ABSTRACT

Information technology (IT) has become increasingly important to accounting professionals. Education in relevant IT-related topics, however, appears to have lagged workplace demands. Most undergraduate accounting programs require an Accounting Information Systems (AIS) course to fulfill the major program requirements. Because this course is often the only one to address AIS topics, students may tend to view IT as being less important to their career paths. Such attitudes may reduce the quality of course outcomes. A survey of 103 undergraduate AIS students was conducted to assess attitudes along two dimensions: *knowledge and skills* and *interest and enjoyment*. Results showed that, for a number of factors, *interest and enjoyment* was positively associated with *knowledge and skills*. The level of the two dimensions, however, varied, and students displayed greater interest in traditional accounting than in technology-related courses. Most importantly, attitude towards IT affected success.

Keywords:
AIS Course Outcomes, Education Factors, Assessment

INTRODUCTION

Accounting is a discipline that increasingly depends upon information technology (IT) *knowledge and skills*. Accountants and, to a greater extent, auditors are reliant on database and computer-based analytical software skills to perform their jobs. Consequently, the American Institute of Certified Public Accountants (AICPA) issued statements, such as the Statement on Auditing Standards No. 94 (SAS 94), "The Effect of Information Technology on the Auditor's Consideration of Internal Control in a Financial Statement Audit," regarding auditors' increased responsibility for IT knowledge and the importance of evaluating IT controls during a financial audit, and SAS 99, "Consideration of Fraud in a Financial Statement Audit," regarding auditors' responsibility for identifying fraud risks. The Sarbanes-Oxley Act of 2002 (SOX02), advancements in IT networks and systems, and continuous and integrated auditing systems have introduced further complexities. These increased demands should lead organizations to a higher expectation of auditors' IT skills (Sumners and Soileau, 2008) and motivate educators to improve these skills.

A recent and significant shift in audit emphasis has been to devote increased attention to IT threats and controls and to audit *through*, as opposed to *around*, the computer. A recent study of 218 Saudi organizations, however, found that internal auditors may lack the requisite computer information system skills (Abu-Musa, 2008). Foundation knowledge for information systems involves IT security issues, systems development, database architectures, and IT governance, as well as a general IT knowledge. Accounting information systems (AIS) textbooks today typically devote separate chapters to each of these topics (Steinbart and Romney, 2006; Gelinas, Jr. and Dull, 2008).

Understanding IT governance and controls is important for accountants as well as IT managers (Van Grembergen, De Haes and Moons, 2005). Internal control, as defined by COSO, is the process designed to help firms achieve objectives in the effective and efficient use of resources, reliable financial reporting, and compliance with applicable laws and regulations (Simmons, 1997). IT controls increase an organization's requirement for specialized knowledge and skill and are thus more costly to implement than other types of controls (ITGI, 2006; Cerullo and Cerullo, 2005). Understanding these controls, as embodied in frameworks such as CobIT (Lainhart, 2000; Tuttle and Vandervelde, 2007), is paramount to the effectiveness of both internal and financial auditors. While the adoption of computer-based auditing systems has steadily increased, a lack of IT education and background has prevented many auditors from integrating the necessary IT *knowledge and skills* with their professional knowledge. This impairs the ability of the auditor to conduct appropriate tests on the relevant IT controls (Li, Huang and Lin, 2007).

In a study of 210 accounting programs in the U.S. schools, an AIS class was required in 79 percent of the larger programs but only 39 percent of the smaller programs (Albrecht and Sack, 2000). Possible reasons are the lack of qualified accounting instructors with an IT background and an underlying feeling that IT issues are less important for accounting students' traditional career paths. Thus, many accounting students now graduate without the requisite IT foundation knowledge.

Another problem is that some students may not perceive IT *knowledge and skills* as important to their careers because many accounting educators are unfamiliar with them. Lack of such knowledge increases the possibility that a material weakness might exist within the finan-

cial statements and, given the recent events that have led to the bailout of 2009, public companies cannot risk further loss of public trust.

Without proper motivation, students may not acquire sufficient IT *knowledge and skills* to provide the necessary future capabilities. Further, many students fail to see the relevance of AIS subject matter to their career. The purpose of this study is to determine how AIS students perceive IT topics and to examine the relationship between their level of *knowledge and skills* of IT topics and their level of *interest and enjoyment* of these topics in order to promote an improved understanding of students' attitudes and to improve their IT education.

IMPORTANCE OF I.T. TO ACCOUNTANTS

Importance of IT Knowledge and Skills

In a study by Albrecht and Sack (2000), accounting faculty and professionals ranked IT second in terms of importance to accounting students. Most programs of accountancy, however, have not adequately addressed the integration of information technology *knowledge and skills* with the more traditional accounting classes. Education is normally limited to a single AIS class supported by a business core class in management information systems. The AIS class is often the only class in which IT topics important to the success of the accountant and auditor are addressed.

The Public Company Accounting Oversight Board (PCAOB) has recommended that auditors receive IT training (O'Donnell and Moore, 2005). An analysis of 595 job listings for IT auditors found that a large percentage specifically mentioned technical skills/abilities including networking (19%), security (18%), database (24%), experience with IT controls (31%), and computer-assisted audit tools and techniques (CAATs) (15%) (Merhout and Buchman, 2007).

IT auditors have been in increased demand as a result of new regulatory requirements for compliance and higher emphasis on IT governance (Hoffman, 2004). The skills for IT auditors extend well beyond those for traditional auditors and, ideally, are a blend of accounting and IT *knowledge and skills*.

Lack of IT *knowledge and skills* can impair an auditor's ability. Continuous auditing (CA) is an increasingly important audit tool that corrects many of the deficiencies of other IT audit approaches. CA, however, often relies upon an underlying knowledge of IT and related technologies such as computer-aided auditing systems and Generalized Audit Software. Auditors who lack IT knowledge will experience greater difficulty in integrating computer-aided auditing systems with their professional audit knowledge. This will impair the auditors' ability to independently and continuously perform tests in the CA environment (Huang and Lin, 2007). Also, Dowling and Leech (2007) found that "there are audit efficiency and effectiveness implications if auditors do not accept these systems and/or do not use these systems in an appropriate manner."

IT control deficiencies negatively impact accounting and financial reporting. Companies report IT security and end-user computing controls as the major IT control problems. These include deficiencies in "segregation of IT duties, and IT policies, procedures, and documentation" (Alali, Grant and Miller, 2008).

Important IT *knowledge and skills* have been identified in literature. These include the general IT knowledge including the assessment, implementation, operation and control of com-

puter resources (Hall and Singleton, 2005) and an understanding of database architectures and computer-based analytical software (Hunton, Bryant and Bagranoff, 2004).

Database security has received increasing attention in auditing classes. Problems associated with data confidentiality, integrity, and availability have been augmented with newer topics such as data quality, completeness, timeliness, and provenance (Bertino and Sandhu, 2005). From an accounting perspective, it is important that databases support auditability, which introduces the topics of embedded audit modules and continuous auditing. Companies need to develop integrated auditors who understand both IT general controls and application controls (Cascarino, 2007) and hybrid auditors who possess *knowledge and skills* in IT-based forensic techniques (Kearns, 2006). This will require educating accounting students about the IT environment, including organizational and administrative activities, infrastructure and environmental controls over how systems are linked, and physical security over IT assets and physical and logical access (Chaney and Kim, 2007).

Importance of Interest and Enjoyment of IT to Learning

Hunton, et al. (2004) posit that enjoyment of computers and technology is important to success for IT auditors. They go on to explain that IT audit engagement success is predicated on the ability to work with people in various disciplines and effectively communicate their ideas and conclusions to several levels of management. Without the foundation *knowledge and skills* acquired in an AIS class, accountants and auditors cannot interact or communicate effectively with IT personnel.

One study showed that "a substantial number of accounting students surveyed have some degree of a non-positive attitude towards computers before taking the introductory AIS course" (Daigle and Morris, 2006. p. 22). Developing a positive attitude towards IT topics is important for educators of IT auditors (Cangemi, 2000). Merhout and Buchman (2007) state that the education of IT auditors requires a blending of skills, and educators "should strive to cultivate such a positive attitude in their students, and they should also make their students aware of the potential opportunities in the challenging IT audit career path."

Accounting Information Systems Course Objectives

Emphasis and focus of each AIS class will depend upon various factors including the accounting program objectives, the content of business information systems core classes, and the specific interests of individual instructors. Auditing requirements as well as information technologies are undergoing continual changes. Nevertheless, there is some consistency between programs in terms of IT-related course content.

The Sarbanes-Oxley Act of 2002 (SOX02) increased senior management's responsibility for a system of internal controls and mandated management's attestation of their existence and effectiveness (AICPA, 2002). Material weaknesses in IT internal controls can significantly affect the audit outcome. Many audit teams, however, lack the requisite skills to audit IT controls and must rely upon a third party. While allowable, this creates a lack of continuity within the process and could affect the overall quality of the audit. Even so, when using third-party IT auditors, the engagement auditors must possess sufficient knowledge of the IT audit process to assess and place reliance upon the product of the other audit team. The existence of strong IT controls, for example, can reduce the amount of substantive tests that must be performed. Thus, internal control has assumed an increased status, and IT controls, in particular, need to be un-

derstood by undergraduate accounting students.

It is also important that accounting students understand that effective IT general controls can create audit efficiencies (PCAOB, 2005) and that, because of their automated nature, application controls can be expected to continue in place without error or continued scrutiny (Weidenmier and Ramamoorti 2006).

AIS literature also focuses on other important IT topics including security and organizational governance (Nidumolu and Subramani 2003). Security covers physical assets, intellectual property, and confidential customer and employee data files. SOX02 stipulates a model similar to COSO for IT governance (Blum, 2005), and the CobIT framework is generally the focus for IT governance (ITGI, 2006).

Although course objectives will vary, most undergraduate AIS classes include a common set of foundation topics (Bain, Blankley and Smith, 2002). A study of 20 syllabi for AIS classes revealed the most popular course objectives. All of the Colleges of Business were accredited by the Association to Advance Collegiate Schools of Business (AACSB), and all of the AIS courses were required classes in the accounting major. These syllabi contained the following topics in the course objectives, and the required textbooks devoted at least one chapter to each of the topics (Steinbart and Romney, 2006; Gelinas, Jr. and Dull, 2008):

- Information Technology (types of AIS)
- Computer Assisted Tools & Techniques (CAATs)
- Relational Database System Architectures
- IT Governance Frameworks
- IT Threats and Internal Control
- IT Security

RELEVANCE AND MOTIVATION

Accounting students often question how they will benefit from the AIS class. Students may not believe the subject matter is as beneficial or relevant as other classes in their major field. To properly motivate students and improve course outcomes, it is important that students view AIS as being relevant to their needs.

Relevance has been found to be an important factor for influencing a student's motivation to learn (Sass, 1989). Relevance is defined as the extent to which information is perceived as being significant and satisfying student expectations (Keller, 1987). It can be established by various strategies. Weaver and Cottrell (1988) suggest using language and examples familiar to the learner and relating the knowledge to future usefulness and student goals. Role playing and games assist students in thinking creatively and independently and help students understand how the information relates to them individually. Using real-world problems, providing examples of the importance of information to the students' careers, inviting guest lecturers who are experienced in the subject, and encouraging students to ask questions about the material also enhance relevance (Schulman and Luechauer, 1993). Research has shown students are most motivated by "interest in and perceived relevance of the material" (Gorhan and Christophel, 1992, p. 247).

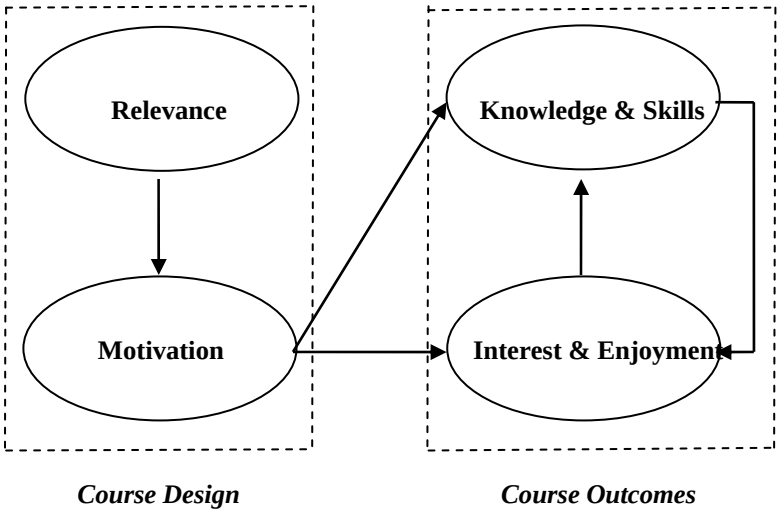
Feldman (1997) reported that stimulating students' interests and demonstrating enthusiasm about the subject matter were the most important dimensions of good teaching. Young and Shaw (1999) examined extensive data to determine what factors were common to effective

teachers. The two most important were student perception of the value of the course and motivation of students to do their best. Thus, successful instructors must convince students of the relevance of the course subject matter and motivate them to acquire the underlying *knowledge and skills* that reflect course objectives.

Students who find AIS relevant and are motivated to achieve course objectives can be expected to exhibit greater *interest and enjoyment* in the AIS subject material. In turn, *interest and enjoyment* should lead to attainment of higher levels of *knowledge and skills*. By increasing relevance, instructors could increase students' overall achievement. Relevance has been shown to increase motivation, which could lead to increased *interest and enjoyment* in the subject matter. If *interest and enjoyment* is positively associated with *knowledge and skills*, then relevance will have a transitive relationship and lead to improved student performance and higher course outcomes.

The theoretical model is shown in Figure 1. Course Design is reflected in the constructs of *relevance* and *motivation* while Course Outcomes consist of the constructs *knowledge and skills* and *interest and enjoyment*. Relevance, controlled by the instructor, is assumed to positively influence motivation, which acts directly upon both components of course outcomes which, in turn, influence one another.

FIGURE 1: The Influence of Course Design on Course Outcomes



HYPOTHESES AND METHODOLOGY

Hypotheses

Eight hypotheses are presented. First, it was theorized that students who possessed higher ***knowledge and skills*** might also be expected to display greater ***interest and enjoyment*** of IT topics. Similarly, students who were interested in and enjoyed IT topics were likely to increase their *knowledge and skills* more highly. Other forces may motivate students to acquire

knowledge and skills. In particular, those students who are highly motivated to make good grades and those who see mastery of IT topics as essential to success will acquire the *knowledge and skills* even though their level of *interest and enjoyment* is not high. However, as one becomes more proficient in a subject, that subject becomes more interesting and relevant. Thus,

> **H1: Accounting students' perceived levels of *knowledge and skills* in accounting and IT topics will be positively related to their perceived levels of *interest and enjoyment* in these topics.**

Although H1 implies a causal relationship, it cannot be determined whether higher values for *knowledge and skills* leads to higher *interest and enjoyment* or vice-versa. For this reason, a separate hypothesis is not provided. It is likely that both work at the same time: as students' *knowledge and skills* increase, the *interest and enjoyment* increases, which results in greater dedication and an ensuing increase in *knowledge and skills*. This relationship is depicted in Figure 1.

Students who are highly dedicated to accounting or are highly focused on traditional accounting subjects might not wish to make a major commitment to another discipline such as IT (Dunn and Grabski, 1998; Ravel, 1991). Therefore, it was hypothesized that students who scored highly on the two accounting factors would show lower interest in strictly IT factors. Thus,

> **H2: Accounting students' perceived levels of *knowledge and skills* in strictly accounting factors will be positively related to their perceived levels of *interest and enjoyment* in strictly accounting factors.**

Similarly, some students may find the IT topics to be more interesting than traditional accounting topics or may find that they excel in these topics as compared to accounting and that the IT discipline offers a more attractive career path. These students would be expected to display a higher level of interest in strictly IT factors. Thus,

> **H3: Accounting students' perceived levels of *knowledge and skills* in strictly IT factors will be positively related to their perceived levels of *interest and enjoyment* in strictly IT factors.**

Some students would be expected to be equally interested in both accounting and IT topics. Thus,

> **H4: Accounting students' perceived levels of *knowledge and skills* in a blend of accounting and IT factors will be positively related to their perceived levels of *interest and enjoyment* in both accounting and IT factors.**

Students' attitudes towards IT can be expected to influence both their *interest and enjoyment* and their *knowledge and skills*. Students with a highly positive attitude towards the AIS class are more likely to rate both their *knowledge and skills* and their *interest and enjoyment* with IT topics more highly. *Knowledge and skills* will shape positive attitudes because the ob-

jectives will appear more easily attainable. *Interest and enjoyment* may be a product of positive attitudes or may actually create those attitudes. On the other hand, those students whose attitudes are shaped by viewing the AIS class as a necessary means towards performing well on the CPA exam will likely have less *interest and enjoyment* with strictly IT topics. Thus,

H5: Accounting students' IT Attitudes will be positively related to their perceived levels of *knowledge and skills* in strictly IT factors.

H6: Accounting students' IT Attitudes will be positively related to their perceived levels of *interest and enjoyment* in strictly IT factors.

Accounting students are expected to value AIS *knowledge and skills* as a means towards achieving career goals and thus deem it as relevant. Because the subject matter is vastly different than other core classes in the program, they are not expected to possess as high a level of *interest and enjoyment*, and relevance is expected to have a higher positive association *with knowledge and skills*.

H7: Accounting students' rankings for relevance will be more highly associated with *knowledge and skills* than with *interest and enjoyment.*

Because accounting students are expected to value AIS as a means towards achieving career goals, they are expected to rate the course outcomes (as measured by knowledge and interest) as moderately high. Relevance was posited earlier as having a transitive relationship with both *interest and enjoyment* and *knowledge and skills*. Because students are likely to value the *knowledge and skills* more highly and achieve them in the absence of interest, course outcomes might be expected to show a higher positive association with *knowledge and skills*.

H8: Accounting students' rankings for course outcomes will be more highly associated with *knowledge and skills* than with *interest and enjoyment.*

Data Collection

Data was provided by an in-class survey, administered by the professor, to students enrolled in a program of accountancy at a university in a metropolitan area in the southeastern United States. Data were collected over three semesters and five sections of the AIS class. The university attracts many commuter students who are already placed in accounting careers and are completing their education. The program is separately accredited by the AACSB, the highest level of accreditation that can be achieved by a college of business. Like most accounting programs, a one-semester class in AIS is required for a major undergraduate degree. Course objectives include materials that are commonly found on the CPA exam section for IT as well as material that is fundamental to an IT auditor certification.

The anonymous survey of 103 students in AIS classes during the period Fall 2008 to Fall 2009 was used to evaluate students' attitudes towards specific topics about information systems and controls and to determine if there was a relationship between their perceived level of *knowledge and skills* and their perceived level of *interest and enjoyment* of these topics. The survey was administered in the final week of the semester in order to capture changes in the stu-

dents' IT attitudes, *knowledge and skills* and *interest and enjoyment*.

The survey instrument appears in Appendix A. Students ranked their levels on a seven-point Likert-type scale for nine different factors along the two dimensions. Two factors referred to strictly accounting topics: Auditing, and Financial & Accounting Analytical Methods. Three factors were strictly IT-related: Information Technology, IT Security, and Database Systems & Architecture. Four factors were a blend of accounting and IT: IT Auditing, IT Governance Frameworks, Computer-Based Analytical Methods (CAATs such as ACL), and Internal Control. These factors were interspersed on the survey so that the student did not unconsciously provide answers that reflected these separate groupings.

ANALYSIS OF DATA AND RESULTS

Correlation Analysis

Pearson product-moment correlation analysis was performed on the 103 observations of students in four AIS classes during the Fall 2008 and Fall 2009 semesters. The questions measured three separate phenomena: *Knowledge and Skills*; *Interest and Enjoyment*; and IT Attitudes. *Knowledge and Skills* and *Interest and Enjoyment* were further investigated by separating the nine factors into three components of student interest: Accounting (measured by two questions), IT (measured by three questions), and Blend (measured by four questions).

Study Metrics

Means and standard deviations for each of the nine questions along the two dimensions are shown in Table 1. A *knowledge index* is also presented that measures the ratio of the *knowledge and skills* response to the *interest and enjoyment* response.

Knowledge Index = *Knowledge and Skills* Mean / *Interest and Enjoyment* Mean

Where *interest and enjoyment* exceed *knowledge and skills*, the index will be less than one, and where *knowledge and skills* exceed *interest and enjoyment*, the index will be greater than one. Thus, for the topic computer-based analytical methods, *interest and enjoyment* far exceed *knowledge and skills* (KI = .79), while for the topic information technology, the two are equal (KI = 1.0). High values of the index may be interpreted to reflect the accomplishment of *knowledge and skills* where *interest and enjoyment* is high, as in the case of financial & accounting analysis (KI = .97). Lower values of the index could reflect the case where *interest and enjoyment* is high but attained *knowledge and skills* low, as with financial auditing (KI = .72). By stimulating the *interest and enjoyment*, of course, it is the hope of the educator to motivate students towards higher attainment of *knowledge and skills*.

The mean values for each of the factors were unexpectedly close to a neutral response (4.0). For both *knowledge and skills* and for *interest and enjoyment*, the mean values ranged from a low of 2.96 to a high of 4.98. The average coefficient of variation (standard deviation divided by the mean) was .39 for both constructs. This tells us that the standard deviation represented 39 percent of the mean and signifies a wide dispersion. Individual responses ranged from

Table 1: Metrics for AIS Students' Perceived Levels of Knowledge & Skills and Interest & Enjoyment

Factor / Metric	Financial Auditing	IT Auditing	Information Technology	IT Security	IT Governance Frameworks	Financial & Accounting Analysis	Computer Based Analytical Methods	Database Systems & Architecture	Internal Control
K & S Mean	3.29	2.69	4.31	3.86	3.19	4.81	2.76	4.10	4.50
Std Dev	1.42	1.28	1.46	1.32	1.23	1.38	1.57	1.71	1.17
I & E Mean	4.60	3.60	4.31	4.00	3.38	4.98	3.50	3.95	4.79
Std Dev	1.59	1.56	1.76	1.55	1.55	1.55	1.64	1.71	1.26
Knowledge Index	.72	.75	1.00	.96	.94	.97	.79	1.04	.94

Mean is based on a scale of 1 to 7 where 1 represents the lowest level and 7 represents highest level.
Knowledge index is calculated as K&S Mean / I&E Mean

1 to 7 for most of the eighteen factors. Low values (less than 4.0) for *knowledge and skills* might reflect students not having sufficient opportunity to develop the *knowledge and skills* or not being sufficiently motivated. Also, because responses represented student perceptions, students may have been reluctant to rate their *knowledge and skills* highly. Five sets of observations were abnormally low (all responses 3 or less). Typically, a number of students earn failing grades in the course, and this may reflect their dissatisfaction. Removing these observations would have increased the mean values. Following prescribed recommendations for surveys, the Likert scale measured attitude in terms of level of agreement/disagreement to a target statement and was bivalent and symmetrical about a neutral middle. Each end was given a verbal anchor. A neutral middle, however, can be used as a dumping ground when respondents are ambivalent or have no opinion.

Association of *Knowledge and Skills* with *Interest and Enjoyment*

Results for correlation of AIS students' *knowledge and skills* with *interest and enjoyment* are shown in Table 2. Coefficients of correlation, or correlates, along the diagonal represent the strength of relationship between the *knowledge and skills* and the *interest and enjoyment* for each of the nine factors (Hair et al., 1998). All of the coefficients are positive, and statistical significance is indicated for each correlate in the table. On the diagonal, there is a very high relationship for database systems and architecture (r = .85) while financial auditing has the lowest relationship (r = .24). Eight of the nine factors display a positive and strong relationship, which supports H1, and we can state that accounting students who have a higher perceived level of *knowledge and skills* in accounting and IT topics will rate their level of *interest and enjoyment* in these topics more highly (and vice-versa by Figure 1).

Students with Preference for Accounting Topics

The next set of hypotheses compared AIS students' *knowledge and skills* and *interest and enjoyment* with preferences for accounting, IT, and blended topics. These are depicted in Figure 2. The correlates for these relationships are shown in Table 3. Two factors referred to

FIGURE 2: Three Preferences: for Accounting, IT, and a Blend of Topics

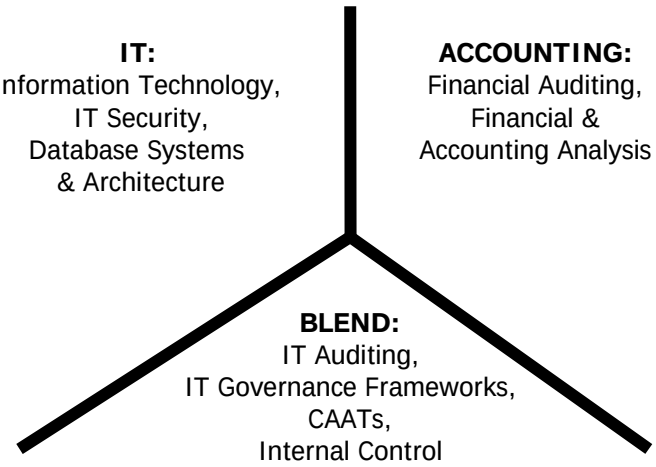


Table 2: Correlation of AIS Students' Knowledge & Skills with Interest & Enjoyment

		AIS Level of Knowledge and Skills								
		Financial Auditing	**IT Auditing**	**Info Technology**	**IT Security**	**IT Governance Frameworks**	**Financial & Accounting Analysis**	**Computer Based Analytical Methods**	**Database Systems & Architecture**	**Internal Control**
AIS Level of Interest and Enjoyment	**Financial Auditing**	0.24	0.18	0.12	0.22	0.26	0.29	0.06	0.22	0.33 *
	IT Auditing	0.30 *	0.60 ***	0.47 ***	0.40 **	0.27	0.21	0.47 ***	0.39 **	0.25
	Information Technology	0.33 **	0.60 ***	0.60 ***	0.54 ***	0.15	0.10	0.44 **	0.49 ***	0.22
	IT Security	0.08	0.38 **	0.31 *	0.45 ***	0.24	0.02	0.30 *	0.33 *	0.24
	IT Governance Frameworks	0.23	0.30 *	0.30 *	0.41 **	0.46 ***	0.22	0.45 ***	0.32 *	0.32 *
	Financial & Accounting Analysis	0.12	0.11	0.21	0.42 **	0.34 *	0.44 **	0.17	0.36 **	0.34 *
	Computer Based Analytical Methods	0.21	0.38 **	0.36 **	0.34 *	0.26	0.27	0.62 ***	0.38 **	0.10
	Database Systems & Architecture	0.16	0.44 **	0.56 ***	0.58 ***	0.43 **	0.49 ***	0.61 ***	0.83 ***	0.50 ***
	Internal Control	0.04	0.28 *	0.39 **	0.52 ***	0.41 **	0.26	0.25	0.47 ***	0.54 ***

*,**,*** represent significance levels of .05, .01, and .001respectively

TABLE 3: Correlation of AIS Students' Knowledge and Skills with Interest and Enjoyment with PRferences for Accounting, IT, and Blended Topics

		Knowledge & Skills			Interest & Enjoyment		
		IT	ACCTG	BLEND	IT	ACCTG	BLEND
Knowledge & Skills	IT	1.00					
	ACCTG	0.62 ***	1.00				
	BLEND	0.82 ***	0.68 ***	1.00			
Interest & Enjoyment	IT	0.73 ***	0.32 *	0.63 ***	1.00		
	ACCTG	0.34 *	0.38 **	0.33 *	0.34 *	1.00	
	BLEND	0.55 ***	0.33 *	0.61 ***	0.77 ***	0.52 ***	1.00
*,**,*** represent significance levels of .05, .01, and .001respectively							

strictly accounting topics: Financial Auditing and Financial & Accounting Analytical Methods. There was a moderate relationship (r = .38) between *knowledge and skills* and *interest and enjoyment* for the two factors that represented interest in strictly accounting topics. Thus, H2 is supported, and we can say that accounting students who have a higher perceived level of *knowledge and skills* in strictly accounting factors will display a higher perceived level of *interest and enjoyment* in strictly accounting factors (and vice-versa).

Students with Preference for IT Topics

Three factors comprised the component for strictly IT topics: Information Technology, IT Security, and Database Systems & Architecture. There was a strong relationship (r = .73) between *knowledge and skills* and *interest and enjoyment* for the IT component. Thus, H3 is supported, and we can say that accounting students who have a higher perceived level of *knowledge and skills* in strictly IT factors will display a higher perceived level of *interest and enjoyment* in strictly IT factors (and vice-versa).

Four factors represented the component that is a blend of accounting and IT: IT Auditing, IT Governance Frameworks, Computer-Based Analytical Methods (CAATs such as ACL), and Internal Control. Mastery of these topics required knowledge in both accounting and IT. There was a strong relationship (r = .61) between *knowledge and skills* and *interest and enjoyment* for the four factors that comprised interest in a blend of accounting and IT topics. Thus, H4 is supported, and we can say that accounting students who have a higher perceived level of *knowledge and skills* in both accounting and IT factors will display a higher perceived level of *interest and enjoyment* in a blend of accounting and IT factors (and vice-versa).

The blend component has moderate to strong associations with both the accounting and

IT components. For *knowledge and skills*, the blend component shows strong relationships with *knowledge and skills* for both accounting (r = .68) and IT (r = .82). It shows moderate relationships for *interest and enjoyment* for accounting (r = .33) and strong for IT (r = .63). For *interest and enjoyment*, the blend component shows a moderate relationship with *knowledge and skills* for accounting (r = .33) and strong for IT (r = .55), and a strong relationship for *interest and enjoyment* for both accounting (r = .52) and IT (r = .77).

This provides further support for H4, and we can say that accounting students who have a higher perceived level of *knowledge and skills* in a blend of accounting and IT factors will display a higher perceived level of *interest and enjoyment* in either accounting or IT factors (and vice-versa). Interestingly, the knowledge indexes for each of the three components, calculated from Table 1, is Accounting Topics KI = .85, IT KI = 1.00, and Blend KI = .86. This could indicate that students are satisfied with their attainment of IT *knowledge and skills* whereas their overall *interest and enjoyment* for strictly accounting topics and topics that represent a blend of both still exceeds their *knowledge and skills*. These will be the areas that students are most likely to pursue.

Students' IT Attitudes

The next set of hypotheses test the relationship between IT attitudes, as determined by the students' interests in the AIS class as a means towards career goals and their perceptions that IT skills are important to accountants, with their level of *knowledge and skills* and *interest and enjoyment* in strictly IT factors. These attitudes were tested using six questions that measured relevance and course outcomes. These questions were then correlated with the responses for the nine questions for the accounting, IT, and blend factors. The three factors that represent strictly IT are Information Technology, IT Security, and Database Systems & Architecture. The results for *knowledge and skills* are shown in Table 4 and for *interest and enjoyment* in Table 5. The strictly IT factors are shaded in both tables.

For the belief that the AIS class has increased overall knowledge of IT, there are mixed results. There is no significant relationship with Information Technology (r = .04 and .07 respectively), but there are moderate to strong responses for the IT Security and Database Systems. For the belief that the AIS class has increased interest in IT, all of the responses were moderate to strong (r ranges from .34 to .74 in both tables). For the belief that IT skills are important for accountants, all of the responses were moderate to strong (r ranges from .39 to .52 in both tables). For students who believe that IT will help them perform well in their career, the *knowledge and skills* correlates are low for IT (r = .22) and Database Systems (r = .22) but moderate for IT Security (r = .39). We might interpret this to mean that strong beliefs may exist although the *knowledge and skills* are low. On the other hand, the belief that IT will help students perform well in their careers has two strong *interest and enjoyment* correlates: IT (r = .43) and IT Security (r = .52). Database Systems is lower (r = .29). This might be interpreted to mean that students might perceive knowledge of database systems as being important but have a lower sense of *interest and enjoyment* with the topic.

For students who believe that knowledge of IT will help them perform well on the CPA exam, the relationship with *knowledge and skills* factors ranged from low to moderate (r = .20, .17 and .40). This might indicate that students who perceived their knowledge as being inadequate still held high beliefs that the knowledge was important to their success on the exam. However, it could also mean that those students with high *knowledge and skills* did not hold the belief that such knowledge was important to their performance on the exam. The latter appears

to be contradicted when examining the relationship with *interest and enjoyment* factors where the associations were strong (r = .45, .46, .33 respectively). Thus, it appears that the students who believe IT is important to their CPA exam performance are more likely to be interested in and enjoy the topics. Finally, for both the *knowledge and skills* factors and the *interest and enjoyment* factors, the associations with intent to take a second AIS class are moderate to strong (r ranges from .33 to .60), with the correlates for the *interest and enjoyment* factors being higher. We would expect that interest in a second class would show higher associations with *interest and enjoyment*. If *knowledge and skills* were sufficiently high, then the student might not see the need to further his/her education in this discipline.

Correlates in both tables were mostly moderate to strong. For the *knowledge and skills* factors, 13 of the 18 correlates were moderate to strong (r ranges from .30 to .52). For the *interest and enjoyment* factors, 16 of the 18 correlates were moderate to strong (r ranges from .29 to .74). Thus, both H5 and H6 are supported and we can state that accounting students who have a higher IT Attitude will display a higher perceived level of *knowledge and skills* and a higher perceived level of *interest and enjoyment* in strictly IT factors.

Relevance and Course Outcomes

Relevance and Course Outcomes were both measured using three questions that were part of IT Attitudes. On the 7-point Likert scale, as shown in Table 6, student response showed moderately strong support for relevance (x = 4.61 to x = 5.91), indicating that they were motivated to succeed. From Tables 4 and 5, relevance appears to be more highly related to *interest and enjoyment* than *knowledge and skills*, but for some of the topics there are no significant associations.

On the 7-point Likert scale, as shown in Table 6, student response also showed moderately strong support for course outcomes (x = 4.70 to x = 6.04), indicating above average satisfaction. From Tables 4 and 5, associations between course outcomes and the topics for both *interest and enjoyment* and *knowledge and skills* are mixed with no significant associations for some of the nine topics. Further inquiry would be necessary to determine why the students did not express either interest or knowledge in these areas. Thus, H7 and H8 were only weakly supported.

DISCUSSION

This study has three primary contributions. First, it provides important information about the relationship between two dimensions of learning: *knowledge and skills* and *interest and enjoyment*. Second, by testing a model in which relevance and motivation are associated with course outcomes, it provides information that will assist instructors of AIS to improve students' attainment of IT *knowledge and skills*. Third, it provides a tested instrument for use by AIS researchers and practitioners.

Relationship Between Knowledge and Skills and Interest and Enjoyment

Nine factors, representing AIS and accounting topics, were used to determine if there existed a relationship between perceived IT *knowledge and skills* and *interest and enjoyment*. Eight hypotheses explored the relationships between the two dimensions and attempted to determine if particular factors—accounting, IT, and a blend of accounting/IT—were more likely to appeal to students and be associated with the intent to pursue advanced certifications. Stu-

TABLE 4: Correlation of AIS Students' Attitude with Knowledge and Skills

	AIS Level of Knowledge and Skills								
IT Attitude	**Financial Auditing**	**IT Auditing**	**Information Technology**	**IT Security**	**IT Governance Frameworks**	**Financial & Accounting Analysis**	**Computer Based Analytical Methods**	**Database Systems & Architecture**	**Internal Control**
I believe that IT knowledge and skills are important for accountants	0.13	0.31 *	0.47 ***	0.52 ***	0.24	0.22	0.21	0.48 ***	0.50 ***
I believe the AIS class will help me perform well in my career	0.40 **	0.51 ***	0.22	0.39 **	0.36 *	0.20	0.44 **	0.22	0.13
I believe the AIS class will help me perform well on the CPA exam	0.47 ***	0.45 **	0.20	0.40 **	0.29 *	0.29 *	0.21	0.17	0.28
The AIS class has increased my overall knowledge of IT	0.06	0.16	0.04	0.30 *	0.45 **	0.47 ***	0.19	0.38 *	0.46 **
The AIS class has increased my overall interest in IT	0.32 *	0.53 ***	0.37	0.47 ***	0.30 *	0.35 *	0.42 **	0.45 **	0.40 **
I would be interested in taking a second AIS class as an elective	0.23	0.39 **	0.33 *	0.40 **	0.46 **	0.36 *	0.39 **	0.49 ***	0.46 **

*,**,*** represent significance levels of .05, .01, and .001respectively

TABLE 5: Correlation of AIS Students' Attitude with Interest and Enjoyment

	AIS Level of Interest and Enjoyment								
IT Attitude	**Financial Auditing**	**IT Auditing**	**Information Technology**	**IT Security**	**IT Governance Frameworks**	**Financial & Accounting Analysis**	**Computer Based Analytical Methods**	**Database Systems & Architecture**	**Internal Control**
I believe that IT knowledge and skills are important for accountants	0.18	0.37 *	0.39 **	0.42 **	0.44 **	0.19	0.36 **	0.48 ***	0.63 ***
I believe the AIS class will help me perform well in my career	0.29 *	0.58 ***	0.43 **	0.52 ***	0.54 ***	0.23	0.52 ***	0.29	0.29
I believe the AIS class will help me perform well on the CPA exam	0.52 ***	0.31 *	0.45 **	0.46 **	0.18	0.37 *	0.13	0.33 *	0.43 **
The AIS class has increased my overall knowledge of IT	0.35 *	0.20	0.07	0.23	0.24	0.22	0.25	0.42 **	0.41 **
The AIS class has increased my overall interest in IT	0.23	0.65 ***	0.70 ***	0.74 ***	0.47 ***	0.17	0.49 ***	0.50 ***	0.40 **
I would be interested in taking a second AIS class as an elective	0.46 **	0.55 ***	0.41 **	0.46 **	0.45 **	0.26	0.42 **	0.60 ***	0.55 ***

*,**,*** represent significance levels of .05, .01, and .001respectively

dents' IT attitudes were measured to determine the association with these factors and along the two dimensions. Moderate to strong support was found for eight hypotheses, and weak support was found for the other two.

Results showed a positive and strong relationship between the two dimensions. Whether *knowledge and skills* leads to higher levels of *interest and enjoyment* or vice-versa or both cannot be proven. We can only state that study data supports a causal relationship that is positive and in the moderate to strong range. Interestingly, data appear to support the existence of *knowledge and skills* without *interest and enjoyment* in some cases. Thus, motivation may have a direct affect on each, which confirms the theoretical model.

IT Attitude was found to be an important predictor of both *knowledge and skills* and *interest and enjoyment* for all three IT factors. (Although correlates for all nine factors were presented, only the IT factors were discussed.) The IT factors represent the more difficult topics for accounting students. Because there were six questions measuring IT attitude, there were a total of 36 correlates (six questions x two dimensions x three factors). Since 29 of the 36 relationships were moderate to strong, the evidence shows how important attitude is to learning.

Students' perceptions of subject matter relevance were measured by two questions: "I believe that IT *knowledge and skills* are important for accountants" and "I believe the AIS class will help me perform well in my career." The average responses were strong (x = 5.91and x = 5.52). Although students' perceptions of course outcomes were generally positive, the average response for overall interest (x = 4.87) was lower than for knowledge (x = 6.04). This might indicate that, while motivation is important to the increase of interest, student perception of relevance may directly lead to knowledge attainment even though interest in AIS is not strong. The reason is that accounting students may perceive the subject matter as important to success but not particularly interesting.

6.2 Implications for Researchers and Educators

Both researchers and practitioners can benefit from the study results. Researchers can replicate the study results to support the reliability and validity of the instrument. They can also examine ways in which AIS instructors can increase the students' *interest and enjoyment* of the topics. Practitioners can use the instrument to determine the level of their own students' *interest and enjoyment* and to assess their IT attitudes. They can also benefit from knowing that increasing the *interest and enjoyment* is likely to increase the *knowledge and skills* outcomes.

Instructors of AIS need to know what motivates their students to learn and how they perceive the topics that typically support course objectives. Student responses can be expected to vary along different dimensions, including their existing level of IT *knowledge and skills*, when they enter the class. Any information that assists the instructor in improving the students' overall performances is highly important. Unfortunately, there has been scant attention to learning motivators at this level.

The purpose of the AIS class is to increase *knowledge and skills*. However, it is reasonable to assume that the level of *interest and enjoyment* will make it easier and be an important motivator for the students to acquire such knowledge. Knowing that the relationship is strong should prompt instructors to increase efforts to improve students' *interest and enjoyment*. These facilitators have not been addressed in this paper and could be the subject of future research. Furthermore, while it was shown that the relationship between the two dimensions was stronger when measured *within* the components (accounting, IT, blend), the correlates were mainly moderate to strong *between* components. It appears that even those students who are primarily interested in either accounting or IT will be spurred to learn other topics if they have sufficient *inter-*

TABLE 6: Metrics for Relevance and Course Outsomes

Relevance	Mean	StdDev
I believe that IT knowledge and skills are important for accountants	5.91	2.49
I believe the AIS class will help me perform well in my career	5.52	2.61
I would be interested in taking a second AIS class as an elective	4.61	3.46
Course Outcomes		
I believe the AIS class will help me perform well on the CPA exam	4.70	2.83
The AIS class has increased my overall knowledge of IT	6.04	2.05
The AIS class has increased my overall interest in IT	4.87	2.68

est and enjoyment. Thus, the level of *interest and enjoyment* appears to be an important condition to creation of *knowledge and skills*.

IT Attitude was positively associated with both dimensions. For this reason, instructors should find opportunities to stress the importance of the topics to accounting careers in order to motivate students and instill a positive mindset. Overall, IT Attitude had stronger associations with all nine factors for *interest and enjoyment* than for *knowledge and skills* (see Tables 4 and 5). This could reflect the fact that students may acquire *knowledge and skills* even where IT attitude is weak because they see it as supporting their goals. A positive attitude, however, is clearly associated *with interest and enjoyment*.

Finally, relevance was associated with *knowledge and skills* and *interest and enjoyment*—representing course outcomes—but not for all AIS topics. Strong significant associations were found for some topics, but others had no significant associations. This could indicate that students did not find the topics relevant and were not motivated. Results of this study should raise special concern for educators. While SOX02 has clearly emphasized the role of IT controls and the PCAOB required disclosure of IT control deficiencies, many IT audit matters (including internal controls, governance, security and CAATs) are covered in a single AIS course and many accounting educators are unfamiliar with these topics and their significance. This weakness could potentially affect future audit quality.

CONCLUSIONS

AIS instructors might improve attainment of course objectives by encouraging students' *interest and enjoyment* of course topics. They can also assess attitudes and guide students towards furthering their IT education. Some students will continue to see the course as a necessary ends towards furthering a traditional accounting career and will not develop a high level of interest in IT topics. On the other hand, many students will embrace IT topics and be interested in pursuing IT as an adjunct to their career. Because the course objectives are broad and the

technology can be highly sophisticated, students may not perceive that they have attained even a moderate level of *knowledge and skills* in certain IT topics. In this study, students ranked their *knowledge and skills* for IT, IT auditing, and computer-based analytical techniques as low. This may reflect a deficiency in attaining these objectives or simply a problem with perception.

REFERENCES

Abu-Musa, A. (2008) Information Technology and Its Implications for Internal Auditing; An Empirical Study of Saudi Organizations. *Managerial Auditing Journal*, Vol. 23 (5), pp. 438 -466.

AICPA (2002) Summary of Sarbanes-Oxley Act of 2002. http://www.aicpa.org/info/ sar-banes_oxley_ summary.htm.

Alali, F., Grant, G. H. and Miller, K. C. (2008) IT Control Deficiencies that Impact Financial Reporting. *Internal Auditing*, Vol. 23 (4), pp. 28-37.

Bain, C. E., Blankley, A. I. and Smith, L. M. (2002) An Examination of Topical Coverage for the First Accounting Information Systems Course. *Journal of Information Systems*, Vol. 16 (2), pp. 143-164.

Bertino, E. and Sandhu, R. (2005) Database Security – Concepts, Approaches, and Challenges. *IEEE Transactions on Dependable and Secure Computing*, Vol. 2 (1), pp. 2-19.

Blum, D. (2005) Act Promotes Survival of the Fittest. *Network World*, Vol. 22 (5), p. 37.

Cangemi, M. P. (2000) (ed.) What Recruiters and Staffing Agencies Say about Trends in IS Auditing, *Information Systems Control Journal*, Vol. 5, pp. 43-45.

Cascarino, R. (2007) *Auditor's Guide to Information Systems Auditing*. John Wiley & Sons, Inc., Hoboken, NJ.

Cerullo, M. V. and Cerullo, M. J. (2003) "Impact of SAS No. 94 on Computer Audit Techniques," *Information Systems Audit and Control Association*, Vol. 1, Downloaded 2/2/2010 from: http://www.isaca.org/Template.cfm?Section=Home&CONTENTID= 16201&TEMPLATE=/ContentManagement/ContentDisplay.cfm

Cerullo, M. V. and Cerullo, M. J. (2005) How the New Standards and Regulations Affect an Auditor's Assessment of Compliance With Internal Controls *Information Systems Audit and Control Association*. Downloaded 12/01/2009 from: www,isaca.org/jonline

Chaney, C. and Kim, G. (2007) The Integrated Auditor. *The Internal Auditor*, Vol. 64 (4) pp. 46 -52.

Daigle, R. J. and Morris, P. W. (2006) Fear Factor: The AIS Course and Non-Positive Attitudes Towards Computers. *The Review of Business Information System*, Vol. 10 (1), pp. 11-25.

Dowling, C. and Leech, S. (2007) Audit Support Systems and Decision Aids: Current Practice and Opportunities for Future Research. *International Journal of Accounting Information Systems*, Vol. 8, pp. 92–116.

Dunn, C. and Grabski, S. (1998) The Effect of Field Dependence on Conceptual Modeling Performance. *Advances in Accounting Information Systems*, Vol. 6, pp. 65-77.

Feldman, K. A. (1997) "Identifying Exemplary Teachers and Teaching: Evidence from Student Ratings." In R. Perry and J. Smart (eds.), Effective Teaching in Higher Education: Research and Practice. New York: Agathon Press, 1997.

Gelinas, Jr., U. and Dull, R. B. (2008) *Accounting Information Systems*, 7th ed. South-Western.

Gorham, J., and Christophel, D. M. (1992) Students' Perceptions of Teacher Behaviors as Motivating and Demotivating Factors in College Classes. *Communication Quarterly*, Vol. 40, pp. 239-252.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C. (1998) *Multivariate Data Analysis with Readings*, 5th ed. Prentice Hall, Englewood Cliffs, New Jersey.

Hall, J. A. and Singleton, T. (2005) *Information Technology Auditing and Assurance*, 2nd ed., South-Western College Publishing, Mason, OH.

Hunton, J. E., Bryant, S. M. and Bagranoff, N. A. (2004) *Core Concepts of Information Technology Auditing*, John Wiley & Sons, Inc., Hoboken, NJ.

Hoffman, T. (2004) IT Auditors Coveted, Hard to Find. *Computerworld*, Vol. 38 (18), pp. 1-16.

ITGI (2006) *IT Control Objectives for Sarbanes-Oxley*. Downloaded from www.isaca.org/sox

Kearns, G. S. (2006) A Curriculum for Teaching Information Technology Investigative Techniques for Auditors. *Journal of Digital Forensics, Security and Law*, Vol. 1 (4), pp. 9-28.

Keller, J. M. (1987) Development and use of the ARCS model of motivational design, *Journal of Instructional Development*, Vol. 10 (3), pp. 2-10.

Lainhart, J. (2000) CobiT: A Methodology for Managing and Controlling Information and Information Technology Risks and Vulnerabilities. *Journal of Information Systems*, Vol. 14, pp.21-25.

Li, S., Huang, S. and Lin, Y. G. (2007) Developing a Continuous Auditing Assistance System Based on Information Process Models. *The Journal of Computer Information Systems*, Vol. 48 (1), pp. 2-13.

Merhout, J. W. and Buchman, S. E. (2007) Requisite Skills and Knowledge for Entry-level IT Auditors. *Journal of Information Systems Education*, Vol. 18 (4), pp. 469-477.

Nidumolu, S. and Subramani, M. 2003. The Matrix of Control: Combining Process and Structure Approaches to Managing Software Development. *Journal of Management Information Systems*. Vol. 20 (3), pp. 159–196

O'Donnell, J. and Moore, J. (2005) Are Accounting Programs Providing Fundamental IT Control Knowledge? *The CPA Journal*, Vol. 75, (5), pp. 64-66.

PCAOB (Public Company Accounting Oversight Board). 2005. Staff questions and answers on Auditing Standard No. 2 – Internal Control. Available online at: http://www.pcaob.org/Standards/Staff_Questions_and_Answers/2005/05-16.pdf, retrieved January 2009.

Ravel, V. (1991) Perspectives on Students' Teaching Evaluations of AIS Courses. *The Journal of Information Systems*, Vol. 5 (2), pp. 62-72.

Sass, E. J. (1989). Motivation in the college classroom: What students tell us. *Teaching of Psychology, 16*, 86-88.

Shulman, G. and Luechauer, D. (1993) The empowering educator: A CQI approach to classroom leadership. In D. Hubbard (Ed.), *Continuous Quality Improvement: Making the Transition to Education*. Maryville, MO: Prescott Publishing, 424-453.

Simmons, M. R. (1997) COSO Based Auditing. *The Internal Auditor*, Vol. 54 (6), pp. 68-73.

Steinbart, P. and Romney, M. (2006) *Accounting Information Systems*, 10th ed. Prentice Hall, Englewood Cliffs, New Jersey.

Sumners, G. E. and Soileau, J. S. (2008) Addressing Internal Audit Staffing Challenges. *Information Systems Management*, Vol. 25 (2), pp. 3-11.

Tuttle, B. and Vandervelde, S. D. (2007) An Empirical Examination of CobiT as an Internal Control Framework for Information Technology. *International Journal of Accounting Information Systems*, Vol. 8, pp. 240-263.

Van Grembergen, W., De Haes, S, and Moons, J. (2005) Linking Business Goals to IT Goals and CobiT Processes. *Information Systems Control Journal*, Vol. 4, pp. 18-21

Weaver, R. L. and Cottrell, H. W. (1988) Motivation students: Stimulating and sustaining student effort. *College Student Journal*, Vol. 22 (1) , pp. 22-32.

Weidenmier, M.L., and S. Ramamoorti. 2006. Research opportunities in information technology and internal auditing. *Journal of Information Systems*. Vol. 20 (1), pp. 205-219.

Young, S., and Shaw, D.G. (1999) Profiles of Effective College and University Teachers. *The Journal of Higher Education*, Vo. 70 (6), pp. 670-686.

APPENDIX

ACCOUNTING INFORMATION SYSTEMS: STUDENT IT INTEREST SURVEY
STRICTLY CONFIDENTIAL – DO NOT PLACE YOUR NAME ON THIS SURVEY

Instructions: The purpose of this survey is to gather information that will allow your professor and the Program of Accountancy to make better informed choices about the materials included in the curriculum. Your answers are confidential and only summary information will be reviewed and evaluated. Under no circumstances will an individual student's responses be identified or used as part of his or her grade. Please answer all questions as accurately as possible.

Circle the number that **best** describes your level where 1 = Low, 4 = Neutral, 7 = High		
	Rank your level of ***knowledge and skills*** with …	
1	Auditing (Financial / Internal / Operations)	1 2 3 4 5 6 7
2	IT Auditing	1 2 3 4 5 6 7
3	Information Technology	1 2 3 4 5 6 7
4	IT Security	1 2 3 4 5 6 7
5	IT Governance Frameworks (COSO)	1 2 3 4 5 6 7
6	Financial & Accounting Analytical Methods	1 2 3 4 5 6 7
7	Computer Based Analytical Methods (CAATs such as ACL)	1 2 3 4 5 6 7
8	Database Systems & Architecture	1 2 3 4 5 6 7
9	Internal Control	1 2 3 4 5 6 7
	Rank your level of ***interest and enjoyment*** with …	
10	Auditing (Financial / Internal / Operations)	1 2 3 4 5 6 7
11	IT Auditing	1 2 3 4 5 6 7
12	Information Technology	1 2 3 4 5 6 7
13	IT Security	1 2 3 4 5 6 7
14	IT Governance Frameworks (COSO)	1 2 3 4 5 6 7
15	Financial & Accounting Analytical Methods	1 2 3 4 5 6 7
16	Computer Based Analytical Methods (CAATs such as ACL)	1 2 3 4 5 6 7
17	Database Systems & Architecture	1 2 3 4 5 6 7
18	Internal Control	1 2 3 4 5 6 7

Circle the number that best describes your *level of agreement* where 1 = Highly Disagree, 7 = Highly Agree		
19	The AIS class has increased my overall IT knowledge and skills	1 2 3 4 5 6 7
20	The AIS class has increased my overall IT interest and enjoyment	1 2 3 4 5 6 7
21	I believe that IT knowledge and skills are important for accountants	1 2 3 4 5 6 7
22	I believe the AIS class will help me perform well in my career	1 2 3 4 5 6 7
23	I believe the AIS class will help me perform well on the CPA exam	1 2 3 4 5 6 7
24	I would be interested in taking a second AIS class as an elective	1 2 3 4 5 6 7