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Journal Profile

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Include the References page (Works Cited only) at the end of the manuscript, followed by any appendix information, if necessary.

All submissions will be reviewed by the editor and two reviewers, using a blind-review process. Authors will receive feedback 6-8 weeks after the initial peer review. Manuscripts will be "accepted," "accepted with minor revisions," "possibly accepted after major revision and resubmission for further peer review," or "rejected."

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Online Course Design – An Analysis of Student Feedback Related to Quality Matters™ Standards

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Abstract

Quality of online instruction is of concern for all stakeholders in online education. Because students represent a key stakeholder group, student feedback was gathered for three semesters related to two online courses offered at the authors' university. Essential Quality Matters™ standards provided the framework for the survey instrument since the authors' university has adopted the Quality Matters (QM) approach for assessing the quality of online course design. The survey specifically sought student opinions on whether the authors had met the QM standards for the courses. Highest-ranking statements related to clear instructions on how to get started and grading policies. Minimum technical skills expected and activities fostering interaction ranked lowest over the three semesters of the study. No significant differences were found based on gender, and little based on previous online course experience. The most differences were found based on age in the fall 2010 semester, with older students giving significantly higher ratings than younger students in 13 different Quality Matters standards.

Keywords: quality matters, student satisfaction, online teaching

Introduction

The 2010 Sloan Survey of Online Learning revealed approximately 5.6 million students enrolled in at least one online course during the fall 2009 semester ("Online education grows," 2010). This represents an increase of almost one million students from just the previous year. Colleges across the country are dealing with finding a good balance between face-to-face and

online education. As stakeholders look at online courses, questions arise concerning such issues as the learning that transpires in online courses; the effectiveness of the course design; and the interaction of students with content, their instructors, and other students enrolled in the course. To address some of these concerns, frameworks have been developed that provide guidance in the effective design of online courses. Three such frameworks are promoted by Quality Matters™, the Sloan Consortium, and the North American division of International Association for K-12 Online learning.

A course syllabus is a standard requirement in higher education, providing information on course objectives, content to be covered, grading plans, schedules of activities and projects, etc. When instructors have the students face-to-face, they can add clarity of explanations, explain linkages from topic to topic and related activities, and immediately answer questions. Providing a clear framework for an online course, with materials effectively aligned for student understanding (and acceptance of value of activities) is not always easy. Repeatedly, administrators at the authors' university (and many other universities) have noted it should not just be assigned textbook readings and quizzes/exams graded by the course management system that provide the full assessment of student learning. Beebe, Vonderwell, and Boboc (2010) believe it is important to use a framework that considers the differences between face-to-face and online courses as higher education strives to provide quality coursework online. Hutti's 2007 study further revealed that the faculty, staff, and student stakeholders of online coursework demonstrated strong cohesiveness in what they considered benchmarks of highest importance.

Purpose of the Study

This project will briefly review three nationally recognized frameworks for evaluating the quality of online courses. Based on the authors' personal experiences with their university's

Quality Matters mandated approach to assessing online course quality, the authors collected additional feedback from their online students through surveys administered at the end of the course, over a three semester timeframe; the survey items included those items the Quality Matters 2008-2010 rubric identified as essential factors. In addition to simple statistics, analysis was conducted to identify differences in responses by gender, age, and previous experience with an online course.

Frameworks for Evaluating Quality of Online Courses

A number of frameworks for evaluating the quality of online courses exist. This research takes a brief look at the Quality Matters™ rubric, the Sloan Consortium scorecard, and the North American division of International Association for K-12 Online Learning framework for evaluating quality online teaching.

The Quality Matters™ approach has evolved over the last ten years. Beginning in 2002, a consortium of 19 higher education institutions in Maryland developed a program that would provide a peer review method of research-based standards for evaluating course design of online courses (MarylandOnline, 2009). Because the focus of the program is course design, the review does not pass judgment on the academic content of the course. The method was named Quality Matters, and the original rubric has been used, modified, and updated since its inception, first with a 2006-2008 version, then a 2008-2010 version, and most recently a 2011-13 version that was applied beginning October 2011. The eight main standards as listed in the 2011-2013 rubric include the following:

- Course overview and introduction
- Learning objectives (competencies)
- Assessment and measurement

- Instructional materials
- Learner interaction and engagement
- Course technology
- Learner support
- Accessibility

The 2008-2010 rubric contained 17 standards deemed essential. In order to earn an official QM course designation, the course must meet all 17 of the "essential" standards (each essential is 3 points) and pass sufficient additional 2 point or 1 point standards to earn at least an 85 percent rating. An official QM review requires that a faculty member apply for an official review. The QM administrators then assign teams of three faculty members, including one outside the school and one having subject matter expertise, to review and assess the quality of an online course. In an official review, all reviewers must have completed official QM reviewer training workshops. The 2011-2013 Rubric contains 41 specific standards across eight broad standards. ("Quality Matters Rubric Standards 2011-2013 edition with Assigned Point Values," 2011).

Even those with many years of teaching experience can benefit from an organized, collaborative review of how an online course is organized. Nankivell, Whittington, and Colwell (2007) state that a process of collaborative review offers benefits for course developers, faculty, students, and the institution as a whole. Pollacia and McCallister (2009), and Pollacia, Russell, and Russell (2009), write that approaches such as QM have received national recognition for this approach to quality assurance in online education. A recent Quality Matters' posting reports almost 9,000 individuals have been trained in the QM approach to course design. Additionally, they report over 1,600 courses formally reviewed and 506 subscribers (some of these

subscriptions are actually statewide subscriptions) ("Announcing FY12 Changes," 2011). The Quality Matters program recently announced that Blackboard, Inc., has become a system subscriber and has adopted QM standards internally. As a result, Blackboard will recommend the QM standards for course design to its client institutions (currently among the thousands) ("Quality Matters Standards for Online Course Design Adopted by Blackboard," 2011).

A competing consortium is the Sloan-C, which describes itself as "a consortium of individuals, institutions and organizations committed to quality online education" with a focus on improving quality, scale, and breadth of online education ("About Sloan-C," 2011). The Sloan "scorecard" includes 70 quality indicators. The scorecard was adapted from the Institute for Higher Education Policy's report "Quality on the Line: Benchmarks for Success in Internet-based Distance Education" (2000). Using a scoring system different from QM, each indicator is scored from 0 to 3 points, with 0 point = "not observed," 1 point = "insufficiently observed," 2 points = "moderate use," and 3 points = "meets criteria completely." While a perfect score is 210 points (70 indicators x 3 points), those courses scoring at least 90 percent are considered exemplary. As long as a course scores at least 80 percent, it is labeled "acceptable," with some improvement recommended. Those scoring 70 – 79 percent are considered "marginal," 60 – 69 percent "inadequate," and below 60 percent "unacceptable" ("A Quality Scorecard for the Administration of Online Education Programs," 2011). Using the Sloan-C framework, the school's online administrator evaluates a course for program evaluation in the following nine major areas:

- Institutional support
- Technology support
- Course development and instructional design

- Course structure
- Teaching and learning
- Social and student engagement
- Faculty support
- Student support
- Evaluation and assessment

A review of the Sloan-C website reveals that Blackboard and Compass are both Level 1 sponsors, which is a sponsorship level of $5,000 per year ("Corporate Sponsor Levels 2010-2011," 2011).

The North American division of International Association for K-12 Online Learning also offers a framework for evaluating quality online teaching. As the association's name reflects, the focus is guidelines for online teaching and instructional design at the K-12 level. The rating scale runs from 0 to 4; 0 = absent—component is missing; 1 = unsatisfactory—needs significant improvement; 2 = somewhat satisfactory—needs targeted improvement; 3 = satisfactory—discretionary improvement needed; 4 = very satisfactory—no improvement needed. Thirteen major standard areas are listed below, with 83 evaluation quality indicators:

- "The teacher meets the professional teaching standards established by a state-licensing agency or the teacher has academic credentials in the field in which he or she is teaching.
- The teacher has the prerequisite technology skills to teach online.
- The teacher plans, designs and incorporates strategies to encourage active learning, interaction, participation and collaboration in the online environment.
- The teacher provides online leadership in a manner that promotes student success through regular feedback, prompt response and clear expectations.

- The teacher models, guides, and encourages legal, ethical, safe, and healthy behavior related to technology use.
- The teacher has experienced online learning from the perspective of a student.
- The teacher understands and is responsive to students with special needs in the online classroom.
- The teacher demonstrates competencies in creating and implementing assessments in online learning environments in ways that assure validity and reliability of instruments and procedures.
- The teacher develops and delivers assessments, projects, and assignments that meet standards-based learning goals and assesses learning progress by measuring student achievement of learning goals.
- The teacher demonstrates competencies in using data and findings from assessments and other data sources to modify instructional methods and content and guide student learning.
- The teacher demonstrates frequent and effective strategies that enable both teacher and students to complete self- and pre-assessments.
- The teacher collaborates with colleagues.
- The teacher arranges media and content to help students and teachers transfer knowledge most effectively in the online environment" ("National Standards for Quality Online Teaching," 2010).

As the above discussion reflects, no single framework for measuring online course quality exists. The three frameworks presented in this study do have significant commonality.

What makes the QM approach unique is its use of a three-person review team that must include someone from another school and someone who can serve as a subject matter expert.

The State Board of Regents for Higher Education in Louisiana (the authors' state) has subscribed to Quality Matters™, and the university has required that those teaching online must complete the basic Quality Matters course design workshop (Simoncelli, 2010). Thus, the authors have each completed the initial QM training course that focuses on course design and have critiqued their own courses. Subsequent to that training, each instructor has provided some modifications to the course design to strengthen its scoring when a QM rubric is applied. While both authors perceive their courses would achieve a Quality Matters passing score if the courses were officially reviewed, student stakeholder opinions are also important.

Data and Methodology

Data for the current study were gathered with convenience sampling. A short instrument consisting of 5 demographic questions, 19 statements based upon a 4-point Likert scale (strongly disagree, disagree, agree, strongly agree), and 2 open-ended questions was administered to two online classes. The 4-point response scale was used specifically to prevent students from simply taking the "no opinion" or middle ground perspective in answering the questions. During the spring 2010 semester, one class contained 28 students enrolled in a freshman level course, and the other class contained 22 students enrolled in a sophomore course. One hundred percent participation of students still engaging in the classes in late April 2010 was achieved between the two classes, resulting in N = 50. During the fall 2010 semester, one class contained 33 students enrolled in a freshman-level course and the other class contained 30 students participating in a sophomore course. Ninety percent participation of students still engaging in the classes in late November 2010 was achieved between the two classes, resulting in N = 57. During the spring

2011 semester, one class contained 33 students enrolled in a freshman-level course and the other class contained 21 students participating in a sophomore course. Eighty-one percent participation of students still engaging in the classes in late April 2011 was achieved between the two classes, resulting in N = 44. For each semester, the freshman level course was an entry-level computer literacy course and the sophomore course was a CIS course required of all business majors. Each student received a unique code that identified the student for awarding participation points. These participation points represented less than 0.005 percentage points that the students were eligible to earn during the semester.

Independent Variables

Gender, age, previous online class experience, and number of hours in which enrolled were used as independent variables for the study.

Spring 2010. Thirty-two (32) percent of the 50 respondents were male, while 68 percent were female. Sixty-four (64) percent were within the ages of 18-24, while the remaining 36 percent were ages 25 and older. Fourteen (14) percent were freshmen, 22 percent were sophomores, 30 percent were juniors, and 34 percent were seniors (some non-business students leave their computer literacy class until senior year). Forty-eight (48) percent reported they never had taken an online class before, while 52 percent stated that they previously had taken an online class. Two (2) percent were enrolled in 1-3 hours for the semester, 6 percent were enrolled in 4-6 hours, 32 percent were enrolled in 10-12 hours, 30 percent were enrolled in 13-15 hours, and 30 percent were enrolled in 16 or more hours.

Fall 2010. Thirty-nine (39) percent of the 57 respondents were male, while 61 percent were female. Seventy-five (75) percent were within the ages of 18-24, while the remaining 25 percent were ages 25 and older. Three (3) percent were freshmen, 32 percent were sophomores,

37 percent were juniors, and 28 percent were seniors. Sixty (60) percent reported they never had taken an online class before while 40 percent stated that they previously had taken an online class. Three (3) percent were enrolled in 1-3 hours for the semester, 3 percent were enrolled in 4-6 hours, 11 percent were enrolled in 7-9 hours, 25 percent were enrolled in 10-12 hours, 25 percent were enrolled in 13-15 hours, and 33 percent were enrolled in 16 or more hours.

Spring 2011. Eighteen (18) percent of the 44 respondents were male, while 82 percent were female. Sixty-eight (68) percent were within the ages of 18-24, while the remaining 32 percent were ages 25 and older. Seven (7) percent were freshmen, 27 percent were sophomores, 34 percent were juniors, 30 percent were seniors, and 2 percent did not declare their classification status. Sixty-one (61) percent reported they never had taken an online class before, while 39 percent stated that they previously had taken an online class. Two (2) percent were enrolled in 1-3 hours for the semester, 4 percent were enrolled in 4-6 hours, 14 percent were enrolled in 7-9 hours, 18 percent were enrolled in 10-12 hours, 30 percent were enrolled in 13-15 hours, and 32 percent were enrolled in 16 or more hours.

Correlations in the Independent Variables

Correlations in the independent variables were analyzed for each of the three semesters.

Spring 2010. The researchers used correlation tools to look for relationships between the pairs of independent variables and between the independent and dependent variables. Gender, age, and classification are positively correlated with the first online class (.316, .364, and .330). Age is positively correlated to the dependent variables "A statement introduces the student to the purpose of the course and to its components" (.290), "The course learning objectives describe outcomes that are measurable" (.282), and "All learning objectives are stated clearly and written from the students' perspective" (.338). Classification is negatively correlated to the dependent

variable “The types of assessments selected measure the stated learning objectives and are consistent with course activities and resources” (-.294). First online class is positively correlated to the dependent variables “Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction” (.358) and “The tools and media support student engagement and guide the student to become an active learner” (.295).

Fall 2010. When correlations were run on fall 2010 responses, Age is positively correlated to 12 of the dependent variables. “A statement introduces the student to the purpose of the course and to its components” (.333); “Minimum technical skills expected of the student are clearly stated” (.300); “The course learning objectives describe outcomes that are measurable” (.429); “The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives” (.424); “Instructions to students on how to meet the learning objectives are adequate and stated clearly” (.381); “The instructional materials contribute to the achievement of the stated course and module/unit learning objectives” (.339); “The relationship between the instructional materials and the learning activities is clearly explained to the student” (.281); “The learning activities promote the achievement of the stated learning objectives” (.325); “Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)” (.279); “The tools and media support the learning objectives, and are appropriately chosen to deliver the content of the course” (.455); “The tools and media support student engagement and guide the student to become an active learner” (.522); and “Navigation throughout the online components of the course is logical, consistent, and efficient” (.395).

The researchers speculate this positive relationship between age and several dependent variables is due to the maturity and experience of the older student. Having attended college for

possibly two or more years, these older students have become exposed to various learning objectives, learning activities, instructional materials, student engagement, and course navigation, just to name a few. As a result, they have developed a standard that they expect to encounter in a course. The younger students are still struggling to understand what is expected of them and what they should expect from a course.

Spring 2011. Based on spring 2011 responses**,** Age is negatively correlated to the dependent variable "Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)" (-.343). The researchers speculate that the older students wanted to know exact times of day and days of week that the instructor would be available for contacting. This need could be a result of an older student having family and work responsibilities on top of attending school.

Statistical Analysis

The mean and standard deviation for each of the statements were computed for each of the three semesters (see Table 1). Based on spring 2010 respondents, the dependent variable "Instructions make clear how to get started and where to find various course components" had the highest mean (M = 3.64, SD = .525) while the dependent variable "Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction" had the lowest (M = 3.20, SD = .700).

Based on the fall 2010 respondents, the dependent variable "Navigation throughout the online components of the course is logical, consistent, and efficient" had the highest mean (M = 3.56, SD = .535) while the dependent variable "Minimum technical skills expected of the student are clearly stated" had the lowest (M = 3.25, SD = .763).

Table 1. Mean and standard deviation of dependent variables, spring 2010, fall 2010, and spring 2011

Statements	Spring 2010 N=50			Fall 2010 N=57			Spring 2011 N=44		
	Mean	STDV	Rank	Mean	STDV	Rank	Mean	STDV	Rank
Instructions make clear how to get started and where to find various course components.	3.64	.525	1	3.54	.537	2	3.36	.750	2
The course grading policy is stated clearly.	3.58	.642	2	3.47	.758	3	3.50	.629	1
Specific and descriptive criteria are provided for the evaluation of students' work and participation.	3.56	.501	3	3.39	.750	6	3.36	.613	2
The learning activities promote the achievement of the stated learning objectives.	3.54	.542	4	3.40	.678	5	3.16	.568	13
The instructional materials contribute to the achievement of the stated course and module/unit learning objectives.	3.52	.505	5	3.37	.587	7	3.20	.701	10
The types of assessments selected measure the stated learning objectives and are consistent with course activities and resources.	3.52	.580	5	3.37	.645	7	3.14	.632	14
The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives.	3.50	.505	7	3.26	.613	16	3.14	.594	14
The course incorporates American Disabilities Act standards and reflects conformance with institutional policy regarding accessibility in online and hybrid courses.	3.50	.505	7	3.33	.636	11	3.25	.615	7
The tools and media support the learning objectives, and are appropriately chosen to deliver the content of the course.	3.50	.614	7	3.33	.557	11	3.20	.594	10
All learning objectives are stated clearly and written from the students' perspective.	3.48	.544	10	3.26	.695	16	3.05	.645	18
Instructions to students on how to meet the learning objectives are adequate and stated clearly.	3.48	.544	10	3.32	.602	14	3.36	.613	2
Navigation throughout the online components of the course is logical, consistent, and efficient.	3.48	.544	10	3.56	.535	1	3.23	.642	9
Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)	3.44	.577	13	3.33	.787	11	3.27	.694	6
A statement introduces the student to the purpose of the course and to its components.	3.42	.499	14	3.46	.569	4	3.30	.734	5
The relationship between the instructional materials and the learning activities is clearly explained to the student.	3.42	.538	14	3.35	.711	9	3.07	.587	17
The course learning objectives describe outcomes that are measurable.	3.36	.525	16	3.32	.631	14	3.25	.615	7
The tools and media support student engagement and guide the student to become an active learner.	3.36	.598	16	3.35	.551	9	3.18	.582	12
Minimum technical skills expected of the student are clearly stated.	3.28	.701	18	3.25	.763	19	3.11	.655	16
Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction.	3.20	.700	19	3.26	.552	16	3.02	.628	19

An analysis of fall 2011 responses reveals that the dependent variable "The course grading policy is stated clearly" had the highest mean (M = 3.50, SD = .629) while the dependent variable "Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction" had the lowest (M = 3.02, SD = .628).

Comparisons by Gender, Age, and Previous Experience with an Online Course

The researchers conducted additional tests on the responses from each of the three semesters. Independent samples t-tests were conducted to identify differences in responses by gender, age, and previous experience with an online course.

Spring 2010 Analysis. Relating the 19 QM rubric questions on the survey to the data collected during the spring 2010 semester, the researchers formulated hypotheses (H1-H19) about the differences in the mean of the dependent variables by **gender**. However, using independent samples t-test, none of the hypotheses were found to be statistically significant.

The researchers also formulated hypotheses, again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **age**. As presented in Table 2, three hypotheses in this grouping were found to be statistically significant. The first hypothesis was do persons 18-24 years of age feel the same about the statement *"A statement introduces the student to the purpose of the course and to its components"* as persons 25 years of age or older (H-21)? Persons 18-24 years of age had a mean of 3.31 while the persons 25 years of age or older had a mean of 3.61. Equal variances were assumed (sig. = .328) and the hypothesis (H-21) of equal means was rejected (sig. = .041).

For the statement, "*The course learning objectives describe outcomes that are measurable,"* persons 18-24 years of age had a mean of 3.25 while the persons 25 years of age or older had a mean of 3.56. Equal variances were assumed (sig. = .276) and the hypothesis (H-23)

of equal means was rejected (sig. = .047). For the statement, *"All learning objectives are stated clearly and written from the students' perspective,"* persons 18-24 years of age had a mean of 3.34 while the persons 25 years of age or older had a mean of 3.72. Equal variances were assumed (sig. = .154) and the hypothesis (H-25) of equal means was rejected (sig. = .017).

Table 2. Spring 2010 Independent Samples t-test grouped by age, N=50

Hypothesis	Met Test Assumption	Test Outcome	Sig. Level
H_o: Mean of *"A statement introduces the student to the purpose of the course and to its components"* for persons 18-24 years of age = Mean of *"A statement introduces the student to the purpose of the course and to its components"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.041
H_o: Mean of *"The course learning objectives describe outcomes that are measurable"* for persons 18-24 years of age = Mean of *"The course learning objectives describe outcomes that are measurable"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.047
H_o: Mean of *"All learning objectives are stated clearly and written from the students' perspective"* for persons 18-24 years of age = Mean of *"All learning objectives are stated clearly and written from the students' perspective"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.017

Continuing with the same testing method of independent samples t-test, the researchers also formulated hypotheses about the differences in the mean of the different dependent variables by **online class experience**. Table 3 presents the two hypotheses that were statistically significant. The first hypothesis was do persons with online class experience feel the same about the statement *"Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction"* as persons without any previous online class experience (H-52)? Persons with online class experience had a mean of 2.96 while the persons having no online class experience had a mean of 3.46. Equal variances were assumed (sig. = .208) and the hypothesis (H-52) of equal means was rejected (sig. = .011). The other hypothesis related to online class experience analyzed responses to the statement *"The tools and media support student engagement and guide the student to become an active learner."* Persons with online class experience had a mean of 3.19 while the persons having no online class experience

had a mean of 3.54. Equal variances were assumed (sig. = .995) and the hypothesis (H-55) of equal means was rejected (sig. = .038).

Table 3. Spring 2010 Independent Samples t-test grouped by previous online course experience, N=50

Hypothesis	Met Test Assumption	Test Outcome	Sig. Level
H_o: Mean of *"Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction"* for persons with online course experience= Mean of *"Learning activities foster instructor-student, content-student, and if appropriate to the course, student-student interaction"* for persons with no online course experience	Yes, equal variances assumed	Reject H_o	.011
H_o: Mean of *"The tools and media support student engagement and guide the student to become an active learner"* for persons with online course experience= Mean of *"The tools and media support student engagement and guide the student to become an active learner"* for persons with no online course experience	Yes, equal variances assumed	Reject H_o	.038

Fall 2010. Relating the 19 QM rubric questions on the survey to the data collected during the Fall 2010 semester, the researchers formulated hypotheses (H1-H19) about the differences in the mean of the dependent variables by **gender**. However, using independent samples t-test, none of the hypotheses was found to be statistically significant. Likewise, none of the hypotheses was found to be statistically significant when tested for previous **online course experience.**

The researchers also formulated hypotheses, again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **age**. Thirteen hypotheses were found to be statistically significant in this grouping (see Table 4). The first hypothesis analyzes responses to the statement, "*Instructions make clear how to get started and where to find various course components."* Persons 18-24 years of age had a mean of 3.47 while persons 25 years of age or older had a mean of 3.79. Equal variances were not assumed (sig. = .001) and the hypothesis (H-20) of equal means were rejected (sig. = .031).

Table 4. Fall 2010 Independent Samples t-test grouped by age, N=57

Hypothesis	Met Test Assumption	Test Outcome	Sig. Level
H_o: Mean of "*Instructions make clear how to get started and where to find various course components*" for persons 18-24 years of age = Mean of *"Instructions make clear how to get started and where to find various course components"* for persons 25 years of age or older	No, equal variances not assumed	Reject H_o	.031
H_o: Mean of "*A statement introduces the student to the purpose of the course and to its components"* for persons 18-24 years of age = Mean of *"A statement introduces the student to the purpose of the course and to its components"* for persons 25 years of age or older	No, equal variances not assumed	Reject H_o	.005
H_o: Mean of *"Minimum technical skills expected of the student are clearly stated"* for persons 18-24 years of age = Mean of *"Minimum technical skills expected of the student are clearly stated"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.023
H_o: Mean of *"The course learning objectives describe outcomes that are measurable"* for persons 18-24 years of age = Mean of *"The course learning objectives describe outcomes that are measurable"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.001
H_o: Mean of *"The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives"* for persons 18-24 years of age = Mean of *"The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.001
H_o: Mean of *"Instructions to students on how to meet the learning objectives are adequate and stated clearly"* for persons 18-24 years of age = Mean of *"Instructions to students on how to meet the learning objectives are adequate and stated clearly"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.003
H_o: Mean of *"The instructional materials contribute to the achievement of the stated course and module/unit learning objectives"* for persons 18-24 years of age = Mean of *"The instructional materials contribute to the achievement of the stated course and module/unit learning objectives"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.010
H_o: Mean of *"The relationship between the instructional materials and the learning activities is clearly explained to the student"* for persons 18-24 years of age = Mean of *"The relationship between the instructional materials and the learning activities is clearly explained to the student"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.034
H_o: Mean *of "The learning activities promote the achievement of the stated learning objectives"* for persons 18-24 years of age = Mean of "The learning activities promote the achievement of the stated learning objectives" for persons 25 years of age or older	No, equal variances not assumed	Reject H_o	.002
H_o: Mean of "*Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)"* for persons 18-24 years of age = Mean of *"Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.036
H_o: Mean of *"The tools and media support the learning objectives, and are appropriately chosen to deliver the content of the course"* for persons 18-24 years of age = Mean of *"The tools and media support the learning objectives, and are appropriately chosen to deliver the content of the course"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.000
H_o: Mean *of "The tools and media support student engagement and guide the student to become an active learner"* for persons 18-24 years of age = Mean of *"The tools and media support student engagement and guide the student to become an active learner"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.000
H_o: Mean of *"Navigation throughout the online components of the course is logical, consistent, and efficient"* for persons 18-24 years of age = Mean of *"Navigation throughout the online components of the course is logical, consistent, and efficient"* for persons 25 years of age or older	No, equal variances not assumed	Reject H_o	.000

For the statement "*A statement introduces the student to the purpose of the course and to its components*," persons 18-24 years of age had a mean of 3.35 while persons 25 years of age or older had a mean of 3.79. Equal variances were not assumed (sig. = .019) and the hypothesis (H-21) of equal means were rejected (sig. = .005). For the statement, "*Minimum technical skills expected of the student are clearly stated*," persons 18-24 years of age had a mean of 3.12 while persons 25 years of age or older had a mean of 3.64. Equal variances were assumed (sig. = .243) and the hypothesis (H-22) of equal means were rejected (sig. = .023).

The fourth hypothesis related to the statement, "*The course learning objectives describe outcomes that are measurable."* Persons 18-24 years of age had a mean of 3.16 while persons 25 years of age or older had a mean of 3.79. Equal variances were assumed (sig. = .458) and the hypothesis (H-23) of equal means were rejected (sig. = .001). For the statement, "*The module/unit learning objectives describe outcomes that are measurable and consistent with the course-level objectives*," persons 18-24 years of age had a mean of 3.12 while persons 25 years of age or older had a mean of 3.71. Equal variances were assumed (sig. = .761) and the hypothesis (H-24) of equal means were rejected (sig. = .001).

The sixth hypothesis related to the statement "*Instructions to students on how to meet the learning objectives are adequate and stated clearly."* Persons 18-24 years of age had a mean of 3.19 while persons 25 years of age or older had a mean of 3.71. Equal variances were assumed (sig. = .656) and the hypothesis (H-26) of equal means were rejected (sig. = .003). For the statement, "*The instructional materials contribute to the achievement of the stated course and module/unit learning objectives*," persons 18-24 years of age had a mean of 3.26 while persons 25 years of age or older had a mean of 3.71. Equal variances were assumed (sig. = .395) and the hypothesis (H-30) of equal means were rejected (sig. = .010).

The eighth hypothesis related to the statement, *"The relationship between the instructional materials and the learning activities is clearly explained to the student."* Persons 18-24 years of age had a mean of 3.23 while persons 25 years of age or older had a mean of 3.71. Equal variances were assumed (sig. = .143) and the hypothesis (H-31) of equal means were rejected (sig. = .034). For the statement, *"The learning activities promote the achievement of the stated learning objectives,"* persons 18-24 years of age had a mean of 3.28 while persons 25 years of age or older had a mean of 3.79. Equal variances were not assumed (sig. = .044) and the hypothesis (H-32) of equal means were rejected (sig. = .002).

For the statement *"Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.),* persons 18-24 years of age had a mean of 3.21 while persons 25 years of age or older had a mean of 3.71. Equal variances were assumed (sig. = .068) and the hypothesis (H-34) of equal means were rejected (sig. = .036). For the statement, *"The tools and media support the learning objectives, and are appropriately chosen to deliver the content of the course,"* persons 18-24 years of age had a mean of 3.21 while persons 25 years of age or older had a mean of 3.79. Equal variances were assumed (sig. = .461) and the hypothesis (H-35) of equal means were rejected (sig. = .000).

For the statement, *"The tools and media support student engagement and guide the student to become an active learner,"* persons 18-24 years of age had a mean of 3.16 while persons 25 years of age or older had a mean of 3.86. Equal variances were assumed (sig. = .168) and the hypothesis (H-36) of equal means were rejected (sig. = .000). Finally, for the statement, *"Navigation throughout the online components of the course is logical, consistent, and efficient,"* persons 18-24 years of age had a mean of 3.44 while persons 25 years of age or older

had a mean of 3.93. Equal variances were not assumed (sig. = .000) and the hypothesis (H-37) of equal means were rejected (sig. = .000).

Spring 2011. Relating to the 19 QM rubric questions on the survey to data collected during the spring 2011, the researchers formulated hypotheses (H1-H19) about the differences in the mean of the dependent variables by **gender**. However, using independent samples t-test, none of the hypotheses was found to be statistically significant. The researchers also formulated hypotheses, again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **online class experience**. None of the hypotheses was found to be statistically significant.

The researchers also formulated hypotheses, again tested using independent samples t-test, about the differences in the mean of the different dependent variables by **age** (see table 5). The only hypothesis found to be statistically significant was do persons 18-24 years of age feel the same about the statement "*Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)"* as persons 25 years of age or older (H-34)? Persons 18-24 years of age had a mean of 3.43 while the persons 25 years of age or older had a mean of 2.93. Equal variances were assumed (sig. = .922) and the hypothesis (H-34) of equal means was rejected (sig. = .023).

Table 5. Spring 2011 Independent Samples t-test grouped by age, N=44

Hypothesis	Met Test Assumption	Test Outcome	Sig. Level
H_o: Mean of *"Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)"* for persons 18-24 years of age = Mean of *"Clear standards are set for instructor responsiveness and availability (turn-around time for email, grade posting, etc.)"* for persons 25 years of age or older	Yes, equal variances assumed	Reject H_o	.023

Open Comments. Students were also invited to write open-ended comments about what could be added to the course design to improve the course. A number of students wrote support

statements for the clarity the instructors provided concerning expectations, objectives, and activities to be completed. The written comments did, as expected, contain an occasional complaint such as needing a longer time to complete timed quizzes regardless of which semester the data were collected. Other suggestions included the following that could improve the courses:

- Spring 2010
  - use of a “due date” tab
  - addition of an instant messaging system with the instructor available at a designated time to address questions (neither instructor had a specific chat time online, but did maintain set virtual office hours)
  - reorganization of contents in some of the folders in the course management system
  - increased instructor help with a particular unit
  - longer MP3 lectures from the instructor
- Fall 2010
  - estimated date when grades will be posted
  - describe how much work is actually involved in the course
  - a discussion board for each homework assignment where students can ask each other questions about things they do not understand about the homework, instead of having to email the instructor
  - put more reminders about assignments because it is really easy to forget what is due
- Spring 2011
  - grading rubric for the lengthy homework assignments

- have deadlines more accommodating to students who work; maybe later than (6:00PM) or on the weekend
- weekly schedules of what assignments are due and what time they are due
- for discussion board entries, maybe give different questions to students so answers are not so redundant or copied
- take students' work schedules into consideration when scheduling quizzes, midterm, and final

Conclusions

The number of students enrolled in online education continues to grow nationwide, with almost a million more students in just the past year. Institutions continue to face questions concerning issues related to the learning that transpires and effectiveness of online course design. Several nationally recognized frameworks exist that address the quality of online courses, including the Quality Matters™ rubric, the Sloan Consortium scorecard, and the North American division of International Association for K-12 Online learning framework. While the frameworks have significant commonality of standards to be met, the Quality Matters approach involves a three-person review team approach that ensures not only a review by internal colleagues, but also someone with subject matter expertise and someone from outside the institution. The QM rubric forms the basis of the online course review process at the authors' university.

Because students are an important stakeholder group in online education, the researchers surveyed their online students over a three semester period to obtain the students' perspective of whether QM standards were being met in the online courses included in the study. A review of the survey findings and the written comments provided by students has helped confirm to the

authors that they are addressing the various standards of the QM rubric successfully from the student stakeholder perspective. For each of the three semesters, response means for every "essential" Quality Matters standard was on the positive side of the scale. Two statements, "Instructions make clear how to get started and where to find various course components" and "The course grading policy is stated clearly," were in the top three in ranking over all three semesters. Likewise, the statements, "Minimum technical skills expected of the student are clearly stated" and "Learning activities foster instructor-student, content-students, and if appropriate to the course, student-student interaction," ranked near the bottom over all three semesters. Although the researchers phrased the interaction standard as it is phrased in Quality Matters materials, several types of interaction are included in the statement and may have contributed to lower scores. For other statements, semester-by-semester rankings were varied. For example, even though no changes were made in types of assessments from fall 2010 to spring 2011, the spring 2011 respondents ranked this standard as 14^{th}, as compared to being 5^{th} or 7^{th} in rank in the two previous semesters.

When analyzing the correlations, as a whole, the older students expected more out of the courses in terms of learning objectives, learning activities, instructional materials, student engagement, and course navigation. The older students appear to be more focused on their learning and are more experienced in thoroughly reading documents such as the class syllabus. In addition, the older students wanted precise times of availability of the instructors. Some older female students had previous online course experience probably because of having to raise a family and/or work while in school. Students with online class experience were more understanding of the different interactions, were more likely to interact with others, and were more likely to use the tools and media available to them.

No significant differences were found based on gender, and little differences were found based on previous online course experience. The most differences were found based on age in the fall 2010 semester, with older students giving significantly higher ratings than younger students in 13 different Quality Matters standards. Caution should be used in interpreting these results, as this semester represented the highest number of survey respondents and the lowest percentage of students over the age of 24.

Although a self-review process through the initial Quality Matters training and a review by a team of reviewers based on the QM rubric all provide support for instructors in designing a quality online course, additional feedback from the student perspective can shed additional light as to whether materials and explanations provided are meeting student needs and/or expectations.

Recommendations

The researchers' university recently switched to Moodle course management systems, which readily supports organization of materials by either weeks or modules. All materials and assignments can be grouped in ways different from the previous course management system, Blackboard. Repeating the study in future semesters, especially if any significant changes are made in navigation, objectives, instructional materials, or assessments, can provide feedback for continuous improvement in course design. Dividing the statement about instructor-student, content-student, and student-student interaction into three separate statements on the survey may also provide instructors with better understanding of student perspectives.

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Flipping an MIS Class with Mobile Technology: An Examination of the Effects of the Use of iPads on Student Learning Outcomes and Satisfaction with Learning

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Abstract

This quasi-experimental study sought to examine how using mobile technology to flip a Management Information Systems (MIS) class affected student learning outcomes and satisfaction with learning. Out of 40 participants, 20 were randomly assigned to a control group, and the other 20 were assigned to a treatment group. The control group used PCs to access the web-based tutorials (eTutor). The treatment group used iPads to access eTutor. Two instruments, which were used to collect quantitative data, were the Digital Forensics Assessment (DFA) and Learning Satisfaction Survey (LSS). Data evidenced statistical significance with differences in learning outcomes and satisfaction with learning for students who used iPads than those who used PCs to access eTutor. The study also found that students who used iPads outperformed those who used PCs. However, students in the iPad group were less satisfied with learning than those in the PC group. The study's small sample size limited the researcher's ability in generalizing to a larger population. Future studies should build on findings of this study with a triangulation mixed design, a larger sample size, and a longer time frame as learning becomes more mobile in a technology-rich society.

Keywords: flipping, iPad, mobile technology, student learning

Introduction

The days of a faculty member giving a lecture in the center of a traditional classroom, as the only way to teach in higher education, are numbered. Research suggests that faculty members in higher education need to better engage today's learners by leveraging technologies to distribute

educational content effectively (Arum & Roksa, 2011). One of the recent trends is classroom flipping. Instead of using lectures in a traditional face-to-face (F2F) classroom, flip teaching is a form of blended learning which encompasses the use of the Internet, multimedia, and information communication technology (ICT) (The Blended Education, n.d.; Bonk & Graham, 2006; Spencer, Wolf, & Sames, 2011). In flip teaching, the student first studies the topic by himself/herself prior to the F2F classroom attendance, typically using video lessons that are created by the faculty. This frees up time for faculty to focus the class time on student-centered activities, differentiated instruction, or project-based problem solving. These high-impact activities have potential to provide students with a transformative learning experience and improved student learning outcomes (Harrison, 2010; Hendricks, Wickersham, & Lumadue, 2012; Johnston & Stroll, 2011; Melhuish & Falloon, 2010).

Problem Statement

Although advances in information technology present new opportunities for higher education to deliver education digitally, faculty members who are uncomfortable with emerging technologies still resort to uploading a text-based lecture to a learning management system such as Blackboard or Desire to Learn. Doing so does not sufficiently address learners' auditory, visual, and kinesthetic learning styles (Britt, 2006; Cao, 2005; Lessen & Sorensen, 2006; Moallem, 2008; Zhang, 2004). Recent studies suggest iPads, which hold great potential for teaching inquiry- or problem-based modules for subject matter such as MIS, can cultivate a multi-sensory learning environment to address various learning styles (Hendricks, Wickersham, & Lumadue, 2012).

While the literature is filled with studies that examine the effects of technologies on teaching and learning, how to design and implement an innovative flip-teaching model with mobile technology for an MIS blended course remain underexplored (Alshare, Kwun, & Grandon, 2006; Bonk & Graham, 2006; Britt, 2006; Cao, 2005; Hendricks et al., 2012; Lessen & Sorensen, 2006; Melhuish & Falloon, 2010; Moallem, 2008; Zhang, 2004).

A Statement of Need for an Effective Flip Teaching Model

Faculty members in higher education must understand technology itself cannot transform education. To become effective in flip teaching, educators must carefully evaluate what, how, and when to incorporate technology that is appropriate for the content and context. To respond to the institutional initiative at the University of Central Oklahoma (UCO), the *Blended Education Collaborative,* this study sought to implement and examine how mobile technology can become an effective flip-teaching strategy in a blended MIS course. The researcher incorporated iPads and web-based tutorials (eTutor) into a fundamental MIS curriculum. The course was designed to teach MIS students how to apply the content knowledge of cyber security and digital forensics to solve a real-world cybercrime.

Preparing Future MIS Workforce with the Content of Digital Forensics Content & Context of Real-World Cybercrimes

The need for cyber security has become increasingly important and a national priority because of the increasing cybercrimes in a technology-rich society. Hackers, white collar criminals, and terrorists commit cybercrimes using the Internet, network, or computer-related equipment as media to commit illegal activities such as identity theft, fraud, or network breaches (Attack trends, 2010; Choo, 2008; Department of Defense, n.d.). Digital forensics has become

an indispensable tool for law enforcement to solve cybercrimes (Nelson, Phillips, Enfinger, & Steuart, 2010). Digital forensics, also known as computer forensics, is a branch of forensic science involving the scientific collection, preservation, documentation, examination, and analysis of legal evidence from compromised digital media to solve cybercrimes (Department of Defense, n.d.).

Purpose Statement

This study aimed to examine how the use of innovative technologies would affect MIS student learning outcomes and satisfaction when learning digital forensics and solving real-world cybercrimes. The project's mission was to incorporate a mobile device such as iPads, which would be used to access web-based learning resources, and an automated intelligent tutoring system (eTutor). Students were required to learn the content of digital forensics prior to their F2F classroom attendance. The research objectives were to examine how the use of mobile technology (i.e., iPads) affects MIS student learning outcomes and satisfaction when learning digital forensics.

RQ1: What is the effect of iPads on student learning outcomes in relation to student preferred learning styles as measured by the *Digital Forensics Assessment*?

RQ2: What is the effect of iPads on student satisfaction when learning digital forensics as measured by the *Learning Satisfaction Survey*?

$H_{1:}$ There is a difference in learning outcome of students using an iPad than those using a PC.

H2: There is a difference in satisfaction of students using an iPad than those using a PC.

Theoretical Framework

As the demand for online education and just-in-time skill acquisition increases, faculty members in higher education are under tremendous pressure to explore how to use advanced technology to create web-based course content/resources and to deliver educational content digitally (Alshare, Kwun, & Grandon, 2006). According to the survey study conducted by the Association to Advance Collegiate Schools of Business (AACSB), 60 percent of full-time faculty were involved in hybrid/online course creation, updating, and delivery through the Internet and course management systems, such as WebCT or Desire to Learn (Singh & Bernard, 2004; Trees, 2000).

In a flip-teaching environment, these types of web-based learning resources, which could be accessed by students via the Internet 24/7 without a location constraint, are often used to substitute lectures that often occur in a traditional classroom (Spencer, Wolf, & Sames, 2011). Although advanced technology offers traditional universities an innovative strategy to deliver educational content, institutional administrators and teachers have tremendous responsibilities to ensure that the quality of online education is technologically, contextually, and pedagogically addressed when using technologies to support effective flip teaching.

Technological Frameworks for Flip Teaching with a Mobile Device

Mobile devices are part of today's learners' daily lives by capturing their attention for educational, social, and personal activities (Melhuish & Falloon, 2010). Many universities are trying to capitalize on the engaging features of iPads to enhance teaching and learning. *The e-Reader Project*, which was conducted by the University of Notre Dame in the fall of 2010, was designed to gain insight into how their institution could use iPads to build an ecosystem that

would support “the creation, distribution, and consumption of digital publication and electronic books (eBooks) on present and future mobile devices” (Hendricks et al., 2011, p.7). Other universities such as Texas A & M used iPads to “replace other technologies and learning materials such as planners, laptops, paper worksheets, student response systems, textbooks, and communication among students and between students and the teacher” (Hendricks et al., 2011, p. 9). Although there were numerous ways to use iPads, the results were mixed.

Pros of iPads: A summary of pros found by the Notre Dame’s e-Reader project included “portability, consolidation (everything in one place), battery life, and connectedness.” The project also cited that “e-mail was easier to use on the iPad, and the calendar on the iPad was more effective” than the iPhone and PC’s (Hendricks et al., 2011, p. 7). According to researchers of the Notre Dame’s e-Reader project, Hagemeister and Schaffhauser (2010), more than 90 percent of students had a laptop; but very few carry them around campus. However, students were more likely to carry iPads since it’s lighter, more portable, and can be used to “share a rich and dynamic computing environment in a mobile impromptu method” (Hendricks et al., 2011, p. 7). Another study by Harrison (2010) revealed that iPads also increased students’ level of confidence, motivation, and engagement.

Cons of iPads: A summary of cons found by the Notre Dame’s *e-Reader Project* included issues with “annotated highlighting, difficulty with note taking” (Hedericks et al., 2011, p. 7). Some students were uncomfortable with a learning curve while adjusting to the fact that iPads lacked the ability to save data to a thumb drive, multitasking, and opening any flash-based videos/files (Hedericks at el., 2011).

Technological Frameworks for Flip Teaching with Just-in-time Tutorials

FlipCams, SoftChalk, Camtasia, and Adobe Captivate are software programs that allow faculty members to create videos or web-based learning modules as a part of flip teaching strategies. In the context of this study, the researcher used Camtasia to create videos and also incorporated information communication technology (ICT), multimedia, and mobile technology into the design, development, and implementation of a web-based tutoring system (*eTutor*). By exposing both teachers and students to ICT and other advanced technologies and innovative tools, eTutor can increase the participant's technical competency and increase their ability to compete in technology-rich and knowledge-based global societies (Brown, 2010; Huynh, Umesh, & Valacich, 2003).

eTutor learning modules consisted of multimedia-based learning modules that were animated with sound, graphics, and hands-on demonstrations. Multimedia learning is the delivery of information in a computer-based presentation by integrating several mediums of communication, such as text, graphics, video, animation, and sound as the Internet supports the delivery of full-motion audio and video to personal computers (Zhang, 2004). The multimedia-based eTutor learning modules were designed to address students' visual, auditory, and kinesthetic learning styles (Folkers, 2005; Hogan & McKnigh, 2007; Moallem, 2008; Picciano, 2006; Sandman; 2009; Turkmen, 2008).

Studies also show that multimedia-based learning modules can entice learners to pay full attention through the vividness of presentation, sound, and hands-on activity in order to maximize the learner's ability to retain information and learning outcomes (Chute, 2002;

Moallem, 2008**;** Nugent, Soh, Samal, Person, & Lang, 2005; Roblyer, Davis, Mills, Marshall, & Pape, 2008; Syed, 2001; Yu, Wang, & Che, 2005; Zhang, 2004).

Furthermore, eTutor was based on the theoretical framework of technology mediated learning (TML) to improve teaching and learning effectiveness in the hybrid classrooms. TML is defined as "an environment in which the learner's interaction with learning materials such as readings, assignments, and instructions are mediated through ICT" (Alavi & Leidner, 2001, p. 2). TML is often implemented in the form of computer-assisted instruction, computer-based training, Web-based instruction, or Web-based training.

Combining iPads with ICT, mediated technology, and multimedia learning could cultivate an active and multi-sensory learning environment to better address students' auditory, visual, and kinesthetic learning styles (Cao, 2005; Weston & Barker, 2001; Zhang, 2004). The use of these frameworks produces empirical evidence that teaching effectiveness and student learning outcomes are improved over traditional settings. Table 1 presents findings of studies and statistical significance (at the 95 percent confidential level). With the exception of Finance, these studies suggested that eTutor improved student performance by one letter grade. The Finance faculty required students to use myFinanceLab, while using eTutor was optional.

Table 1. ***eTutor Studies on Student Learning Outcomes for Business Disciplines***

Business Disciplines	**eTutor**	**Lecture**	**p-value**	**Source**
Accounting Information	72.34	62.33	0.01	Cheng & Swanson, 2011
Finance Information	77.10	73.17	0.10	Cheng & Epplin, 2011
Management Information	84.32	73.25	0.01	Cheng & Moyers, 2008
Master of Business Administration	76.92	53.83	0.01	Cheng & Phongkusolchit, 2010

Accessibility of an Automated Tutoring System

eTutor learning modules were stored in the commercial server Screencast. Students accessed eTutor by using a computer, the Internet, and WebCT, a learning management system. eTutor could be accessed by students via the Internet. Learners only needed a Web browser, a RealPlayer, and a sound card to hear the narration of the eTutor streaming video. In this study, students used an iPad to access eTutor that functioned as an intelligent eBook device with embedded links. Research showed that eTutor was more accommodating of students with barriers to learning by providing students with 24/7 global access to educational content without time or location constraints (Cao, 2005; Hendricks et al., 2012; Lessen & Sorensen, 2006; Melhuish & Falloon, 2010; Moallem, 2008; Zhang, 2004)

Contextual Frameworks for Flip Teaching

Technology is rarely a solution without rich and current content. The rapid growth in cybercrimes results in high demand for technical professionals with forensic skills and interdisciplinary knowledge. The multi-disciplinary nature of digital forensics also aligns with Brown's assertion (2010) that today's students and tomorrow's workforce will not have a fixed, single career in the next decade.

To address this challenge, *eTutor* modules were designed to model just-in-time skill acquisition and lifelong learning. Subject knowledge must be easily modified to enable curriculum updates with the rapidly changing pace of an emerging profession such as digital forensics. *eTutor* modules can be accessed by first time college students or professionals returning to update their skills but without the time and location constraints.

Effective flip teaching not only distributes content knowledge but also requires giving students the context of real-world problems. Students were required to read and learn the content of digital forensics prior to attending the class. This approach allows the faculty to better use in-person classroom time to focus on the context of problem solving by encouraging students to apply the content knowledge of digital forensics that students learned outside the classroom. Doing so also allowed students to relate how real-world cybercrimes could negatively disrupt our society, national security, and daily lives.

Andragogical Frameworks for Flip Teaching

Technology is only a tool, and content knowledge alone is not enough to transform education; therefore, great teachers must be able to call on a repertoire of methods and reformed andragogy (Brown, 2010). Despite the fact that flip teaching has gained momentum, andragogical guidance is needed for faculty making the transition from faculty centeredness to student centeredness. This type of teaching guidance is very limited (Moallem, 2008). Educators often undergo the pragmatic process by unlearning past teaching habits and philosophies. According to Harrison (2010) and Hendricks et al. (2012), effective flip teaching should include the following:

First, incorporating cognitive and constructive learning theories can help students learn autonomously as the teaching practice transitions from knowledge transmission to knowledge construction (Folkers, 2005; Waterhouse, 2005; Yu, Wang, & Che, 2005). Cognitive and constructive learning underlines the importance of goal setting and the types of feedback that can motivate students to learn (Bellefeuille, 2006). Cognitive and constructive learning also aids the

development of students' self-regulatory skills to manage course workload and succeed in the e-learning environment (Whipp & Chiarelli, 2004).

Second, having teachers become facilitators while students lead the in-class discussions. These discussions typically reach higher orders of critical thinking. Students challenge one another during class on content, take ownership of the material, and use their knowledge to lead one another without prompting from the teacher.

Third, students are transforming from passive listeners to active learners (Brzovic & Matz, 2009; Chanlin & Chan, 2007). In order for teachers to transition from teacher-centeredness with lectures to student-centeredness with active learning, a hands-on, problem solving, inquiry-based, and project-driven (HPIP) approach should be developed. The HPIP learning environment can foster students' critical thinking where learners "become more actively engaged in the learning process" (Waterhouse, 2005, p. 37). In a HPIP learning environment, students are actively engaged in problem solving and critical thinking that reaches beyond the traditional scope of the course (Artino, 2008; Gonzalez & Salmoni, 2008; Juniu, 2006; Snow-Renner & Lauer, 2005; Tangdhanakanond et al., 2006).

Methodology for Data Collection & Analyses

The researcher used *Camtasia*, a screen capturing software by TechSmith, to create five *eTutor* multimedia-based learning modules. *eTutor* modules were administered to MIS students with step-by-step instructions on how to perform digital examination by (1) downloading forensics tool kits, (2) recovering digital photos, (3) examining the hidden email header, (4) restoring data from digital devices after files have been deleted, and (5) searching criminal

records on databases. *eTutor* modules were streamed by using a commercial server (Screencast.com) which worked with the *Camtasia* software and could be downloaded to iPads.

Target Population

The target population of the quasi-experiment study included college students who self-enrolled in management information systems (MIS) courses at UCO during the academic year of 2011-2012. A computer program was used to randomly assign a sample of 40 underrepresented students to two groups: (1) the control group used a computer (desktop or laptop) to access eTutor (referred to as the PC group), and (2) the treatment group used an iPad to access eTutor learning modules.

Instruments

The researcher used the *Digital Forensics Assessment* (DFA) and the *Learning Satisfaction Survey* (LSS) that were used in a prior study. Using instruments with established reliability and validity is important for quality data collection and research findings (Cobb, Confrey, deSessa, Lehrer, & Schauble, 2003; Lamberg & Middleton, 2009; Shadish, Cook, & Campbell, 2002; Shaffer, 2010). These instruments were used to collect quantitative data that formed the basis for answering the following research questions and supporting the research hypotheses.

Data Collection

The *Digital Forensics Assessment* (DFA) and *Learning Satisfaction Survey* (LSS) were used to collect quantitative data. Both instruments were stored on the Survey Monkey website. The DFA instrument consisted of closed-ended, multiple-choice questions that could provide the researcher with interval data.

DFA were administered to both control and treatment groups as pre-tests and post-tests. The objective of the pre-tests was to establish the baseline of prior forensics knowledge. The objective of the post-tests was to determine any knowledge that was gained by students after reviewing discipline-specific contents. The score differences from the pre-tests and post-tests formed the basis to compare differences in student learning outcomes for both groups. Data were derived from the DFA instrument, downloaded from Survey Monkey, and analyzed in the Statistical Package for Social Science (SPSS) to form the basis for answering the first research question (RQ1) as shown in Table 2.

RQ1: What is the effect of iPads on student learning outcomes as measured by the *Digital Forensics Assessment* (DFA)?

Table 2***. Learning Outcome in Relation to Mobile Device***

Group	Pre-test	Post-test	Score Gained
Treatment (iPad)	32.5	74	41.5
Control (PC)	34.3	69	34.7

The LSS survey instrument consisted of closed-ended questions that were answered by participants with pre-defined Likert-type scales including *strongly disagree (=1), disagree (=2), undecided (=3), agree (=4), and strongly agree (=5).* Data were derived from LSS to form the basis for answering the second RQ2. The overall student satisfaction with learning digital content by the iPad group is 2.67; whereas the PC group is 3.29.

RQ2: What is the effect of iPads on student satisfaction when learning digital forensics as measured by the *Learning Satisfaction Survey*?

To further understand why the iPad group was less satisfied, Table 3 presents a breakdown of student satisfaction in relation to other variables including student preferred learning style (PLS), gender, ethnicity, and technical competency.

Table 3. ***Student Satisfaction with Learning Digital Forensics***

Description	Sub Group	iPad Group	PC Group
PLS	Auditory	N/A	N/A
	Visual	2.83	3.48
	Kinesthetic	2.83	2.00
Gender	Male	2.75	2.00
	Female	3.00	3.43
Ethnicity	American Indian	5.00	N/A
	Hispanic	3.00	N/A
	Caucasian	3.17	3.75
	Asian	N/A	3.67
	Other	3.67	4.33
Technical Competency	Beginner	N/A	N/A
	Intermediate	3.00	4.00
	Advanced	3.67	3.92

Research Hypotheses

Data, which were collected with the Digital Forensics Assessment (DFA), were downloaded and imported into the SPSS software. A t-test was conducted for the first hypothesis at the 95

percent confidence level. Data evidenced a statistical significance that students in the iPad group outperformed students in the PC group (Table 4) by an average gain of 36 points.

H_1: There is a difference in learning outcomes of students using an iPad than those using a PC.

Table 4. ***Hypothetical testing for a Difference in Learning Outcome***

Learning Outcome	PC Group	iPad Group
Mean	32	68
P value	0.001 < 0.5	

An F-test was performed for the second hypothesis at the 95 percent confidence level. Table 5 presents statistical significance that there was a difference in the satisfaction of students when learning in the iPad group as compared to those in the PC group.

H2: There is a difference in satisfaction of students using an iPad than those using a PC.

Table 5. ***Hypothetical testing for a Difference in Satisfaction with Learning***

F-Test	iPad Group	PC Group
Mean	3.60	4.04
P value	0.04 < 0.5	

Scope and Limitations

This study has several limitations. First, the study employed convenience sampling, and the sample size was small. Second, all participants came from the same institution in the same state. Third, *the quasi-experimental* procedures were conducted in one semester. Hence, the scope, sample size, geographic boundary, and time constraints of the study hindered the researcher's ability to generalize the results to a larger population.

Implication

The project challenged the traditional method of teaching MIS students to learn the content of digital forensics by exploring innovative teaching strategies that could enhance learning in the hybrid classroom. Project findings support that flipping a hybrid classroom with an intelligent tutoring system enhanced teaching and learning effectiveness. However, technologies themselves cannot provide students with a transformative learning experience nor can technologies totally replace human interactions in a face-to-face classroom. The quest for deeper understanding and the discovery of a transformative model should continue so that higher education institutional administrators, policy makers, and the research community can better support faculty and engage today's tech-savvy learners with innovative teaching strategies and emerging mobile technologies.

Future Study

Future studies are recommended to extend the preliminary findings to a larger population, more institutions, longer timeframe, and different emerging technologies. A triangulation study with a mixed research design to collect both quantitative and qualitative data is also recommended. Surveys will be used to collect numeric data while follow-up interviews with focus groups will be used to collect qualitative data. The future study should aim to explore thematic factors and gain deeper understanding of why students were less satisfied with learning using iPads. While Ireland and Woollerton (2010) assert that schools that do not join the mobile education revolution may be left behind, Johnston and Stoll (2011) emphasize that the focus of iPads in the classroom should be on supporting "high-impact andragogical practices, not on the device itself" (p. 113). Since the technological trend of using mobile devices continues to gain

traction, a better knowledge of how to enhance flip teaching and learning effectiveness with iPads and other mobile devices is becoming increasingly important in a technology-rich society.

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Social Networking in Education and Connectivism Learning

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Abstract

Technology continues to change communication. Connectivism learning theory provides a new perspective on Web 2.0 tools. Though there are pros and cons to using social networking sites, these communication tools are gaining in popularity in business. In addition to "value-added" content for online education, students need to be equipped to use these tools in the workforce.

Keywords: social networking, online education, connectivism, Web 2.0 technologies

Introduction

As is often the case, the younger generation is the first to embrace new technologies, and especially those technologies that have to do with communication. These include instant messaging, text messaging, social networking sites, and Twitter, to name a few. As Williams, Karousou, and Mackness (2011) point out, the drastic increase in the number of blogs, emails, texts, and tweets in recent years is significant. In fact, they stress that that number has gone from zero to billions in a matter of just a few years. Students today are communicating in ways that were not even imagined 20 years ago. Siemens and Conole (2011) purport that the use of Web 2.0 technologies, such as social networks, in education significantly influence how information is created and shared. Social networks have had a profound effect on the manner in which people connect and socialize. It is for just such reasons that these technologies may provide promising results for adoption in education.

In the present study, two social networks, Facebook and Ning, are used to examine student preferences and perceptions regarding the use of social networks in their university

courses. Facebook, the most notable social network to date, began as a Harvard-only social networking site in 2004. Ning is called a “do it yourself” social network. Though originally the company offered free plans, as of 2010, all Ning hosted social networks are now for paying subscribers (Frommer, 2011).

Review of Literature

Because of the reach and benefits offered by social networks, they continue to attract the attention of academia and industry.

Social Networking

Boyd and Ellison (2007) define a social network as:

> . . . web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system.

According to Goble (2012), America OnLine (AOL) was the precursor to social networking. Classmates.com, an early entrant into the landscape of connecting people, was launched in 1995 (Cooper, 2002). Classmates.com, however, was not usually classified as the first social network in its early days because in the beginning it did not allow the creation of profiles, though it did afford the ability to search for friends and acquaintances. SixDegrees.com was considered by most to be the first recognizable “social network” beginning in 1997. Since that time, many major social network sites have launched, closed, or been re-launched (Boyd & Ellison, 2007).

It has now been a decade since social networking became a major “player” with an online presence. In 2002, Friendster promoted having a “Circle of Friends” who have true common

bonds for a rich online community. This service was quickly followed by LinkedIn and MySpace in 2003. Both LinkedIn and MySpace remain popular in their own niches. It was, however, Facebook, launched in a limited form in 2004 and then as an open network in 2006, that really solidified the use of social networks for a huge number of people (Goble, 2012).

Learning and Web 2.0 Technologies

A new educational framework has evolved that helps to clarify uses of Web 2.0 technologies, such as social networks, in the classroom. This new framework is called Connectivism. Siemens began writing on this topic in 2004. He states that, "Our ability to learn what we need for tomorrow is more important than what we know today" (Siemens, 2005, p. 8). In writing on the need for a new framework, Siemens suggests that technology is altering people's brains by reshaping and redefining their thinking. He contends that, more than ever, learning is a lifelong process, and formal education no longer comprises the majority of our learning. Siemens attributes this to the speed at which new information is now discovered and disseminated; he references Gonzalez in describing the challenges of keeping up with information in a time when the half-life of knowledge is shrinking, and he contends that half of what is known today was not known ten years ago. Siemens notes that "learners as little as forty years ago would complete the required schooling and enter a career that would often last a lifetime. Information development was slow. The life of knowledge was measured in decades" (Siemens, 2005, p. 3).

Connectivism, according to Dunaway (2011), is a theory of learning taking place across networked learning communities and information technologies. Dunaway further explains that the individual's knowledge emerges from the learning network by making connections between concepts, opinions, and perspectives that are accessed via Internet technologies such as

electronic databases, web search engines, and online information resources. Though there are many established theories of learning, "established theories of learning do not acknowledge the influences that information and communication technologies have upon human cognition" (Dunaway, 2011, p. 678). Anderson and Dron (2011) examine the stages through which pedagogy for distance learning has evolved. When discussing the newest of these pedagogies—Connectivism—it is described as being focused on "building and maintaining networked connections that are current and flexible enough to be applied to existing and emergent problems" (p. 5). Further, Anderson and Dron state that the theory "assumes that information is plentiful and that the learner's role is not to memorize or even understand everything, but to have the capacity to find and apply knowledge when and where it is needed" (p. 5).

This new theory of Connectivism is still in its early stages and is perceived by some as lacking in rigor as a learning theory. However, in both formal and informal learning situations, the growing profile of social networked learning is not something that can be easily ignored (Siemens & Conole, 2011). Dyrud (2012) suggests that the challenge for educators is to use social networks as a classroom enhancement by harnessing its connectivity.

Social Networking Sites: Facebook and Ning

According to Mark Zuckerberg, Facebook has now exceeded 1 billion users (Smith, Segall, & Cowley, 2012). Other statistics provided prior to the new milestone showed that more than 50 percent of Facebook users were logging in on any given day. Popularity is not only contained to the U.S., with more than 75 percent of Facebook users being from other countries. Ranieri, Manca, and Fini (2012) reported, "Internet users in Europe spend more and more time on social networks and blogs; e.g., Italian users spend 31 percent of their total Internet time visiting these categories of Web services, and German users spend more time on them than on

any other type of site" (p. 754). In addition, there are more than 70 languages available on the Facebook site (Facebook.com).

Ning (http://www.Ning.com) was co-founded in 2004 and acquired in 2011 by Glam Media. The website for Ning describes the site as "the world's largest platform for creating social websites." Ning is different from Facebook in that Ning is a site where users are able to create their own personal social network, and people can be invited to join the network. Another difference between Ning and Facebook is that though Ning began as a "free for users" site like Facebook, it is no longer free. Those who set up a site with Ning must pay a monthly fee for the hosting of the network. The newest numbers posted on the Ning site are for July 2011 with 90,000+ customers worldwide with paid hosted networks. The number of registered users, those invited to the hosted sites, is shown as 100 million "registered user social profiles."

Social Networks and Their Use in Education

Universities are known as institutions of higher learning. When defining the term *learning*, Siemens (2005) provides Driscoll's definition as "a persisting change in either human performance or performance potential" (p. 4). Siemens says that this change must happen as a result of the experience and interaction that the learner has with the world. His definition holds closely with attributes of learning theories such as behaviorism, cognitivism, and constructivism. Siemens (2005) further expands Driscoll's definition as "learning as a lasting changed state (emotional, mental, physiological (i.e., skills)) brought about as a result of experiences and interactions with content or other people" (p. 4).

Obviously, social networking provides experiences and interactions with content and other people. However, the jury on the benefits of using social networking in the classroom seems to be hung. According to Selwyn (2009), "Whilst growing numbers of educators celebrate

the potential of social networking to (re)engage learners with their studies, others fear that such applications compromise and disrupt young people's engagement with 'traditional' education provision" (p. 157). Many people still view social networks as a waste of time, at best, and detrimental, at worst, for students and employees. Among freshmen college students, researchers (Thompson & Lougheed, 2012) discovered "for freshmen the number of Facebook friends was related to low academic adjustment as those with more Facebook friends had lower emotional adjustment in college" (p. 89). In addition, it is reported that there is a growing concern about Internet addiction with the popularity of Facebook and other social-networking sites. This concern has led to research on potential risks of using the sites (Kittinger, Correia, & Irons, 2012). The authors go on to say that other studies reported "between 8 percent and 50 percent of college students report problems consistent with Internet addiction" (p. 324).

Hew (2011) reported findings of students' and teachers' use of Facebook; conclusions of the study suggested that "Facebook thus far has very little educational use, that students use Facebook mainly to keep in touch with known individuals, and that students tend to disclose more personal information about themselves on Facebook, hence attracting potential privacy risks upon themselves" (p. 662).

Another recent study (Junco, 2012) of 3,866 residential college students in the northeastern United States resulted in 1,839 completed surveys regarding "the relationship among multiple measures of frequency of Facebook use, participation in Facebook activities, and time spent preparing for class and actual overall GPA" (p. 187). The author reported "linear regression analyses revealed that time spent on Facebook was strongly and significantly negatively related to overall GPA, while only weakly related to time spent preparing for class" (p. 187). However, Junco (2012) also emphasized that 80 percent of variance in overall GPA

may be due to student personality characteristics, motivation, and engagement, leading to an important caveat:

> While there was a negative relationship between time spent on Facebook and grades, it is important to look at the real-world implications of these findings. First, while time spent on Facebook was strongly negatively predictive of GPA, the amount of additional time on Facebook needed to produce a substantial decrease in GPA was enormous (p. 196).

As the interest in social media in educational settings increases, educators must develop methods to integrate their positive aspects in educationally relevant ways. Social learning can no longer be ignored; "further research should explore the outcomes of academic information delivered in this way….Facebook technology should be manipulated by higher education professionals in a way that leverages the site's ubiquity and popularity toward positive academic outcomes" (Junco, 2012, p. 197).

There are, however, many educators who are very supportive of the use of Web 2.0 technologies such as social networks. Perhaps those who are not in support of the social networks in education are still clinging only to the learning theories that have served educators well in the past, but they have not yet learned to harness the power available from these new technologies. According to Siemens (2005), most learning theories have as their central tenet the fact that learning occurs inside a person. He says even learning theories such as behaviorism, cognitivism, and constructivism, which do acknowledge that learning is a socially enacted process, do not address the learning that "occurs outside of people."

Dyrud (2012) provides examples from a number of professional communication professors in their use of social networks in university classrooms. In a 2011 study (Rodrigues, Sabino, & Zhou) on the use of a social network in class, the results indicated enhanced

information and knowledge sharing and interaction. The researchers suggested that current learning management systems are "platforms with rigid structure that do not promote students pro-activity, making it unattractive over time" (p. 1154). They found that furnishing tools beyond the learning platforms improved the contact among students and allowed the students to manage their own learning process (Rodrigues, Sabino, & Zhou, 2010). However, these learning opportunities do not just happen. They must be orchestrated to some degree to maximize their potential.

In a study in a research methods course, faculty used Facebook in place of a traditional class management system. According to Loving and Ochoa (2011), the "faculty found that the tradeoffs between the appropriation of Facebook as an online classroom management solution and using a conventional CMS were relatively few and in many ways worth the necessary workarounds" (p. 129). They further said that using Facebook in the course greatly improved the level of communication. In addition, they found an increase in student interest and interactions.

Pilgrim and Bledsoe (2011) conducted a study among pre-service teachers, some of whom were required to "Like" a professional organization on Facebook and follow the organization on Facebook for ten weeks. They found that teachers "who followed professional organizations on Facebook were more knowledgeable about the educational organizations and resources than those who did not" (p. 40).

Ning social network, as previously discussed, is similar in some ways to Facebook. However, it is more customizable for specific needs than is Facebook. According to Brady, Holcomb, and Smith (2010), "non-commercial, education based SNSs [social network systems], such as Ning in Education, have been recently shown to build communities of practice and facilitate social presence for students enrolled in distance education courses" (p. 151). Results of

their study with graduate students in an education program indicated that significant e-learning benefits were provided by the use of the SNS.

Another example, given in the *Journal of Adolescent & Adult Literacy*, was of in-service teachers using Ning (Rock, McCollum, & Hessee, 2009). The authors provide descriptions of the ways various components were set up and used. In conclusion, the authors reported that the site was very helpful to the in-service teachers by providing more uses than a simple listserv, with this benefit being accessible to teachers across a district, state, region, nation, or even to an international audience. The creator of the network described it as being able to "assist teachers in applying the moral dimensions of teaching to their professional development practice because it involves a truly democratic process. No one is in charge, all have equal say, and the quality of the discussion forms rests solely upon individual commitment to the community" (p. 88).

Social Networks and Business

Despite the naysayers in academics, businesses are increasingly utilizing the potential of social networks. Just as with many other technologies, what began as entertainment morphed into powerful business tools. In a recent IBM survey of 1,709 Chief Executive Officers from 64 countries spanning 18 industries, results indicated that within the next three to five years social media will "leap" from the least used, to the number two spot in customer interaction—passing websites, call centers, and channel partners (IBM, 2012).

Social media will be an important player both within organizations as well as with customers and constituencies. Just as celebrities can be valuable to advertisers in traditional media, according to blog.neilsen.com, people who follow these celebrities on social networks are also valuable to companies. According to The Nielsen Company (March 2011), 64 percent of adult Internet users in the U.S. who follow a celebrity also follow brands. They report "this

means the celebrity follower is four times more likely to follow a brand than the average U.S. adult online." It was also noted in the study that these celebrity fans are also more likely to offer advice and opinion to fellow online consumers.

Another Nielsen report (October, 2011), suggests that social media plays an "important role in how consumers discover, research, and share information about brands and products." Authors of the report went on to say that 60 percent of consumers learned about a specific brand or company through its social networking site. This is in part because active social media users are more likely to read product reviews online. They are also more likely to create their own reviews of products and services. Nielsen reported "women are more likely than men to tell others about products that they like (81 percent of females vs. 72 percent of males)." Further, the most preferred source of product information for social media users is consumer-generated reviews and ratings of products.

Purpose and Procedures

The following section explains the purpose of the study, theoretical framework, research questions and methodology of the study.

Purpose of the Study

The purpose of this study was to examine whether social networking sites such as Facebook or Ning enhance a course, the degree to which social networking sites are accepted by faculty and students in educational settings, how students feel the sites can be used for student benefit to enhance communication, and whether the use of a private social network influences student participation on the site.

Theoretical Framework

The evolving Framework of Synergies is being used to guide this study. The Synergies framework is a developing framework that takes the three constructs of contact, complexity, and culture to integrate into a framework to be used in the introduction and implementation of information and communication technologies in education. This framework purports synergies exist between online communities of practice, design-based research, and activity theory. According to Boitshwarelo (2011), "This framework is particularly aimed at developmental research and as such its enactment would be interventionist in nature" (para. 43).

Research Questions

The following research questions are addressed in this study:

Q1. To what extent are faculty members using social networks for educational purposes in their classes?

Q2. Do students like the use of social networks for educational purposes?

Q3. When provided the choice of Facebook or Ning social networking sites, which do students find to be the most beneficial for use and why?

Q4. Are students more likely to participate in communication through a private social networking site, such as Ning, as opposed to the more often used personal Facebook account?

Methods and Procedures

Participants (n=49) comprise two convenience samples of students in a mid-sized university located in the Gulf States region of the United States who were enrolled in a 300-level course. Students in 300-level or higher courses at this university must have junior or senior class standing. One group was in a course that used the social network Facebook in their course, and the second group was in a course that used the social networks Facebook and Ning in their

course. Group 1 was comprised of 5 Female (22%) and 18 Male (78%) participants. Group 2 was comprised of 16 Female (62%) and 10 Male (38%) participants. All students were taking courses from one professor.

Participants

All students (N=49) were enrolled in a single university. In addition, all participants were part of a convenience sample and self-selected whether or not to participate in the survey portion of the study. The participants were divided into two groups based on the course in which the student was enrolled.

For Group 1 (n=23), the professor used Facebook for informational purposes only. Online articles that were relevant to the course were posted. In addition, the page was used for class announcements and reminders. Students were encouraged to post comments to the professor postings or add postings of their own to the class page.

For Group 2 (n=26), a private Ning social network was created. In this network environment, students were required to work in teams to find and post videos to the site. Students were required to post their observations and opinions about their classmates' postings and answer the questions posed by the posting team. In addition, students were allowed to post personal pictures and personal introductions to the site. This class also had a Facebook page that was used simply for announcements and reminders. Students were encouraged to post comments to the professor's postings or add postings of their own to the Facebook class page as well. Observations of student performance were made by the professor.

Students from both groups were surveyed using an online survey developed and administered through Qualtrics survey software.

Results

The research questions are addressed in this section.

Social Network Use by Faculty

Q1. To what extent are faculty members using social networks for educational purposes in their classes?

Social network use does not appear to be prevalent based on this research sample. When looking at the use of social networks in university on-campus and online courses for the participants in this study, results indicated that only 12 percent of students in both groups combined had used a social network in a class prior to their current enrollment.

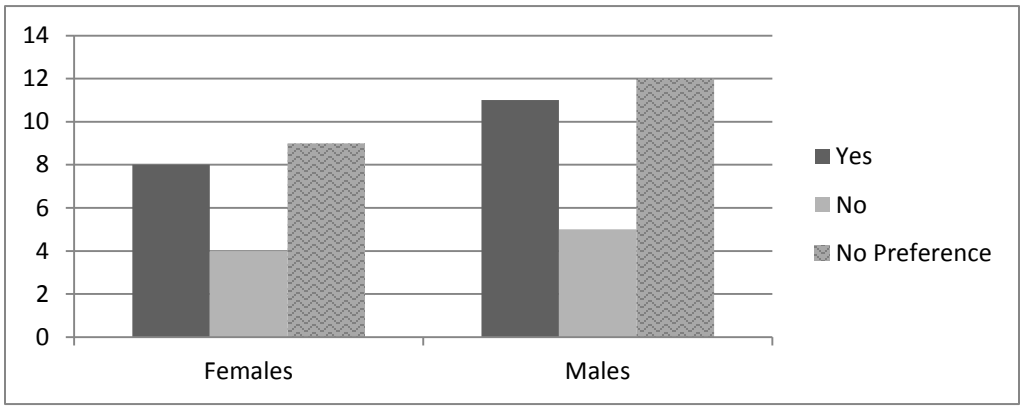
Student Preferences for Educational Use of Social Networks

Q2. Do students like the use of social networks for educational purposes?

Just as there are mixed results from faculty on the use of social networks for educational purposes, there are mixed results from students. As shown in Chart 1, when examining the difference between gender in preference for use of social networks for educational purposes, the results are very similar, with 38.1 percent of females (n=21) and 39.3 percent of males (n=28) answering yes. Only 19 percent of females and 17.9 percent of males answered no, they did not like using social networks for educational purposes. There were exactly 42.9 percent in each group, females and males, who indicated they had no real preference as to whether or not social networks were used.

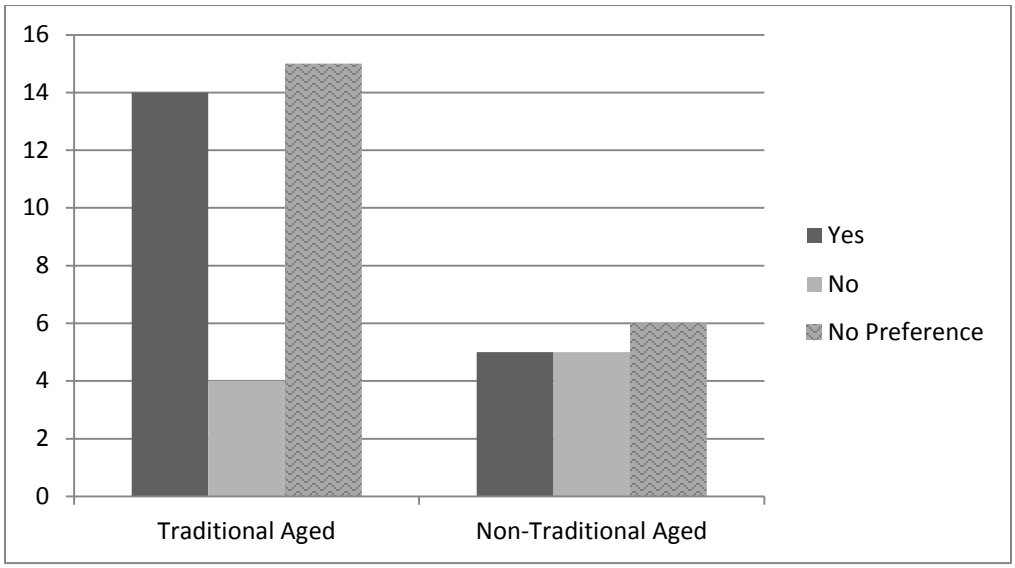
When looking at the entire group (N=49), 39 percent indicated that they liked the use of a social networking page, 18 percent indicated they did not like the use of a social networking page, and 43 percent indicated that they had no preference as to whether the professor did or did not use a page.

Chart 1: Educational Use of Social Networks Preferences by Gender



Results examining groups based on age were not as similar. Because of the small sample size, only two age groups were used with traditional aged 18 to 24 years old (n=33) and non-traditional aged 25 and older (n=16). Their preferences are shown in Chart 2.

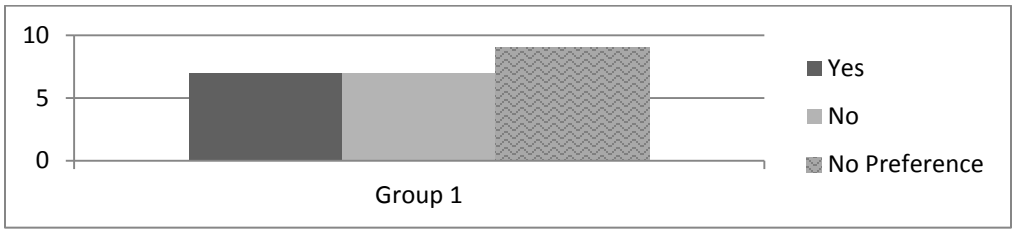
Chart 2: Educational Use of Social Network Preferences by Age



When looking at the individual groups based on course enrollment, those in Group 1 (n=23), where the professor used Facebook for posting only announcements and articles, 30.5 percent indicated they liked the use of a social networking page, 30.5 percent indicated they did

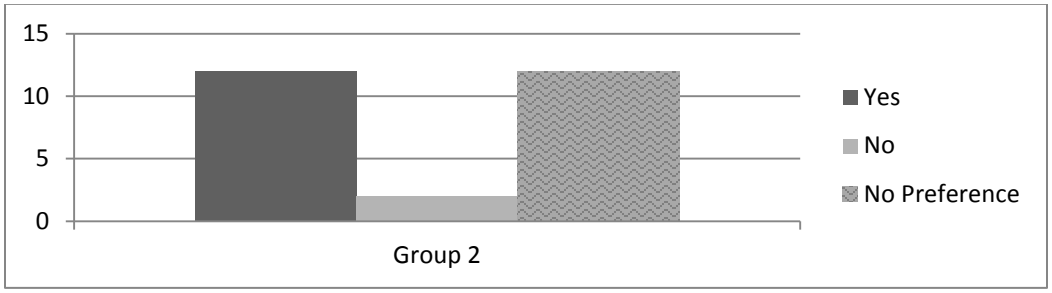
not like the use of a social networking page, and 39 percent indicated that they had no preference as to whether the professor did or did not use a page as depicted in Chart 3.

Chart 3: Educational Use of Social Network Preferences Group 1 - Facebook Only



For those students in Group 2 (n=26), where the professor used both Facebook and Ning, the results were somewhat different. For this group, 46 percent of the students indicated they liked the use of a social networking page, 8 percent of the students indicated they did not like the use of a social networking page, and 46 percent indicated they did not have a preference either way.

Chart 4: Educational Use of Social Network Preferences Group 2 - Facebook and Ning



Student Preference between Social Networks for Educational Use

Q3. When provided the choice of Facebook or Ning social networking sites, which do students find to be the most beneficial for use in a class and why?

Only Group 2 used the Ning social network site. When asked the preference between Facebook and Ning, 58 percent of the students indicated they preferred Ning and 42 percent preferred Facebook for use in a class. When broken down by gender, 68.8 percent of the females preferred Ning, but only 40 percent of the males preferred Ning.

When asked the reasons for the individual preference, the following items were presented for Ning:

"Because I feel that Ning is more structured and doesn't allow one to get off task. On Facebook there is so much going on that it is not really conducive to an educational atmosphere."

"Facebook is much more popular than Ning, but Ning does have the aspect of being very private and seems less likely to threaten secure information."

"Having the class required interactions of Ning keeps the time spent focused. I tend to get on Facebook to waste time and/or briefly catch up on random tidbits with friends. I am not sure that legitimate class oriented objectives could be completed on Facebook—it doesn't exactly encourage productivity. Ning allows you to create a Facebook-type situation that still has purpose."

"I really enjoy Ning for the class setting. Although Facebook could be used as well, Ning provides less of a distraction in my opinion. I think that if I have assignments on Facebook that I would get distracted very easily and find myself on my NewsFeed, Chat, messages, and looking at profiles rather than being focused on the assignment for the course. I definitely think Ning is the best for a class to use for a social network."

"I use Facebook a lot, but I like how Ning is separate from everything else; and I don't have to worry about missing a notification or anything."

Other comments on preferring Ning followed these same general thoughts. Students who preferred Ning felt that the Ning environment offered fewer distractions.

Those students who preferred Facebook presented the following reasons:

"Because I check it more, and the Ning website runs really slow sometimes."

"Facebook is the most user friendly social network; it is also the most well established and no one likes checking more than one site!"

"Since I am already on Facebook a lot, it is easier to access and see the updates."

Other comments on preferring Facebook followed these same general thoughts. Students who preferred Facebook felt that the convenience of using an online platform they are using anyway was a benefit. None of the students who preferred Facebook provided any advantage other than familiarity as a reason.

Communication Frequency of Social Networking Sites

Q4. Are students more likely to participate in communication through a private social networking site, such as Ning, as opposed to the more often used personal Facebook account?

To answer this question the professor monitored the postings in both of the social networking sites. Obviously, in the class where postings were required, there was much more participation. However, it was noted that other than a few "Likes" to various articles and announcements that were made, only two students through the entire semester made comments to the Facebook page. On the other hand, when looking at the Ning site, participation was found to be significantly above and beyond the required postings. There were a number of students who uploaded photos to the site. These included pictures of vacations, family, pets, and a variety of other topics. In addition, videos that were not part of the assignments were posted, and students made comments on the content of the videos.

Conclusions and Future Research

Even in the face of strong evidence that Facebook use may "encourage open collaborative learning within the wider context of students aspirations in a competitive climate" (Goodband, Solomon, Samuels, Lawson, & Bhakta, 2012), use of a social networking tool has

been, in fact, “a source of conflict within the wider academic social community” (p. 236) for researchers studying its ability to provide a more participative learning environment. Indeed, the use of Facebook for academic purposes has been metaphorically described as “the American Old West – a vast, wild, and somewhat lawless place that has attracted diverse groups of individuals seeking to stake a claim and leave their mark” (Green & Bailey, 2010), with a note of warning from the authors to use Facebook for instruction “with a sense of adventure and potential, but with eyes wide-open and with caution” (p. 22).

In the current reported study, there was not an overwhelming preference of the use of a social network in classes, especially in the class where only Facebook was used. It was interesting to note that the distribution of yes, no, and no preference responses were extremely similar between females and males. When broken out by age, the non-traditional group was much more balanced across the three choices (yes, no, no preference) where the traditional aged students had a much smaller percentage of no responses.

It did appear that the class that had the more structured use for the Ning private social network generated more positive reporting. In the class using Ning, students were required to make observations and opinion postings. The professor of this class did not feel that requiring these types of postings would be appropriate in the Facebook setting due to its potential privacy concerns for the students. This sentiment was generally reflected in the student comments on their preferences as well. In addition, there were no negative observations by either the students or the professor with the exception of a few limitations in the speed and format of the components of the site when it came to how the site was being used.

The professor for these classes felt that the students’ participation in the discussions occurring on the Ning site were very well thought out and nicely articulated. Students appeared

to have put sufficient thought into the topic to make intelligent and thought provoking input. She felt that the product of the discussions was better than what she had previously experienced in the learning management system (LMS) discussion board.

Future studies on the use of social networking are needed to explore additional ways to engage online students. Discussions should occur with LMS vendors to determine how a similar component with more dynamic features than simply a discussion board or chat can be incorporated into current LMS systems.

The popularity of Facebook is not likely to come to an abrupt end. As Mattu (2012) puts it, "if you are still desperately clinging to the idea that your work and home lives are completely separate, you are fighting a battle that was lost a long time ago" (p. 12). He goes on to discuss the fact that organizations are looking for those with ambition – and those are the ones who do not leave their 9-to-5 baggage at the office. He does go on to say that it is also important to know the limits as to what to share about personal lives with co-workers.

Since businesses are using this communication tool, both with employees and with customers, is it not important that students are able to differentiate between personal and professional use of social networks? Learning to communicate in virtual environments in a professional manner will provide ongoing benefits to students as they enter the workforce. Structured planning and implementation of a social networking component may provide vehicles for improved critical thinking beyond what is currently provided for in the traditional classroom or online learning management system. Having a class Facebook or other social networking page can serve as an example of a professional networking site, while also providing a way to enhance the online teacher/student interaction.

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Investigation of Strategic Issues Impacting Use of Cloud Services

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Abstract

Although the cloud computing industry is still in the development phase, the cloud computing market is expected to reach $241 billion by 2020. To maximize value potential from IT sourcing opportunities, organizations must diligently investigate the variations among available cloud services and service providers and potential risks that accompany them. This research investigated cloud benefits, risks, and implementation issues from the perspective of IT executives and identified challenges of the cloud computing paradigm. Although the use of cloud resources to promote innovation within the organization was not indicated by most of the executives, they did view the cloud as a source of operational and strategic advantage. The cloud services relationship was viewed as one of give-and-take between the organization and the cloud service provider, and cloud service providers were viewed as ethical in their relationships with clients.

Keywords: cloud computing, IT security, IT sourcing

Background

Cloud computing, a new sourcing paradigm for providing real-time access to information technology resources and services, continues to gain popularity as a strategic approach to controlling IT costs and increasing technological agility. Forrester Research projects that the cloud computing market will reach $241 billion in 2020, more than 500 percent growth over 2011 (Dignan, 2011).

The National Institute of Standards and Technology, U.S. Department of Commerce, defines cloud computing as “a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage,

applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grance, 2011, p. 2).

Cloud deployment models include the private cloud, community cloud, public cloud, and hybrid cloud. This paper focuses on public clouds, unless otherwise indicated, described as "the cloud infrastructure is provisioned for open use by the general public. It may be owned, managed, and operated by a business, academic, or government organization, or some combination of them. It exists on the premises of the cloud provider" (Mell & Grance, 2011, p. 3).

The integration of cloud services into an organization's IT system can provide advantage, often strategic, not otherwise attainable for organizations with their current infrastructure, levels of staffing, and capital funding: access to global resources and innovative technologies, such as data analytics; increased business focus; facilitation of collaboration among staff and other community groups; and leveraging financial resources, to name a few (Iyer & Henderson, 2012; McAfee, 2011). Yet to achieve organizational advantage, specific requirements must be integrated into a well-designed cloud strategy.

The cloud computing literature includes numerous articles and case studies focusing on the value of integrating cloud resources into an organization's IT system. As with any emerging technological system, however, value analysis must consider risks and controls which must be undertaken to assure that overall value creation is achieved from the use of cloud services. Before entering into a contract with a cloud service provider, an organization should attempt to minimize uncertainty by analyzing opportunities and risks that may be experienced through the cloud relationship. This analysis should evaluate cloud services from the perspective of the organization's current and evolving strategic and operational IT needs and capabilities, financial

restrictions or optimization goals, regulatory restrictions, skill in leveraging opportunity through organizational change, and inherent resistance to the cloud paradigm.

This paper describes a research study designed to investigate opportunities and risks inherent in the cloud environment. First, the theoretical framework on which the research was developed is described: Transaction Cost Theory and Agency Theory. Then, major legal and security risks that an organization must consider when integrating cloud services into the IT infrastructure are summarized. Last, the perspectives of IT executives in eight organizations in different industries are discussed with emphasis on the status of cloud services use and the perceived benefits, risks, and other implementation issues that impact strategic and operational planning for and outcomes of cloud implementation.

Theoretical Framework

Many IT risk management methods have been developed and applied to IT outsourcing over the years (e.g., Barki, Rivard, & Talbot, 1993; Kern, Willcocks, & Lacity, 2002). These assessment frameworks have been developed to facilitate evaluation of IT risk factors, potential consequences, and mechanisms for addressing areas of conflict. The Bahli and Rivard (2003) outsourcing risk framework is one reputable perspective; it is based on two theories frequently applied to IT outsourcing risk analysis: Transaction Cost Theory and Agency Theory.

Transaction Cost Theory (Williamson, 1985) assumes that risk analysis must consider that (1) clients have incomplete knowledge and limited ability in evaluating outsourcing suppliers and managing contract relationships (bounded rationality) and (2) service providers act out of opportunism (both in self-interest and in exaggeration/untruth) in order to maximize their success.

Agency Theory (Eisenhardt, 1989) assumes that each participant in the outsourcing arrangement has a separate profit motive or "agenda" (noncongruent goals). Only with difficulty

and at cost can the provider (agent) of the outsourcing services be monitored by the outsourcing firm (principal).

The framework described by Bahli and Rivard (2003) has applicability to evolving cloud computing relationships, which are often viewed as a form of outsourcing. Because risks associated with cloud computing are within the organization's control, actions must be taken to prevent or mitigate them. Cloud computing contractual arrangements must be carefully developed and effectively monitored by the organization to assure that the service provider is performing ethically and in the interest of the organization.

Legal and security risks add complexities as each participant in the outsourcing relationship seeks to accomplish "his or her" own profit motive—Agency Theory—while increased costs are incurred—Transaction Cost Theory—from restrictions, controls, and behaviors in the operating environment.

The service provider's profit motive, however, must not stand in the way of meeting contractual obligations (stated or implied). The increasing number of legal issues in the cloud environment confounds the outsourcing relationship and adds risks in meeting the organization's expectations.

Problem Statement

This research investigated the opportunities and risks that management must consider when evaluating the use of cloud services in the global IT environment. The following specific issues were investigated:

- What decisive benefits make the cloud computing relationship beneficial?
- What major factors should be considered when choosing a cloud service provider?
- Are cloud services viewed as a mechanism for innovation?

- What cloud computing risks must be evaluated?
- Are upper-level managers hesitant to move to the cloud?
- Are cloud service providers viewed as ethical in their relationships with cloud customers?

Research Plan

The research plan consisted of both secondary and primary data collection. A review of the literature identified major legal and security risks facing users of cloud computing resources. Based on this literature review and the current status of cloud computing in the global marketplace, an interview guide was developed (see Appendix) to obtain information from senior IT executives regarding the status of cloud computing services use in their organizations and their perspectives regarding cloud computing benefits, risks, and other implementation issues. The interview process received IRB approval.

During the fall of 2012, IT executives in eight organizations in different industries and of varying scope (Table 1) were interviewed. An inductive interview process was used, with the discussion revolving around the research questions.

Based on the review of literature and analysis of qualitative data from industry executives, guidelines were proposed for developing a successful cloud relationship.

Uncertainty in the Cloud Computing Environment

Organizations considering contracting for cloud services must evaluate the many uncertainties in the cloud environment. Assuring a secure operational environment requires definitive control over the cloud services relationship to assure that the service provider fulfills certain legal and ethical responsibilities, such as confidentiality, privacy, and protection of data; regulatory compliance; and security of intellectual property (Rosenbaum & Bruce, 2010).

Table 1

Organizations Participating in the Study

Number of Organizations	Industry Type	Scope
1	Financial	Regional
1	Government	State
1	Healthcare	Regional
1	Insurance	National
1	IT Services	International
2	Telecommunications	National
1	Utility	Regional

Issues such as the following must be evaluated as part of the risk management process that an organization must develop to achieve value in the cloud computing relationship:

1. Conflicting U.S. State and Country Laws and Regulations.
2. Data Storage in Countries with Fewer Legal Protections.
3. Varying Coverage by Insurance Companies.
4. Lower Legal Standards Regarding Search and Seizure of Data.
5. Varying Laws/Regulations Relating to Personal Data.
6. Restrictive Data Export Regulations.
7. Unclear Jurisdiction/Legal Governance over Data.
8. Unclear Security of Nonpublic Personal Information.
9. Unclear Warranties for Software Licenses.
10. Varied Intellectual Property Rights and Protection of Trade Secrets.

11. Limited Warranties and indemnities to Protect the Customer.
12. Subcontracting to a Third Party.

Conflicting U.S. State and Country Laws and Regulations

The myriad of laws that affect data stored in a cloud system varies across jurisdictions. Management must know where the corporate data is residing in order to identify the laws that impact data flow and security (Agarwal, 2010).

Data Storage in Countries with Fewer Legal Protections

Countries vary in laws that regulate where various types of data can be stored. An organization may be restricted in using, or simply not allowed to use, cloud resources in certain countries (Cunningham, 2010).

Varying Coverage by Insurance Companies

Insurance policies purchased by cloud users vary in coverage for losses or interruption of data caused by disasters, such as earthquakes, terrorist attacks, floods, etc., for various global storage locations.

Lower Legal Standards Regarding Search and Seizure of Data

Data stored in the cloud is subject to less stringent legal standards relating to search and seizure. Data may even be obtained without a search warrant (Lemos, 2009).

Varying Laws/Regulations Relating to Personal Data

Organizations in almost all 50 states are required to contact residents of the state when a data breach has been experienced. The cloud service provider must work with the organization in meeting the legal regulation. Similar legislation is being considered in the European Union. However, regulations such as the USA Patriot Act require that in certain circumstances personal information be provided to the U.S. government without notification of the cloud customer (Bowen, 2011).

Restrictive Data Export Regulations

In some locations laws prohibit organizations from transferring personal information into a jurisdiction that does not provide an equal level of protection for personal data. For example, cloud providers who want to conduct business in the European Union must meet specific requirements of the European Union Data Privacy Directive in order to transfer data outside the European Union (Bowen, 2011).

Unclear Jurisdiction/Legal Governance over Data

Should conflict arise between an organization and a cloud service provider, the place of jurisdiction is extremely relevant. Which country's court system is involved may not be evident (Agarwal, 2010). In addition, an organization may find difficulty accessing from cloud providers' information needed during litigation. Since multiple copies of data are often created, stored, and transmitted, what constitutes a "record" of evidence may be unclear. A cloud providers' use of third party subcontractors also complicates the jurisdiction issue (Dlodlo, 2011; Ward & Sipior, 2010).

Unclear Security of Nonpublic Personal Information

Cloud infrastructures may provide a level of security well beyond that financially feasible at a local deployment. However, both the cloud service provider and customer have a shared responsibility to assure a high level of reliability and security. Meeting the demands of relevant acts and standards is an additional issue. Depending upon the customer's industry, the outsourcing provider must be compliant with regulations and laws such as Health Insurance Portability and Accountability Act (HIPAA), for medical sector, or Payment Card Industry Data Security Standard (PCI DSS), for financial industry, for United States firms. Other countries have similar requirements (Bowen, 2011). Who is responsible for compliance is further

complicated by an organization's relationship with other business partners; for example, in B2B or B2C relationships, compliance is impacted by who delivers data or content and whose resources process, communicate, or even interface information. If multiple parties and multiple jurisdictions exist, responsibility may be blurred for delivering data, content, application programs, etc. (Rosenbaum & Bruce, 2011).

The restrictive use and transfer of personal and personally identifiable data are governed by an increasing number of laws throughout the world. The European Unions' Data Protection Directive, for example, restricts the export of personal information of EU citizens and residents outside of the EU. Rosenbaum and Bruce (2010) emphasize that global legal regulations ". . . create a patchwork quilt of obligations, disclosure requirements, restrictions, responsibilities and liabilities that global and multinational companies will need to navigate in a cloud environment" (p. 4).

To make the situation even more complex, an organization may not know at any one time where its cloud-based data are being stored—e.g., on one or more servers across state lines or national boundaries. The laws that govern may be unclear. The laws of some countries give the power to confiscate data stored within its borders (Rosenbaum and Bruce, 2010).

Unclear Warranties for Software Licenses

Unclear paradigms for software licensing are evolving. McAlpine (2010) warns that service may be provided with no warranty; no level of performance may be guaranteed. Cloud service providers will seek to reduce their liability to cloud customers.

Varied Intellectual Property Rights and Protection of Trade Secrets

Intellectual property rights vary among countries. Data passing through a country, enroute to a secure destination, may be unprotected. Wiretapping or the intentional "taking" of data

within the country may be legal; the country may have the right to censor. Thus an organization must assure that it is performing due diligence on the security and reliability of cloud service providers. A cloud service agreement may allow the provider to "see" or "use" the data (Rosenbaum and Bruce, 2010). On the other hand, an organization may have in its data privileged information (such as that protected under an attorney-client relationship) of other businesses. What if that information is disclosed via the cloud service? Would the cloud service provider protect the organization? To what extent? As a cloud customer, what are reasonable contractual components that will assure the organization has performed due diligence in contract negotiations to protect its intellectual property rights?

Limited Warranties and Indemnities to Protect the Customer

Often form contracts of cloud providers are designed to protect the provider and not the customer. For example, if a data security breach is experienced, the provider may classify the damages to the customer as incidental and inconsequential and thus exclude it from recovery (Peterson, 2011).

Subcontracting to a Third Party

If the cloud service provider contracts to a third party, illegal or unethical actions by the subcontractor may be very difficult to identify and measure (Bowen, 2011).

Cloud Computing Perspectives of Senior IT Executives

Building on a mutual knowledge of cloud computing basics and security and legal risks in the cloud environment, the researcher engaged IT executives in the study to discuss their expertise relating to strategic issues in cloud computing. They identified justifications for moving to the cloud, risks inherent in the cloud environment, and controls that can help mitigate risks; and they described their perceptions of ethical standards of cloud service providers. The executives focused on issues most important in their organizations. Analysis of these data

helped integrate the myriad of information in the literature to produce guidelines for developing a successful cloud relationship.

Justification for Moving to the Cloud

IT executives identified varied reasons for moving to the cloud, although most reasons related to providing needed IT services rather than cost cutting, as shown in Table 2. Overall the executives viewed the cloud as providing a new consumption paradigm in which IT services can be obtained quickly without capital expenditures or overhead acquisition and with less concern about personnel or other economic constraints.

Only two executives indicated that their organizations viewed the cloud as a mechanism for innovation—an opportunity to transform the business model or business processes. One of these executives worked for an organization which contracts for knowledge-based services. The other viewed the cloud as the conduit for obtaining unified communications, which provides innovation through process improvement drivers such as increased communication and collaboration, increased efficiency, and an overall more productive workforce.

Risks Inherent in the Cloud Environment and Hesitancies of Management

Risks of the cloud environment and hesitancies of management to embrace the cloud identified by IT executives focused upon data security and compliance and internal budgeting and control issues, as shown in Table 3.

Controls to Mitigate Risks

IT executives were asked to identify ways to mitigate risks when employing cloud resources. All IT executives indicated the key to minimizing risks is to determine which of the organization's applications/services are best suited for cloud deployment based on organization

Table 2

Reasons for Moving to the Cloud as Identified by IT Executives

- To obtain quick system access uptime and scalability in service level without additional investments and without provisioning with excess capacity (building for the future)
- To obtain support for short-term projects, so quick startup is achieved and limited investment in resources, which would be redundant at project end, is needed
- To lock-in predictable service rates without front-end capital expenditures
- To upgrade services without capital expenditures on an aging infrastructure
- To obtain new project development and implementation without new internal resources, such as personnel and project management services
- To repurpose staff to more strategic efforts
- To improve and standardize end-user support through automatic updates, latest tool availability, and focus on application development rather than system maintenance
- To obtain best of breed software and/or system functionality not possible with current IT infrastructure
- To obtain competitive advantage through more effective or streamlined business processes
- To provide localized connectivity for system access throughout the world without latency
- To reallocate resources to more strategic projects
- To streamline the budgeting process through a system of contracted operational expenses and costs allocated by service use
- To benefit from a proactive stance toward security challenges
- To obtain system continuity/disaster control through cloud redundancies
- To shift system downtime, security, and financial risks from the organization to the cloud service provider (especially relevant for small- and medium-sized organizations)

Table 3

Cloud Environment Risks and Hesitancies of Management to Embrace the Cloud as Identified by IT Executives

- Cloud service providers may lack compliance audit capability or not allow controls required by regulatory agencies. A cloud provider may have its own certifications but will not allow audit of its systems or will not share audit reports, for example. Regulatory compliance legally falls on the organization, not the cloud service provider.
- Moving an application to the cloud typically impacts multiple systems (often back-office systems); dataflow issues can be complex.
- Assuring backup and archival of data may be complex. Because a third party subcontractor may be involved, transfers of large quantities of data may be required.
- Points of connectivity to the service provider are potential points for security breaches.
- The multi-tenancy model for data storage, on which many cloud storage models are based, causes management to fear that data will not be fully segregated from that of other organizations and, therefore, be exposed to security risks.
- Business units may resist a movement from capital expenditures with depreciation to cloud services paid as monthly operational expenses; business units experience a large up-front "hit" with the cloud payment structure—a charge that in the past may have been covered at the organizational level rather than the business unit level or covered through special capital outlays rather than ongoing monthly expenditures.
- Business units may be opposed to direct billing for cloud services. Business units often question charges they face for system "use" time of their staff, because the charges may be greater than budgeted expenditures.
- Organization decision makers may require that cloud use be justified by "hard" financial savings without consideration of soft value added, such as more efficient use of internal staff who are moved to more strategic activities or availability of superior tools to end users. Value of innovation may not be part of the decision making paradigm.
- IT staff may fear losing control and even employment when services are obtained externally.

need, technology evolution, industry regulations, organization experience, and internal project management skills. The following specific recommendations were stated:

- Develop a strong relationship of trust with the cloud service provider.
- Initiate cloud services with small projects involving limited system integration and impacting work units. The organization will thus have a more manageable system migration process and less required training.
- Classify internal data using a multi-tiered system to distinguish among proprietary or high risk data, such as customer records, and data requiring less stringent security control, such as back office, operational data. Use the security-based system in evaluating prospective systems for migration to the cloud.
- Use a cloud service provider which has credible continuity control, including security, data redundancy, and storage locale (such as allowing all organization data to be stored in the U.S.).
- Assure that the cloud service provider effectively controls and monitors all components of the cloud environment to assure data security end to end.

Organizations should select cloud service providers based upon support for the organization's competitive strategies. For example, when obtaining cloud services from a telecommunications service provider, connectivity is already in place and a complete service package can integrate data, voice, teleconferencing, instant messaging, and other components of the mobile environment.

Ethics in Governing the Cloud Relationship

All IT executives had confidence that cloud service providers engaged clients ethically. Since cloud services as an industry is still in a development phase, service providers are seeking

clients and are proactive in establishing strong relationships with them. No indications were given that either party in the cloud relationship was attempting to take advantage of the other.

The IT executives emphasized that the relationship between user and provider rests heavily upon the contractual arrangement. The contract is developed through negotiations and compromise on both sides. Major involvement of the organization's legal staff is essential—legal staff with expertise relating to IT sourcing. The contract must identify governance controls for the cloud relationship.

The IT executives stressed that IT must be the organization's internal contact with the cloud provider and provide oversight of the cloud relationship. Using cloud services, as stated earlier, requires ongoing integration with on-premises private systems, for which IT is responsible. To assure an integrated organization-wide IT system, IT must be the final arbiter of cloud decisions.

This governance stance was clear among the IT executives. Non-IT management might, however, hold a different perspective; this stance is not congruent with select governance literature (see Weill & Woodham, 2002).

Current Status of Cloud Computing among the Participating Organizations

IT executives indicated high comfort-levels with cloud services currently integrated into their organizations and industries. The levels of use varied among the organizations but, overall, included all categories of services on the cloud, such as Software as a Service (SaaS), Platform as a Service (PaaS), Infrastructure as a Service (IaaS), and Business Process as a Service (BPaaS).

Some indicated proprietary systems must be tightly controlled on premises, while others indicated comfort in moving competitive systems to the cloud. For example, one professional in the IT services field stated confidence in moving infrastructure and strategic systems to the

cloud. The person indicated that both the organization and the service provider had to compromise to develop a workable relationship: the organization must accept a more standardized solution than they currently have (which can provide the service provider profit) but with certain restrictions on the provider (such as all data being stored in the U.S.A. and other security controls) that provide an acceptable level of security to the organization. The service provider can provide quality service within its business model and yet offer the organization best-in-breed infrastructure and services.

On the other hand, the executives working in the healthcare industry and state government were very skeptical about moving high value, highly regulated systems to the cloud due to security concerns. With highly regulated data and visibility within the marketplace, these organizations are using cloud services for only lower- and mid-tiered systems—those requiring less stringent security and control from regulatory agencies.

Hesitancy in making a large-scale conversion to cloud-provided services was observed among the executives. One executive indicated that the market overall seems to be waiting for one great cloud success story for the overriding "cloud resistance" to dissipate. Organizations are yet to immerse themselves in the cloud.

Summary

Organizations entering into cloud computing services relationships should develop a process for evaluating and controlling the many risks inherent in the cloud computing environment. This paper has identified many legal and ethical risks relating to confidentiality, privacy, and protection of data; regulatory compliance; and security of intellectual property. In addition, IT executives described their perspectives of cloud integration into the organization:

1. Executives viewed the cloud as providing a new consumption paradigm; the use of the cloud to provide opportunity for innovation was minimized.
2. Executives viewed data security and compliance and internal budgeting and control issues as risks in the cloud environment that caused hesitancy to move to the cloud.
3. Executives indicated that choosing the right application or service for cloud deployment based on specific organizational criteria, such as need, industrial regulations, and internal management skills, is the best way to minimize risks.
4. Executives emphasized importance of choosing a reputable cloud service provider whose services support the organization's competitive strategies as a way to minimize risks.
5. Executives (all IT) stressed the need for IT to control the cloud services relationship.
6. Executives viewed their cloud experiences as being very ethical relationships.
7. Executives reflected hesitancy in making large-scale conversions to cloud-provided services; cloud resistance was observed.

Conclusion and Recommendations

As reflected in this paper, the complexity of the cloud computing environment demands that organizations be extremely diligent in evaluating how cloud computing fits within the IT strategy. As one interviewed IT executive stated, "The cloud strategy must be a balance among agility, efficiency, security, compliance, and integration."

The IT executives indicated no conflicts with cloud service providers from the perspective of conflicting profit motive or unethical behavior, as reflected in Transaction Cost Theory and Agency Theory. The highly positive relationships experienced may be due to the careful selecting of cloud projects within the organization and cloud service providers, the effectively

designed contractual arrangements, and/or the early stage of growth of the cloud market environment.

The IT executives did indicate that cloud resources were added to their infrastructure after very careful analysis of the application and evaluation of potential cloud service providers. Analysis and planning may have resulted in effective matches between the organization and the cloud service provider.

As described by Babcock (2012), in today's very competitive environment, cloud service providers are focused on acquiring a strong customer base necessary for their survival. Their behavior from both a financial and ethical perspective directly impacts customer loyalty. Cooperation at all levels is vital as the industry develops. As cloud service providers achieve increased stability, relationship risks may become more evident.

When evaluating a move to the cloud, strategizing the transition in IT infrastructure, and choosing a cloud service provider, an organization should consider the questions in Table 4, which address the challenges identified in this research.

The research reinforces the assumption that cloud computing service relationships should be developed by carefully selecting a cloud service provider that can meet unique organizational needs and minimize risks. Based on this assumption, the following recommendations are made:

1. Organizations should evaluate their IT services financial model to see if cloud computing can provide competitive cost advantage.
2. Organizations should evaluate the role of cloud computing as a mechanism through which innovation in the business model or business processes could be achieved.

3. As a foundation for evaluating cloud service providers, organizations should identify risks in the cloud deployment model that are unique to their industry, business processes, and organizational characteristics.
4. Organizations should evaluate cloud service providers based upon unique contributions of the provider in supporting organizational competitive strategies.
5. Organizations should involve legal, management, and IT professionals in the negotiation of` cloud services contracts.
6. Organizations should approach the cloud relationship assuming that both the organization and service provider are trustworthy and will work to meet the mutually compatible goals of both parties.
7. Specific governance must be established by management for controlling the cloud computing relationship.

Need for Continued Research

This research should be extended to include more organizations of differing industry types so that cloud computing relationships across industry types could be contrasted. In addition, as the cloud computing market grows and matures and as trust among users increases, the strategic use of cloud resources and the evolving models of risk should be tracked.

Table 4

Issues Impacting Selection of Cloud Service Providers

• What are the reputation, financial standing, and sustainability of the service provider?
• To what extent will the cloud service produce operational and/or strategic value?
• Are business continuity plans well documented? Is a customer data disaster plan identified?
• What certifications does the service provider hold?
• What type of training does the service provider offer to employees? (Trained employees are likely to present less security risk.)
• What happens if a security breach occurs? Is the service provider liable for data loss and violations of data security?
• Does only the organization have access to proprietary data and intellectual property?
• What type of data classification system does the service provider use? Is the data of the organization segregated in storage from that of other clients?
• What technical measures are used to secure customer data?
• Where and how is the service provider liable for legal conflicts that may arise relating to conflicting global laws and regulations?
• Can the organization control in what country or countries its data will be stored?
• What due diligence and security audit rights will the organization have?
• Will the service provider subcontract to a third party?
• Does the service provider allow clear severability regarding organization data in case the service agreement ends?

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Appendix

Cloud Computing Interview Guide

1. Industry
    a. Government
    b. Healthcare
    c. Insurance
    d. IT Services Provider
    e. Technology
    f. Utility
    g. Other:

2. In what ways are Cloud Services integrated into your organization?
    a. SaaS (software)
    b. IaaS (infrastructure)
    c. PaaS (platform)
    d. BPaaS (business processes)
    e. Other:

3. To what extent do you see corporate leadership viewing the Cloud as a mechanism for innovation—to transform what the organization can do—transform the business model? Versus
    a. Isolated projects with limited scope or budget
    b. Business applications (service model), such as collaboration, email, HR (areas of lesser impact in case of some down time)
    c. Create more cost efficient, agile infrastructure

4. What were your major deciding factors in choosing a cloud computing service provider?
    a. Business continuity
    b. Disaster plan
    c. Economic benefits
    d. Financial standing
    e. Liability guarantee
    f. Monitoring/reporting
    g. Recommendations from others
    h. Reputation
    i. Security/privacy of data
    j. Legal compliance standards
    k. Service record/quality
    l. Years in business/sustainability

5. What risks must be weighed in relation to the services you are receiving?
    a. Access to cloud provider records in case of litigation
    b. Audit rights (security audits/compliance oversight)
    c. Insurance coverage for loss or interruption of data/data access/services
    d. Intellectual property rights violations
    e. Location of data storage
    f. Possible search of your data by outsider
    g. Security related to financial regulations/HIPPA
    h. Warranties for services/or lack thereof

6. What hesitancies to movement to Cloud services do you observe among administrators?

7. Do you view the following issues as risks of cloud providers/users? How do you combat the risks?
    a. Legal environment/conflicting jurisdiction laws among states/countries
    b. Unclear jurisdiction/legal governance over data based on storage location
    c. Varying legal protections for stored data in varied countries
    d. Varying insurance coverage in differing jurisdictions
    e. Varying legal standards for search and seizure of data stored in the cloud
    f. Varying legal regulations regarding transfer of personal information/data export restrictions?
    g. Unclear security of nonpublic personal information/compliance with regulations—financial/HIPPA, etc.
    h. Protections to cloud customers
    i. Software warranties/trade secrets/intellectual property

8. When entering into a cloud contract with a service provider, what conflicting interests do you observe? Due to many organizational uncertainties, what gains and losses may occur? How can a user of cloud services assure that they will be treated ethically by the service provider? System of monitoring/reporting?

9. What type of governance controls should be implemented to assure the outsourcing relationship is beneficial to both parties?

10. What are your final suggestions for getting the most advantage from Cloud services? For protecting the organization against risks in the cloud environment?

Do We Have It? A Reflection and Examination of Post-Secondary Education Institutions Websites' Privacy Policy: Presence, Location, and Content

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Abstract

According to the Federal Trade Commission, websites that collect information from the user should contain a policy where the owner states exactly what data is collected from the user, what the owner plans to do with it, and how the owner can secure the integrity of the data. These privacy policies are ubiquitous on websites where monetary transactions are performed but how are other websites ranking on privacy policies? This study analyzed 2,153 websites belonging to higher education institutions in the United States to find out the state of their privacy policies. The study found out that only 42 percent of the higher education institutions analyzed had posted privacies; out of those, very few had them with easy access to the user and contained all the recommended FTC content. Qualitative results showed that users expect these privacy policies in websites that collect information; but the information that they contain as well as the exact location in the website is unclear to the users.

Keywords: privacy policies, higher education, user data collection

Introduction

When we disclose personal information on a website, who has access to the information? How is the information used? Should the website owner include a privacy statement about the above-mentioned questions? Are higher education institutions' websites following the e-commerce guidelines? The purpose of this research is to determine the answers to the above

questions. This research also seeks to determine the researchers' perceptions about how easy it is to locate the privacy policy and if it contains information about personal data usage and protection.

Trust has been an important factor in the individual usage of e-commerce websites (Patton & Josang, 2004; Velmurgan, 2009). One of the basic pillars of creating trust on a website is assuring the user that his or her privacy is protected. E-commerce websites utilize privacy policies and privacy seals to assure the users that their privacy will be protected. Good privacy policies state the amount of information captured by the website about the user and his or her environment, and most importantly, what the website owner plans to do with that information. Higher education institutions are starting to capture more and more personal information from the users that visit their websites. Some of the very visible examples are pages that provide "more information" on the university via postal mail, alumni websites, or even newsletters. Probably the least visible example is the client data information that gets collected when an individual visits a website. In the majority of the cases, data are collected that accounts for the length of the visit, the pages visited, and the originating IP address of the client computer (Bowle & Jamal, 2006; Earp, Anton, Aiman-Smith, & Stufflebeam, 2005). This information, even though it seems meaningless for the user, can become an informative marketing tool for the higher education institutions.

We believe that it is important to collect personal and usage information from the user, but at the same time, it is imperative that we follow the historical research perspective of e-commerce websites in terms of privacy and trust. We believe that all higher education institutions that are currently collecting personal or usage information should provide their users with a privacy policy that follows the guidelines presented in the e-commerce research. The

following provides a summary of literature covering both, the issues faced by e-commerce sites and the proposed recommendations to solve some of the issues.

Issue #1: Lack of Trust in E-commerce Sites

Velmurgan (2009) states that one of the main successful factors for an e-commerce business is the positive projection of trust via a well-developed website that contains not only quality products and content, but also the use of privacy seals and a privacy policy. Moreover, once the transaction has been completed, the website needs to take all the necessary steps to ensure that the entire user's private data are secured, well maintained, and safe.

Patton and Josang (2004) express that some of the factors affecting trust in e-commerce from the consumer point of view are security risks, privacy issues, and lack of reliability in e-commerce processes.

Issue #2: Privacy Concerns

Cavoukian and Crompton (2000); Cranor, Reagle, and Ackerman (2000); and Tedeschi (2000) state privacy is the major concern for people using the Internet. Culnan (1993); Culnan and Amstrong (1999); Hoffman, Novak, and Peralta (1999); and Phelps, Nowak, and Ferrell (2000) all suggest that consumers are much less concerned about utilizing the Web and providing information if the necessary steps are taken by the stakeholders involved to assure their privacy. Web users are not only concerned about their personal information, but also about their web browsing history. According to Bowie and Jamal (2006) and Earp, Anton, Aiman-Smith, and Stufflebeam (2005), websites can also collect indirect information about a user as he or she navigates a website by using a small file called a "cookie." This pattern of browsing behavior can be extremely useful in terms of website marketing with or without being paired with personal identifiable information. This pattern of browsing can be used for targeted

advertisements (ads). For example, the visited website places a cookie in the user's computer signaling that the user has visited a bookstore. When the user visits another website that contains ads, the ad aggregator can check the cookies in the user's computer and see that he or she recently visited a bookstore. Then, the ad aggregator will place a bookstore ad on the page; hence the ads will favor the user's browsing history. Bowie and Jamal (2006) and Earp et al. (2005) believe that collecting this indirect information also breaks the privacy of the user; and as such, it should be disclosed in the website's privacy policy.

Issue #3: Confusing Language on Privacy Policies

The majority of the subjects surveyed by Mass Insight Corporation (2001) affirm that they have seen the privacy policies presented by websites, and 69 percent have at least read one online privacy policy. However, Culnan and Milne (2001) also found that users consider privacy policies too long and that they contain confusing language.

Turow, Feldman, and Meltzer (2005), Hochhauser (2003), and Jensen and Potts (2004) state the majority of the surveyed web users who read privacy policies on the web consider those privacy policies difficult to understand. Moreover, Turow et al., (2005) also present that web users tend to think that their privacy is protected just by seeing the web link to a privacy policy on the website.

Proposed Solution #1: P3P – Platform for Privacy Preferences

According to Cranor, Langheinrich, Marchiori, Prester-Marshall, and Reagle (2002), one major attempt to solve privacy issues on the Internet and hereby increase the possibility of user trust in the Web is the W3C's Platform for Privacy Preferences (P3P) Project. P3P allows websites to encode their privacy practices in standard XML-based format that is readable by web

browsers. P3P encodes information such as data being collected; data being shared; and how data are being used, kept, and maintained.

Proposed Solution #2: Self-Regulation by Fair Information Rules and Privacy Statements

According to the Federal Trade Commission (FTC), fair information practices outline the privacy guidelines for a self-regulatory system. These practices attempt to find the balance between the need of the commerce companies of utilizing consumer information, and the consumer's right of privacy. These rules are grounded in five main aspects: a clear notice of the firm's information practices, a choice given to the consumer on the future uses of the collected information, access to the personal data in order to correct any possible issues with it, assurance of security in the transmission and/or maintenance of the data, and finally a method in place to assure the compliance of the company with fair information practices (1998).

Hui, Teo, and Lee (2007) describe how the Fair Information Practices (FIP) guidelines focus mainly on sufficient notice, choice, and access mechanisms about the data being collected, reducing the amount of data collected to what is completely necessary to carry out a transaction, and securely protecting the data after the transaction is complete. Culnan and Bies (2003) and Milne and Culnan (2004) recommend companies follow the self-regulation practices provided by the FIP and communicate privacy, information, and commitment policies to their stakeholders.

Hui et al. (2007) conclude that privacy statements seem to provide a higher level of user trust than privacy seals because they tend to induce users to disclose their personal information. Andrade, Kaltcheva, and Weitz (2002) study the effect of providing a comprehensive privacy policy on the user's willingness to provide information on the Web. Their study supports that the completeness of the provided privacy policy, as well as the reputation of the company do, influence the concern over web disclosure of personal information.

Culnan (2000) affirms that by being consistent with the fair information practices, a firm can signal to the consumer its commitment to fair policies and rejection of opportunistic behavior. Since these practices reduce the possibility of unfair disclosure, it increases the visible trustworthiness of the company and compels users to disclose their information.

Tsai, Egelman, Cranor, and Acquisti (2007) maintain that websites that provide accessible privacy information strongly reduce the information asymmetry gap between websites and their users. Once the asymmetry is reduced, the trust in those websites increases and users are more prone to maintain a positive information flow with the website.

Proposed Solution #3: Trust Seals

Patton and Josang (2004) list a number of trust seals that have been developed to provide self-regulation a more visible face. They mention TRUSTe, which after auditing a website's present privacy policy allows the website to post the seal if the website does comply with the specific standards required. Other seals are the BBBOnline, which also provides a reliability program, and the CPA WebTrust seal. Studies that review the efficacy of these web trust seals on increasing the user trust are not providing definite results (Cheskin, 2000; Cheskin Research & Studio Archetype/Sapient, 1999; Hui et al., 2007).

Research Questions

As we have seen in the preliminary discussion, trust issues and privacy concerns are important to all web users, not only e-commerce users. Any internal or external data collection, use, maintenance, and security procedures utilized by a website should be clearly disclosed to the user in the form of comprehensive, easy to access, and easy to read privacy policies. We believe that higher education institutions should also follow these business practices closely. For this

reason, our study attempts to analyze the state of the privacy policies on higher education websites. Specifically, we want to examine the following:

- Is there a general knowledge about privacy policies? What are the general expectations in terms of content for these privacy policies?
- How many higher education institutions have privacy policies on their websites?
- Does the use of privacy policies on the website differ?
- For those higher education websites that have privacy policies, are they easily accessible?
- For those higher education websites that have privacy policies, what is the content of online privacy statements?
- For those higher education websites that have privacy policies, do they address the FIP?

Research Methodology

According to Milne and Culnan (2002), one of the ways that self-regulatory effectiveness can be measured is by utilizing web surveys based on the privacy policies posted by organizations. This web survey methodology has been utilized in different studies and based on different web groups. In 2000, the Center for Democracy and Technology surveyed 100 financial institutions to examine the privacy policies posted as well as their compliance with the Gramm-Leach-Bliley financial modernization act (CTD, 2000). The Federal Trade Commission conducted four different web survey sweeps during 1996, 1998, 1999, and 2000 (FTC, 1996; 1998; 1999; 2000) to analyze the state of the privacy self-regulation in U.S. popular and .com websites. Adkinson, Eisenach, and Lenard (2002) surveyed 85 different websites to study the use of third-party cookies and the existence of a P3P privacy policy. Manoharan and Fudge (2012) surveyed government municipality websites to examine security and privacy in two areas:

privacy policies and user authentication. Liu and Arnett (2002) examined Fortune 500 websites to study their privacy policies in terms of presence/absence, content, and their relation with the web user's concerns. Therefore, this particular research methodology was used.

The methodology involved a qualitative/quantitative exhaustive data collection effort by the researchers. Due to the high number of websites visited and the nature of the data collection effort, the researchers had to devise a three-step approach to the data collection and analysis. First, the researchers were interviewed about their knowledge and experiences about privacy policies. These interviews helped establish a data collection baseline in terms of privacy policies knowledge. Furthermore, for the data collection to be valid, the researchers had to agree on a common and specific set of steps to collect the data. Second, after the data collection processes were outlined, the researchers collected the data following those specific guidelines to preserve the consistency of the study. And third, the researchers' experiences and observations were also recorded to account not only for data inconsistencies, but also to be able to account for researchers' observations.

A total of 2,153 U.S. higher education websites collected from the listing provided by the University of Texas at Austin (2011) were visited and examined by the researchers from April 2011 through June 2011. The list contained private and public universities without any consideration to online offerings. The complete list was divided among the 7 researchers and each visited 307 websites. After the examination, nine websites were eliminated from the list due to various reasons (e.g., page not loading or university closed). After the data collection guidelines were explained to the researchers, the researchers were tasked with the following data collection processes:

1) Examine the main higher education webpage to locate a link to the privacy policy. Record the presence/absence of a privacy policy link on the main page of the higher education website.

2) If the link to the privacy policy was present, the researcher clicked on the link to visit the page. On the privacy policy page, the researcher downloaded the text and took a screen capture of the privacy policy.

3) If the link to the privacy policy was not present, the researcher then utilized the search box (if provided; if not, a search was conducted in Google) to enter the "privacy policy" search terms. If the results provided a link to the university's or college's privacy policy, the researcher would follow the link to download the text and take a screen capture.

4) To measure how deep the privacy policy was on the Web site, the researchers recorded the number of clicks made to reach the privacy policy.

5) For the qualitative analysis, the interviews performed with the researchers before and after the data collection were gathered and coded for common themes. These interviews covered the researcher's previous knowledge and expectations about privacy policies; and after the data collection, the researcher's observations in terms of privacy policy website placement, difficulty, and content.

Data Analysis and Results

Qualitative data analysis and the results addressed the following questions:

Question 1: How many higher education institutions have privacy policies on their websites?

Question 2: For those higher education websites that have privacy policies, do they address the FIP in terms of being easily accessible?

Question 3: For those higher education websites that have privacy policies, do they address the FIP in terms of visibility?

A total of 2,153 websites belonging to higher education institutions in the United States and its territories were examined. Nine websites were eliminated due to errors on the page or university closures. All other institutions listed were included in the data collection. The websites belonged to the institutions. Out of those 2,144 institutions, 909 higher education websites had a posted privacy policy (42%). After the different states, territories, and district were calculated, it was revealed that Colorado was the state with the highest percentage of higher education websites that present a privacy policy. Two territories (Guam and U.S. Virgin Islands) and a state (Wyoming) did not provide any privacy policy on their higher education websites (see Table 1).

Table 1: Percentage (%) of Higher Education Websites with Privacy Policies

STATE (# OF INSTITUTIONS)	**# PP**	**%**
ALABAMA (32)	10	31%
ALASKA (6)	1	17%
ARKANSAS (23)	9	39%
ARIZONA (21)	13	62%
CALIFORNIA (152)	85	56%
COLORADO (29)	23	79%
CONNECTICUT (27)	12	44%
DELAWARE (5)	3	60%
DISTRICT OF COLUMBIA (17)	10	59%
FLORIDA (75)	43	57%
GEORGIA (61)	23	38%
STATE (# OF INSTITUTIONS)	**# PP**	**%**
GEORGIA (61)	23	38%
HAWAII (8)	4	50%
IDAHO (7)	2	29%
ILLINOIS (104)	47	45%
INDIANA (65)	23	35%
IOWA (39)	19	49%
KANSAS (30)	5	17%
KENTUCKY (35)	12	34%
LOUISIANA (31)	4	13%
MAINE (21)	5	24%

MARYLAND (35)	17	49%
MASSACHUSETTS (94)	39	41%
STATE (# OF INSTITUTIONS)	**# PP**	**%**
MICHIGAN (51)	23	45%
MINNESOTA (50)	31	62%
MISSISSIPPI (17)	6	35%
MISSOURI (64)	21	33%
MONTANA (12)	3	25%
NEBRASKA (24)	11	46%
NEVADA (7)	3	43%
NEW HAMPSHIRE (18)	6	33%
NEW MEXICO (13)	5	38%
NEW JERSEY (32)	7	22%
NEW YORK (155)	91	59%
NORTH CAROLINA (54)	16	30%
STATE (# OF INSTITUTIONS)	**# PP**	**%**
NORTH DAKOTA (14)	5	36%
OHIO (85)	38	45%
OKLAHOMA (35)	9	26%
OREGON (28)	9	32%

PENNSYLVANIA (134)	53	40%
RHODE ISLAND (11)	3	27%
SOUTH CAROLINA (34)	13	38%
SOUTH DAKOTA (15)	5	33%
STATE (# OF INSTITUTIONS)	**# PP**	**%**
TENNESSEE (52)	16	31%
TEXAS (107)	61	57%
UTAH (9)	4	44%
VERMONT (20)	7	35%
VIRGINIA (51)	23	45%
WASHINGTON (28)	9	32%
WEST VIRGINIA (25)	8	32%
WISCONSIN (37)	11	30%
STATE (# OF INSTITUTIONS)	**# PP**	**%**
WYOMING (1)	0	0%
GUAM (1)	0	0%
U.S. VIRGIN ISLANDS (1)	0	0%
PUERTO RICO (42)	3	7%

Out of those states that presented privacy policies, those that had to be found by using the search engine capabilities of the website or a Google search were also examined. The results appear on Table 2.

Table 2: Percentage (%) of Privacy Policies Found by Using Search Engines

STATE	%
ALABAMA	10%
ALASKA	0%
ARKANSAS	22%
ARIZONA	0%
CALIFORNIA	51%
COLORADO	17%
CONNECTICUT	33%
DELAWARE	33%
DISTRICT OF COLUMBIA	30%
FLORIDA	33%
GEORGIA	35%
HAWAII	50%
IDAHO	50%
ILLINOIS	21%
INDIANA	48%
IOWA	32%
KANSAS	20%

STATE	%
KENTUCKY	33%
LOUISIANA	25%
MAINE	80%
MARYLAND	12%
MASSACHUSETTS	23%
MICHIGAN	57%
MINNESOTA	29%
MISSISSIPPI	33%
MISSOURI	43%
MONTANA	33%
NEBRASKA	55%
NEVADA	67%
NEW HAMPSHIRE	50%
NEW MEXICO	40%
NEW JERSEY	57%
NEW YORK	37%
NORTH CAROLINA	75%
NORTH DAKOTA	40%

STATE	%
OHIO	66%
OKLAHOMA	33%
OREGON	33%
PENNSYLVANIA	28%
RHODE ISLAND	33%
SOUTH CAROLINA	62%
SOUTH DAKOTA	40%
TENNESSEE	94%
TEXAS	20%
UTAH	50%
VERMONT	0%
VIRGINIA	30%
WASHINGTON	22%
WEST VIRGINIA	25%
WISCONSIN	18%
PUERTO RICO	0%

Finally, the webpage click depth of the privacy policy was calculated. This webpage click depth gave insights on how many clicks on average were needed to reach the privacy policy from the homepage in order to reach the privacy policy. Indexes closer to 1 signify a higher percentage of privacy policies found on the homepage of the higher education website. Indexes closer to 2, signify that the use of search engines was necessary to find the majority of the privacy policies. Results appear in Table 3.

Qualitative Data Analysis

Qualitative data analysis was performed on the researchers' interviews conducted before and after the data analysis. It provided the following insights into the research process and the expected results.

Qualitative Data Analysis – Researchers' previous knowledge and experience

The first qualitative research question covered the experience of the researchers before the data collection. These interviews helped the researchers create a common baseline of knowledge about privacy policies. The interviews were coded and common themes were

Table 3: Average by State of Privacy Policy Page Relative Depth

STATE	DEPTH
ALABAMA	1.1
ALASKA	1
ARKANSAS	1.111111
ARIZONA	1.076923
CALIFORNIA	1.529412
STATE	**DEPTH**
COLORADO	1.304348
CONNECTICUT	1.333333
DELAWARE	1.333333
DISTRICT OF COLUMBIA	1.3
FLORIDA	1.395349
STATE	**DEPTH**
GEORGIA	1.869565
HAWAII	1.5
IDAHO	2
ILLINOIS	1.234043
INDIANA	1.521739
STATE	**DEPTH**
IOWA	1.526316
KANSAS	1.4
KENTUCKY	1.416667
LOUISIANA	1.25
MAINE	1.8
MARYLAND	1.117647
MASSACHUSETTS	1.333333
MICHIGAN	1.608696
MINNESOTA	1.483871
MISSISSIPPI	1.333333
MISSOURI	1.571429
MONTANA	1.333333
STATE	**DEPTH**
NEBRASKA	1.181818
NEVADA	1
NEW HAMPSHIRE	1
NEW MEXICO	1.4
NEW JERSEY	1.571429
NEW YORK	1.527473
NORTH CAROLINA	1.8125
NORTH DAKOTA	1.4
OHIO	1.710526
OKLAHOMA	1.333333
OREGON	1.444444
PENNSYLVANIA	1.283019
STATE	**DEPTH**
RHODE ISLAND	1.666667
SOUTH CAROLINA	1.692308
SOUTH DAKOTA	1.2
TENNESSEE	2
TEXAS	1.52459
UTAH	1.5
VERMONT	1
VIRGINIA	1.391304
WASHINGTON	1.222222
WEST VIRGINIA	1.25
WISCONSIN	1.272727
PUERTO RICO	1.3

highlighted. First, researchers were asked about the importance and expected content of privacy policies. According to their interviews, the majority of involved researchers knew what privacy policies were; one of the researchers stated that she knew of privacy policies in e-commerce sites, but never thought of them in higher education websites. Second, the researchers were asked about the topics or the content that was expected in these privacy policies. All researchers thought that a privacy policy should contain some type of disclaimer about how data was collected and what the institution planned to do with the data once collected. One of the researchers insisted on the data security aspect of the disclaimer. For this researcher, it was important to show not only what the institution was collecting, or using, but also how secure the data was in their hands. Overall, the researchers agreed that privacy policies should be included in all higher education institutions, and their content should follow a standard "template" where the main aspects of data privacy were stated: data collection, data usage, and data security.

Qualitative Data Analysis – Researchers' observations after the data collection process.

The second qualitative research question focused on the data collection experience. The researchers collected information about the data gathering process and were asked about four main issues: first, the presence/absence of privacy policies on higher education websites; second, how easy or difficult it was to find these privacy policies; third and fourth, if present at all, what was the format and specific content of these privacy policies.

First, in terms of the presence/absence of privacy policies in higher education websites, the researchers were unanimously shocked about the number of higher education websites without a general privacy policy. Some of the comments stated that many higher education institutions would lack a general privacy policy; whereas, one or two of its individual schools or colleges would show one. The researchers agreed that only in a small number of higher education universities the privacy policy was general to the whole institution. It was also noticeable that some institutions would share the privacy policy of the university system, which provided a much-needed consistency to the privacy policy.

Second, when asked about how easy it was to find these privacy policies, the response was again, unanimous. According to the researchers, it was very difficult to find the privacy policies on the higher education institutions' website. First, if there was a link, it was normally partially out of the main screen area, either almost hidden at the bottom of the screen or the top left, or embedded in a series of long menu items. If the link to the privacy policy was not easily discovered by the researchers, they were instructed to do a restricted web search (university-wide only) first to try to find the privacy policy. If this attempt was not successful, then they were instructed to do a global search with the privacy policy and the name of the university. During the after data collection interview, researchers commented how tedious this process was due to

the fact that the lack of consistency in privacy policy content and format made the results extremely ambiguous. It took a lot of clicks and reading to figure out if the found privacy policy was part of the general higher education website or a specific college or school inside the higher education institution. Moreover, in some cases, a discussion on FERPA was used as a privacy policy for the higher education institution; creating an obvious confusion for the reader, and in this case, for the researcher.

Third, researchers provided extremely helpful insights into the format and connections of the existing privacy policies. According to the researchers, these privacy policies appeared in many different ways: some schools would create them as part of their admissions pages as html documents (same as the rest of the pages) but other institutions would have privacy policies in the form of text documents saved either as text format (.txt) or as Adobe reader format (.pdf). The majority of these present privacy policies were linked directly from the higher education main page. The format of the link was normally not highlighted, in a small font, and after the main theme of the page in terms of font type and color. Those privacy policies that were not found directly from the main page were a little bit more difficult to analyze. Since they had been located through a search engine, the researcher normally could not find the connections or where this privacy policy was stored. In that case, the researcher tried to find a connection by looking at the menu items or main title of the page. As mentioned before, many of these were associated with admissions pages.

Fourth and finally, researchers were asked to comment on the content of these privacy policies. All researchers agreed that the main aspects discussed in the privacy policies were the data collection and data usage. Only a few privacy policies discussed the security of the data collected.

Discussion

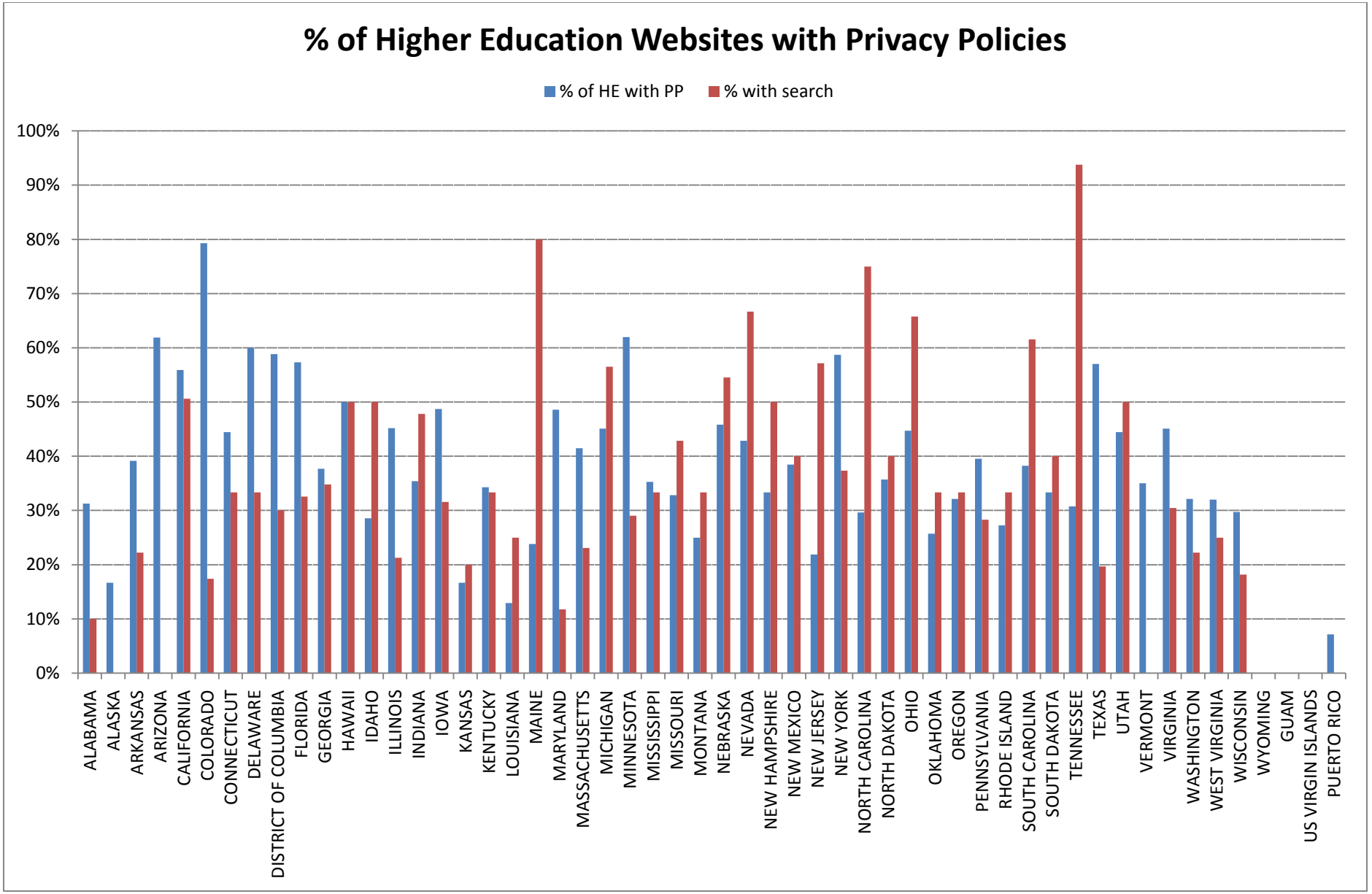
Have you ever received a non-solicited ad while browsing the web? How is your data used online? We believe that providing a complete privacy policy for all higher education website users should be a priority. However, results indicate that only 42 percent of the higher education institutions' websites in the U.S. and its territories provide a privacy policy on their website. This number may be considered appropriate; but if higher education institutions want to utilize their websites to collect information directly or indirectly from their users, those numbers should definitely be higher. Educators are trying to expand the knowledge and awareness of our students and other stakeholders in terms of sound electronic documentation design. If the universities' own websites do not model this design, it is difficult to stress the importance. Moreover, privacy policies should be considered by all stakeholders, not only students, to make sure data are properly stored, secured, utilized, and ultimately destroyed. In comparison with e-commerce websites, higher education institutions' websites seem to be in their infancy. In 1999, 48.3 percent of e-commerce websites surveyed presented a privacy policy; in 2000, 65.5 percent; and in 2001, 76.6 percent of surveyed e-commerce websites provided a privacy policy to all their users (Milne & Culnan 2002). With this rapid increase, it is not impossible to think that by 2011, almost all e-commerce websites will present a privacy policy to their users.

Moreover, the fact that in many of the examined cases, the privacy policies could only be found by completing a search of the website is against the Fair Information Practices recommendations. These recommendations specifically require that privacy policies should be visible and accessible to the user. In the majority of the cases where search engines were not necessary; and according to the researchers conducting the data gathering process, the preferred

privacy policy link location seemed to be at the bottom of the homepage and normally in very small font (FTC, 1999).

Finally and also continuing with the FIP recommendations, the privacy policy needs to be visible and accessible to the user. If the privacy policy is deeply buried in the website, users will not be able to find it with ease. First, researchers tried to find the link to the privacy policy on the main webpage of the higher education institution. Researchers were instructed to visually scan the main webpage and scroll down if necessary to try to find the link to the privacy policy. In the case that the researchers did not find the privacy policy link on the main page of the higher education website, the researchers were instructed to use a search engine (either website wide or general) to find the privacy policy. Only four of the states received a perfect depth index of 1 (Alaska, Nevada, New Hampshire, and Vermont). An index of 1 indicates that the privacy policy was directly linked on the institution's homepage website. In the researchers' opinion, the majority of university or college websites need to do a better job of placing the privacy policy on a visible and easy to locate area of the website. As stated by our researchers, one of their most difficult tasks was to first scan the main webpage and try to find the link. Even in the cases where the link was present on the main webpage, it was almost "hidden" from view at the bottom of the screen.

Higher education administrators need to be aware of the content that is being placed on their privacy policies to make sure they follow the Fair Information Practices recommendations by the Federal Trade Commission. Moreover, it is important to determine if any or all of these proposed solutions utilized in the e-commerce literature are being used by higher education institutions.


% of Higher Education Websites with Privacy Policies
% of HE with PP
% with search
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
ALABAMA
ALASKA
ARKANSAS
ARIZONA
CALIFORNIA
COLORADO
CONNECTICUT
DELAWARE
DISTRICT OF COLUMBIA
FLORIDA
GEORGIA
HAWAII
IDAHO
ILLINOIS
INDIANA
IOWA
KANSAS
KENTUCKY
LOUISIANA
MAINE
MARYLAND
MASSACHUSETTS
MICHIGAN
MINNESOTA
MISSISSIPPI
MISSOURI
MONTANA
NEBRASKA
NEVADA
NEW HAMPSHIRE
NEW MEXICO
NEW JERSEY
NEW YORK
NORTH CAROLINA
NORTH DAKOTA
OHIO
OKLAHOMA
OREGON
PENNSYLVANIA
RHODE ISLAND
SOUTH CAROLINA
SOUTH DAKOTA
TENNESSEE
TEXAS
UTAH
VERMONT
VIRGINIA
WASHINGTON
WEST VIRGINIA
WISCONSIN
WYOMING
GUAM
US VIRGIN ISLANDS
PUERTO RICO

Future Research

Future research is needed to analyze the content of the privacy policies found on university and college websites. Which types of institutions are most likely to have a privacy policy—private or public? Do online universities have a privacy policy? Does anyone really care if universities have a privacy policy? Does anyone ever read posted privacy policies?

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Faculty Perceptions and Policies of Students' Use of Personal Technology in the Classroom

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Abstract

With the increased use of personal technology in the classroom, such as laptops, tablets, and smartphones, effective teaching may have some powerful distractions, or some excellent support. The purpose of this paper is to report on the progress of personal technology in the classroom and to determine how members of the Association of Business Information Systems (ABIS) and the Southwest Decision Sciences Institute (SWDSI) are clarifying the use of personal technology through syllabus statements and policies. The study does not intentionally set out to provide definitive answers related to the best way to handle personal technology in the classroom; but rather, to share some current perceptions and policies that have been adopted by educators. This, in turn, may provide a springboard for specific policies that would work in an educator's classroom.

Keywords: technology, smartphones, tablets, laptops, classroom procedures, syllabi technology statements

A Short Sketch of Technology in the Classroom

The modern era of the college classroom began with two instructional items: the chalkboard and the overhead projector. Since those early days, faculty have consistently introduced new equipment in the college classroom. Today's college classroom may be well equipped with computer projection, large screens and/or whiteboards, and all of the devices necessary to enhance instruction. All of the technology in the classroom had one thing in common: it was controlled or utilized by the instructor.

Perhaps the most interesting, challenging, and controversial technology to be introduced does not come from the instructor, but rather the student—t hat being the electronic devices students are bringing into the classroom.

Personal Technology

Personal technology can be defined as mobile devices, such as a smartphone, tablet, or notebook (Thornton, 2011). These devices are easily connected to the Internet permitting student access to the Internet during class. The frequency of college students bringing their personal technology into the classroom is increasing. Students' dependence on the devices indicates that the personal technology is here to stay. In some cases, students may have more than one device, such as a smartphone, as well as a notebook or tablet computer.

A combination of increasing technological advances, competition, and lower prices has resulted in the technology being more available to students. In fact, a survey of 976 faculty and students in public universities located in New York, North Carolina, and Texas, indicated that 90 percent of the respondents owned laptop computers and 99 percent had cell phones (Baker, Lusk, & Neuhauser, 2012).

Cell Phones and Smartphones

When cell phones first began to appear in the classroom, an annoying ringing phone would announce its presence and students would look around wondering who it belonged to. This distractor made it difficult for the instructor to keep the attention of the class. Later the rings changed to notes of a song, then to vibrations, which could bounce a phone across a metal desk, and finally to text messages. Every call or message is a distraction to someone.

Now smartphones have access to the Internet allowing students to browse on Facebook or any other website, as well as check email and send text messages. A study from Ball State in

2010 revealed that 98.8 percent of college students owned cell phones. In addition, 97 percent of students reported that text messaging was their main form of communication (Sprint joins University of Notre Dame, 2011).

In a further study of text messaging, researchers found that 92 percent of college students admitted sending or receiving text messages while waiting for class to start. Nearly 95 percent of students said that they always bring their phones to class, with 30 percent indicating that they send or receive a text during class every day. Whether or not a student texted often depended on class size. More texting occurred in classes with 100 students or more, while the least amount of texting occurred in small class sizes such as 12 students. When asked what would shock professors about texting, 54 percent of the students said professors would be shocked at how much texting is going on during class (Tindell & Bohlander, 2011).

While texting and inappropriate use of smartphones in the classroom have been distracting, the advent of numerous educational apps and the opportunity to connect wirelessly with the Internet provide educators a dilemma of what to do with this technology. This dilemma expands to other personal technology such as laptops and tablets.

Laptop and Tablet Computers

After initially embracing laptops and tablets in the classroom, many educators determined they were more of a distraction than they were beneficial. Georgetown Law School, George Washington University, American University, the College of William and Mary, and the University of Virginia are just a few prominent universities where professors banned the use of laptops (de Vise, 2010). Instructors at Florida International, Harvard, and the University of Michigan, and the University of Wisconsin created laptop-free zones (Fischman, 2009). Sample (2012) also suggested establishing a lapto- free zone in the classroom. For instance, this might

keep the first few rows of desks free of any personal technology so that those who felt they were easily distracted by someone else's technology would not be exposed to it.

In schools that allowed laptops/tablets, students who arrived with laptops to take notes in class quickly found other uses in wireless classrooms—checking and sending email, checking and posting on Facebook, checking sports scores, shopping, playing games, and reading the news. All of these uses may occur while the instructor is trying to conduct a class at the front of the room (Bugeja, 2007).

While it is obvious that laptops and tablets may provide a world of possibilities related to innovative instruction, it is challenging to harness this power in a way that truly is beneficial for learning in the classroom.

Schools of Thought

With all of the issues surrounding the expanding student use of personal technology in the classroom, how are faculty members addressing these behaviors? On the issue of technology in the classroom, at least two schools of thought are apparent. One idea is to ban any extra technology from the classroom, and the other idea is to include technology in the learning process.

Students and faculty have different perceptions of the importance of personal technology (Miller et al., 2011). While many college students believe that they can productively multitask (Samson, 2010), easily sending text messages and paying attention to the professor's lecture at the same time, many professors believe the distraction limits learning. One study by a University of Colorado professor, Diane Sieber, found that students did 11 percent worse, on average, than their peers who did not have their faces in their computers as much (Fischman,

2009). Fischman further stated, however, that faculty find it difficult to enforce bans on personal technology, and student access to the Web can enrich classroom discussions (2009).

Because students are using their personal technology throughout their day, they see no reason why they cannot use the technology in the same manner when they get to the classroom (Miller et al., 2011). With all of the issues surrounding the expanding student use of personal technology in the classroom, how are faculty members addressing these behaviors? What are the key issues related to banning or using personal technology in the classroom?

Banning Personal Technology

Why ban the use of personal technology? The arguments against classroom use are numerous. They include distractions in the classroom caused by personal technology, incivility in the classroom, poor notetaking, and the inability to think without computer support.

Distracted by personal technology. The Center for Research on Learning and Teaching at the University of Michigan conducted a study of 600 college students. About 75 percent of the students said that using a laptop in class increased the time they spent on non-course activities. In addition, 35 percent of the students surveyed estimated that they spent more than 10 minutes per class using email and social networking sites (Sample, 2012).

Laptop usage in the classroom has been linked to poorer learning outcomes and self-perception of education. In addition, students also realize the distraction factor. In lecture style classes, students may not have received guidance on how to effectively use the technology in the classroom (Rosenberger & Robertson, 2011).

One set of parents visiting the college classroom were at first impressed with all of the students who were using personal technology until they noticed that the students who were

diligently typing away in class were actually on Facebook, banned sites, shopping and sports sites, or were instant messaging and texting friends (Bugeja, 2007).

Civility in the classroom. In a study of nearly 3,500 students at a Midwestern public university, questions were asked about civility in the classroom. Students were asked to rate uncivil behaviors. Allowing a cell phone to ring in class ranked third on the list right below coming to class under the influence of alcohol or drugs. Text messaging was tenth on the list between arriving late and/or leaving early and packing up books before class is over. When students were asked to rate the frequency of uncivil behaviors, text messaging was rated as the most commonly observed behavior (Bjorklund & Rehling, 2010).

In a study of 976 faculty and students in three public universities in three states, students used their cell phones to send 26-50 text and voice messages per day while receiving an additional 26-50 text and voice messages. In contrast, faculty sent and received an average of 3-5 text and voice messages per day. The authors indicated that the cell phone usage was greater with students "by an order of magnitude" (Baker, Lusk, & Neuhauser, 2012).

Notetaking is not improved. Early on, law schools faced challenges with laptops in classrooms. In fact, some law professors banned laptops in the classroom based on three general arguments 1) note-taking is not improved with laptops, 2) students are less engaged in class and less interested in participating when laptops are allowed, and 3) students using laptops and those sitting near them are easily distracted by the laptops (Murray, 2011).

Challenge the ability to think. An article in *USA Today College* argued that laptops may be the ultimate classroom distraction (Glass, 2012). American University Professor G. Buden Flanagan believes that the easier it is to use technology to get answers, the less reasoning

and thinking we will do to develop our own answers. In fact, the mind will not get the workout it needs to function most effectively (Glass, 2012).

Using Personal Technology

Why include personal technology in the classroom? Proponents of using personal technology cite greater student engagement, use of equipment familiar to students, an increasing number of study applications for personal technology, and the ability to use personal technology for reflection and idea generation.

Greater engagement with students. An English teacher in Iowa is using a Twitter-like technology to improve classroom discussion. Students are encouraged to participate with their personal technology. While the discussion is going on as usual in the face-to-face class with one student contributing at a time, a second or back channel is opened so that students can contribute silently to the discussion. A comparison might be watching a cable news program, with viewers making live comments on the program in a feed at the bottom of the screen. As only a limited number of students can contribute in the regular discussion, using a back channel can greatly increase the amount of discussion generated on the topic (Gabriel, 2011).

To encourage student engagement, Purdue University has developed its own back channel system of communication called Hot Seat. Students can post comments or questions which can be read on phones, laptops, or projected on a large screen. The instructor has an opportunity to address questions that appear frequently which might never be asked verbally in class. In spite of the advantages, Hot Seat was used in only 12 courses in one semester as faculty were slow to adjust their teaching styles to the use of this type of technology. While Hot Seat is in its early stages, the goal is to create more in-class student engagement. Students who are more engaged in the course and its content may, in turn, become more successful (Gabriel, 2011).

Personal technology can also be used to increase student interactivity. Activities such as polling, posting questions, short answer writing, and others are used to involve each student in the class, rather than the few who might contribute to a discussion (Sample, 2012).

Use familiar technology. In support of using laptops in the classroom, some law professors believe that students know how to use the technology and have used computers since childhood. In addition, the professors expect students to be a part of the educational experience. Jana McCreary from Florida Coastal School of Law believes that by the time students are in Law School, they have already developed a learning style that may rely on taking notes with the computer in class. In a survey of her class, McCreary found that 77.8 percent reported that they used the Internet to look up cases, statutes, and other course-related materials during class (Murray, 2011).

Denholm (2013) argues that students should be allowed to use the smartphones and iPads in class because they are already using them and familiar with them outside of class.

Increasing number of applications. The number of applications is increasing for all mobile devices to help students have better study tools. Programs such as LectureTools, an interactive student response system, are now available. Over 400 colleges and universities have accounts with LectureTools (Samson, 2010). Additional applications that individual students can use are available.

Reflection and idea generation. Sample (2012) proposes that instructors should turn student laptops into a type of studio where students use them to reflect on concepts and generate ideas. In fact, he encourages a classroom environment where students would use the laptops to solve problems or create something new.

So, how are faculty addressing the personal technology issue? In one School of Journalism, about 20 percent of syllabi contain warnings about misusing technology in the classroom (Bugeja, 2007). The author further predicted that statements on course syllabi relating to personal technology would only increase in the future. Sample (2012) suggests establishing a policy on personal technology and communicating it to students.

Purpose

The purpose of this study was to determine college faculty's attitudes toward personal technology and to ascertain practices allowed or banned in the classroom regarding students' use of personal technology. The researchers wanted to learn if information systems faculty have a philosophy about personal technology, if they placed statements in the syllabus about personal technology, and if they were willing to share those statements.

Procedure

The researchers sent an electronic survey of 9 questions to 175 Federation of Business Disciplines colleagues who are members of the ABIS and SDSI communities. Participants were asked to indicate 1) if personal technology is ignored, encouraged, or banned; 2) if their syllabus contained statements relating to the use of personal technology in the course; and 3) if they could report any unusual experiences or distractions that have occurred in the classroom due to personal technology. Instructors were also asked to share the technology statements placed in their course syllabi, if any.

Findings

Of the 175 faculty surveyed, 55 faculty responded for a 31 percent response rate. Figure 1 indicates the respondents' university rank, which was predominately professor, followed by assistant professor, instructor/visiting faculty, associate professor, and adjunct faculty.

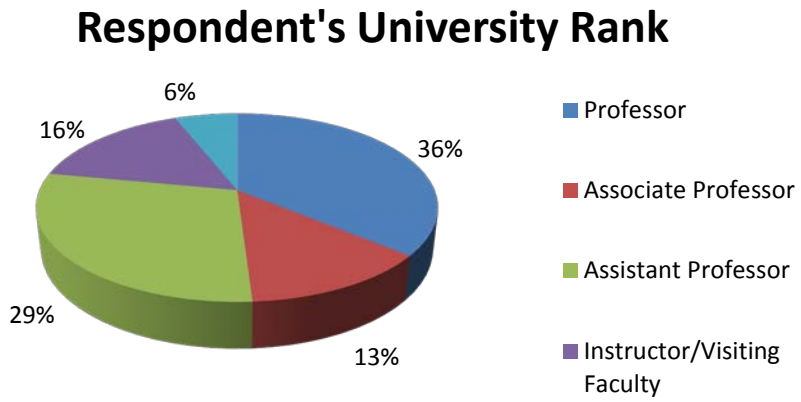

Figure 1

Syllabus Statements

When asked, "Do you have a statement in your syllabus outlining acceptable personal technology use by students in your class," 47 percent of the respondents reported they do have a statement in the syllabus outlining acceptable personal technology usage by students in the classroom; however, 29 percent do not have a statement, but indicated one might be helpful; while 24 percent indicated that they did not need a statement.

Respondents were asked to share their personal technology statements from their syllabus. An analysis of the statements provided by the respondents indicated a common thread: that while some allow technology for classroom-related activities only, others have an adamant statement that no technology is allowed. Of the 55 respondents, 27 provided their syllabus statements. Following are selected examples of these statements:

- I do not prohibit the use of electronics in the classroom as a general rule. I trust that most students are using these devices to further their education for educational purposes during class. However, if it comes to my attention that these devices are creating a distraction to yourself or to other

students, I reserve the right to change this policy by communicating such a change in class and through Blackboard. No cell phones will be permitted during exams.

- As a courtesy to your fellow classmates and instructor, you are asked to only use a laptop, PDA, iPad, etc. in class if you are genuinely using it for class purposes (i.e., taking notes, reviewing PowerPoint, etc.). I reserve the right to ask that these devices not be used in class if they distract from class lectures or activities. These and all other electronic devices must be stored, and not on your person, during exams.
- Expected etiquette: Silence (not vibrate – silence) your cell phone, Blackberry, iPhone, and other PDA devices. Do not text, email, read, listen to, or talk on your cell phone or other device during class time. If the professor sees you using your cellphone during class time, your name will be called; and 10 points will be deducted from your overall points in the course for each occurrence. No texting, no social media, no Internet! Class time is for discussion, learning, and participation. Laptops and other computing devices are not allowed during class time. Classes held in the computer lab are for coursework only. Do not use email, social media, or the internet during class time in the lab unless warranted by the assignment.

University Policy

The researchers also asked instructors if the use of personal technology in the classroom on their campus is encouraged, discouraged, banned in the classroom, left up to the individual

instructor, or other (please specify). Of the 55 responses, 75 percent indicated that it is left up to the individual instructor, 11 percent indicated it was encouraged, 11 percent indicated it was discouraged, and none said it was banned. Three respondents commented along the lines that personal technology was encouraged for course-related use, but some instructors may wish not to use it.

Classroom Distractions

Respondents were asked, to indicate if they have had problems with personal technology class distractions. Table 1 indicates the types of problems and the extent of the distractions to the educational environment that 76.4 percent (42) of the respondents indicated were issues in the classroom.

Table 1.

Personal Technology Class Distractions

Activity	% Response
1. Students reading text messages in class	73.7%
2. Students sending text messages in class	66.7%
3. Students browsing websites for personal information (i.e., latest news, sports scores, shopping, etc.)	64.3%
4. Students dealing with ringing phones	40.5%
5. Students checking or communicating on Facebook	40.5%
6. Students taking or making calls during class	21.4%
7. Students checking or communicating with Twitter	16.7%
8. Students cheating on assignments or tests using personal technology	16.7%

Additional input from the respondents indicated that sound was considered as the most challenging distraction overall. However, even though students have learned to turn off the ringer, silent texting is also considered a major challenge, and small smartphones enable browsing.

Even though the majority of respondents indicated that the use of personal technology in the classroom was a distraction, many on occasion allowed students to use their personal devices in order to enhance specific learning. This contradiction in practice is summed up by one respondent who allows no challenges to the non-use policy since students are warned at the beginning of the semester that phone use is not allowed during class. However, occasionally, if students have Internet access, the instructor asks them to do a search, for clarification purposes, on a topic that they are discussing for clarification purposes.

Classroom Use of Personal Technology

When asked if students use personal technology to complete any course assignment or for any other course-related activity during class, the respondents were divided. While slightly more than half of the respondents (57%) report that students DO NOT use personal technology during class to complete any course assignment, 43 percent reported that their students DO use personal technology to search for pertinent information for classroom discussion.

Technology Literate Faculty

When asked, "How would you describe yourself in relation to today's technology," the respondents considered themselves relatively up-to-date in their understanding of today's technology. An overwhelming 62 percent self-identified as knowledgeable about technology, while 23 percent considered themselves as tech savvy and/or use the latest tech gadgets. Only 15 percent indicated that they have only some knowledge about technology. No one was averse to

technology. Such responses seem in line for faculty who are involved in teaching topics related to technology/information systems.

Personal Technology Perceptions

Following are additional comments shared by respondents about the use of personal technology in the classroom. These thought provoking comments led to the conclusions of this article and give reasons to continue to consider the importance of a personal technology statement in the class syllabus:

- As educators, we should be modeling technology in the classroom and occasionally have our students use their technology. Last semester, I had another professor teaching my class, and I was monitoring it online from home when three students emailed me during the class time about questions. I replied (with a copy to the teaching professor) "Why are you emailing me during class lecture?"
- Some of my colleagues 'ban' personal technology in the classroom and have temporarily 'confiscated' these items. But this approach seems very 'high school' to me, so I've avoided it because it's not the kind of classroom atmosphere I want to develop. Personal technology seems like it is here to stay; perhaps it is wise to conduct this type of study and try to find ways to incorporate it into teaching.
- Increasingly, textbooks will be delivered electronically, so tablets and laptops will be a normal part of the classroom environment. Collectively, we need to discover ways to focus students on the constructive use of their devices rather than on distractive activities.

- I support the use of technology in class; the challenge is to have students use it for learning purposes during class time!

Conclusions

Based on our study of information systems faculty, it appears that the use of personal technology remains a gray area in the classroom. Some faculty ban it, some ignore it, and some use it to enhance the classroom experience. Nearly half of the respondents have a statement in the syllabus relating to personal technology use, almost 30 percent say that they think they need to include a statement about personal technology in the syllabus, and about one-fourth do not think a statement of any type is necessary.

Our results from faculty indicate that text messaging is the biggest classroom distraction, which echo the results from the study conducted by Bjorklund and Rehling (2010) where the most frequently observed uncivil classroom behavior was texting.

One of the biggest issues relating to personal technology in the classroom may be that faculty have not found significant ways to use it to enhance teaching.

Recommendations

Because faculty have different viewpoints and expectations about personal technology in the classroom, they should specify policies for students to follow in the course syllabus. Following are two examples of policy statements relating to technology that could be used in a class syllabus.

Statement 1: This statement would be for the faculty member who wishes to exclude personal technology use in the classroom.

Personal Use of Technology. The use of computers, tablets, and smartphones/cellphones in the classroom will not be permitted without prior arrangement with the instructor.

Statement 2: This statement would be for the faculty member who would like to encourage appropriate use of technology but provides restrictions on the use.

Appropriate Use of Technology. When students have personal technology available in the classroom or class lab, it should be used appropriately. Using devices for interacting on sites such as Facebook or Twitter is not an appropriate in-class use of technology. Sending or receiving text messages, instant messages, or making or receiving phone calls in class can cause distractions to the teacher and to fellow students. Cell phones, computers, and other electronic devices in the classroom are to be used for class purposes only.

Faculty should also reassess assignments and classroom activities to see if personal technology could enhance those assignments or make them more current and relevant. Sharing that knowledge with other information systems faculty would assist in more efficient utilization of personal technology in those classrooms that use it.

In addition, faculty should develop new activities that rely on personal technology to increase student interest as well as engagement. Increasingly, personal technology will become more available. At some point, faculty may have to decide to embrace the technology if they are not doing so now. It will not be going away.

Future Research Implications

Further research could provide information about additional creative ways students and instructors are using personal technology to add to the learning environment. Problems and cases that require the use of personal technology would be advantageous to both the instructor and the students.

At the current time, the use of personal technology in the classroom is in transition. A definitive answer of no—to ban personal technology—or yes—to use personal technology—has

not yet been established in higher education. Research to follow this trend may develop a definitive answer.

Students and faculty appear to have diverging viewpoints on the use and value of technology in the classroom. Students sending and receiving 100 text messages per day may find it difficult to see the importance of not texting during class. A further study highlighting differences in perception between faculty and students could be of value to higher education.

With information systems professionals' greater understanding of technology than university faculty without that expertise, it may fall to our profession to develop more effective ways that technology can be used to enhance the classroom experience.

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