

# INFORMATION SYSTEMS EDUCATION JOURNAL

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# Student Characteristics and E-textbook Experiences: The Direct and Moderating Effects of Technology Savvy and Gender

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## Abstract

The adoption of e-textbooks in universities by the majority of students has yet to materialize, requiring a better understanding of the differences among users to cater for their different needs. The main focus of this study is to examine the role of technology savvy in terms of the experiences, skills and self-efficacy of students in using information technologies. It is hypothesized that technology savvy directly affects major e-textbook experiences, including perceived e-textbook helpfulness, student involvement and learning outcome, as well as moderates the relationships among them. Based on the data gathered through a survey, the results suggest that the e-textbook experiences of students vary significantly across technology veterans and novices, suggesting a salient direct effect of technology savvy on e-textbook experiences. Also, the mediating relationship between e-textbook helpfulness and learning outcome through student involvement is stronger for technology veterans than novices, suggesting a salient moderating effect of technology savvy on the relationships among e-textbook experiences. An additional comparison based on gender is performed to find out whether the gender stereotyping regarding technology usage holds true for the new generation of students in the use of e-textbooks. The results show that gender does not fully account for the differences in e-textbook experiences, and its moderating effect on their relationships is not as strong as that of technology savvy. To enhance the adoption of e-textbooks, therefore, it is important for publishers and instructors to customize training and support for students at different levels of technology savvy.

**Keywords:** e-textbook experiences, e-textbook helpfulness, student involvement, learning outcome, technology savvy, IT experiences, IT self-efficacy, IT skills, gender difference.

## 1. INTRODUCTION

In the educational settings, the use of electronic books (e-books) as teaching tools lead to the transition from traditional paper textbooks to paperless electronic textbooks (e-textbooks). E-textbooks have a stronger presence every year

with a higher potential to influence the learning experiences of students. This trend accompanies the emergence of new mobile devices such as tablets, smartphones and iPods that provide flexible learning environments to students (Alkhamayseh, Zmijewska, Lawrence, & Culjak, 2007; Mellow, 2005).

Compared with paper textbooks, e-textbooks provide additional functionalities like searches within the text, hyperlinks to related topics, case examples and even videos to facilitate the content understanding (McGowan, Stephen, & Bradley, 2009). Economic situations also provide incentives for students to adopt e-textbooks. The cost of textbooks increases two times faster than the inflation rate in recent years, reaching up to \$898 per year for an average college student (Singletary, 2006). Meanwhile, the market share of e-textbooks will increase from 3% of total textbooks sold in 2010 to 10-15% by 2012, according to the National Association of College Stores (Foderaro, 2010).

Despite the fast growth, the penetration of e-textbooks has still a long way to go. In addition, the actual use of e-textbooks does not automatically come with the purchase of e-textbooks. For instance, the libraries of high education institutions include more and more e-book titles, but most of the students still prefer the websites on the Internet (e.g. Wikipedia) to e-books as their main sources of information (Sutton, 2003; Jamali, Nicholas, & Rowlands, 2009). If students do not actually use e-textbooks to enhance their learning, it is meaningless to push the diffusion of e-textbooks. In this sense, student adoption of e-textbooks is not just the acquisition of digital copies but the actual use of them to enhance learning experiences.

In the diffusion of this new innovation, some students are quicker to adopt e-textbooks than others. Using Everett Rogers' (1962) terminology, they can be labeled as innovators, early adopters, early majority, late majority, or laggards depending on how soon they switch to e-textbooks once they become available. This study focuses on the individual factors that contribute to the differences across students in their adoption of e-textbooks. In particular, it examines how prepared students are to use this IT innovation in terms of technology savvy, and its direct and moderating effects on their e-textbook experiences. To find out whether such variations are mainly due to gender difference or not, this study also compares e-textbook experiences between males and females.

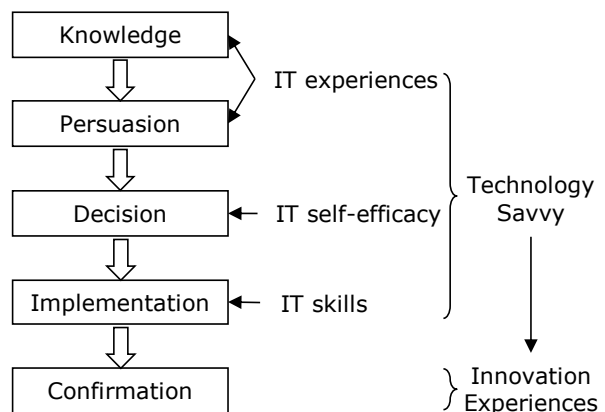
The understanding obtained may provide educators useful guidelines on how to engage students of different technology backgrounds in learning using e-textbooks. Publishers and IT managers can also customize e-textbook

content, support and training to user characteristics. For policy makers and administrators, the findings may yield insights on how to promote e-textbook adoption and usage in higher education.

## 2. CONCEPTUAL FRAMEWORK

In his Innovation Diffusion Theory, Rogers (1962) used the S-shaped curve to describe different stages of adoption and user categories. The presumption is that people vary in their innovativeness regarding the use of new technologies. For instance, innovators and early adopters are generally information seekers and risk takers who like to try new things (Rogers, 1995). Researchers of IT adoption have examined how technology innovativeness may affect people's adoptions of new applications.

In particular, Agarwal and Prasad (1998) developed the construct and measure of personal innovativeness in information technology (PIIT), defined as the willingness of an individual to try out any new information technology. However, the empirical studies using PIIT to predict how likely individuals are to adopt new applications have yielded inconsistent results (Lu, Yao & Yu, 2005). A closer look at Agarwal and Prasad's (1998) definition and measurement items suggests that PIIT is a single-dimensional construct that indicates the tendency to try out new technology. It may be over-simplified to conceptualize technology innovativeness as a single-dimension construct.



**Figure 1. Innovation Adoption Factors**

According to Rogers (1995), individual decision-making regarding whether to adopt an innovation involves five stages: knowledge, persuasion, decision, implementation, and

confirmation. As shown in Figure 1, they describe the process that an individual first gets exposed to the innovation (stage 1) and becomes interested (stage 2), evaluates the advantages and disadvantages (stage 3), tries the innovation (stage 4) and adopts the innovation if the experiences are positive (stage 5). Thus, decision-making on innovation adoption is not simple but a multi-faceted phenomenon.

Among the five stages, the first two are related to a person's indirect experiences with the innovation such as the word of mouth and the experiences with other related technologies. Experienced users that are familiar with different kinds of IT applications are more likely to know and pay attention to new technologies than inexperienced users (Raymond, 1985; Bhattacharjee, 2001). Thus, the general "IT experiences" of an individual are closely related to the knowledge and persuasion stages of decision-making.

The third stage of decision-making involves the comparison between the pros and cons of using an innovation. In the adoption of IT applications, they typically take the forms of perceived usefulness and perceived ease-of-use as in the technology acceptance model (Davis, 1989). Whereas the actual use of an IT application may not be needed for the perception of usefulness (e.g. an individual reads the description of functions), it is generally required for the perception of ease-of-use. At this stage of decision-making, however, an individual has not tried the innovation yet. Rather, the concept of self-efficacy is more appropriate here as it is related to the expectation of control for an upcoming task (Bandura, 1997). In IT adoption research, Compeau and Higgins (1995) defined computer self-efficacy as "a judgment of one's capability to use a computer" (p. 192). For an IT application like e-textbook, therefore, the "IT self-efficacy" of an individual is closely related to the stage of decision. If a person is not comfortable to use IT applications, the individual is not likely to adopt the e-textbook technology.

The implementation stage requires a person to actually use an innovation. Some basic skills are needed for the use of IT applications (Nelson, 1991). For a student to use an e-textbook, the individual must have certain skills, such as how to browse the Internet (e.g. publishers' websites) and download files. Thus, the "IT skills" of an individual is closely related to the

stage of implementation. If a person does not have the basic skills needed, the individual is not likely to try out an innovation.

Finally, whether a person decides to adopt an innovation depends on his/her actual experiences with it. At this stage, the individual has already used the innovation. Thus, it is not a stage that is pertinent to how innovative the person is. Rather, IT experiences, IT self-efficacy and IT skills that are closely related to the previous stages largely determine whether or not an individual is likely to adopt the innovation. The aggregation of these three aspects of personal characteristics, therefore, can be denoted as "technology savvy". Unlike PIIT, it is a multi-dimensional construct related to different stages of decision-making before adopting an innovation.

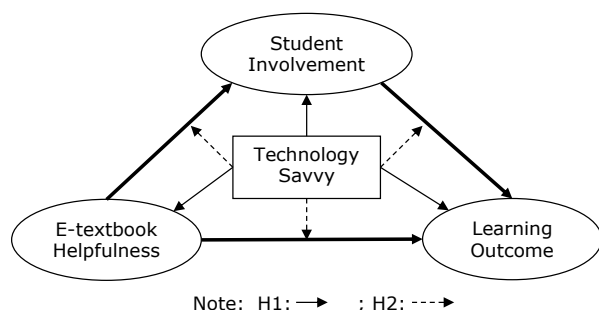
### 3. RESEARCH HYPOTHESES

As the earlier stages influence the later stages in the innovation adoption decision-making process, people's technology savvy is likely to influence their actual experiences in using an innovation. Regarding the adoption of e-books, Bennett and Landoni (2005) found that librarians, authors, publishers and readers who have some technical knowledge about the innovation are likely to have positive attitude toward it. Cope and Ward (2002) found that experienced and inexperienced users have very different perceptions of e-books: those who prefer technology also perceive e-books as a key element of learning technologies.

In the context of e-textbook adoption, students who are technology savvy are more likely to be open to the use than those who are not. McGowan, Stephen and Bradley (2009) found that among the students who prefer e-textbooks, most believe that the technical features are helpful for learning. When students have positive experiences with e-textbooks, they are likely to actively use them. Black and Toner (2009) found that students who have used online textbooks (a form of e-textbook) are significantly more satisfied and more inclined to use them later than those who have not.

Sun, Flores and Tanguma (2012) identified major e-textbook experiences in terms of e-textbook helpfulness, student involvement, and learning outcome and examined the relationships among them. This study proposed a research model to examine the relationships

between technology savvy and e-textbook experiences. As shown in Figure 2, there is a partial mediating relationship between e-textbook helpfulness and learning outcome through student involvement. Whereas e-textbook helpfulness may have some positive direct effect on learning outcome, most of its effect on learning outcome is realized through student involvement from the use of e-textbooks. That is, if a student perceives the e-textbook helpful, the person is likely to get involved in the learning activities facilitated by it, which enhances the outcome of learning.



**Figure 2. Technology Savvy and E-textbook Experiences**

As a user characteristic closely related to technology-related behavior, technology savvy is likely to influence each e-textbook experience. First of all, students who are technologically savvy are likely to perceive e-textbooks helpful as they know and understand the technology. Then they are also likely to get involved in e-textbook use as they know how to use the innovation to facilitate learning process. Finally, they are likely to have positive learning outcome due to the effective use of e-textbooks. This leads to the following research hypothesis:

H1: Technology savvy directly affects e-textbook experiences in terms of e-textbook helpfulness, student involvement, and learning outcome.

In addition, the relationships among e-textbook experiences may vary across people of different technology savvy levels. Student involvement largely converts perceived e-textbook helpfulness to actual learning outcome, and its role as a mediator may be more salient for students who are active in using e-textbook than those who are not. Thus the second hypothesis is as follows:

H2: Technology savvy moderates the relationships among e-textbook helpfulness, student involvement, and learning outcome. Researchers notice that there is some gender difference in information technology user behavior (Janssen Reinen & Plomp, 1997), but the gap is narrowing especially for new-generation student users (Sherry & Fielden, 2005). To check for the possible confounding effect of gender on technology savvy due to the stereotyping view that males like technology more than females, this study will examine whether gender has similar effects on e-textbook experiences. If the effects of technology savvy and gender exhibit different patterns, there is evidence that the two user characteristics are relatively independent.

Like technology savvy, gender has two possible routes of influence on e-textbook experiences. First, it may directly affect e-textbook helpfulness, student involvement, and learning outcome. Previous studies suggested that males have more positive perceptions and attitudes related to information technologies than females (Broos, 2005). Here is the third hypothesis:

H3: Gender directly affects e-textbook experiences in terms of e-textbook helpfulness, student involvement, and learning outcome.

Second, gender may also moderate the mediated relationship between e-textbook helpfulness and learning outcome through student involvement. Though males may use more technical features of e-textbooks, females may get more involved in the technology-facilitated learning process (e.g. discussion and collaboration in doing exercises on the platform of e-textbooks). Rather than holding a stereotyping view, therefore, this study suggests that different genders may exhibit different behavioral patterns in terms of the relationships among e-textbook experiences. Hence the last hypothesis follows:

H4: Gender moderates the relationships among e-textbook helpfulness, student involvement, and learning outcome.

Because gender and technology savvy are equivalent in statistical modeling, their effects are directly comparable. As the effect of gender is well-established, it provides a benchmark for the effect of technology savvy. Compared with gender difference, technology savvy is more closely related to how prepared each individual

is to use the e-textbook innovation. Thus, it is expected that the direct effects of technology savvy on e-textbook experiences as well as its moderating effects on their relationships are stronger than those of gender.

#### 4. METHODOLOGY

##### Measurement

The Appendix gives the instrument of technology savvy developed for this study. There are six items of IT experiences that indicate how often students use common information technologies (e.g. email). Six items measure IT skills by indicating how capable the students are to use various information technologies (e.g. anti-virus software). Four items of IT self-efficacy indicate how comfortable and confident the students are to use IT applications in general.

E-textbook experiences are measured with the instrument developed and validated in Sun, Flores and Tanguma's (2012) study. There are three items each for e-textbook helpfulness, student involvement, and learning outcome. All the technology savvy and e-textbook experiences items use five-level Likert scale.

##### Subjects

Students participating in the survey were elicited from an undergraduate statistic class at a southern university in USA. Their major fields were in business and psychology, and they accessed the same e-textbook with computers through the Internet. There were a total of 108 usable responses out of 170 students surveyed, and the response rate was 64%. Among the participants, 58 were females and 50 were males.

##### Procedure

A survey questionnaire was developed to measure the variables in the research hypotheses. The survey was administered electronically using an online survey website. It was administered to a student population taking statistical classes using electronic book. Emails with the link to the questionnaire were sent to the students at the beginning of the semester. The survey was anonymous and it usually took less than 10 minutes to complete the questionnaire.

##### Statistical Analyses

Before testing research hypotheses, it is necessary to validate the newly-developed technology savvy instrument. In particular, its convergent and discriminant validity will be assessed with factor analysis. In addition, reliability analyses will obtain Chronbach's alphas of technology savvy factors. If the responses exhibit acceptable levels of internal consistency, index scores of IT experiences, IT skills and IT self-efficacy will be calculated by taking the averages of their item scores.

The next step is to classify students into technology veteran and novice groups. This allows the comparison of e-textbook experiences across students at different levels of technology savvy. A *k*-means cluster analysis will be performed based on the scores of IT experiences, IT skills and IT self-efficacy. The results also indicate the significance of each of the three clustering variables, and give the means of cluster centers.

Then, research hypotheses will be tested. First, a *t*-test will compare the e-textbook experiences in terms of e-textbook helpfulness, student involvement, and learning outcome between technology veterans and technology novices. This result pertains to the first research hypothesis (H1). Next, a multi-group structural equation modeling (SEM) analysis will compare the structural paths among e-textbook experiences across the two groups. This tests the second research hypothesis (H2).

In addition, the direct and moderating effects of technology savvy on e-textbook experiences will be benchmarked with those of gender. Similarly, a *t*-test will examine males' and females' e-textbook experiences and the comparison will provide the clue about the third hypothesis (H3). Finally, a multi-group SEM analysis will compare structural paths between gender groups. With this, the fourth hypothesis (H4) will be tested.

#### 5. RESULTS

Table 1 gives the results of factor and reliability analyses. The factor analysis extracted three factors using the latent root criteria (i.e. eigen value > 1), and 64.32% total variance was extracted. The rotated solution using Promax method shows that each item was loaded to its own factor without any cross-loadings. All the standardized loadings were above 0.5. Thus, the



convergent and discriminant validity of technology savvy measures were supported. In addition, the Chronbach's alpha was well above 0.7 for each technology savvy factor, indicating an acceptable level of internal consistency for the calculation of its index score.

**Table 1. Factor and Reliability Analyses**

Item	IT experiences	IT self-efficacy	IT skills
EX1	0.784		
EX2	0.609		
EX3	0.621		
EX4	0.756		
EX5	0.849		
EX6	0.588		
SE1		0.649	
SE2		0.850	
SE3		0.742	
SE4		0.777	
SK1			0.565
SK2			0.786
SK3			0.764
SK4			0.799
SK5			0.615
SK6			0.585
$\alpha$	0.847	0.885	0.846

Note: Extraction Method: Principal Component Analysis. Rotation Method: Promax with Kaiser Normalization. Factor loading below 0.5 were suppressed.  $\alpha$  - Chronbach's alpha.

Table 2 shows the final cluster centers from the *k*-means cluster analysis on the index scores of technology savvy factors. There were two clusters and the first cluster had much higher average scores on IT experiences, IT skills and IT self-efficacy than the second cluster. Thus, the first group of participants can be labeled technology veterans and the second group can be labeled technology novices. There were 59 participants in the veteran group and 49 participants in the novice group.

**Table 2. Final Cluster Centers**

	Veteran	Novice
IT Experiences	4.84	4.17
IT Self-efficacy	4.78	3.72
IT Skills	4.25	3.21

Table 3 reports the comparison between veteran and novice groups on e-textbook experiences. The veteran group had consistently higher average scores on e-textbook helpfulness, student involvement, and learning outcome than the novice group. The differences were significant for e-textbook helpfulness and learning outcome, and marginally significant for student involvement. This provides supporting evidence to the first hypothesis (H1). That is, students with higher level of technology savvy are likely to have more positive e-textbook experiences.

**Table 3. Direct Effects of Technology Savvy**

E-textbook Experiences	Technology Savvy		<i>t</i> -test	
	Veteran	Novice	<i>t</i>	sig.
E-textbook Helpfulness	3.54 (.85)	3.25 (.76)	1.90	.03
Student Involvement	3.66 (1.03)	3.44 (.77)	1.23	.10
Learning Outcome	3.49 (.95)	3.23 (.75)	1.59	.05

Note: Standard deviations are shown in parentheses; observed significance levels (sig.) were based on one-tailed *t* tests.

**Table 4. Moderating Effects of Technology Savvy**

	Veteran	Novice
E-textbook Helpfulness --> Learning Outcome	0.25	0.18
E-textbook Helpfulness --> Student Involvement	0.89**	0.54**
Student Involvement --> Learning Outcome	0.83**	0.89**

Note: \*\*-significant at 0.01 level; \*-significant at 0.05 level.

Table 4 reports the structural path estimates from the multi-group SEM analysis. The relationships among e-textbook helpfulness, student involvement, and learning outcome varied across the veteran and novice groups. Additionally, the relationship between e-textbook helpfulness and learning outcome was not significant for either group, suggesting that there was a full mediating relationship through student involvement in both. However, the mediating path through student involvement was much stronger for the veteran group than for the novice group. In the veteran group, the total effect of E-textbook Helpfulness on Learning Outcome was:  $0.25 + 0.89 \times 0.83 = 0.986$ , and in the novice group, it was:  $0.18 +$

$0.54 \times 0.89 = 0.664$ . The total effect of the novice group was 67% of that of the veteran group. The results suggest that technology savvy does moderate the relationships among e-textbook helpfulness, student involvement, and learning outcome. Thus the second hypothesis (H2) is supported.

Table 5 presents the comparison between the two gender groups on e-textbook experiences. Males had consistently higher mean responses on all the aspects of e-textbook experiences than females. However, the differences were not significant except for e-textbook helpfulness for which the difference was marginally significant. In this sense, the third hypothesis (H3) is partially supported.

**Table 5. Direct Effects of Gender**

E-textbook Experiences	Gender		t-test	
	Male	Female	t	sig.
E-textbook Helpfulness	3.54 (.78)	3.31 (.85)	1.43	.08
Student Involvement	3.61 (.89)	3.52 (.97)	.53	.30
Learning Outcome	3.43 (.86)	3.33 (.89)	.56	.29

Note: Standard deviations are shown in parentheses; observed significance levels (sig.) were based on one-tailed *t* tests.

Among the e-textbook experiences, e-textbook helpfulness is related to user perception and attitude, whereas student involvement and learning outcome is related to the actual behavior and behavioral consequences. Most of previous studies focus on gender difference in user perceptions and attitudes related to information technologies, but not many addresses the difference in actual behaviors and behavioral consequences. The results of this study seems to suggest that though males have somewhat more positive perceptions related to e-textbook helpfulness than females, they are not much different in student involvement and learning outcome.

Table 6 presents the statistical relationships from the multi-group SEM analysis. The structural path estimates among e-textbook helpfulness, student involvement, and learning outcome varied across two genders in an alternating pattern. The mediating relationship through student involvement was significant for both groups. The direct relationship between e-textbook helpfulness and learning outcome was

significant for the male group, showing a partial mediation (i.e. both direct and mediating relationships were significant). The same relationship was insignificant for the female group, showing a full mediation (i.e. only the mediating relationships were significant). In the male group, the total effect of e-textbook helpfulness on learning outcome was:  $0.31 + 0.68 \times 0.83 = 0.874$ , and in the female group, it was:  $0.14 + 0.89 \times 0.88 = 0.923$ . The total effect of the male group was 95% of that of the female group. The results suggest that gender moderates the relationships among e-textbook helpfulness, student involvement, and learning outcome to some extent. Consequently, the fourth hypothesis (H4) is partially supported.

**Table 6. Moderating Effects of Gender**

	Male	Female
E-textbook Helpfulness --> Learning Outcome	0.31*	0.14
E-textbook Helpfulness --> Student Involvement	0.68**	0.89**
Student Involvement --> Learning Outcome	0.83**	0.88**

Note: \*\*-significant at 0.01 level; \*-significant at 0.05 level.

Contrary to the direct effect, the total effect of e-textbook helpfulness on learning outcome was higher for females than for males. This is mainly due to the fact that the mediating path through student involvement was much stronger for females than for males. This suggests that males tend to try out the technology at the beginning, but they get less involved in the learning process later. However, once females start using e-textbooks, they get more engaged in learning to obtain a better outcome.

## 6. IMPLICATIONS AND CONCLUSION

This study mainly focuses on the relationship between technology savvy and e-textbook experiences. Based on innovation diffusion theory, it develops the multi-dimension technology savvy construct and measures. The analyses of the observations collected from a survey suggest that technology savvy does influence students' e-textbook experiences. In particular, technology savvy has generally positive effects on e-textbook helpfulness, student involvement and learning outcome. Also, it moderates the relationships among these e-textbook experiences. Compared with the novice group, the veteran group exhibits a stronger

mediating relationship through student involvement.

In the same vein, this study tests gender difference as the literature suggests that males and females exhibit different technology preferences. Results indicated that gender makes some difference in the e-textbook experiences, and moderates the relationships among them to some extent. This result is aligned with findings by Alshare, Grandon and Miller (2004) that gender gap regarding technology use and technology efficacy is still there but shrinking. Females and males exhibit different behavioral patterns: for male students e-textbook helpfulness seems to be linked more closely with learning outcome, but for females, student involvement plays a more salient mediating role between two.

This study has limitations. Most importantly, the scope of this study is relatively narrow. The participants were elicited from only statistics courses in one institution, both using the e-textbooks of the same title and version. The lack of variations in the course subjects as well as e-textbook contents and formats leaves the generalizability of the findings in question. Nevertheless, responses were taken from the participants in terms of their relatively general perceptions regarding their learning experiences associated with e-textbooks. That is, the survey did not ask questions about specific e-textbook features but how the platform may influence their learning experiences. Still, the relationships among the constructs may vary more or less across different subjects and e-textbooks. This suggests a future research direction to collect data from different courses adopting different e-textbooks in multiple institutions.

Despite the limitations, this study has some important implications. The results provide practical guidance on how to adapt the specific implementation of e-textbooks to user characteristics. Compared with students with a higher level of technology savvy, students with a lower level of technology savvy are less likely to get involved in learning activities facilitated by the e-textbooks. Educators and publishers can work together on providing customized training and guidance to such students. As previous studies indicated, higher education institutions and publishers introduce e-textbooks to the classrooms for considerations such as costs and logistics. From the perspective of students, however, it is very important to find out how

such technology may enhance their learning experiences. Learning is not just knowledge absorbing but rather a dynamic process.

The results of this study suggest that e-textbooks are not simply the electronic version of paper books, but they provide the platform for students to engage themselves in learning. This confirms Arend's (2004) and Astin's (1999) theory that the student engagement plays an important role in learning as an experience booster. Enabled by the advance in information and communication technology (ICT), therefore, e-textbooks facilitate student involvement and enhance the learning experiences. It is important to let students use the e-textbook platforms to collaborate with each other. For example, the publishers may provide discussion board on their platforms for students to exchange views on group discussion questions. In this sense, e-textbooks have great potentials as the means to active learning.

The results also suggest interesting patterns in gender difference related to the use of e-textbooks. Generally speaking, males tend to try out various features of e-textbook technology, but females are more likely to engage in the innovative learning process. Instructors may adapt the new teaching methods with e-textbooks to such a gender difference. For example, they may assign group projects to students so that female and male students can collaborate together in learning. In that way, students can complement their strengths and weaknesses with each other for more effective use of e-textbooks.

In conclusion, e-textbooks not only include the same content as the paper textbooks, but they also provide a platform for active and collaborative learning for students. They may enhance the engagement of students and promote their learning experiences. If the use of e-textbooks promotes student involvement in their learning process, the possibility for students to succeed in their learning increases. The accomplishment of this goal requires that publishers, educational institutions, instructors and students work closely together.

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## **APPENDIX**

### **Technology Savvy Measures**

#### IT Experiences (EX):

EX1: I have at least a computer.

EX2: I regularly download files from the Internet.

EX3: I check email at least once every day.

EX4: I use online messaging services to communicate with others.

EX5: I often use the Internet for research purposes.

EX6: I solve all kinds of problems using the Internet.

#### IT Skills (SK):

SK1: How would you rate your level of computer skills in general?

SK2: I know how to test my computer for the presence of malware.

SK3: If my computer became infected with a virus, I would know how to get rid of it.

SK4: I can usually sort out any Internet access problems I may encounter.

SK5: I know how to deal with annoying advertisements while I'm using the Internet.

SK6: I usually find it easy to learn how to use a new software application.

#### IT Self-Efficacy (SE):

SE1: I am comfortable working with computers.

SE2: Computers make me much more productive.

SE3: I am confident in my abilities to make use of computers.

SE4: I can solve a problem by searching online.

# A Comprehensive Survey on Cyberbullying Perceptions at a Major Metropolitan University – Faculty Perspectives

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## Abstract

Cyberbullying is a concern for any college or university. Digital harassment incidents are featured daily in the news. The authors of this study examine the perceptions of faculty on cyberbullying at a major metropolitan university. From the findings of a survey distributed to faculty in all schools of the university, the authors learn of high levels of perceptions on incidents as an issue but low levels of perceptions on infrastructural and instructional methods of preemption and resolution at the university. This study will be beneficial to faculty in colleges and universities, as cyberbullying is considered an issue more frequent in high schools.

**Keywords:** cyberbullying, cyberharassment, electronic media, faculty, hostility, internet, privacy, social networking, technology, victimization.

## 1. BACKGROUND

Cyberbullying is the abuse of choice of the “cyberimmersion generation” (Englander, 2009). Cyberbullying is “any behavior performed through digital or electronic media by [a college student or groups of college students] that repeatedly [over time] communicates aggressive or hostile messages intended to inflict discomfort or harm on [another student or other students]” (Tokunaga, 2010). Cyberbullying is about control (Roome, 2012) or dominance (Olthof, Goossens, Vermande, Aleva, & Van Der Meulen, 2011) over another student. The control is an

attempt of the attacker to bring oneself up by demeaning the other student and to improve the esteem of the attacker (Fertik & Thompson, 2010) by attacking the other students that have difficulty defining themselves. In brief, cyberbullying is “bullying [through] the Internet” (Vandebosch & Van Cleemput, 2008) – “a common risk” confronting students (Palfrey, Boyd, & Sacco, 2009) in “a new school yard” (Burnham, Wright, & Houser, 2011).

The attacker is empowered by the Internet. The behavior of attackers is evident in the following forms of cyberbullying:

- cellular or digital imaging messages considered derogatory, harmful or mean to another student;
- discussion board messages considered harmful or mean-spirited to another student;
- e-mails, instant messages, pictures, photographs or "sexting" of videos considered homophobic, racist or sexual if not humiliating and offensive to another student or students;
- "flaming" or messaging on profiles on gaming or social networking sites considered offensive to another student or students; and
- impersonating or messaging on gossip, personal polling or virtual reality sites or systems and "outing" or targeting other students if not stalking and threatening them (Reynolds, 2012).

This behavior may be initiated by a direct form of an attacker attacking the other student or an indirect form of an attacker engaging other students in attacking the student (Wong-Lo, Bullock, & Gable, 2009). The cyberbullying messaging of the attacker may be forwarded instantaneously to others to be bystander observers of the attacked student. The attacker may be cyberbullying on-line even other students without the increased risk (Dempsey, Sulkowski, Nichols, & Storch, 2009) that was evident when the bullying was off-line without the Internet. The bullying is moreover "non-stop" (Mishna, Saini, & Solomon, 2009), as the cyberbullying may be continuing beyond the location of the school. Impact is in increased internalizing psychological problems manifested in cyberbullied students (Greene, 2003, & Faryadi, 2011) – problems that may be resulting in school shootings (Chapell, Hasselman, Kitchin, Lomon, Maclver, & Sarullo, 2006) if not suicides. Clearly cyberbullying is not the "fact of life" or "kids are kids" that bullying was without the Internet (Scott, 2012).

Estimates in a consensus of the literature disclose that cyberbullying is experienced by 21% of high school students – 21.8% of female and 19.5% of male students (Patchin & Hinduja, 2012). High and middle school students experienced 17% of 1 or higher forms of incidents 2 to 3 times in the last 30 days and experienced 14% of incidents in generic hurtful or mean-spirited messaging, and 16.8% of high and middle school students were attackers or

perpetrators (Patchin & Hinduja, 2012). Literature discloses that cyberbullying may be experienced as frequently by college students in 22% of college students – 22% of female and 21.9% of male students – in 25% of incidents on social networking sites (Indiana State University, 2011), and 8.6% of college students were perpetrators (MacDonald & Roberts-Pittman, 2010), the bulk of whom were already middle, high or elementary school perpetrators or victims (Walker, Sockman, & Koehn, 2011). Literature discloses even female students to be more involved in both perpetration and victimization (Snell & Englander, 2010), though male students may be more involved in perpetration than female students (Chapell, Casey, De La Cruz, Ferrell, Forman, Lipkin, Newsham, Sterling, & Whittaker, 2004). The literature on cyberbullying is focused frequently however on high school and middle school students. The impression may be that cyberbullying is a feature of life in high and middle school students, not of college students who are considered emerging adults (Zacchilli & Valerio, 2011). Therefore, the authors of this study attempt to examine first the perceptions of faculty on cyberbullying of students at a major metropolitan university in the United States for initial perspectives on the issue.

## 2. INTRODUCTION TO STUDY

The authors attempted to examine cyberbullying in 2011 in a study of college students in courses in the School of Computer Science and Information Systems at Pace University in New York City (Molluzzo & Lawler, 2011). From this study, the authors learned that cyberbullying was experienced by 7% of the students – 25% of female and 25% of male students and that cyberbullying was perceived as an issue on the Internet (79%). The students experienced 1 to a few incidents in 43% of incidents on messaging and social networking Web sites and felt incidents were perpetrated towards gay (43%) and lesbian (25%) students, and 10% of the students were perpetrators. The authors learned that cyberbullying was perceived by a high 79% of the students to be managed insensitively by institutional methods of non-pro-action of the university. The limitation of the 2011 study was that faculty of the school and of the university was not included in the survey. Though the results from most of the responses of the survey were consistent in general with the literature, the survey without the faculty as players in pro-action of potential preemption and



resolution may have confined the culture perceptions of the study. In this paper, the authors examine cyberbullying in an expanded survey of the perceptions of faculty members in of the university, in order to explore the extent of cyberbullying fully as a norm in the university.

The paper of this new study posits the following considerations on cyberbullying at Pace University:

- extent to which faculty members perceive cyberbullying as a generic issue in society and in a university;
- extent to which faculty members perceive cyberbullying as a specific issue in which students known to them were victimized by other students in the university;
- extent to which faculty members perceive the culture of discussion of cyberbullying and cyberethics as a fabric of infrastructure and instruction in the university;
- extent to which faculty members perceive the culture of pro-action of pre-emption and resolution of cyberbullying by chair, department and institutional officials in the university; and
- extent to which faculty members perceive and propose recommendations of sensitivity solutions to cyberbullying in the university.

The paper is focused on the perceptions of the faculty members as to the seriousness or non-seriousness of cyberbullying at the university.

This paper is critical in learning the culture of cyberbullying in a major metropolitan university, as papers in the academic field focus more on cyberbullying prior to university (Zacchilli & Valerio, 2011). Cyberbullying is evident more in the practitioner publications, as in the sensational Tyler Clementi and Dharun Ravi story (Bazelon, 2012, Glaberson, 2012, & Rouba, 2011). Increased incident reporting of students may be indicating the increased seriousness of cyberbullying (Patchin & Hindjua, 2012). Faculty members and officials of a university need to be in a position to protectively but realistically respond to cyberbullying if students perceive perpetration problems, otherwise there may be liability potential (Willard, 2012) with the reality of victimization. Staff needs to respond in reinforcement and safety solutions (Snakenborg, Van Acker, & Gable, 2011), software systems (Lieberman, Dinakar, & Jones, 2011) and support shared with faculty members and students. This paper

will attempt to examine the extent of cyberbullying as perceived by faculty, so that in the event of perceived seriousness pre-emptive and resolution strategies may be proposed by the authors.

### 3. FOCUS OF STUDY

The focus of the authors is to examine the perceptions of faculty on cyberbullying in all schools of Pace University. The new study furnishes input into not only the prevalence of cyberbullying but also, as appropriate, recommended reinforcement and safety strategies for the full university (Collier, 2012). The findings of this study will exclude the perceptions of students in all schools of the university, which will be examined separately in a further study. This study of the faculty will be beneficial however to faculty members and staff in schools of computer science and information systems, if not all schools of a university, in considering the growing issue of cyberbullying, an issue that is often perceived as a problem in high schools but not in universities. The prevalence of cyberbullying, and the seriousness or non-seriousness of cyberbullying as an issue, learned now from the perceptions of the faculty will be reflected in the analysis of the findings of the study.

### 4. RESEARCH METHODOLOGY

The research methodology of this new study consisted of a survey of the perceptions of full-time and part-time faculty members at the university.

The survey consisted of a cyberbullying definition (Tokunaga, 2010) and 47 items:

- 6 demographic questions;
- 7 fundamental knowledge of cyberbullying questions;
- 9 knowledge and perception of group or individual incidents and methods of cyberbullying perpetration questions;
- 14 knowledge and perception of cyberbullying institutional response questions; and
- 11 perception of seriousness or non-seriousness of cyberbullying as an issue at the university questions.

The survey was distributed to the faculty in March to May 2012 through the e-mail system of the university, and the questions were furnished

through the Qualtrics software survey system. The responses returned to the authors were anonymous, and the faculty was assured of privacy of responses on the instrument of survey. There were 79 valid responses for a return rate of about 10%. The authors reviewed the responses for statistical interpretation (McClave, Sincich, & Mendenhall, 2007) in SPSS tools in May to June 2012.

The instrument of survey, which is furnished in Figure 1 of the Appendix of this study, was reviewed for feasibility and integrity by an Internal Review Board (IRB) consisting of a committee of faculty of the university, and was approved in February 2012 by the Dean of Students and the Provost for distribution to the faculty population.

## 5. ANALYSIS OF FINDINGS

### Demographic Data

Of the respondent faculty, 46% were full-time and 54% part-time; 51% were female and 49% were male. The distribution across the four faculty ranks was almost exactly even. The majority of respondents (59%) were from the Liberal Arts School with the remainder spread more or less evenly among the other four schools of the university. The university has two main campuses – one in a large city and one in the suburbs of that city. Of the faculty responding 51% were from the suburban campus and 49% were from the city campus. The survey asked how long the respondent had been a faculty member at the university. 59% of the respondents have been at the university for 10 or fewer years; 13% between 11 and 20 years; 29% for 21 or more years.

### Faculty Awareness of Cyberbullying Issues

Faculty were asked if they were aware of cyberbullying incidents at the university with 11% responding Yes. The survey also asked (using a 5-point Likert scale) if the respondent believed that cyberbullying was a serious issue at the university. 14% of the respondents Agreed or Strongly Agreed, 17% Strongly Disagreed or Disagreed, and 68% Neither Agreed Nor Disagreed.

Also using a 5-point Likert scale, the survey asked if cyberbullying was a serious issue to the faculty member and if the faculty member believed cyberbullying was a serious issue for

their students. The results of these questions are summarized in Table 1. Note that 73% of faculty believe cyberbullying is a serious issue for them (Agree or Strongly Agree) but only 56% believe it is a serious issue for their students.

The University Core requires that all students take UNIV 101, which introduces them to college life, fosters good study habits, etc., and CIS 101, a required computer technology course. The survey asked if the faculty believed that cyberbullying should be discussed in these courses. 97% of respondents believed it should be discussed in UNIV 101, while 83% believed that it should be discussed in CIS 101.

The survey asked several questions about if and where faculty may have discussed cyberbullying issues. The results of these questions are shown in Table 2, which shows that there has been a high level of discussion of cyberbullying in respondents' classes as well as at the department level.

Ninety-eight percent (98%) believe that cyberbullying is, pure and simple, wrong, and 87% of the respondents either Agree or Strongly Agree that cyberbullying is a violation of privacy. However, as Table 3 shows, the respondents do not feel knowledgeable on the laws of cyberbullying in the United States.

### Faculty Awareness of Cyberbullying Incidents

The survey asked if the respondents were aware of cyberbullying of students at the university. 12% (9) of the faculty replied Yes. Most of these reported knowing of just one incident and one person reported several incidents. Interestingly, 10% of the respondents reported being cyberbullied themselves either by fellow faculty members or by students usually through social networking sites.

Of the nine faculty who reported knowledge of cyberbullying incidents at the university, most incidents involved either female students (4) or gay students (2).

### Faculty Response to Cyberbullying

The survey asked whom a faculty member would contact if they were aware of a cyberbullying attack on one of their students. Table 4 lists the responses. The Department Chair, Dean of

Students, and Counseling Center all received more than 60%.

The survey also asked what should be the penalty for perpetrators of cyberbullying. Table 6 lists the responses. The most favored answer is a warning to the student, but a majority of respondents (52%) would also support suspension of the perpetrator.

### **Institutional Awareness**

Using a 5-point Likert scale, the survey asked several questions about institutional awareness of cyberbullying. Table 6 summarizes the results. It is interesting to note that only about 50% Agree or Strongly Agree on all the questions, with the lowest such response (39%) for the professors at the university. The survey also asked if the respondent was aware of the university's official policy on cyberbullying. Twenty-three percent (23%) either Agreed or Strongly Agreed that they were aware of the university's official policy, 32% Neither Agreed Nor Disagreed, and 46% Disagreed or Strongly Disagreed.

### **Institutional Response**

The survey asked several questions on what the faculty thought should be the university's response to the problems of cyberbullying. Table 7 summarizes the results. The data show that there is an overwhelming feeling among the faculty that the university needs to do more to educate students, faculty and staff in the harmful effects of cyberbullying.

### **Sensitivity to Cyberbullying Issues**

Three questions on the organizational sensitivity to the problems of cyberbullying resulted in the responses shown in Table 8. On all institutional levels - university, school, and department - at least half of the respondents Neither Agreed Nor Disagreed that the organizational unit was sensitive to cyberbullying issues.

## **6. DIFFERENCES AMONG DEMOGRAPHIC GROUPS**

The survey asked several questions on a 5-point Likert scale. Because our sample size was relatively small ( $n = 79$ ), having five categories did not yield statistically valid results. It was felt that the Strongly Agree and Agree responses basically meant the same thing, and the other

three responses meant the opposite - the respondent did not agree with the statement. Therefore, we combined these categories into two responses, which enabled a chi-squared test of independence on 2x2 cross-tabs. Following is an analysis of some of the statistically significant results organized along some of the demographic categories of the respondents.

There were significant differences between full-time and part-time faculty responses to several questions. The first four rows of Table 9 show that there are significant differences in the full-time and part-time faculty perceptions of the sensitivity of various university units to cyberbullying. In all five cases, significantly more part-time faculty agreed with the statements.

There was a slight, albeit not a statistically significant, difference ( $p = 0.054$ ) in gender on the question "Cyberbullying is a serious issue for you" with a higher percentage of females (82.5%) agreeing as opposed to males (63.2%).

There were statistically significant differences between faculty on the two university campuses on two related questions as shown in Table 10. On Question 74, significantly more faculty on the suburban campus agree with the statement, while on Question 61 significantly more urban faculty agree with the statement.

The responses to Q73, How long have you been a faculty member at the university?, were combined just two responses: 1-5 years (i.e. junior faculty) and 6 or more years (more senior faculty.) Running a 2x2 cross tabs, there was one significant difference ( $p=0.034$ ) between these two groups on Question 8 - You are aware of cyberbullying as an activity on the Internet. As might be expected, 100% of the junior faculty agreed, while 86.7% of the more senior faculty agreed.

In addition to the Likert scale questions, there were many Yes/No questions in the survey. On these questions we performed chi-squared tests of independence on 2x2 cross-tabs. There was a significant difference ( $p<0.03$ ) in gender on Question 56 Should the university sponsor sensitivity seminars for professors on the problems of cyberbullying as an activity that is harmful to students with 78.4% of female faculty and only 54.3% of the male faculty wanting such seminars.

Another interesting significant difference ( $p=0.031$ ) between senior ranked professors (Full and Associate Professors) and junior ranked professors (Assistant Professors and Instructors) was in Question 76, Have you discussed cyberbullying in your classes?, with 48.4% of senior faculty responding Yes and 24.4% of the junior faculty responding Yes.

## 7. IMPLICATIONS OF STUDY

The study shows that cyberbullying is a serious issue for faculty. A vast majority also believe that cyberbullying is wrong and a violation of one's privacy. This belief is confirmed by Table 5, which shows that a majority of faculty want perpetrators of cyberbullying suspended from the university.

The study shows that although cyberbullying is a serious issue for faculty (73%, see Table 1), only 56% believe that cyberbullying is a serious problem for their students.

The study also revealed some information that might be useful to a university's administration. Only 35% of the faculty reported discussing cyberbullying in their classes. Also, 51% of the faculty believe that the university is not knowledgeable of cyberbullying as an activity harmful to students. Finally, as shown in Table 7, a vast majority of faculty believe the university should do a lot more to educate the university community on the problems of cyberbullying.

## 8. LIMITATIONS AND OPPORTUNITIES FOR FURTHER STUDY

The findings from a faculty population at one university may not be generalized without caution. The difficulty of a cyberbullying survey is in potential respondent sensitivity to questions that may obscure perpetration in the population of the survey (Cole, Cornell, & Sheras, 2006, even of faculty populations in a university. The extent of victimization in a largely metropolitan urban university moreover may not be as representative of cyberstalking vulnerability as in a largely suburban university (Daniloff, 2009).

The opportunity in this field is fruitful however for further study (Mishna, Cook, Saini, Wu, & MacFadden, 2009). Research in this field is more often in high school settings and is relatively limited in the post-secondary settings

of universities. This university is interested in partnering with other universities in the United States in a larger population and setting study that might be performed in a longitudinal survey annually, as perceptions of faculty and students might shift on the topic with novel usage of the technology. Resources for further cyberbullying study are furnished in Table 11 of the Appendix.

## 9. CONCLUSION

This study confirmed that cyberbullying is a concern for the faculty of the university. Knowledge of the faculty of the proactive processes for safety steps with the institutional problems of perpetration and victimization were disclosed in the study. The study also showed that the university needs to be more proactive in educating the university community in the problems of cyberbullying and that these problems are evident in the setting of a university and are not limited to high school settings. In a forthcoming paper by the authors, a large study ( $n > 350$ ) of student attitudes towards cyberbullying will be described. In addition, a comparison of student and faculty attitudes will be reported.

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## APPENDIX

**Figure 1: Instrument of Survey:** Note that the numbering of the survey questions is that imposed by the survey software.

Q6 To which school of the university do you belong?

- Liberal Arts (1)
- Education (2)
- College of Health Professions and Nursing
- School of Business (4)
- School of Computing (5)

Q5 Which is your "home" campus?

- New York (1)
- Pleasantville (2)
- White Plains (3)

Q71 What is your faculty status?

- Full-time (1)
- Part-time (Adjunct) (2)

Q72 What is your faculty rank?

- Full Professor (1)
- Associate Professor (2)
- Assistant Professor (3)
- Instructor/Lecturer (4)

Q73 How long have you been a faculty member at the university?

- 1-5 years (1)
- 6-10 years (2)
- 11-15 years (3)
- 16-20 years (4)
- 21 or more years (5)

Q4 Gender?

- Male (1)
- Female (2)

Q7 Cyber-bullying is any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others. In cyber-bullying experiences, the identity of the bully may or may not be known. Cyber-bullying can occur through electronically-mediated communication at school; however, cyber-bullying behaviors commonly occur outside school as well.

Q8 You are aware of cyber-bullying as an activity on the Internet

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q9 Cyber-bullying is a serious issue for you.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q74 Cyber-bullying is a serious issue for your students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q10 You are aware of cyber-bullying activities at other schools (for example the Rutgers student who committed suicide as a result of cyber-bullying)?

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q46 Might it be acceptable for freshman or sophomore students to be cyber-bullied by junior or senior students?

- Yes (1)
- No (2)

Q47 Have you discussed issues of cyber-bullying in your department or at the University?

- Yes (1)
- No (2)

Q48 Should cyber-bullying be discussed in UNIV 101?

- Yes (1)
- No (2)

Q49 Should cyber-bullying be discussed in CIS 101?

- Yes (1)
- No (2)

Q75 Are you aware of instances of cyber-bullying at the university?

- Yes (1)
- No (2)

Q76 Have you discussed cyber-bullying in any of your classes?

- Yes (1)
- No (2)

Q50 Do you know if professors at the university, other than yourself, have discussed incidents or issues of cyber-bullying in their classes?

- Yes (1)
- No (2)



Q51 How many professors have done so?

Q52 Should the university do any of the following? Please respond to all.

Q53 Publicize more its policy on cyber-bullying.

- Yes (1)  No (2)

Q54 Publicize more the problems of cyber-bullying as an activity harmful to students.

- Yes (1)  No (2)

Q55 Sponsor seminars for students on the problems of cyber-bullying as an activity harmful to students.

- Yes (1)  No (2)

Q56 Sponsor sensitivity seminars for professors on the problems of cyber-bullying as an activity harmful to students.

- Yes (1)  No (2)

Q57 Sponsor sensitivity seminars for staff on the problems of cyber-bullying as an activity harmful to students.

- Yes (1)  No (2)

Q58 What should be the penalty for perpetrators of cyber-bullying? Choose as many as appropriate.

- No penalty by the University (1)
- Warning sent to the student by the University (2)
- University informs police of the incident (3)
- Student is suspended by the University (4)
- University immediately expels the student (5)

Q59 If a student of yours is a victim of cyber-bullying, whom would you contact. Choose as many as appropriate.

- The President of The university (1)
- The Dean of Students (2)
- The Dean of your school (3)
- The Chair of your department (4)
- The Counseling Center (5)
- The Security Department (6)
- Your local Police Department (7)
- Your fraternity or sorority (8)
- Your best friend (9)
- Your parents (10)
- No one (11)

Q60 The administration of the university is knowledgeable of cyber-bullying as a activity that is harmful to students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q77 My dean is knowledgeable of cyber-bullying as a activity that is harmful to students.

- Strongly Disagree (1)

- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q78 My chairperson is knowledgeable of cyber-bullying as an activity that is harmful to students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q61 Cyber-bullying is a serious issue at the university.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q62 Professors at the university are knowledgeable on cyber-bullying as an activity that is harmful to students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q79 Professors in my school are knowledgeable on cyber-bullying as an activity that is harmful to students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q80 Professors in my department are knowledgeable on cyber-bullying as an activity that is harmful to students.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q63 You are aware of the official policies of the university on cyber-bullying.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q64 The university, as an institution, is sensitive to the problems of cyber-bullying.

- Strongly Disagree (1)

- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q81 My school, as an organization within the university, is sensitive to the problems of cyber-bullying.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q82 My department, as an organization within the university, is sensitive to the problems of cyber-bullying.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q65 You are knowledgeable of the laws on cyber-bullying in the United States.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q66 Cyber-bullying is a violation of privacy, regardless of the intent of the perpetrator.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q67 Cyber-bullying, pure and simple, is wrong.

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

Q11 Are you aware of incidents of cyber-bullying at the university?

- Yes (1)
- No (2)

Q12 Of how many incidents are you aware?

Q13 How many perpetrators were involved?

Q14 How many victims were involved?

Q15 Have you ever consciously or unconsciously been a perpetrator of cyber-bullying?

- Yes (1)
- No (2)

Q16 Have you ever been a victim of cyber-bullying at The university?

- Yes (1)  No (2)

Q17 How many times were you victimized?

Q18 How many perpetrators were there?

Q20 Which method was used to cyber-bully you. Choose as many as appropriate.

- Looking in to your cell phone (1)
- Looking in to your email (2)
- Sending you harassing emails (3)
- Sending you harassing pictures (4)
- Sending you pornographic images (5)
- Posting harassing messages on a social networking site (6)
- Posting harassing pictures on a social networking site (7)
- Preventing a friend from contacting others on a social networking site (8)
- Sexting (9)
- Other (10)

Q21 Have you ever been a victim of cyber-bullying outside the university - at another university, in high school, or at work?

- Yes (1)  No (2)

Q23 How many perpetrators were there?

Q25 Which method was used to cyber-bully you. Choose as many as appropriate.

- Looking in to your cell phone (1)
- Looking in to your email (2)
- Sending you harassing emails (3)
- Sending you harassing pictures (4)
- Sending you pornographic images (5)
- Posting harassing messages on a social networking site (6)
- Posting harassing pictures on a social networking site (7)
- preventing a friend from contacting others on a social networking site (8)
- Sexting (9)
- Other (10)

Q26 Are you aware of cyber-bullying of any of the following groups at the university? Choose as many as appropriate.

- Male students (1)
- Female students (2)
- Asian students (3)
- Gay students (4)
- Lesbian students (5)
- Physically disabled students (6)
- African-American students (7)
- Hispanic students (8)
- Muslim students (9)
- African students (10)
- Developmentally disabled (11)
- Other (12)

Q28 For each of the following pairs, choose the one you think is more likely to be a VICTIM of cyber-bullying at the university.

Q29

- Male (1)  Female (2)

Q30

- Foreign (1)  Non-foreign (2)

Q31

- Gay (1)  Straight (2)

Q32

- Lesbian (1)  Straight (2)

Q33

- Disabled (1)  Non-disabled (2)

Q34

- African-American (1)  White (2)

Q35

- Hispanic (1)  White (2)

Q36

- Muslim (1)  White (2)

Q69

- Asian (1)  White (2)

Q37 For each of the following pairs, choose the one you think is more likely to be a PERPETRATOR of cyber-bullying at the university.

Q38

- Male (1)  Female (2)

Q39

- Foreign (1)  Non-foreign (2)

Q40

- Gay (1)  Straight (2)

Q41

- Lesbian (1)  Straight (2)

Q42

- Disabled (1)  Non-disabled (2)

Q43

- African-American (1)  White (2)

Q44

- Hispanic (1)  White (2)

Q45

Muslim (1)

White (2)

Q70

Asian (1)

White (2)

**TABLES**

**Table 1**

Answer	Cyberbullying is a Serious Issue for You	Cyberbullying is a Serious Issue for Your Students
Strongly Disagree	5%	4%
Disagree	10%	6%
Neither Agree nor Disagree	11%	34%
Agree	43%	43%
Strongly Agree	30%	13%

**Table 2**

Answer	Have Discussed Cyberbullying in Your Classes	Have Discussed in Your Department	Know of Other Professors Who Have Discussed in Their Classes
Yes	35%	16%	18%
No	65%	84%	82%

**Table 3**

**You are Knowledgeable of the Laws of Cyberbullying in the United States**

Answer	%
Strongly Disagree	6%
Disagree	31%
Neither Agree nor Disagree	31%
Agree	21%
Strongly Agree	11%

**Table 4**

**If a Student of Yours is a Victim of Cyberbullying, Whom Would You Contact?**

Answer	%
The President of the University	4%
The Dean of Students	61%
The Dean of your school	43%
The Chair of your department	72%
The Counseling Center	60%
The Security Department	41%
Your local Police Department	7%
Your fraternity or sorority	1%
Your best friend	7%
Your parents	3%
No one	1%

**Table 5**

**What should be the penalty for perpetrators of cyberbullying?**

Answer	%
No penalty by the University	4%
Warning sent to the student by the University	67%
University informs police of the incident	43%
Student is suspended by the University	52%
University immediately expels the student	23%



**Table 6**

**Who is knowledgeable on cyberbullying as an activity that is harmful to students?**

Answer	The University Administration	My Dean	My Chairperson	Professors at the University	Professors in My school	Professors in My Department
Strongly Disagree	0%	0%	0%	0%	0%	0%
Disagree	0%	0%	3%	6%	6%	6%
Neither Agree nor Disagree	51%	48%	43%	55%	42%	38%
Agree	38%	36%	39%	35%	44%	45%
Strongly Agree	11%	16%	15%	4%	8%	11%

Answer	Publicize More Its Policy on Cyberbullying	Publicize More the Problems of Cyberbullying as an Activity Harmful to Students.	Sponsor Seminars for Students on the Problems of Cyberbullying as an Activity Harmful to Students.	Sponsor Sensitivity Seminars for Professors on the Problems of Cyberbullying as an Activity Harmful to Students.	Sponsor Sensitivity Seminars for Staff on the Problems of Cyberbullying as an Activity Harmful to Students.
Yes	95%	93%	78%	67%	73%
No	5%	7%	22%	33%	27%

**Table 8**

**The following are sensitive to the problems of cyberbullying**

Answer	The University	My School	My Department
Strongly Disagree	0%	0%	0%
Disagree	0%	0%	3%
Neither Agree nor Disagree	56%	54%	51%
Agree	38%	39%	36%
Strongly Agree	7%	7%	11%

**Table 9**

**Significant Differences: Part-time vs. Full-time Faculty**

<b>Question</b>	<b>p &lt; 0.01</b>	<b>p &lt; 0.05</b>
Q60: The administration of the university is knowledgeable of cyberbullying as an activity that is harmful to students		0.016
Q64: The university, as an institution, is sensitive to the problems of cyberbullying		0.034
Q81: My school, as an organization within the university, is sensitive to the problems of cyberbullying		0.022
Q82: My department, as an organization within the university, is sensitive to the problems of cyberbullying		0.030
Q66: Cyberbullying is a violation of privacy, regardless of the intent of the perpetrator	0.010	

**Table 10**

**Significant Differences: Urban vs. Suburban Campuses**

<b>Question</b>	<b>p &lt; 0.05</b>
Q74: Cyberbullying is a serious issue for your students	0.024
Q61: Cyberbullying is a serious issue at the university	0.041

**Table 11**

**Cyberbullying Resources for Faculty and Staff**

<a href="http://www.bullyonline.org">www.bullyonline.org</a>
<a href="http://www.bullysafeusa.com">www.bullysafeusa.com</a>
<a href="http://www.cyberbully.org">www.cyberbully.org</a>
<a href="http://www.cyberbullying.us">www.cyberbullying.us</a>
<a href="http://www.cyberbullying-news.com">www.cyberbullying-news.com</a>
<a href="http://www.cyberbully411.com">www.cyberbully411.com</a>
<a href="http://www.cybersmart.org">www.cybersmart.org</a>
<a href="http://www.digizen.org">www.digizen.org</a>
<a href="http://www.ikeepsafe.org">www.ikeepsafe.org</a>
<a href="http://www.isafe.org">www.isafe.org</a>
<a href="http://www.lifeafteradultbullying.com">www.lifeafteradultbullying.com</a>
<a href="http://www.MARCcenter.org">www.MARCcenter.org</a>
<a href="http://www.ncpc.org/cyberbullying">www.ncpc.org/cyberbullying</a>
<a href="http://www.stopbullying.gov">www.stopbullying.gov</a>
<a href="http://www.wiredsafety.com">www.wiredsafety.com</a>

# Fostering Entrepreneurship in the CIS Sandbox

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## Abstract

A fresh coat of paint and new furniture were the obvious external changes to an eleven-year-old computer lab at Bentley University when it was renovated in 2011. More difficult than changing the outward appearance of the room was changing the perceptions of what happens inside. The facility had a reputation of being a place where only students who needed help would go, and the role of assistants who worked there was limited to tutoring and maintaining equipment. This case study describes the transformation of a Computer Information Systems (CIS) department tutoring laboratory into a Learning and Technology Sandbox where student lab assistants are employed as staff of a startup company, whose responsibilities include not only tutoring, but managing the technology and business infrastructure, publicity, and day-to-day operations of the facility. Students who frequent the facility go for tutoring as well as to independently explore new technology. This study, which included both surveys and personal interviews of student workers and student attendees, suggests that through the use of web-based collaborative applications, social media, and a work environment that encourages exploration, the Sandbox has provided student workers with an opportunity to build skills as entrepreneurs, and changes the nature of what a computer lab can be for the students who frequent it.

**Keywords:** entrepreneurship, computer lab, social media, learning spaces

## 1. INTRODUCTION

Many students no longer look to the university computer lab as a place to go to use desktop computers. At universities where students have their own their laptops, the need to go to a particular place to use computer equipment or connect online is less of a priority. Specialized services, software, or equipment must draw students to these facilities. Providing customer service to patrons or tutoring to students enrolled in CIS courses remains the major responsibility of student workers who staff campus computing labs, but this alone may not attract students of varying abilities, skills, and interests.

The CIS Lab at Bentley University had not been modernized for over a decade; with the

renovation came the opportunity to change not only the physical space but also the culture among the tutors and the students who use it.

Previous research describes the results of transforming this physical space into a collaborative learning environment (Frydenberg, Creating a Collaborative Learning Community in the CIS Sandbox, 2012) that is aligned with a virtual presence based on the use of social media tools. (Frydenberg, Aligning Open, Physical, and Virtual Spaces in the CIS Sandbox, 2012 ) This paper explores the enhanced role and learning experience of student workers, also referred to as tutors, in such a facility. Applying "start-up" values to the day-to-day operation of the lab, student workers now take on responsibilities of providing a service (tutoring), as well as administrative responsibilities of

managing, promoting, planning for, and maintaining the facility. In the process, they gain expertise using real-world web-based social media and collaboration tools.

Implementing such an environment in a university computer lab inspires these research questions:

- Will a "start-up" management approach help create a culture of engagement among both patrons and student workers?
- Will student workers seize the opportunity to develop entrepreneurial skills?
- Can working in informal learning environment promote the development of entrepreneurial skills?

## **2. CREATING A SPACE FOR LEARNING AND ENTREPRENEURSHIP IN THE CIS SANDBOX**

Senges, Seely Brown, and Rheingold (2008) define entrepreneurship as "the practice of identifying and creating all kinds of opportunities and then taking action aimed at realizing them." (p. 126)

A first step in providing new opportunities in a computer lab setting was creating an inviting physical space where students would want to go. Figure 1 in Appendix I shows the former CIS Lab before renovations. The space, located then the basement of a classroom building, is approximately 900 square feet. It housed tables with 36 desktop computers around the perimeter, and a long work table at the center of the room. Networking equipment was mounted on the back wall.

Relaunched as the CIS Learning and Technology Sandbox, the renovated facility promotes collaboration and informal learning at group tables or in a lounge setting. Figure 2 in Appendix I shows the renovated facility. As the number of students who own laptops, tablets, and other mobile devices increases, (Smith, 2010) the remodeled space provides more desk space and fewer desktop computers. At the entry of the new facility are comfortable and easily-movable chairs and a 42" Google TV mounted on the wall, creating an informal living room setting. This area sets the business casual tone for the rest of the space.

One way to improve an entrepreneurial environment is to "reorganiz[e] work into fun,"

(Faltin, 2001, p. 22), and both the new layout and its name promote a sense of playfulness and discovery. Colorful stripes painted on the walls identify each work area. Learning stations with large, uncluttered tables containing a computer and a 42" monitor, and a wall-mounted SMART board facilitate group collaboration; 12 desktop computers running Linux, Windows 7, and Windows 8 pre-released software encourage discovery and are available for general use. A Mac desktop and a Windows 8 touch-screen computer are also available. An Xbox and Kinect provide a source of relaxation for both student workers and patrons when the lab is not busy, and an alternative platform for developing software applications through the use of standard software development kits. Sandbox workers are general need to know how to use all of these.

Lobler (2006) describes the role that informality plays in learning, and how entrepreneurs must enjoy what they are doing in order to be successful.

"Learning is a precondition for fun. ... It seems that we totally underestimate the value of playing and having fun for the purpose of learning, especially in learning entrepreneurial skills and competencies or characteristics. In general, if you are really interested in something you do not perceive your endeavors as work or learning but as fun! Achievement and fun is no contradiction, as typically can be seen in the field of successful entrepreneurs." (Lobler, 2006, p. 31)

The term "Sandbox" has a start-up connotation that encourages tech-savvy exploration, learning, and creativity, all entrepreneurial skills required in a business context. (UK Centre for Bioscience) In engineering, "a sandbox environment consists of a controlled set of resources for trying ... new app[lication]s without the risk of damaging critical parts of the system." (Malizia & Olsen, 2011, p. 210) Acadia University used the term to describe its institute for teaching technology, the primary on-campus resource for supporting computer-enhanced learning efforts. It has become "a place where all disciplines can meet and share ideas." (MacDougall, 1998, p. 33) Indiana State University also named their Instructional and Research Technology Services (IRTS) facility a Digital Sandbox, acknowledging that their "sandbox allows faculty to experiment with new

technologies with the help and guidance of IRTS staff.” (Janz & Owen, 2004, p. 206)

The CIS Sandbox is more than an informal learning space; itself, it is managed as businesses where student workers take pride and responsibility in its day-to-day operations, as such, develop skills in industry-standard software tools, learn the importance of establishing good relationships with customers (students who frequent the lab), and claim ownership of the work they do.

Staffed by eight graduate students and 12 undergraduates, the facility is open seven days a week, for 14 hours per day during the week, 6 hours on Saturday, and 10 hours on Sunday. One graduate assistant is designated as the Administrative Manager, responsible for overseeing student worker schedules, maintaining the lab’s calendar on Google calendar, and other administrative tasks. Another graduate student is designated the Technology Manager, responsible for training staff on the use of the equipment, installing software upgrades, and documenting procedures for use.

In addition to providing tutoring services to students in need of assistance, lab workers have planned special activities and programs on extracurricular IT topics to take place in the CIS Sandbox. These were designed to be of interest to advanced students. In the fall, they worked with the university’s Microsoft representative to offer a workshop on xBox game development. In the spring, a university alumnus now employed at Mashery presented on mobile app development, APIs, and his role in the company. CIS Sandbox workers created the publicity for these events, flyers for which are shown in Figure 1.

These activities extend the reach of a computer lab and help create a community of learners in an informal setting. Such events were an unintended consequence precipitated by the ownership that several student workers took on when asked to consider what services the CIS Sandbox might provide beyond tutoring to attract a variety of students.

To enable student workers to take on these creative projects, and following an employment model at Google, (Mediratta & Bick, 2007) those who take on expanded roles are given one hour per week apart from their scheduled tutoring

responsibilities to work on planning specialized activities in the CIS Sandbox.



Figure 1. Students create posters and flyers for special events in the CIS Sandbox.

### 3. TECHNOLOGIES FOR SOCIAL ENTREPRENEURSHIP

“Social entrepreneurship allows business professors to offer an experiential learning environment” (Wessel & Godshalk, 2004, p. 25). Student workers learn to use social media and other tools to promote the CIS Sandbox and its activities. The public face of the CIS Sandbox is its Wordpress blog, to which student workers post approximately twice per month. Some blog posts reflect frequently-asked-questions that come up during tutoring sessions, others are on new technologies, tech-related events,

interesting articles students read, or career-related posts. Facebook status updates and Twitter posts occasionally report new blog posts or special happenings in the CIS Sandbox, and add a social dimension, as students like or follow the facility. Students plan special workshops on extracurricular tech topics, and use EventBrite so participants can sign up for these events. One student worker is responsible for creating and digital signage using Prezi to draw students into the lab space.

Extending their tutoring skills beyond the physical lab, some tutors have created instructional screen cast demonstrations on how to software applications used in CIS courses, and post them on YouTube. Other tutors offer live chat tutoring via Meebo or Skype, and soon, Google+ hangouts. This provides virtual support to off-campus students and those who are unable to visit the lab's on-campus location.

Each of these activities provides an opportunity for students to develop skills in social entrepreneurship using current technologies which will provide good experiences as they prepare for their future careers. They enable "students to perceive the world (and especially social technology) as a learning opportunity ... that allows them to develop as humans and as professionals" (Senges, Seely Brown, & Rheingold, 2008, p. 126).

#### 4. SURVEY AND INTERVIEW RESULTS

A survey was given to the CIS Sandbox staff at the end of the fall 2011 and spring 2012 semester. A total of 15 student workers completed the survey. Several were interviewed about their work experiences in the CIS Sandbox.

The UK Centre for Bioscience, the Canadian Foundation for Economic Education, and, Bilen, Kisenwether, Rzasas, & Wise (2005) identified several entrepreneurial skills. Student workers identified those which they felt were necessary to succeed in business, and those which they felt their work in the CIS Sandbox helped them develop, as shown in Figure 2.

Critical thinking, collaboration, creativity, and hard-working were the most popular skills that student workers felt were necessary to succeed; collaboration, resourcefulness, creativity, and tech savviness were the four most popular skills

that they said they developed through their work in the CIS Sandbox.

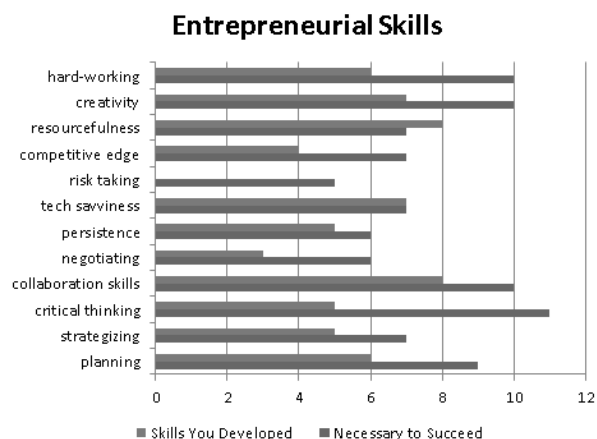


Figure 2. Entrepreneurial Skills developed by CIS Sandbox Workers.

Several workers commented on how their work assignments in the CIS Sandbox helped them to develop various entrepreneurial skills:

On risk-taking, one said: "I'm overall shy and have problem talking to native speakers. But in order to succeed in my job, I have to communicate not only with the students I tutored, but also with my coworkers. I am now more confident with my communication and skills to convey my idea precisely and concisely."

On critical thinking and resourcefulness: "Working with students on some of their assignments required critical thinking, creativity, and resourcefulness, especially when trying to help them complete the project in the way they wanted to do it. If they were completely wrong it sometimes took a bit of negotiating and convincing to show them better ways to solve their problems."

One lab assistant felt there was a bit of strategizing going on when planning "events and workshops [to make sure they] were well thought and addressed interesting topics" so they would be well attended.

Another claimed that "creativity and persistence are a must when working with a particularly technologically challenged individual. I remember helping one student with a Java program who was literally typing my words into Eclipse. I'd lead her into it and say, 'so how can you get the value at position *i* in that array?'

She'd type in 'array at  $i =$ ' and run the program wondering why it doesn't work... I needed to rethink my method of communication and get my point across in a way that she'd understand."

Said one lab assistant, "Since I came in right at the very beginning, I've felt like [helping to shape the CIS Sandbox] has been a project of mine from the get go. I wasn't sure how much authority I'd have, or how I'd be able to influence that way things were done, but I and all the tutors were really able to ... take the wheel when it comes to making decisions."

Patrons of the CIS Sandbox recognized some of these skills in their tutors. Several commented on how they would help them outside of their scheduled work hours.

### 5. FUTURE ACTIVITIES

To provide an opportunity to develop proficiency in cloud-based CRM solutions, some student workers are currently investigating the use of Salesforce.com as a tool for managing help desk / tutoring requests and usage. Salesforce is the premier cloud-based Customer Relationship Management (CRM) software as a service provider, and provides grants for non-profit organizations to use the software at no cost. Involving students in this project gives them an opportunity to develop valuable skills using this software that they can use in their own organizations.

Another goal is to involve student workers in developing an improved social media plan to market the CIS Sandbox on Facebook and Twitter, and to encourage students who frequent the lab to take on a more active role in contributing to the Sandbox online presence by responding to blog posts, posting to the Sandbox Facebook page, and tweeting about their experiences or events at the CIS Sandbox.

Following the successful presentation with Mashery, the CIS Sandbox is partnering with the university's Career Services office to invite companies to offer information and recruiting sessions in the CIS Sandbox. This will attract CIS majors and minors to learn about career opportunities in an informal setting.

### 6. CONCLUSIONS

The CIS Sandbox presents a start-up approach to a university tutoring lab and the

responsibilities of the workers who staff it. Lab assistants have the flexibility to explore their technology interests, which results in extracurricular programming for students and the community. Taking on extended roles beyond tutoring enables student workers to interact with their peers, as well as with social media tools and collaborative technologies. Working in the CIS Sandbox provides an opportunity to learn about IT trends and concepts beyond what is covered in their classes, explore technology interests, and develop valuable entrepreneurial skills that will be helpful in their future careers.

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#### Editor's Note:

*This paper was selected for inclusion in the journal as a ISECON 2012 Meritorious Paper. The acceptance rate is typically 15% for this category of paper based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2012.*



## Appendix I



Figure 1. The CIS Lab, prior to renovation.



Figure 2. The renovated CIS Learning and Technology Sandbox.

# Collaborative learning in online courses: Exploring students' perceptions

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## Abstract

Virtual collaborative activities have the potential to keep students engaged, create a sense of community in online courses and allow them to experience and practice virtual teamwork skills. This study presents an attempt to explore students' perceptions of online collaborative learning involving both process and product oriented activities. The online collaborative activities were used in the context of a Management Information Systems course. Results showed that perceived structure of the collaborating activity and peer interaction that takes place during the activity are positively related to perceived learning. Peer interaction and perceived learning were also related to satisfaction with the course.

**Keywords:** collaborative learning, online learning, virtual teamwork, learning community, peer interaction

## 1. INTRODUCTION

Online education has become an integral part of many colleges and universities. Results of a recent survey indicated that more than 6 million students had taken courses online during 2010, a 10% increase from the year before (Lytle, 2011). Educators are frequently faced with the challenges of adapting teaching methods to the online environment. Group work and collaborative activities are teaching methods that have been widely utilized as an effective instructional method in traditional classroom environment. Based on the constructivist perspective of learning, interaction is considered fundamental to learning experiences (Vygotsky, 1962). Additionally, social learning or learning as part of a group is an important way to help students gain experience in collaboration and develop skills in co-construction of knowledge (Brindley, Walti, & Blaschke, 2009). Ability to work in teams is a skill required to work effectively in the work place. IT sector, in

particular, has witnessed an increased use of virtual teams, where members are geographically and culturally dispersed.

In spite of the challenges, collaborative learning is increasingly becoming an instructional approach for online courses (Lee, Bonk, Magjuka, Su, & Liu, 2006). An online environment provides opportunities for students to participate in collaborative learning. Learning activities can be designed to support the creation of a learning community. These activities can vary from participation in discussion boards to participating in small group activities (Koh & Hill, 2009).

There has been a significant amount of research on online education, yet development of social interaction in an online community and the impacts of student interactions on learning is an area that is less researched. Wang (2007) suggested that although advantages of student interaction and collaborative learning online

have long been recognized, there still remains to be identified what are the instructional design of course tasks and activities that promote consistent student interaction and collaboration for knowledge construction. Liu, Magjuka, Bonk, & Lee (2007) stated that it is important to examine the perceptions of online students and instructors on whether it matters to build a learning community in online courses, as well as the effective ways to build a sense of community. Abrami et al. (2011) state that the next generation of distance education should facilitate interaction that is more targeted and engaging, and research is needed to validate the underlying processes as well as the outcomes.

The purpose of this study is to explore students' perceptions towards participation in collaborative activities in online courses. Its main objective is to investigate the relations between perceptions of peer interactions, perceived learning and satisfaction with collaborative activities.

## 2. COLLABORATIVE LEARNING

Collaborative learning in an online classroom can take the form of discussion among the whole class or team activities within smaller groups. Another categorization of collaborative activities classifies them as either process oriented or product oriented (Macdonald, 2003). Process oriented collaboration typically includes discussions and sharing of ideas related to course content that may not lead to a product. It engages students in a structured debate on a course topic. Product oriented online collaboration, on the other hand, may lead to a final product such as a project, essay, and so forth. These tasks can be assessed using two elements: a common grade for the group based on the quality of the group product and individual grades for the contribution of each individual (Wang, 2007).

Studies have examined students' perceptions of both these types of activities. With regard to online discussions, some of the benefits that students have perceived from online discussions have been: extended time to reflect on and structure their thoughts before communicating the ideas; more time to check course readings or other sources of information; more in depth discussion than in-class discussion would permit; access to different perspectives on the same issue (Pena-Shaff, Altman, & Stephenson, 2005; Pena-Shaff et al., (2005) also reported that there are factors that hinder students'

perceptions and participation such as written apprehension anxiety, the fear of publicly expressing their comments. Some perceived that their peers' posting lacked substance and that participating in online discussion was considered a time consuming activity.

With regard to online teamwork, previous research has reported mixed results. Chiong and Jovanovich (2012) found in their study that social learning, learning through communication and knowledge exchange, was one of the perceived benefits reported by students. While students' concern about time constraints, delays in communication, differences in skills/knowledge among team members were found to be some of the reasons that affected students' reluctance to participate in online collaboration. Goold, Augar, & Farmer, (2006) study showed that students felt that they learned more through discussions with their peers and faculty that they did by reading the text alone. However, students were less enthusiastic with working in a group within an online environment compared to a classroom setting.

Collaboration in virtual teams may be more challenging than in traditional teams. Andres and Shipps (2010) studied the effect of collaboration mode on team interactions. They found that technology-mediated collaboration experienced greater instances of communication breakdowns, misunderstandings, and difficulty moving forward compared to collocated teams. Another study by Koh and Hill (2009) indicated that students found online group activity to be more difficult than work in face-to-face groups. Students reported difficulty with communication and a lack of sense of community as the most challenging factors. Online collaborative groups may also go through delayed group development stages, taking longer to getting to know the group members or reaching agreements (Wang, 2007; Grzeda, Haq, & Lebrasseur, 2008). Birch and McDonald (2007) reported that students found the online group activity to be time consuming and frustrating. However, they agreed that it was beneficial in terms of cognitive and social learning outcomes. Another study by Lee et al., (2006) showed that students have positive attitudes towards online team activities.

## 3. THEORETICAL BACKGROUND

Several studies have aimed to identify factors that influence the success of collaborative

learning online. Kirchner (2004) introduced a framework for the effectiveness of collaborative learning suggesting that collaborative learning process is contingent upon technological, educational (learning) and social affordances present in the task environment. Carabajal et al. (2003) stated that there are three dimensions of groups in online learning communities. These dimensions are: task, social, and technological. Yoon (2006) studied the major behaviors that teams perform and found that three functions are important for group performance: work, social and management. Work, or completing a task, was the most frequently performed behavior, followed by building relationship among team members, and last was managing the team. At the beginning of teamwork, the social domain explained the largest portion of observed behavior. They found that technologies did not seem to be the most influential toward the development of virtual teams. A common theme across these studies is that successful collaborative learning needs to consider both task and social aspects of the activity. Lee et al. (2006) suggest that instructors tend to focus more on the task dimension of the teamwork, causing students perceptions on the social dimension to be not as strongly positive. They recommend that the assessment of the virtual teams has to cover the 'teaming process' as much as the team output.

Another stream of research has focused on the development of a sense of community in online courses. Garrison and Anderson (2003) developed a Community of Inquiry (COI) model. Based on this model, knowledge building is a contextualized social process which occurs within a community comprising students and teachers. This model includes three interacting and reinforcing elements of cognitive, social, and teaching presences. Cognitive presence refers to the extent to which participants in a community of inquiry are able to construct meaning through sustained communication (Garrison, Anderson, & Archer, 2000). Teaching presence refers to designing and managing learning, providing subject matter expertise, and facilitation of active learning. In this model, social presence is defined as "the ability of participants in the community of inquiry to project their personal characteristics into the community, thereby presenting themselves to others as 'real people'" (Garrison et al., 2000).

Rovai (2002) examined the relationship between the sense of community in online courses and perceived cognitive learning and found that students with stronger sense of community tend to possess greater perceived levels of cognitive learning. Liu (2007) also indicated close relationships exist between the sense of learning community and the perceived learning outcomes and quality. Students report that feelings of connecting and communication are vital to their online education experience (Glassmeyer, Dibbs, & Jensen, 2011).

With regard to teaching presence, several studies have indicated the importance of structure and organization in online learning. Tseng, Ku, Wang, & Sun (2009) found organization to be one of the most significant factors related to teamwork satisfaction, and they suggested that instructors should help students get organized by providing clear project descriptions and grading rubrics. Hutchinson (2007) suggests that structure is an important factor for managing the online cooperative environment. A clear understanding of the structure of the course and the collaborative activities, and how students will be assessed, contribute to a positive learning experience. Brindley et al. (2009) also suggested that transparency of expectations and clear instructions are among factors that can contribute to the effectiveness of collaborative learning online. Adequate task structure was an important dimension of the virtual teamwork identified by students in a study by Grzeda et al. (2008).

Based on this review of previous research, this study explored the three elements of creating a learning community from the student's point of view, in the context of collaborative learning in online information systems courses. The three main constructs involved in the study were: *perceptions of peer interaction*, *perceived structure* and *perceived learning*. The social dimension of collaborative learning is examined using the concept of 'peer interaction'. Moore (1989) identified three kinds of interactivity that affect online learning: interaction with content, interaction with instructors, and interaction among peers. This study focuses on the last type of interaction, peer interaction. The cognitive dimension in this study is operationalized as perceptions of learning through collaborative activities in online courses. The teaching presence aspect will focus on the perceived structure of collaborative activities. In

addition, experience with online courses will also be considered in this study. It is argued that online collaboration skills are improved over time and students' perceptions may depend on their experience with online courses. Hostetter and Busch (2006) found that the higher the number of online courses students had taken, the more positive their perceptions of social presence in the online course.

The study addresses these questions:

1. Does previous experience with online courses affects perceived peer interaction and perceived learning?
2. Is perceived structure of the collaborative activities related to perceptions of peer interaction and perceived learning?
3. Are perceptions of peer interaction related to perceived learning?
4. Are perceptions of peer interaction and perceived learning related to satisfaction with the activity and the course?

The following hypotheses are proposed:

H1. Students with previous experience with online courses have better perceptions of perceived peer interactions and perceived learning.

H2. Perceived structure of collaborative activities is positively related to perceptions of peer interaction.

H3. Perceived structure of collaborative activities is positively related to perceived learning.

H4. Perceptions of peer interaction are positively related to perceived learning.

H5. Perceptions of peer interaction and perceived learning are positively related to suggestions for future offering of collaborative activities.

H6. Perceptions of peer interaction are positively related to satisfaction with the course.

H7. Perceived learning from collaborative activities is positively related to satisfaction with the course.

#### 4. METHODOLOGY

##### Participants

The participants in this study were undergraduate students enrolled in Management Information Systems course at a Midwestern university. The course was taught fully online. Students from two sections of this course were included in this study. A total of 58 students completed the course over two semesters. Feedback about student perceptions was elicited at the end of the course. Students were asked to complete a voluntary, anonymous online survey questionnaire. A total of 38 valid responses were received and used for the purposes of this study. Table 1 presents demographic data about respondents. About 47% of students reported that they had taken an online course before.

Variables	No of subjects	Percentage
<b>Gender</b>		
Female	22	42%
Male	16	58%
<b>Age</b>		
18-24	34	90%
25-35	4	10%
Over 35	0	0%
<b>First online course</b>		
Yes	20	53%
No	18	47%

Table 1. Demographic information about study participants

##### Collaborative activities

Collaborative learning in this study incorporated both process oriented and product oriented tasks.

The main task was a product oriented activity, a group project that was accomplished in small groups consisting of 4-5 students. The design of this activity was based on two principles for effective online teaching (Graham, Cagiltay, Lim, Craner, & Duffy, 2001). One of the principles encourages active learning by suggesting that students should present their course projects. The second principle recommended by Graham et al. is to allow students to choose project topics. This allows incorporation of diverse views into online courses.

Groups were established at the beginning of the semester and each group had their own area in the course web site where group members could communicate with one another using options such as group discussion board, file exchange, and email. Each group was assigned to a general course topic that typically corresponded to a chapter from the reading materials. The group then had to choose a specific topic/concept within the main topic, research the topic and prepare a report. At a specified date during the semester, the report along with the group introduction was posted in a class forum that was accessible to all students.

Students were given specific written instructions about the milestones of the project as well as report requirements. Milestones included introduction of group members to one another within the group discussion board, selection of a group leader, selection of the report topic, notifying the instructor about the topic and getting approval, completing the report and posting it on the class discussion board. Each group had to select a leader who was also responsible for posting the group introduction and the report on the course discussion board. Birch and McDonald (2007) indicated that teams appeared to function more effectively when they had a leader.

The process of planning, electing a leader, negotiating on the topic, and producing the final product required cooperation and collaboration among group members to arrive at consensus to produce the report. To ensure equal participation among the group members, criteria were set about the minimum number of articles each group member had to find and summarize for the report and a peer evaluation survey had to be completed at the end of the project.

The second collaborative task consisted of class forum discussions. Each report posted by a group became a discussion forum for the rest of the class. Students, excluding the group that had posted the report, had to read the report posted by a group for that week and comment on it. Assessment of the student postings was based on a rubric that included criteria established for earning point scores. The rubric consisted of several criteria such as reflection on the topic, new perspectives on the topic, relating the report to the reading materials, asking questions that helped further discussions, using examples, etc.

These forums were intended to provide the rest of the students an opportunity to learn more about the topic covered that week. This is similar to a group presentation in a traditional face-to-face course. Such presentations typically generate questions from the audience. In the case of asynchronous communication that takes place in an online course, the rest of the class has more time to read and respond to the posted report. The group that prepared the report was also responsible for addressing questions posted in the forum about the report.

### **Measurements**

The measurement of variables of interest was based on items from previous studies as well as items that were developed specifically for this study. The measurement of perceived learning was based on the measurement of similar constructs by Birch and McDonald (2007), adapted for the context of this study. Cognitive learning outcomes of the activity were: development of research, synthesis, and gaining a better understating of course topics. Perceptions of peer interaction were measured using items from Tseng et al. (2009) and Birch and McDonald (2007). Structure was measured using two items were developed for the purpose of this study. A complete list of the items used to measure the three main construct is presented in Table 2 (see Appendix 1). Satisfaction with the activity and satisfaction with the course were measured by a single item that asked participants if the collaborative activity should be used for future course offerings and about the extent at which this course met their expectations. Most questions required respondents to select an option from a five-point Likert scale indicating the level of agreement with the corresponding statement (1 represents strongly agree and 5 strongly disagree).

### **5. DATA ANALYSIS AND RESULTS**

Initially, exploratory factor analysis using varimax rotation was employed to uncover the underlying structure of the set of the variables used. This analysis indicated that 3 factors were extracted. All items loaded in the corresponding constructs, except for one item that showed double loading and was dropped from further analysis. Table 2 shows the results of the factor analysis. The internal consistency of each factor was estimated by Cronbach's reliability alpha. Alpha coefficients values ranged from 0.72 to

0.84, indicating acceptable internal consistency of items for each construct.

For the entire sample, mean and standard deviation values for perceived learning were  $M=2.25$  and  $SD=0.78$ , for perceptions of peer interaction  $M=2.71$  and  $SD=0.82$ , and structure  $M=1.84$  and  $SD=0.74$ .

The first hypothesis states that students who have taken online courses before will have better perceptions of learning from the collaborative activity compared to first-time online students. Mann-Whitney U tests were conducted to test this hypothesis. Results indicate that students who had taken online courses before did not differ significantly in their perceptions of learning from the students who were taking an online course for the first time ( $U=163$ ,  $p=0.617$ ). Similar results were observed with regard to peer interactions ( $U=148$ ,  $p=0.347$ ) and perceived structure ( $U=175$ ,  $p=0.879$ ). Thus, this hypothesis is rejected. This is a positive finding because it indicates that students who were taking an online course for the first time felt that they benefited from the collaborative learning at the same level as students who were more experienced with online courses.

Research question two aimed at exploring the relationship between perceived structure of the collaborative activities and perceptions of peer interaction and perceived learning. For this question, data were analyzed using linear regression analyses. These tests showed that perceptions of structure are significantly related to perceived learning ( $\beta =0.41$ ,  $t(36)=2.71$ ,  $p<0.05$  and  $R^2 = 0.17$ ,  $F(1, 36) =7.538$ ,  $p <0.05$ ). To examine any effect of experience with online courses, the same tests were run separately for each group. These tests revealed that this result was significant only for students who had taken online courses before ( $\beta =0.52$ ,  $t(16)=2.43$ ,  $p<0.05$ ), while for students new to online courses this relationship was not significant ( $\beta =0.273$ ,  $t(18)=1.20$ ,  $p>0.05$ ).

Similar results were observed for the relationship between perceived structure and peer interaction. For all subjects, perceived structure was significantly related to peer interaction ( $\beta =0.36$ ,  $t(36)=2.33$ ,  $p<0.05$  and  $R^2 = 0.13$ ,  $F(1, 36)=5.46$ ,  $p<0.05$ ). This relationship was significant for students with experience in online courses ( $\beta =0.52$ ,  $t(16)=2.43$ ,  $p<0.05$ ), but not significant for

students who were taking an online course for the first time ( $\beta =0.22$ ,  $t(18)=0.98$ ,  $p>0.05$ ). These findings imply a moderating role of the experience with online courses in the relationship between structure and perceived learning. One might expect that for students who are new to online courses, perceptions of clear instructions and grading rubrics may be more important and related to the perceived learning and peer interaction. In this study this seems to be the case for students who have taken online courses before. One reason for this result may be the fact that students new to online course experience may not have a basis of comparison and prior experiences with various methods of presenting the instructions for online activities. In addition, this may suggest that students new to online courses experienced peer interaction and learning in spite of how they perceived the instructions to complete the tasks. Hypotheses two and three are supported.

To test hypothesis four, a linear regression test was employed to explore the relationship between peer interaction and learning from collaborative activities. This relationship was significant ( $\beta =0.35$ ,  $t(36)=2.28$ ,  $p<0.05$  and  $R^2 = 0.13$ ,  $F(1, 36)=5.18$ ,  $p<0.05$ ). Thus, this hypothesis was also supported suggesting that students with stronger perceptions of interactions tend to possess greater perceived levels of learning.

To capture the overall level of satisfaction with the collaborative activity, participants were asked if this activity should be used for future course offering. First, frequency analysis revealed that almost 80% of respondents strongly agreed or agreed that this activity should be used in the future. This is an indication that the majority of students who participated in the study were satisfied with their experience in this activity. Second, to test hypothesis five, a multiple linear regression analysis showed that both peer interaction and perceived learning were significant predictors of future use ( $R^2 = 0.40$ ,  $F(1, 35)=11.91$ ,  $p<0.01$ ).

Relationship between peer interaction and satisfaction with the course was examined to test hypothesis six, using a linear regression analysis. This relationship was significant ( $\beta =0.60$ ,  $t(36)=4.46$ ,  $p<0.01$  and  $R^2 = 0.36$ ,  $F(1, 36)=19.97$ ,  $p<0.01$ ). Relationship between perceived learning from collaborative activity and satisfaction with the course was also

significant ( $\beta=0.42$ ,  $t(36)=2.78$ ,  $p<0.01$  and  $R^2 = 0.18$ ,  $F(1, 36)= 7.71$ ,  $p<0.01$ ). Both hypotheses six and seven were supported. This is an indication that both aspects of collaborative learning, interaction and learning, are significant predictors of perceived success with the online course.

## 6. DISCUSSION AND CONCLUSIONS

This study aimed at exploring students' perceptions of collaborative activities in online courses. Based on the Community of Inquiry model, three main constructs were presented and analyzed. 'Perceptions of peer interaction', 'perceived learning' and 'perceived structure' were used to capture the three dimensions of an online learning community, Social Presence, Cognitive Presence and Teaching Presence.

Results showed that students' perceptions of the way the instructor has provided structure and guidance for the online collaborative activity are related to their perceptions of peer interactions and to the perceived learning. In other words, the better the students understood the instructions and assessment of collaborative activities, the more they perceived they were connected with their classmates and the more they learned from these activities.

One of the main research questions in the study dealt with the relationship between the perceived interaction and perceived learning. The results indicated that students with a stronger feeling of connection and interaction with other students, or sense of community, felt they learned more from the collaborative activity.

The study also indicated a positive relationship between the perception of interaction, learning and satisfaction with the activity and the online course. The role of previous experience with online courses was also considered in this study. While previous experience was not related to perceptions of interaction and learning, there were indications that this factor may moderate the relationship between the perceived structure and perceived interaction and learning.

The Internet has become popular among educators because of its ubiquitous nature that supports education through the sharing and distribution of online course materials. Teaching styles also need to adapt to the online environment, to incorporate methods that

encourage cooperative and collaborative learning. This study contributes to the current research on collaborative learning from both theoretical and practical perspective. From the theoretical perspective, this study explored constructs suggested by previous research as important to be investigated in the area of distance education. Peer interaction is a new construct introduced in this study to capture the sense of community created in the online environment using the collaborative activities. This concept also has important practical implications. Omar, Bhutta, & Kalulu (2009) suggested that student-to-student interaction can be a powerful tool to increase online participation, minimize the chances of drop-out and increased levels of motivation. MacDonald (2003) stated that by interacting with their peers, students become familiar with the language of the discipline and assists in their ability to read and write appropriately within the discipline.

From the practical perspective, this study presented a set of collaborative tasks that can be used to engage students in the online environment and how they are perceived by students. Importantly, this collaborative activity included both process and product oriented collaborative tasks.

Limitations of the study include the small sample size, so caution should be exercised when generalizing the findings of this study. The findings are also limited to one particular course and one specific collaborative task.

This study offers evidence that experiential teaching practices can be transferred from traditional to virtual classrooms, by including adequate support for students. Building a sense of community is important to promote collaborative learning. To promote a sense of connection, instructors should incorporate various opportunities for students to interact with their peers. It's important to continue to explore activities that are most effective for online collaborative learning.

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## Appendices

### Appendix 1

Items	Factors		
	Learning	Peer Interaction	Structure
I learned from reading other students' comments on the posted reports.	.872		
Reading and commenting on the reports of other teams was useful for learning in this course	.841		
This activity was beneficial to my learning in this course.	.696		
Comments and questions from other students in the class regarding my team's report were useful and might help me to improve my future work.	.619		
This activity allowed me to develop more effective electronic communication skills.	.608		
Communicating with my team members helped me understand what we were supposed to do in the team project.		.849	
Interacting with my team members increased my motivation to learn.		.803	
I enjoyed the experience of working in collaborative group with my team members.		.764	
The group project helped to reduce the sense of isolation that I sometimes feel as distance learner.		.621	
The group project provided me with an opportunity to interact with other students in this course.		.544	
The group project helped me become more confident in using the course discussion board.		.502	
I think the grading criteria for the group work given by the professor were clear enough.			.862
The group project instructions were stated clearly.			.790

Table 2. Results of factor analysis

# Cyberbullying Presence, Extent, & Forms in a Midwestern Post-secondary Institution

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## Abstract

This research study was an investigative inquiry as to the forms and characteristics of cyberbullying present in a midwestern post-secondary educational institution during the 2011-2012 academic year. Cyberbullying incidents have increased in educational situations bringing new ethical and legal issues to light; however, most of the research has focused on secondary education. Cyberbullying in this post-secondary institutional study was defined in this research as repeated use of technology to threaten or harass. Researchers utilized an online survey and interview methodology to gather cyberbullying data and information. The survey sought information from a randomly selected group of students (n=16,983) enrolled at any of the university's campuses, inclusive of undergraduate, graduate, and continuing education students, where 276 students participated. Through the survey invitation, a voluntary interview was also requested where nine students were interviewed. Results included confirmation that cyberbullying incidents did occur to and by college students as well as instructors at this institution. The majority of both survey and interview participants did not think it a problem at the university level, but this issue is more serious and prevalent in secondary schooling. Those experiencing cyberbullying as a university student, however, reported moderate to extremely serious effects in their life and learning which included physical endangerment. The researchers have advised more research into this topic. Additionally, while conducting this study, this institution has adopted cyberbullying language in their 2012 student conduct code to try to address the cyberbullying phenomenon.

**Keywords:** cyberbullying, distance education, higher education, mobile devices, online learning, social networking

## 1. INTRODUCTION

Cyberbullying is a relatively new phenomenon that has been extensively addressed by secondary schools, but not by post-secondary institutions. This research study investigated

whether cyberbullying was occurring at a specific midwestern university, and if it was present, what were the forms, extent, and characteristics. From the results, it was hoped that the institution could better understand its cyberbullying landscape to help formulate plans

of action and perhaps policies addressing possible ethical and legal issues.

The cyberbullying definition utilized was by Holladay (2011), "cyberbullying is the repeated use of technology to harass, humiliate, or threaten" (p.4), however, during the course of this research, the university adopted its own definition of bullying and cyberbullying in its student conduct code: "Section VI. Subd. 7. Bullying. Bullying means aggressive behavior directed at another person, either in person or through electronic means, that causes stress or harm and that is repeated over time, including but not limited to assaulting, defaming, terrorizing, making obscene gestures, or invading privacy."

This study involved both survey and interview tools for data and information gathering to address the research questions. It was motivated by an incident that occurred spring semester 2010 on one of the university's campuses involving university wireless technologies in a dormitory lounge. This case involved two Caucasian female students who harassed an African American female student through an online social networking site. The event was traumatic for the victim and abhorred other students, faculty, staff, and administrators. It also inspired students to organize and hold a silent march, and the Chancellor has been addressing the campus climate through various means since. Administrators had no policy directly dealing with this type of harassment other than what was in the student conduct code - although, at that time, "bullying" was not yet addressed in the code. Questions of university liability arose, even though it did not occur in a classroom but was in a university dorm lounge using university supplied wireless Internet.

For this research, all participants were students enrolled on any of this university's campuses. Additionally, the roles of instructors/faculty were investigated and included. Recent news stories on cyberbullying at this university have included faculty. An incident occurred where faculty and staff were cyberbullied fall semester 2011. This case was of a student altering video of an interview and posting it on the Internet. This video interview involved a faculty member and another student, in which the video posting resulted in thousands of email threats to the faculty member, staff, and associated students. Because of this situation, cyberbullying was

analyzed not only between students, but also between students and faculty. The results of this research hopefully shed light on higher education cyberbullying and associated policy-making.

## 2. LITERATURE REVIEW

With Web 2.0 and social networking technologies infiltrating the educational environment, new issues have arisen, one being cyberbullying (Sellers, Wray, Meeker & Moulton, 2009). Cyberbullying has been evidenced in post-secondary educational institutions (Sellers et al., 2009; Walker, Sockman & Koehn, 2011) and shows to be a global problem (Li, 2007, 2008). Recent police report coverage shows that college students have created imposter social networking sites to harass other students (Luscombe, 2011). Worse yet, cyberbullying related suicides in higher education have occurred (*Wallstreet Journal*, 2010). The negative health impacts of cyberbullying on individuals have been verified (Ybarra, Diener-West & Leaf, 2007). Media reports and research studies involving serious physical threats and suicides have focused on secondary school incidents (Englander, Mills & McCoy, 2009), with increased reports involving children younger than 13 years old (Bauchner, 2011). Researchers are seeing cyberbullying even more pernicious than bullying, as the perpetrator may have less empathy than in face-to-face bullying (Levy, 2011). The negative effect on children and adolescents is evident (Ang & Goh, 2011; Beale & Hall, 2007), however more attention is needed to be directed toward studying cyberbullying in post-secondary education (Sellers et al., 2009; Walker et al., 2011).

Cyberbullying is loosely defined as harassing behavior transmitted electronically. It is a behavior that has been very difficult to define. Originally applied to children and teenagers, the definition is transcending to adults (Sellers et al., 2009). According to Holladay (2011), "cyberbullying is the repeated use of technology to harass, humiliate, or threaten" (p.4).

Cyberbullying is not typical bullying. It can happen anytime, anywhere, with the bully being removed from direct contact with the victim. Cyberbully victims are also more likely to exhibit cyberbullying behavior themselves (Clemans, Graber, Lyndon & Sontag, 2011) and cyberbullying is dramatically changing the bullying landscape in severity and frequency

(Akbulut, Sahin & Eristi, 2010; Wright, Burnham, Inman & Ogorchock, 2009), as well as more female cyberbullies cropping up (Li, 2008).

Cyberbullying policy action begs more refined definition (Brown, Jackson & Cassidy, 2006) because of this distance between the perpetrator and victim and ubiquity of tools used (Woods, 2001). The problem is that school cyberbullying policies are almost nonexistent when violent communications occur through the school's infrastructure, be it on- or off-campus (Brown et al., 2006). Many cyberbullying court cases have used commercial website terms of use agreements to go after cyberbullies, which are policies created by the private entity to limit its liability (Jones, 2011).

Freedom of speech is blocking school cyberbullying policy creation to help reprimand students exhibiting cyberbullying (Conn, 2011). U.S. law has not sufficiently covered this new form of abuse due to freedom of speech, and because of this, cyberbullying policies themselves are problematic for educational institutions (O'Neill, 2008). However, because of extreme cases of life endangerment, state laws are being drafted and school policy is being addressed (O'Neill, 2008). Lane (2011) has argued that it is the responsibility of schools and cyberbullying policy and practices can be implemented successfully.

As state lawmakers and secondary school administrators address cyberbullying, so too should post-secondary education. The technological ease of higher education cyberbullying has occurred because of the rapid investment of university technology infrastructures for student education, as well as students' own technological devices. According to Samarawickrema and Stacey (2007), a majority of higher educational institutions are becoming deliverers of online, educational content to their students through learning management systems. Increasing use of e-learning tools in higher education and a transition from Web 1.0 to Web 2.0 is changing the learning environment and roles of teachers and students; and these new ways of learning and communicating are producing new forms of harassment. Cyberbullies invade email, chat rooms, blogs, cell phones, video recorders, cameras, web- sites, and networked printers to communicate offensive information to other students (Belsey, 2006; Campbell, 2005; Shariff, 2005).

Through survey and interview research, this study considered the institution's responsibility through the eyes of those victimized, perpetrating, and/or witnessing cyberbullying in the university system. It also looked at what was the cyberbullying extent, technologies used, and effects on those involved. Initially an inquiry was planned regarding only victims of cyberbullying, but the literature showed that this problem is complicated. It appears that witnesses are integral in helping alleviate the problem as well as victims are likely to exhibit cyberbullying behavior themselves. The results by Clemans et al. (2011) showed cyberbully victims being more likely to have more reactive aggression and likely to exhibit cyberbullying behavior as well, compared to traditional, face-to-face bullying and its victimization. Because of these studies, this research investigated the roles of not only cyberbully victims, but also the perpetrators and witnesses.

### 3. METHODOLOGY

This was an inductive case study to try to answer the research questions as well as to test one hypothesis. An online survey and interview questionnaire (Appendix 1 and 2 respectively) were utilized to collect data and information from students enrolled at the midwestern university.

#### Population and Instruments

After the study's Internal Review Board (IRB) application was approved, requests were sought for students to take an anonymous, online survey and participate in an interview. The survey was the tool for collecting data that was standardized from a large population:

- N= 56,410 of entire student population (from CollegeBoard.com and university campus websites)
- n= 16,983 of randomly chosen emails
- n= 276 survey responses from emails to the study's listserv

The survey invitations were sent to a listserv compiled from randomly chosen publicly available student emails on the university's web directory. This helped to obtain a random sample of those who responded to the online survey. This was a cross-sectional design as the process of sending, receiving, and collecting the data from the online survey was between November 21 through January 16 and generated the data from two email requests – however,

this was considered analyses at a single point in time to “discern patterns of association” (Bryman, 1989, p. 104) within that population or sample of a population (Robson, 2002). Through the emailed survey invitations with consent forms, the interview participants were also recruited.

The online survey and interview questionnaire were field tested to ensure accessibility and navigability of the online form as well as readability and understandability for both survey takers and interviewees. The survey consisted of Likert and open-ended questions to gather both quantifiable data and qualitative information. The interview questions were open-ended to try to illicit as much information as possible. All human research subjects training and approvals were conducted prior to conducting the research. There were no incentives for survey takers to complete the survey, however \$10 was offered as an incentive to participate in an interview.

The research questions and hypothesis are listed as follows. The initial underlying null hypothesis was that cyberbullying does not occur in a higher educational environment. This was not tested as the likelihood of at least one incident reported in the survey and/or interview methods was expected, however the extent and degree was unknown.

The research questions addressed the extent, forms, and characteristics of cyberbullying at this university. Ten questions arose based on previous literature.

1. What is the extent of cyberbullying in the midwestern post-secondary institution?
2. What are the targeted topics of offensive communication (i.e., based on this university’s equal opportunity statement: race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation, or other or unknown)?
3. How and where is cyberbullying transmitted?
4. What are the demographics of the self-admitted cyberbullies?
5. What are the demographics of the self-admitted cyberbully victims?
6. What are the demographics of the self-admitted cyberbully witnesses?
7. What are common themes, if any, of the cyberbullying offenses?

8. What do those involved in cyberbullying (as victims, perpetrators, and/or witnesses) do to help minimize cyberbullying?
9. What do those involved in cyberbullying think the university should do to help minimize cyberbullying?
10. To what extent and how does cyberbullying affect student learning and life?

The research hypothesis was to analyze the prevalence of cyberbullying at the university. A high rate of incident was being theorized. The hypothesis was stated as “over half of the university students have had experiences of cyberbullying as a victim, perpetrator, and/or a witness.”

#### 4. RESULTS

This study showed that cyberbullying does exist at this university, however, not to the degree which was hypothesized. Below relays the survey and interview results that tested the hypothesis and helped answer the research questions. There were 276 student survey takers and nine interviewees. Of a population of 56,410 and a sample of 16,983, these response rates are very low and impeded on conducting more robust statistical measures of the descriptive data.

##### Hypothesis Testing

The research hypothesis was to analyze the prevalence of cyberbullying at the university. A high rate of incident was being theorized. The hypothesis stated that over half of the university students have had experiences of cyberbullying as a victim, perpetrator, and/or a witness. This was evidenced by the survey, however, due to the low survey response rate it is unknown as to its validity. The percentage of student cyberbullying experiences was reported at 51.8% as indicted as follows.

- Ten percent (28, 10.1%) of students stated they were cyberbullied by another student.
- Almost 3% (3, 2.9%) of students selected that they had been cyberbullied by an instructor.
- A little over 2% (6, 2.2%) of students selected that they had cyberbullied another student while being at the university.
- One percent (3, 1.1%) of students admitted to cyberbullying an instructor.

- Over a quarter (76, 27.5%) of the students stated they witnessed cyberbullying behavior by a student towards another student.
- A little over 5% (14, 5.1%) of the students said they witnessed cyberbullying behavior by a student towards an instructor.
- Almost 3% (8, 2.9%) of the students relayed they had witnessed an instructor cyberbully a student during their university experience.

### Research Questions Answered

The online survey results answered some research questions. However these research questions could not be answered as the low response rate could not indicate any correlations:

- What are the demographics of the self-admitted cyberbullies?
- What are the demographics of the self-admitted cyberbully victims?
- What are the demographics of the self-admitted cyberbully witnesses?

The demographics of the survey takers are as follows: two-thirds (186, 67.4%) of the survey takers were female and 87% (240) were white or Caucasian. The average responder was around 24 years old and over half fell into the 18-21 year old range (52%) with most being undergraduate students and the rest continuing education or graduate students. The oldest respondent was 55 years old.

The research question, "what is the extent of cyberbullying in the midwestern post-secondary institution" and, "what are the targeted topics of offensive communication (i.e., race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation, other)," can be answered through the survey and interview responses. For those students stating they had been cyberbullied by another student, the targeted topics of offensive communication were relayed as follows:

- 6 (12.2%) religion or creed
- 6 (12.2%) sexual orientation
- 5 (10.2%) gender
- 4 (8.2%) race or ethnicity
- 3 (6.1%) disability
- 3 (6.1%) age
- 2 (4.1%) marital status
- 2 (4.1%) national origin

- 1 (2.0%) color
- 1 (2.0%) public assistance status
- 1 (2.0%) veteran status

Also, over 30% relayed other or unknown reasons for the attacks. "Other" was specified as online learning problems, abusive relationships, sexual harassment, attack on clothes seen in profile picture/materialistic target/physical appearance, ethical decisions made which the bullier did not approve, misinterpretation of not being able to provide assistance to the bullier, more studious than bullier, did not partake in (as many) parties, not (online) social enough, more (or less) knowledgeable than the bullier, lack of online gaming skills, and misunderstanding of a joke or having fun.

Of the 10% stating they had been cyberbullied by another student, over 46% reported the extent being moderate with some short-term effect on life and learning. Four (14.3%) selected that the cyberbullying had a great extent affecting life and learning and one (3.6%) as seriously impacting emotional health and/or physical trauma. These statistics show that over half of those reporting being victimized by another student during their university studies were at least having short-term negative effects on life and learning.

The percentage of students witnessing cyberbullying were larger. The responses of witnessing cyberbullying behavior by a student towards another student was over a quarter (76, 27.5%). Over 80% of these (142, 82%) related to the university's equal opportunity statement as listed below:

- 28 (16.0%) sexual orientation
- 25 (14.3%) race or ethnicity
- 24 (13.7%) gender
- 18 (10.3%) color
- 14 (8.0%) religion or creed
- 9 (5.1%) disability
- 7 (4.0%) age
- 6 (3.4%) national origin
- 6 (3.4%) public assistance status
- 3 (1.7%) marital status
- 2 (1.1%) veteran status

Of the 27.5% stating they had witnessed cyberbullying by one student to another, the affect on life and learning was reported as over a quarter (20, 26.3%) having little or no affect on life and learning with over 40% (32, 42%) stating the extent was moderate with some short-term affect on life and learning. Fourteen



(18.4%) selected that the cyberbullying had a great extent affecting life and learning and six (7.9%) as seriously impacting emotional health and/or physical trauma. No students reported the cyberbullying being extremely serious that led to life-endangerment. This may show that witnessing the event may provide keys in differences in identifying and addressing cyberbullying.

Also reported was witnessing cyberbullying behavior by a student towards an instructor. A little over 5% (14, 5.1%) of the students relayed they had witnessed a student cyberbully an instructor during their university experience, but the majority had not (258, 93.5%; missing 4, 1.4%). Of those responding yes, 36 characteristics of the cyberbullying were selected. Over 80% (29, 80.6%) related to the university's equal opportunity statement, which also relates to the student conduct code. This could be of importance for future investigation for this institution.

There was also witnessing of cyberbullying behavior by an instructor towards a student. Almost 3% (8, 2.9%) of the students relayed they had witnessed an instructor cyberbully a student during their university experience, but the majority had not (262, 94.9%; missing 6, 2.2%). Of those responding yes, 19 characteristics of the cyberbullying were selected. Almost three-quarters (14, 73.7%) related to the university's equal opportunity statement. Since a large percentage of these respondents named university aspects addressed as being important in their mission, this could be a problem that needs to be investigated.

The number of cyberbullying life experiences for the student was averaged at 4.74 times (missing 18, 16.5%). The average number of experiences of witnessing cyberbullying during the student's lifetime was 5.36 times (missing 26, 9.4%). The average number of experiences of cyberbullying another during the student's lifetime was less than one time, 0.75 (missing 26, 9.4%). This also shows higher reporting of witnessing versus experiencing cyberbullying as a victim or perpetrator. When it came to face-to-face bullying as part of the cyberbullying incidences, students reported an average of 13.1% (missing 29, 10.5%) experiences.

Some students did admit to cyberbullying behavior either towards another student (2.2%)

or to an instructor (1.1%). The reasons for the attacks against students included sexual orientation, gender, age, veteran status, unknown and "other" being political ideologies/affiliations, musical talents, hair color, and name, with one stating it was a joke that was taken out of context. Those cyberbullying an instructor stated the reasons were about teaching style/ability, age, and expectations.

The statistics of being cyberbullied as well as witnessing cyberbullying in grade or high school were much higher, but the incidence of cyberbullying an instructor was low. Over 20% (59, 21.4%) of the students selected that they had been cyberbullied in grade and/or secondary school. Almost 7% (19, 6.9%) of the students selected that they had cyberbullied another student in grade and/or secondary school. Almost a third (89, 32.2%) of the students selected that they had witnessed cyberbullying in grade and/or secondary school. This may showcase the responses of students stating that this is a grade or secondary school issue.

For this midwestern institution, it is of some comfort to know that over three quarters of the responses had moderate to extreme comfort in reporting cyberbullying to university faculty and/or administration. However other students (44, 15.9%) had little comfort and almost 7% (19, 6.9%) had no comfort in reporting (missing 2, 0.7%). The responses as to being comfortable in reporting a cyberbullying event were due to the established environment, relationships with faculty and/or staff, or knowing where to go or what to do. The opposite situations were detailed in either their unknowingness about how to report an incident and/or their distrust of the campus faculty, staff, and/or resources. Some relayed that the university is not responsible for this and this is not applicable.

Again, this study of this institution had a low survey response rate, and also, a small extent of cyberbullying negatively affecting students' learning at the university. The majority (239, 86.6%) reported no extent of cyberbullying having a negative effect on learning (missing 1, 0.4%). Eighteen (6.5%) reported little extent. Twelve (4.3%) reported moderate extent. Three (1.1%) reported great extent. Two (0.7%) reported an extremely serious extent with one (0.4%) reporting a serious extent. However, since there were two reporting an extremely

serious extent, it does raise the issue of a potential university problem.

“How and where is cyberbullying transmitted” was answered as a myriad of technologies provided by the survey and interview answers. The technologies involved in cyberbullying were 27% (125, 27.6%) Facebook™, almost 12% (54, 11.9%) texting, over 10% (47, 10.4%) via email, and less than 2% (7, 1.5%) for both Twitter™ and YouTube™. Other technologies, such as other instant chat, posting websites or applications comprised 8.8% (40) of responses and other online gaming technologies comprised 10.8% (39) responses. These are relayed below. Note that over 40% (112, 40.58%) did not respond or selected not applicable.

- AOL Instant Messenger (AIM)™ (15)
- Generic forums, message boards, blogs, Internet relay chat, virtual network computing with one specific to a university sociology class (8)
- MSN Messenger™ (6)
- Myspace™ (4)
- League of Legends™ (3)
- Starcraft™ (3)
- Halo™ (2)
- Omegle™ (2)
- Team Fortress™ (2)
- Tumblr™ (2)
- World of Warcraft™ (WoW) (2)
- Xbox Live™ (2)
- 4chan™ (1)
- Counterstrike™ (1)
- First-person shooter™ (FPS) (1)
- Hotmail Instant Messenger™ (1)
- InPerson™ video conferencing (1)
- Kakao talk™ (1)
- Leoslyrics™ (1)
- LinkedIn™ (1)
- Okcupid™ (1)
- Ratemyprofessors™ (1)
- Runescape™ (1)
- Skype™ video conferencing (1)
- Slingo™ (1)
- Ultima Online™ (1)
- WebVista/CT™ (1)
- Wireless printer (1)

This represents that cyberbullying does not represent one technology; however, the leading social media technologies tend to be used.

The survey responses also helped answer who is responsible when cyberbullying occurred in higher ed. When it came to the responsible parties of cyberbullying incidences in class

(online or face-to-face), the selections were as follows:

- |     |         |   |  |
|-----|---------|---|--|
| 210 | (18.7%) | the one   | exhibiting cyberbullying behavior            |
| 197 | (17.5%) | person(s)   | witnessing cyberbullying behavior            |
| 177 | (15.7%) |   | university instructor(s)/faculty             |
| 142 | (12.6%) |   | university administrators/policymakers       |
| 116 | (10.3%) | person(s)   | who are targets of cyberbullying behavior    |
| 91  | (8.1%)  | Monitors of online classroom activities, such as Moodle or WebCT              | course developers/instructors                |
| 88  | (7.8%)  | Monitors of campus electronic resources, such as university emails, websites, | wireless/ethernet connections and networks   |
| 87  | (7.7%)  | Parents of  | student(s) exhibiting cyberbullying behavior |

Those responsible of cyberbullying incidences on-campus and/or using university resources that were listed as the top six (90.5%) were:

- |     |         |   |  |
|-----|---------|---|--|
| 212 | (21.9%) | the one   | exhibiting cyberbullying behavior          |
| 191 | (19.8%) | person(s)   | witnessing cyberbullying behavior          |
| 140 | (14.5%) |   | university administrators/policymakers     |
| 128 | (13.3%) | person(s)   | who are targets of cyberbullying behavior  |
| 107 | (11.1%) |   | university instructor(s)/faculty           |
| 96  | (9.9%)  | Monitors of campus electronic resources, such as university emails, websites, | wireless/ethernet connections and networks |

Those responsible of cyberbullying incidences off-campus that were listed as the top four (82.8%) were:

- |     |         |            |  |
|-----|---------|------------|--|
| 211 | (27.6%) | the one    | exhibiting cyberbullying behavior            |
| 136 | (17.8%) | person(s)  | who are targets of cyberbullying behavior    |
| 198 | (25.9%) | person(s)  | witnessing cyberbullying behavior            |
| 88  | (11.5%) | Parents of | student(s) exhibiting cyberbullying behavior |

Those responsible included university faculty, staff, and administration, so what does the university do to help minimize cyberbullying in academe? To address one of the research questions, possible ways the university could

handle cyberbullying based on the survey respondents were as follows: almost 21% selected direct punishment of the cyberbully by the university and over 20% thought there should be specific university policy addressing cyberbullying. Over 18% thought the university provides special reporting tools when cyberbullying is exhibited. Over 15% selected that the university instructor/faculty be required to report cyberbullying incidents. Over 10% thought university IT staff record and track cyberbullying incidences. Another 10% thought all courses contain "netiquette" rules in syllabi.

To address the research question, "to what extent and how does cyberbullying affect student learning and life," the answers were 46% responding with 243 selections of characteristics:

- 51 (21.0%) decreased self-esteem
- 45 (18.5%) interruption(s) in education, negatively impacted ability to complete coursework
- 40 (16.5%) loss of or withdrawal from social contacts and experiences
- 32 (13.2%) depression
- 13 (5.3%) increase in anger management issues
- 12 (4.9%) decrease in g.p.a./lower grades
- 50 (20.6%) other (listed in Appendix 3)

### Qualitative Survey Responses

Of the survey respondents, only 61 (22%) responded to the open ended question on providing additional information for this study. The survey comments were categorized into what the university could/should do, cyberbullying is a problem of immature people and level of social media involvement, respondents had little experience with cyberbullying, issues related to cyberbullying presence in higher education, cyberbullying is unclear or hard to address, cyberbullies are part of life, it is a police matter, it is a freedom of speech issue, and it is the witnesses' responsibility to report. Details of these responses are in Appendix 3.

### Interview Results

Nine interviews were conducted with anonymous results shown in Appendix 4. Initially 64 (23.2%) survey takers responded that they would be interested in an interview, however, because this researcher did not know who

responded to this survey question, and they were told to contact the researcher, only 23 relayed interest to the researcher with just nine interviews successfully conducted.

Four of the interviews were taken over the phone, one was via Skype, and the rest were face-to-face. There were interviewees from all campuses except one. Notes were altered to ensure they were sufficiently de-identified and no interviewee could be identified. Common themes from these interviews were that Facebook™, Twitter™, texting, and email were utilized as the technology for bullying. Most of the interviewees were witnesses of cyberbullying. One was victimized by cyberbullying, and law officials and legal charges were involved to stop the cyberbullying. Two stated that cyberbullying had not been witnessed by them during their university studies and did not know if it really was a problem in higher education. Most relayed that students have to just deal with this bad behavior, but university resources should be available if it does become serious. It appears that witnesses will take responsibility and communicate to the bully that the behavior is wrong.

### 5. ASSUMPTIONS AND LIMITATIONS

The assumptions of this study are that cyberbullying is occurring in higher education and impacting students' lives and learning. It also assumes that it exists not only at this specific midwestern institution. However, the leading limitations were that small response rates were retrieved from the survey and interviews. Because of these samples and that the research was a case study, generalizability to other post-secondary educational institutions may or may not be appropriate. However, cyberbullying was shown to exist as well as the negative consequences of cyberbullying on some students' lives. This institution has already investigated this issue and adopted bullying, inclusive of cyberbullying, definitions in its 2012 student conduct code.

### 6. CONCLUSIONS

Clearly cyberbullying is occurring at this institution. However, the severity in students' lives and learning ranged from no negative effects to being extremely serious (i.e., life endangerment). With situations reported in this research involving physical endangerment and

the police, it is a topic to take seriously. Student survey and interview respondents agreed overall that in severe cyberbullying cases involving physical endangerment, the university has responsibility. According to respondents, those responsible included policy makers, information system administrators and staff relating to monitoring electronic resources and/or providing reporting tools.

Another topic of research may be how to define cyberbullying. Rates of witnessing are much higher for the student respondents at this university and during their lives than being victimized or being a cyberbully themselves. Questions may arise as to what cyberbullying truly is. In other words, can it be misinterpreted as a witness, victim, and/or a perpetrator?

Additional research is needed with our fast-paced technological era infiltrating our lives, inclusive of our educational pursuits. This research showed that many technologies, not only those that are socially popular, are used to harm others. It is likely technologies will continue changing and college students will acquire and use them to communicate with each other and faculty/instructors. It is also likely that higher education will increasingly adopt them for teaching and learning. Understanding the immediacy of communications and social interactions and their consequences may be at the forefront of new educational research fields. What post-secondary education can do to help in delivering high quality, as well as safe, instruction is the core of our evolving landscape. Through this research study, it is recommended to conduct more research on cyberbullying and affiliated policies and reporting tools in higher education.

## 7. ACKNOWLEDGEMENTS

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## 8. REFERENCES

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## Appendix 1

### Survey Questions *(provided with consent form)*

1. What is your gender?
  - Female
  - Male
  - No specification
2. What is your age?
3. What ethnicity best defines you?
  - Alaskan Native
  - American Indian
  - Hispanic or Latino
  - Asian
  - Black or African American
  - Native Hawaiian
  - Other Pacific Islander
  - White or Caucasian
  - No specification
  - other input
4. What category best defines your student status?
  - Undergraduate-Freshman
  - Undergraduate-Sophomore
  - Undergraduate-Junior
  - Undergraduate-Senior
  - Continuing Education-as a pre-undergrad
  - Continuing Education-as a pre-graduate student
  - Continuing Education-as a post-graduate
  - Graduate-enrolled in a master's program
  - Graduate-enrolled in a doctoral program
  - Graduate-non-degree student

Questions 5-16 are based on the definition of cyberbullying for this study:

"cyberbullying is the repeated use of technology to harass, humiliate, or threaten" (Holladay, 2011, p.4)

- 5a. Have you been cyberbullied as a university student by another student?
- Yes
  - No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color

- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

5b. Have you been cyberbullied as a university student by an instructor?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

6a. While a university student, have you exhibited cyberbullying behavior towards another student?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin

- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

6b. While a university student, have you exhibited cyberbullying behavior towards an instructor?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

7a. While a university student, have you witnessed cyberbullying by a student towards another student?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender



- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

7b. While a university student, have you witnessed cyberbullying by a student towards an instructor?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- public assistance status
- veteran status
- unknown
- other- please specify:

7c. While a university student, have you witnessed cyberbullying by an instructor towards a student?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability

- public assistance status
- veteran status
- unknown
- other- please specify:

8. To what degree of comfort do you have in reporting cyberbullying to University faculty and/or administration?

- No comfort
- Little comfort
- Moderate comfort
- Great comfort
- Very great comfort
- Extreme comfort

What is the University doing or not doing that supports you to make that selection?

9a. Did you experience cyberbullying in grade and/or secondary school as a victim?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

9b. Did you experience cyberbullying in grade and/or secondary school as one exhibiting the cyberbullying behavior?

- Yes
- No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

- 9c. Did you experience cyberbullying in grade and/or secondary school as a witness?
- Yes
  - No

If yes, to what extent?

- NONE
- LITTLE
- MODERATE
- GREAT
- SERIOUS
- EXTREMELY SERIOUS

If yes, was there a specific characteristic the cyberbullying targeted? (check all that apply)

- race or ethnicity
- color
- religion or creed
- national origin
- gender
- sexual orientation
- age
- marital status
- disability
- public assistance status
- veteran status
- unknown
- other- please specify:

10. To what degree has cyberbullying negatively affected your learning at the University?

In what ways?

11a. Please estimate the number of your cyberbullying experiences:

At anytime in your life:

- # as being victimized by cyberbullying
  - # as witnessing cyberbullying
  - # as exhibiting cyberbullying behavior
- On any of the university campuses:
- # as being victimized by cyberbullying
  - # as witnessing cyberbullying
  - # as exhibiting cyberbullying behavior

11b. Approximately what percentage was face-to-face bullying part of your cyberbullying incidences?

12. What technologies were involved in your cyberbullying experiences? (please select all that apply)

- email
- texting
- Facebook™
- Twitter™
- YouTube™
- other instant chat/posting website(s)/application(s) - please specify:
- other audio/video website(s)/application(s) - please specify:
- online gaming - please specify:
- other - please specify:

13. Who do you think is responsible in minimizing cyberbullying incidences? (please select all that apply for each category)

Incidences occurring in class (online or face-to-face)?

- the one exhibiting cyberbullying behavior
- person(s) who are targets of cyberbullying behavior
- person(s) witnessing cyberbullying behavior
- University administrators/policymakers
- University instructor(s)/faculty
- Parents of student(s) exhibiting cyberbullying behavior
- Monitors of online classroom activities, such as Moodle or WebCT course developers/instructors
- Monitors of campus electronic resources, such as University emails, websites, wireless/ethernet connections and networks
- other - please specify:

Incidences occurring out of class, but on campus and/or using university resources?

- the one exhibiting cyberbullying behavior
- person(s) who are targets of cyberbullying behavior
- person(s) witnessing cyberbullying behavior
- University administrators/policymakers
- University instructor(s)/faculty
- Parents of student(s) exhibiting cyberbullying behavior
- Monitors of campus electronic resources, such as University emails, websites, wireless/ethernet connections and networks
- other - please specify:

Incidences occurring off campus?

- the one exhibiting cyberbullying behavior
- person(s) who are targets of cyberbullying behavior
- person(s) witnessing cyberbullying behavior
- University administrators/policymakers
- University instructor(s)/faculty
- Parents of student(s) exhibiting cyberbullying behavior
- Monitors of campus electronic resources, such as University emails, websites, wireless/ethernet connections and networks
- other - please specify:

14. What are possible ways you think the university should handle cyberbullying:(please select all that apply)

- University policy specifically addressing cyberbullying behavior
- Direct punishment of person exhibiting cyberbullying (e.g., suspension, expulsion)

- Special University reporting tools of cyberbullying behavior by victims and/or witnesses
- University instructor/faculty requirements to report cyberbullying incidences
- All courses requiring "netiquette" rules in syllabi
- University IT staff recording and tracking cyberbullying incidences
- other - please specify:

15. In what ways has cyberbullying affected you? (please select all that apply)

- interruption(s) in education, negatively impacted ability to complete coursework
- decrease in g.p.a./lower grades
- loss of or withdrawal from social contacts and experiences
- decreased self-esteem
- depression
- increase in anger management issues
- other - please specify:

16. Please share any other comments about cyberbullying you think will assist in this study?

17. Would you be willing to be involved (during spring semester 2012) in a short face-to-face interview as part of the second phase of this study in which information you share will also be anonymous?

- No
- Yes  
If yes, you will be provided the interview consent form for your review and approval prior to the interview during the spring semester 2012.
- Maybe

If yes or maybe, please contact the researcher, as the researcher does not have your information to contact you.

Thank you very much for your time and assistance in helping shed light on the cyberbullying phenomena in a university setting.

### Reference

Holladay, J. (2011). Cyberbullying. Education Digest: Essential Readings Condensed for Quick Review, 76(5), 4-9.

## Appendix 2

### Interview Questions *(provided with consent form)*

Please refer to the definition of cyberbullying for this study when answering interview questions: "cyberbullying is the repeated use of technology to harass, humiliate, or threaten" (Holladay, 2011, p.4)

1. During your enrollment at the University, approximately how many cyberbullying events have you experienced?
2. Were you a cyberbullying witness, victimized by cyberbullying, and/or one who exhibited cyberbullying behavior as a university student?  
Please explain your role in the incidence(s).
3. How many individuals were involved in the university cyberbullying incident(s) you've experienced?
4. What were their roles, such as a university student or instructor, parent of student, etc.?
5. What forms of technology were involved?
6. How long did this go on?
7. What did you do about the situation?
8. What did others do about this?
9. What repercussions, if any, happened to the person exhibiting cyberbullying behavior?
10. What were the outcomes for the person victimized by the cyberbullying?
11. How did these event(s) affect your life and learning?
12. What can the University do to help students share cyberbullying incidents with University faculty and/or administration?
13. What is your opinion as to how to minimize cyberbullying at the University?
14. What additional information would you like to add for this study?

### Reference

Holladay, J. (2011). Cyberbullying . Education Digest: Essential Readings Condensed for Quick Review, 76(5), 4-9.

### Appendix 3

#### Qualitative Survey Responses

##### **Cyberbullying affecting university learning "other" category:**

50 (20.6%) other - please specify:

- As a mother, I witnessed my teen-age son victimized to this behavior.
- Disappointment when I read about instances in articles, or what have you.
- I am informed of how cyberbullying could affect others including my classmates and instructors.
- I didn't want to play the games anymore.
- I have witnessed it once or twice. I know it is a big issue, however I think my campus at least, is able to control it quite well. I have never witnessed cyberbullying on campus.
- Allowed me to fight against authoritarians and white male supremacists without fear that some authority will intervene and make things fair, hamstringing my words and allowing an idiotic and insidious point of view to remain unchallenged.
- Increase in feeling uncomfortable in the presence of my advisor
- It's caused me to be amused at how silly and childish people are on the internet, which, if anything, should improve self-esteem.
- Lessened comfort and sense of safety on campus.
- Makes me want to get even...because the current system has failed to provide the proper redress to stop it.
- Not feeling safe in my home
- Ruins the vibe.
- Reputation of university tarnished with racial comment on facebook incidents last year
- 30 answered "none" or "not at all" with these comments:
  - None for me, but I know it has affected my friends' ability to do well in school. Some of them even dropped out.
  - None. I have just seen the effects in those affected.
  - No affect whatsoever. didnt know it was occurring.
  - None, to be honest. I've never seen or heard of anything I'd consider cyberbullying.
  - None. I am not phased by cyber bullying.
  - Hasn't really affected me.
  - This stupid survey that I decided to fill out is really bothering me. Why am I doing this its such a joke. People need to stop crying about bullying its not a problem. The problem is people need to grow up and deal with there problems.
  - Cyber bullying hasn't affected me at all.
  - Cyberbullying hasn't really affected me because I was not a victim and I wasn't the one bullying a person.
  - Haven't had an experience negative enough to affect me.
  - Can't say it has affected me much. It's part of the competitive environment of online gaming which my experiences with cyber-bullying are exclusive to. You give it out and you take it.
  - I have not been affected by this type of behavior, to my memory.
  - I have not been affected.
  - Hasn't affected me personally. Has made me think about how people get hurt and think about what kind of people cyberbully.
  - It hasn't.
  - It's not an issue
- 5 answered not applicable
- 1 selected "other" with no response

***What University could/should do.***

- As a public educational institution the U has an obligation to not only protect its students, faculty and staff from bullying but to actively oppose it through discipline, education and advocacy and monitor and control its impacts.
- Netiquette notes in syllabi is a good idea.
- The emphasis on cyberbullying is laudable, but please don't forget that face-to-face bullying still happens frequently - particularly in the form of derogatory comments about sexual orientation ("that's so gay", etc).
- Tools should be there for witness and victim, but direct involvement by the University is not necessary (yet).
- Would the university policy address more than the university websites or would it also include other sites such as Facebook-
- By allowing peers to personally attack one another without any repercussions may perpetual the cycle. When bullying is no longer face-to-face the chance of consequences decrease, and therefore increase the likelihood of attacks that are higher in intensity.
- Cyberbullying is as bad as face to face bullying. All forms of bullying must be eliminated for the health and equality of all students. Too many lives have been lost because bullying has been allowed to be brushed under the rug. We needs stricter punishments for any form of bullying.
- I think being able to talk to people about what is happening will also help lower cyberbullying.
- I think just by having your leaders of any institution promoting the proper behavior is a great step. Then if they can convince leaders of the student body, not just the political leaders, but the leaders in social groups, to also follow the behavior then I think the problem will be solved.
- I think schools should take this more seriously.
- If this will turn in to a committee that is going to decide policy on this issue, remember that most students are leaving home for the first time. I don't think online monitoring of people's accounts is appropriate, but let the students know that it can be an issue and where someone should go to report it.
- Explain what the University considers to be cyberbullying at the beginning of the study or in the invitation e-mail.
- Such behavior should be clearly labeled as unacceptable, and in the event that it occurs, the offender should be expelled.

***Cyberbullying is a problem of immature people - not a college/university issue.***

- Adults need to grow up.
- To be completely honest, I think cyberbullying is something that is only a problem for middle school and high school girls.
- It's not an issue, nothing needs to be done.
- It is not as common in the University setting and when it does happen it tends to be freshmen or sometimes sophomores
- I have witnessed it once or twice. I know it is a big issue, however I think my campus at least, is able to control it quite well. I have never witnessed cyberbullying on campus. I have never lived off campus. Maybe, with the use of Facebook and other online resources cyberbullying is present. However, I don't think students, staff, or faculty would tolerate any sort of cyberbullying in a University setting. We are a very open and accepting campus community and I do not think a cyberbully would do much harm before someone stood up to them.
- I am of the opinion that allegations - concerns over cyberbullying may be legitimate with young children, in cases where parents should be keeping closer tabs on how their children communicate. Frankly, I find it a little strange that the university is even looking into this. I feel that learning proper social interaction is part of college, and that adding guide-rails would detract from that learning experience. And at any rate, much of what could be considered "cyberbullying" occurs outside university networks and websites, and is by definition not the university's domain.
- From my experience, cyberbullying is uncommon at the university level. Students who wish to bully other students generally do so face-to-face, rather than through technology. Most potential bullies understand how much more risky cyberbullying can be, and choose to do it in person, usually in a secluded area to avoid getting caught.
- Cyber bullying is ridiculous as a subject to study.
- From what I've seen, it isn't a big deal after high school.



- Don't institute any new policies. This is a university and a big one at that any action that could make a serious difference would be far too big of an invasion into the privacy of university faculty and students. As it is it is simply not big enough of an issue to begin infringing on free speech rights. By this point in students lives they are hopefully mature enough to handle these situations on their own or understand that there are relevant authority figures who are capable of helping.
- I personally haven't seen cyberbullying going on in my age group since I was in junior high. I'm sure it still exists, but I think it's more of a problem for less mature ages.
- I'm not going to be a help because I feel like the only bullying that is a problem is face to face because you can't stop it, but online there is plenty of ways to block that person from getting to you.
- Its a joke, does not exist stop making a deal of it.
- Is this really a problem at U campuses- While it may be in high schools, I would think that college students can better control their behavior. Or so we would hope. However, the fact that they can't, or don't, doesn't mean the the U should play Big Brother, beyond having a policy akin to what it has regarding verbal bullying. Students should be encouraged to report incidents to RAs, professors, etc, which and law enforcement, but any action needs to come from established University policies. Students who are experiencing bullying can also be encouraged to contact the campus counseling services, which are mandated reporters in the case of physical threat to self or others, as are professors and RAs. Bullying that occurs in class or via class-required online activity should be treated the same as it would be if the same action occurred in the classroom.

#### ***Level of social media involvement.***

- I personally feel as if some victims of cyberbullying are hated on because they post too deep of statuses or too personal pictures etc. Controlling and censoring what you post on the internet can lower your chances of being cyberbullied.
- I know people that have been cyber bullied and I helped them reduce their vulnerability to cyber bullies.
- I don't have Facebook, If more people were in the same boat as me the world would be a better place.
- Honestly, I have very little interaction with messaging media that would normally be used for cyber bullying. I do not have a facebook, twitter, myspace, or a blog. In the past, I rarely used AOL messenger (when it was popular), and I only google chat with my significant other and a NA or no response group of close friends. My youtube account is private and I do not post messages using it. This is not hyper-vigilance, I just do not feel that socialization over the internet is good for social development, as it allows people too much anonymity, which in my opinion leads to things like cyber-bullying, but also increased social isolation and inability to function in social situations. Also, I know that future employers often scan these media to screen applicants, and this ensures there is no unflattering information out there that would discourage future employers.
- Cyberbullying is a new phenomena for someone my age (34 yrs.), email was only starting to be used when I originally entered undergraduate education at the university. At this point in my education, I am beyond the point of really being a part of the university 'lifestyle.'
- I have heard of cyberbullying, but I do not participate frequently in online social networks. I only use Facebook to keep in contact with far away friends and family.
- I think cyber-bullying in regards to online gaming is not an issue. It doesn't much affect my real life other than thinking something was a little mean/unwarranted/unfair; it's just for sport like talking smack in a sports game. Cyber bullying on social networking sites like Facebook must present a different issue and a different challenge/solution. That I imagine is much different as to how it affects a person.

#### ***Little experience with cyberbullying.***

- I've been bullied before in my life, but not cyber-bullied. This is a new phenomenon that came with technology, it hasn't happened to me.
- You should include a "not applicable" option to those of us for whom "cyberspace" didn't exist when we were in grade school.
- I don't think this existed yet when I was in primary school.
- I have never been apart of cyberbullying, never a witness, attacker, or victim, while at the University or after.

- I haven't really seen cyberbullying and, for example, in my high school (Coon Rapids) where students were just recently suspended for bullying, the whole story isn't seen by admins or instructors. A thorough investigation would be necessary before some rash decision is made because we want to squash the problem.
- I think this is more of a problem for the generation below me.
- I'd imagine this is something that younger students who grew up with social networks in grade/middle/high school have more experience with.

***Cyberbullying presence in higher education.***

- My experience with cyberbullying was a combination of spoofing and property theft. The individuals stole my phone and copied my Sim Card. They then started spoofing messages to most of my contacts lies about myself and my significant other. These couple of individuals continued to harass and try and convince my parents, family and friends that I was involved in all sorts of illegal activities that made it seem like I was a criminal and a bad person. I am still trying to find it in my heart to forgive these 2 individuals, but struggle with the anger and hate towards them daily. I never once retaliated for what they did, but I am trying to with hold this and other aggression towards them.
- Since you can not see who if cyberbullying you, you start to think of everyone as the bully causing them to withdraw socially.
- Lots of sexual harassment.
- I would not be comfortable meeting due to worry about how this would affect me, as many students have brought this to [school] by administration. We have been told that there are funding issues and school might not be accredited and that this is not the time to bring up the issues. These issues need to be brought up to the [accrediting board] accreditation as school should not be allowing this.

***Cyberbullying issue is unclear or hard to address.***

- I just do not understand how the University has a role in this unless the cyberbullyer is using a school computer or something like that.
- I think it is personally something difficult to track because the cyberbully can say, "that's not what I meant" if confronted about his or her behavior.
- I think that there is a current national obsession with bullying.
- Possibly tell us what your definition of cyberbullying is that will be used in your research.

***Cyberbullies are part of life.***

- I think if you guys actually care about this issue the best thing you could do is to tell students (but not is stupid seminars because nobody cares about seminars) that online there are these things called haters. Tell them that they're everywhere and that you can't take them too seriously because when they insult you they don't really care about the insults or about you or insulting you. What they care about is making you freak out because it's funny when people freak out and the easiest way to do it is to insult you. so that's what they do. they're called trolls and they know what they're doing because they do it a lot. ignore them. it's hard, harder than it sounds, but do it anyway. Do it because they won't listen to reason, because that's what they want because when they don't listen you'll freak out and that's what they want because it's funny. Of course you won't see it that way because you care about what you're talking about but they don't so they'll just insult you more. Don't listen don't explain yourself, just ignore them. This obviously doesn't apply to all situations, because you might know them, but please don't feed the trolls. It only makes them hungry.
- Some people are just jerks [*sic.*], and there is not much anyone can do about it.
- Cyberbully the cyberbullies.
- In the few cases I've seen, cyberbullying is made worse by responding aggressively as is the case in many face-to-face encounters. I believe it is important for people to take what others say on the internet with a grain of salt. While the person bullying may really believe it, they probably wouldn't say it to the person's face. While most people have some prejudice (big or small), the internet seems to reduce people's inhibitions because there is less threat of punishment.

***This is a police matter, not a University matter.***

- I was interrogated from the city's police officer because she thought I wrote this rude message to a student on campus which was not true because I never wrote it and she just thought I did it right off the back because that student and I got into an argument so make sure the police officer gets their facts straight before going to the student accusing them of nothing. Also, don't get the whole entire chancellor involved. The school does not need to be notified. The police should.
- Did not have success with campus police, but with city police.

***This is a freedom of speech issue.***

- It's a tough issue to talk about. Some people say "I have freedom of speech/text/etc", while others believe it is cyberbullying. The definition of cyberbullying is not clear enough. Maybe as part of orientation, cyberbullying needs to be addressed.

***Witnesses' responsibility.***

- When it comes to cyberbullying on a public site, such as Facebook, I think it's up to the witnesses of the bullying to stand up for the person getting bullied.

## Appendix 4

### Interview Summaries

Three male and six female students were interviewed between December 22, 2011, and April 1, 2012. One interview was via Skype, four were face-to-face interviews on the students' campuses, and four were telephone interviews.

#### Interview A

The interviewee was not victimized by cyberbullying but a witness to cyberbullying and knows the male who was the cyberbully. The incident occurred spring semester 2012 and Facebook was used. She knows about cyberbullying because of the big focus to educate students about bullying in secondary school. In her high school, suicides were attributed to being bullied, so a lot of efforts to stop bullying were put into place. Regarding her university account, witnesses on Facebook were in opposition to the cyberbully and responded to the bully as his behavior being wrong. She has witnessed cyberbullying using other technology. With Twitter, bullying can be more aggressive, and with FaceBook you can block people, as there are more controls. There seems to be a lot of rude remarks in Facebook but aggressive (continuing) bullying can be done using Twitter. Resources that could help minimize cyberbullying at the University would be the use of security and surveillance and the bullies' resources could be blocked or de-activated because of misuse. Students usually know where they can go to get help if they are victimized by cyberbullying. Each technology has different ways to deal with it, such as blocking and unfriending in Facebook. Students have to make their own decisions. The University doesn't need to get involved unless it gets to be serious.

#### Interview B

Interviewee was witness to, but not victimized by, cyberbullying. A listserv is used on this campus and there were posts that were sexist in nature that were inappropriate. There were back and forth responses where other witnesses emailed that the statements were inappropriate. Campus police got involved, however, it is a freedom of speech issue. The duration was about a week and it ended up in the local newspaper. It was brief and hasn't happened since.

Facebook is also used where demeaning commentary is posted. There were about six people involved in that event witnessed and there were multiple episodes of responses. Witnesses usually tell the bully to stop it. Sometimes postings are just jokes and taken the wrong way and overreaction occurs.

Ways that the University could help is to better filter the listserv postings, educate students, involve the themed weeks on campus for education. Student rights are important. This small campus has close relationships between students and faculty (e.g., faculty are addressed on a first-name basis by students) and students have opportunities to seek help and advisement if there are problems. We are all adults. School representatives should speak out about this too when serious problems occur. Students should report cyberbullying events and be open and discuss it. The bully should be confronted. There is a technology/media course on this campus that addresses cyberbullying.

#### Interview C

This interviewee has not evidenced cyberbullying at the University. She has witnessed Facebook events that were initially a joke but taken the wrong way and ended up not being a problem. It is the student's responsibility to act correctly as well as deal with negative communications. The University doesn't need to do anything unless it becomes a serious problem. The University could send out emails to inform students what to do in case they are in need of help.

#### Interview D

The interviewee has been involved in an event that began spring of last year, and is still an ongoing problem. The interviewee and fiancé were (and still are) targets of cyberbullying, more so for the

fiancé than himself. It started out when they were dating and going to school on this campus (he has recently graduated and has moved from this campus' city. His girlfriend, now fiancé, left this campus and goes to school elsewhere, however the cyberbullies have followed her there through a network of the cyberbullies' friends.

The event started out with the bullies accusing him of stealing money from them, which he did not do. The bullies, one being a resident advisor (RA) on the campus, stole his sim card from his phone and copied the info and sent crank texting to his family and friends (e.g., sent messages that his girlfriend was pregnant, which she was not). The form of cyberbullying is termed "Spoofing." The bullies also stole his laptop. The bullies went to campus police and lied about the stolen money. One campus police officer sided with the bullies rather than him and his girlfriend. The city police ended up being helpful for him and his girlfriend. There are now charges against the bullies, one in particular, and she may end up in jail over this ordeal because it is considered a stalking offense.

As horrible as this has been for him and his fiancé, he believes he is stronger now. He also realizes how patient he can be through difficult times, his fiancé more so. It appears justice will prevail. However, even though it was one unhelpful campus officer, he has no faith in the campus police in these circumstances.

### **Interview E**

The interviewee has witnessed cyberbullying while a student at the University, but has not been victimized. There were two events he relayed that were during his university studies involving students. One was via email and the other using Facebook. The duration of each lasted only about a day. Witnesses told the bully to stop their behavior. The victims were appreciative to have help from their peers. Neither of these events affected him in any great way. The University could help on a case by case basis depending on severity. There could be emails from the University to address this and/or report it. There can be a fine line as to whether cyberbullying is actually occurring or just rude behavior.

### **Interview F**

The interviewee witnessed cyberbullying that took place via Facebook between students of the University. Students should handle this on their own. They can block people on Facebook and via email. The University shouldn't get involved unless there is the possibility of physical and re-occurring threats. An anonymous tip line could be created and announced to students if they need help. Cyberbullying is a problem as it is much easier to do than face-to-face bullying.

### **Interview G**

This interviewee has not experienced cyberbullying while a university student. If it happens, the cyberbully should be confronted. The University could create a policy. Faculty should be resources for students to go to with these problems. With online social networking increasing as an important part of student's lives, liability and legal issues may increase that could be detrimental to the University. As long as University resources are involved in incidents, the University has more obligation to be involved in minimizing these problems.

### **Interview H**

This interviewee was involved in two cyberbullying incidences as a witness, however, they were both out of class, one using Facebook, the other Twitter. The bully made a fake profile of the victim on Twitter. This was eventually removed after about one month. There are liability issues involved. The Facebook incident was arguing between people. Younger students (in secondary school) usually are more immature. University students should be more mature to know what is appropriate or not. Both of these incidents did not last long. Face-to-face bullying is more direct and obvious, but cyberbullying is behind the scenes and may or may not be a problem. The definition of cyberbullying

is not clear. The University shouldn't get involved in this other than advocating appropriate behavior. The University shouldn't go to the extent of blocking users from resources.

### **Interview I**

This interviewee had just one cyberbullying incident as a witness which involved her friends, one being the bully and one being the victim. Face-to-face bullying was also involved. The bully also exhibited aggressive behavior with other students and they just put up with his behavior, however some students do tell him to stop, even though most are afraid of him. Both Facebook and Twitter were used in the cyberbullying attacks on her friend. Very negative comments were posted. She stood up for her friend and the bully seems to be backing off now. She says her friend is tough and has taken it well, but the behavior is disturbing to her and other students. Her friend has sent milder negative responses back to the bully, but mostly she ignores it. No one sided with the bully and he did not get the reaction he was probably expecting. Students know to go to their advisors if they have problems, so not sure what else the University could do to assist in minimizing this behavior. The incidents were reported to the advisement office but it got dropped initially. The bully's behavior is affecting students who are in the same academic program. The bully appears to need to feel in power over others. The bully also has a charismatic personality so is well-liked at times. Bullying is a personal issue each student has to deal with and most students grow up and know what is appropriate behavior and what is not. It does become a problem if serious, and that is where laws, such as stalking laws, could come in to play.

# Reassessing the Skills Required of Graduates of an Information Systems Program: An Updated Analysis

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## Abstract

The study involves an updated analysis of the job characteristics of information systems graduates based on the status of the job market as well as the perceptions of 72 graduates from an information systems program of a Midwestern university. Approximately one-third of the graduates were working in positions related to technical support. Providing end-user support, installing software, managing information, and installing and maintaining computer devices/components were the top four tasks performed by the largest number of graduates. Other aspects of the graduates' jobs were similar to national trends and most felt adequately prepared based on their coursework.

**Keywords:** information systems (IS), information technology (IT), IS graduates, IS graduate survey demographics, and IS/IT labor market employment outlook

## 1. INTRODUCTION

The fast-paced advance of technology continually reshapes the workplace and motivates educators to improve curriculum. One of the main educational goals is preparing graduates for the workplace. This is due in part to the constantly evolving IT landscape with its emerging technologies and advanced business computer systems. As the field continues to change and evolve at an incredibly fast pace, faculty knowledge of the most current workforce

needs is paramount. It is essential not only to identify these newly required positions, but also the specific tasks and responsibilities needed for each of these new jobs. This also requires educators to modify and update their curriculum and instruction regularly so that their students acquire the skills and knowledge requisite to performing these tasks in the current workplace.

A steady supply of IT professionals to the business community is necessary for our nation to remain competitive in the global market, and

educators must train and support the next generation of IT specialists.

In an attempt to analyze the skills needed and the job market of the next few years, many in the IT field use surveys or interviews to gather feedback from business professionals. Atkinson and Andes (2010), provide additional support to the growing employment in the IS/IT professions. The authors argue that even though offshoring has caused a decrease in IT jobs from 1998 to 2008 (programming jobs have declined by 25 percent over the last decade, a loss of 134,000 jobs, presumably much due to offshoring), two kinds of IT jobs have grown. These include:

“ IT workers have to be onsite or nearby – jobs such as network administrators and computer support specialists, adding roughly 147,000 and 106,000 jobs respectively. Likewise, Network Systems and Data Communications Analysts jobs grew from 98,000 in 1999 to over 230,000 in 2008, or 134 percent. The second kind are jobs that are higher skilled and hence harder to be moved to low wage nations. For example, computer engineer, software and application engineering jobs paid 25 percent more than the average IT job and 27 percent more than computer programmers and grew by over 400,000 during this period. Likewise, research computer scientists, who pay the most of any IT occupation, also grew, albeit not as fast.” (Atkinson & Andes, 2010, pp. 1 - 2).

Studies like these help educators stay current and manage content in the classroom in order to incorporate valuable information on current threats, challenges, and opportunities students will face as graduates of IS programs. Some educators also survey graduates to identify skill sets performed in the workplace. Surveys of graduates, along with analysis of perceptions of which skills are most important, contribute to validating classroom content. This information can be used by faculty to help them revise and improve curricula and better prepare students for the changing workplace.

## 2. PURPOSE AND RESEARCH QUESTIONS

This updated study elaborates on workplace experiences gathered from graduates of an IS program at a Midwestern university. Specifically, the purpose was to identify the types of jobs and tasks performed by the graduates, to identify

their perceptions regarding the importance of various skills in the curriculum, and to compare the status of males and females in such areas as time taken to obtain employment, salaries, primary job focus, and perceptions of importance of various technical and nontechnical skills.

Analysis of this type of data can contribute to improvement in the performance of an IS curriculum. Post-graduation surveys are an effective means to evaluate the value of education gained. Such surveys can also assess institutional excellence, providing valuable feedback on graduates' experiences in the workplace and how higher education impacted the students' experience (Andero, 2000). Graduates who have completed a program are often able to evaluate its effectiveness and make comments regarding content areas to be included in the curriculum once they are in the workforce.

The research questions were:

1. On average, how much time do graduates spend obtaining positions after graduation, and is there a significant difference between males and females in the time taken?
2. What are the salaries of the graduates' first information systems jobs, and is there a difference in salaries between males and females?
3. What are the main areas of job focus (career fields) of the graduates, and is there a difference between males and females?
4. What are the main types of tasks that the graduates perform on a regular basis, and are there a difference between males and females?
5. How well did the IST curriculum prepare graduates for their present employment?

This paper reports on the overall responses of the graduates; the analysis of gender differences is part of another study.

## 3. REVIEW OF THE LITERATURE

### Labor Market, Industry Trends, and Projected IT Outlook

The recent recession of 2007 through 2009 significantly affected the U.S. economy, labor market, and every sector of business and industry. By January 2010, job losses were at their lowest point totaling approximately 8.8



million in losses (Goodman & Mance, 2011). Among one of the industry sectors affected, is the sector of information (this sector includes occupations in the information and communication technology fields), which according to Goodman and Mance (2011), experienced their largest sustained job losses on record (p. 7).

The good news is that the projections for the U.S. labor market and economy have been improving since its stabilization in 2010 with strong employment outlooks in the information sector. According to Henderson (2012), the U.S. industry employment outlook and projections through 2020 state that the information sector "is projected to have the fastest growth rate in real output for all major industry sectors, increasing from nearly \$1.2 trillion in 2010 to almost \$1.9 trillion in 2020," (p. 68). These projections are further supported by the U.S. Bureau of Labor Statistics' (BLS) *2010-2020 Occupational Outlook Handbook* for computer and information technology occupations. Additionally, the BLS has projected an increase of 22% employment for all computer related occupations from 2010 through 2020 as compared to a 14% increase in all other occupation.

Further the BLS's *2010-2020 Occupational Outlook Handbook* (2012) for computer and information technology occupations identifies eight occupational categories and their respective occupational growth. These occupations include:

- Computer and information research scientists
- Computer programmers
- Computer support specialists
- Computer systems analysts
- Database administrators
- Information security analysts, web developers, and computer network architects
- Network and computer systems administrators
- Software developers

As identified in Figure 1 (Appendix), data from the BLS shows that all computer and information technology occupations will outperform "all occupations" in growth through 2020. Additionally, the data identified the following percent growth through 2020 in each of the following occupational categories: software developers-apps 28%, software developers-

systems 32%, software developers 28%, network and computer systems administrators 28%, information security analyst, web developers and computer network architects 22%, database administrators 31%, computer systems analysts 22%, computer support specialists 18%, and computer and information research scientists 19%. The decline in employment in the category of computer programmers (12% growth versus "all occupations" growth of 14% and all computer occupations of 22%) may be supported by Atkinson and Andes's (2010) discussions relating to this occupations argument due to offshoring.

### **IT Employment Demographics by Gender, Occupation, and Salaries**

In the U.S. Department of Labor's (2010) report, *Women in the labor force: A databook*, the percentage of women employed in the professional and related occupations category showed that women hold 57.5% of the jobs in this category. This category further includes sub-categories in the computer and mathematics occupations. The computer sub-categories include: computer scientists and systems analysts, computer programmers, computer software engineers, computer support specialists, database administrators, network and computer administrators, and network systems and data communications analysts. Of these sub-categories, the following percent employment by women were provided: computer scientists and systems analysts, 26.9%; computer programmers, 20.2%; computer software engineers, 20.2%; computer support specialists, 26.7%; database administrators, 35.3%; network and computer administrators, 22.3%; and, network systems and data communications analysts, 24.7%.

Additionally, this report stated that women working in 1979 earned approximately 62% of what men did versus 80% in 2009. The most recent data for women-to-men earnings peaked at 81% in 2005 to 2006, slightly down to 80% in 2007, where it currently remains through 2009. Further in 2009, women accounted for 51% of all employed individuals in the management, professional, and related occupations (p. 1).

Thibodeau (2008), in an article published on *Computerworld.com*, states that men are making approximately 12% more in earnings than women in the tech fields. Further referencing a survey performed by Dice.com, the

survey found that earnings for men increased by 2.7% in 2007 as compared to a flat women's earnings. The average salary for men during this survey in was \$76,582, versus \$67,507 for women in the same position.

Further, the BLS's *2010-2020 Occupational Outlook Handbook* (2012) for the computer and information technology occupations states that the 2010 median salaries for the 8 occupational categories listed above are: software developers - \$90,530; network and computer systems administrators - \$69,160; information security analyst, web developers and computer network architects - \$75,660; database administrators - \$73,490; computer systems analysts - \$77,740; computer support specialists - \$46,260; computer programmers - \$71,380; and, computer and information research scientists - \$100,660, respectively.

### **IT Skills: 2012 and Beyond**

#### *Technical IT skills*

From a survey of 353 IT executives, Sala (2011) found that the following IT skills are presently in demand. These technical skills (ranked in order of hiring percentage) for 2012 include (a) programming and application development, (b) project management, (c) help desk/technical support, (d) networking, (e) business intelligence, (f) data center operations, (g) Web 2.0, (h) security, and (i) telecommunications.

Additionally, in an international study performed by CompTIA (2012) of 1,061 IT and business managers involved in managing IT or IT staff within their organizations, the authors classify 3 objectives the study. The overall goal of the study was to gain a better understanding of the IT skills in demand and identify any existing or forthcoming IT skills in shortage. The stated objectives were: (1) identify which IT skills are and will be most important to employers, (2) determine how well IT skills align with current/future needs of employers, and (3) examine professional development practices (p. 1).

The study identified 15 technical skills from the respondents that are considered the top priorities in IT for 2012. These following technical skills listed below are in order of percent importance tabulated from all respondents:

- Cybersecurity (88%),
- Data storage/back-up (88%),

- Updating aging computers/software for staff (82%),
- Network infrastructure (82%),
- Disaster recovery/business continuity planning (81%),
- Automating business process through technology (73%),
- Mobility (66%),
- Web/online presence, including e-commerce (64%),
- Collaboration (63%),
- Telecommunications (62%),
- Virtualization (61%),
- Business intelligence/data analytics and mining (59%)
- Cloud computing (50%),
- Social networking technologies (41%), and
- Green IT (38%) (CompTIA, 2012, p.5).

Additionally, in an article published on *CIO.com*, Levinson (2012), states that research from 2 different IT firms suggests that there are 14 different IT skill sets and sub-skill sets in demand for 2012 identified by research performed by Bluewolf. These skill sets and sub-skill sets included:

- *Mobile application development*: HTML5, iPhone/iPad, Android, JavaScript, and UI design.
- *Cloud computing*: Elouqa, Marketo, Salesforce, Google Apps, and Amazon Web Service - Elastic Compute Cloud (EC2).
- *Big Data*; MySQL, HBase, Cognos, and Informatica

Although the insights/studies and company analyses listed above cover a variety of IT businesses, it is obvious that there is a very wide variety and/or disparity in IT skills needs based solely on the type of companies researched. In summary, the study identified for those companies surveyed, that their IT "technical" skills gaps concerns included: database/information management, networks/infrastructure, server/data center management, security/cybersecurity, helpdesk/IT support, data analytics/business intelligence, web design/development, application development/programming, virtualization, storage/data back-up, and cloud computing - IaaS or PaaS.

#### *Non-technical (Soft) IT Skills*

According to the BLS's *2010-2020 Occupational Outlook Handbook* (2012) concerning IT "soft" skills in the workforce, the handbook identified

the following *soft skills* related to the 8 major categories under the computer and information technology occupations. These soft skill sets for each of the categories are:

- *Computer and Information Research Scientists*: analytical, communications, critical-thinking, ingenuity, detail-oriented, and logical thinking skills.
- *Computer programmers*: analytical, concentration, and detail-oriented skills.
- *Computer support specialist*: interpersonal, listening, problem-solving, speaking, and writing skills.
- *Computer systems analysts*: analytical, communication, creativity, and teamwork skills.
- *Database administrators*: analytical, communication, detail-oriented, logical thinking, and problem-solving skills.
- *Information security analysts, web developers, and network architects*: analytical, concentration, creativity, customer service, detail-oriented, ingenuity, leadership, organizational, problem-solving, and teamwork skills.
- *Network and computer systems administrators*: analytical, communication, computer, multi-tasking, and problem-solving skills.
- *Software developers*: analytical, communication, creativity, customer service, detail-oriented, problem-solving, teamwork, and technical skills.

Further, CompTIA's (2012) research provided additional insights from its study of the 1,061 IT and business managers involved in managing IT or IT staff within their organizations and their expectations on what "soft skills" are needed in the IT profession. These soft skills include (by respondent rank of percent very important): (a) strong work ethic (71%), (b) motivation and initiative (67%), (c) customer service (65%), (d) flexibility and adaptability (64%), (e) innovation and creative problem solving (63%), (f) analytical skills (61%), teamwork (60%), verbal and written communication (59%), and project management (47%).

In a past report published by the Boston Advanced Technological Education Connections (BATEC, 2007) in collaboration with research through the National Science Foundation (NSF) and the University of Massachusetts relating to "soft skills" in the IT professions, a regional survey of 68 IT and Information and Communication Technology (ICT) employers

stated that the most significant "soft skills" needed of IT personnel should include: (a) communication skills (verbal aptitude), (b) problem solving skills (especially problem definition), (c) greater facility with teamwork and collaboration, (d) ability to manage and motivate one's self, and (e) contextual knowledge of the work - Why, Whom, and When.

It is interesting in comparing the regional study in 2007 to both the most recent studies internationally and through the U.S. BLS in evaluation of soft skills in the IT profession and beyond. There is little variance in the fact, that even though we are a digital age, there is still a need for the human interface to ensure communication and technical success in IT endeavors.

### **Educational Demographics in IT**

The U.S. Department of Education, National Center for Education Statistics (2011a) reported for the 2009 to 2010 academic year, 32,466 associate's degrees were conferred, 39,589 bachelor's degrees were conferred, and 17,953 master's degrees were conferred in the computer and information sciences disciplines from all educational institutions (public, private for-profit, and private not-for-profit). In an additional report published by the U.S. Department of Education, National Center for Education Statistics (2011b) for the 2009 to 2010 academic year further data on the ethnicity of graduates with bachelor's degrees conferred in the computer and information sciences were provided. Of the ethnicity data identified in this report, 26,565 (67%) were White, 4,565 (12%) were Black/African American, 2,942 (7%) were Hispanic, 3,372 (9%) were Asian/Pacific Islander, 279 (< 1%) were American Indian/Alaska Native, and 1,866 (5%) were Non-resident alien.

Further in another report provided by the U.S. Department of Education, National Center for Education Statistics (2011c) stated that a total of 39,589 bachelor's degrees were conferred in the computer and information sciences disciplines during 2009 to 2010. Of this total, 32,410 (82%) degrees were obtained by men versus only 7,179 (18%) women. Additionally, the data provided for master's level degrees for this same period, showed a total of 17,953 degrees were conferred. Of this total, 13,017

(73%) degrees were obtained by men versus 4,936 (27%) degrees conferred by women.

The data provided above for conferred bachelor's degrees between men and women also provided a percent change in degree obtainment by gender from academic years 2004 to 2005 through 2009 to 2010. Degrees conferred by women in this category for the 2004 to 2005 academic year were 11,986. As stated above, degrees conferred by women in the 2009 to 2010 academic year were 7,719. This is a negative percent change of approximately 40% over 6 years. Additionally, men also saw a negative percent change across this same period, but at almost half of the loss (-23%) in degrees conferred. Peak degrees conferred in this field of study occurred for women in the 2002 to 2003 academic year with a total of 15,483 degrees conferred. Likewise for men, the peak academic year and number of degrees conferred was 2003 to 2004 and 44,585, respectively.

It was unclear from these reports why a decline in degree completion has happened over this period. One possible reason for the decline of males and females entering into an educational environment and specifically this field of study during this period may have been the recession and its impact on the information sector as previously discussed by Goodman and Mance (2011).

Additionally, the BLS's *2010-2020 Occupational Outlook Handbook* (2012) for the computer and information technology occupations states that of all 8 of the categories listed, 6 of these categories require a bachelor's degree. These occupations include: software developers, network and computer systems administrators, information security analyst, web developers and computer network architects, database administrators, computer systems analysts, and computer programmers. The occupation of computer support specialists states that the educational requirements are "some college, no degree." Most of these individuals have acquired an associate's degree in a computer related field, and then further their training and development through certifications and/or company specific training. Of all the educational requirements discussed above, only the occupation of computer and research scientist requires further education at the doctorate or professional level. Although, per the discussion in the *2010-2020 Occupational Outlook*

*Handbook* regarding this occupation, some government jobs in this occupation may only require a bachelor's degree.

#### 4. METHODS

Every other year beginning in 2001, a follow-up study of the graduates of an information systems and technologies degree at a Midwestern university was conducted. The survey was designed based on a review of the literature and the curriculum proposed by the Organizational Systems Research Association (Hunt, 2004). A panel of expert's pilot tested and reviewed it; revisions were made based on the feedback. For each of the studies (conducted in 2001, 2003, and 2005) the survey and cover letter were sent to the Human Subjects Review Board for approval. The study involved e-mailing a cover letter, and survey, to all students who graduated in the previous two year period. In 2001, the 1999-2000 graduates were surveyed with a return rate of 57%. In 2003, the 2001-2002 graduates were surveyed with a 62% return rate, and the 2003-2004 graduates were surveyed in 2005 with a 46% return rate. It is important to note that this included all of the graduates of this degree program. Originally, it was a two year office systems program; in 1997, this program was expanded into a four year information systems and technologies degree with the first students graduating in 1999. The survey was designed to identify the time it took to get the first job, the entry-level salary, the tasks and responsibilities of the graduates on their first information systems or information technology job, as well as their perceptions of the various skills they felt should be included in the curriculum.

A follow-up survey for IST graduates, Information System Technologies Survey, was used to collect data. The survey consists of 29 questions related to post-graduate educational and work experience as well as IST curriculum. The link to the survey was sent via e-mail to Midwestern university IST graduates (57% return rate) through Limesurvey and responses from participants were saved in Excel and SPSS. The total number of respondents to the survey was 72 with 60 male respondents (83.3%), 9 female respondents (12.5%), and 3 unidentified. The statistical software used for data analysis was SPSS.

The purpose of this study was to (a) provide demographic information on IST graduates, (b)

provide information on how long it took to find the first job, the entry-level salary, and how well 2010 and 2011 graduates think IST curriculum helped them prepare for their jobs, and (c) identify what tasks are more frequently performed in IST jobs and the primary focus of their jobs.

The survey includes 2 demographic questions, one Likert-scale question on how well graduates feel the IST curriculum prepared them for their jobs, two open-ended questions, and 21 multiple-choice questions. To answer previous research questions, we analyzed question 1 and 2 for demographic information, question 13 for how long it took to get the first job, question 15 for salary information, question 12 for how well the graduates feel IST curriculum prepared for their jobs, and question 17 and 18 for identifying most frequently performed tasks and primary focus of their jobs.

## 5. FINDINGS

### Demographic Information

Figure 2 below shows that of the 72 respondents, approximately 60 were male (83.3%), 6 were female (12.5%), and 6 did not identify their gender.

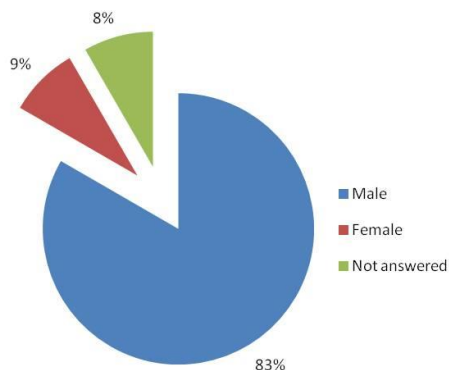


Figure 2. Survey Gender Demographics

Of the 72 respondents asked about their ethnicity, 61 of the respondents identified themselves as Caucasian (84.7%), 3 as Asian-American (4.2%), 1 as African-American (1.4%), 2 as other (2.8%), and 5 (6.9%) did not provide an answer. Figure 3 below provides the distribution of respondent's ethnicity responses:

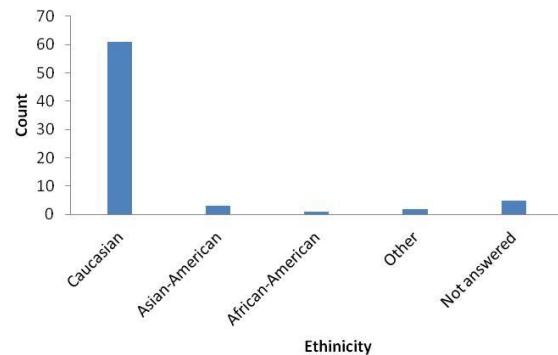


Figure 3. Survey Ethnicity Demographics

### Research Question 1: Time Taken to Obtain the First Job

This survey further asked "How long did it take you to get your first IST-related job?" Of the 59 individuals who responded, 18.6% said they were employed prior to graduation, 13.6% indicated they had an offer prior to graduation, 30.5% stated they found a job in less than three months, 22% said they found a job in more than three months and less than six months, and 8.6% indicated they were employed after 6 months. Almost 85% of the graduates in this survey were employed within six months of graduation.

### Research Question 2: Salary

Fifty-six of the respondents provided answers relating to their salary range. Of those respondents, 23.2% indicated they earned less than \$30,000 and 46.4% said they earned more than \$40,000. 25% of the graduates make more than \$50,000. Generally speaking, salary distribution is very balanced in every range (the data shows that the responses identify a relatively close uniform distribution).

### Research Question 3: Job Primary Focus

Respondents were asked to identify their primary job focus in which there are 10 categories of primary job focus. Of the 57 respondents to this question, each respondent was only allowed to pick one primary job focus. Twenty-six percent of the respondents identified Networking as the highest percentage of their job focus. Approximately twenty-one percent chose Other as their job focus with 0% choosing E-commerce as their job focus. Table 1 below provides a complete breakdown of responses to this question by number and percent:

Table 1

<i>Primary Job Focus</i>		
Job Focus	Frequency n	Percent %
Networking	14	24.6
Other	12	21.1
Technical/end user support	10	17.5
Information management	7	12.3
Information security management	5	8.8
Database design/development	4	7.0
Web design/development	2	3.5
Project management	2	3.5
Computer programming	1	1.8
E-commerce	0	0
Total	57	100

*Research Question 4: Tasks Performed*

The participants were asked to choose what type of job tasks they regularly performed in question 18 in which there are 20 categories of tasks. The respondents could pick all that applied and 71 participants completed the question. The mostly frequently picked task was providing technical/end-user support and it was picked by 33 participants. The least frequently picked task was developing e-commerce applications and it was picked only once. Table 2 below provides a complete breakdown of responses to this question:

The respondents evaluated how well the IST curriculum prepared them for their jobs in question 12. The question is measured in Likert-scale from 1 to 5 in which 1 represents "not at all prepared", 2 represents "not well prepared", 3 represents "somewhat prepared", 4 represents "well prepared", and 5 represents "very well prepared". The higher the value, the better that the IST curriculum prepared them for their jobs. The graduates were asked to rate question 12 from 1 to 5 and 65 graduates responded to the question. The mean of 3.54 indicated that graduates rated how well IST curriculum prepared them for their jobs between "somewhat prepared" and "well prepared".

Table 2

<i>Task Performed</i>	Frequency
Providing technical/end-user support	33
Maintaining/troubleshooting networks	32
Analyzing systems	27
Managing information	26
Setting up/configuring LANs	24
Maintaining accounts	24
Installing software	24
Installing/maintaining computer devices	19
Developing/redesigning systems	19
Configuring/maintaining WANs	15
Monitoring security systems	15
Maintaining databases	14
Maintaining web pages	12
Other	12
Customizing computer programs	10
Installing security systems	10
Writing computer programs	9
Creating web pages	9
Designing databases	8
Developing e-commerce applications	1

*Research Question 5: How Well IST Curriculum Prepared Graduates for Their Jobs*

**6. SUMMARY**

To summarize the major findings of this study from 2010 and 2011 graduates:

1. Respondents were dominated by Caucasian (almost 85%) with underrepresented African-American (1.4%) and Asian (4.2%). There were no enrollments of Hispanics at all.
2. Almost 85% of the responding graduates found a job within six months after graduation and 46.4% are earning more than \$40,000 annually and another 25% are earning more than \$50,000 per year.
3. Networking and Technical/end-user support were among the top of primary job foci and E-commerce was at the bottom.
4. Providing technical/end-user support and Maintaining/troubleshooting networks were among the most frequently performed tasks

and Developing e-commerce applications was the least frequent.

5. The graduates rated the IST curriculum preparation for jobs between "somewhat prepared" and "well prepared".

## 7. CONCLUSION AND FUTURE RESEARCH

The demographics of our respondents were in line with the demographics trends in all computing sciences. For example, the annual Taulbee Survey (Zweben and Bizot, 2012) reports that of all undergraduate computer science degrees awarded in 2010-2011, 66.9% were earned by Caucasians and 88.3% were earned by men. Since 2011, IST graduates at this institution were predominately Caucasian (84.7%). As with the supporting data provided from the U.S. Department of Education National Center for Education Statistics (2011a) relating to a graduate's ethnicity, further research and analysis should be performed in order to identify what barriers are preventing minorities and women from entering the disciplines of IS and IT, and their respective professional fields.

Our findings related to salary show that the majority our graduates that responded to the survey are earning more than \$40,000 annually. This figure is considerably less than salaries reported by other studies and the BLS but it should be noted that the figures in the current study are from new or recent hires. The BLS reports mean salaries for occupations which take into consideration promotions and salary increases over time. The authors plan to collect data from less recent graduates to determine how well our graduates are keeping pace with salary increases compared to national averages.

The most common job focus was networking related. However, as shown in Table 1, there were positive responses to most of the other categories. This finding is in line with the BLS's projections for various categories of jobs. Since our curriculum offers network specialization, and that is a job in high demand, our findings align and that portion of the curriculum is appropriate.

The average rating for how well IST curriculum prepared the graduates for their jobs was 3.54 (the highest is 5) indicating there is some room for curriculum improvement. IST Educators should focus on those tasks more frequently performed so that graduates can better prepare themselves for their future jobs. This study can provide insight in curriculum delivery for

educators in the IST field in order to make decisions on IST curriculum design.

The most commonly reported job tasks in our study are also aligned with the BLS's projection of jobs in the computer support specialist category. It is obvious that the graduates are being hired into high-demand jobs, however, perhaps the most important question is how well were they prepared. The 3.54 rating indicates the graduates were fairly well prepared, but there is room for improvement. The next step in this research is to analyze the quantitative data submitted by the respondents to develop specific goals for the current curriculum.

Because the IS/IT field experiences rapid change, it is important for academics to be attuned to the needs of hiring organizations. Graduates of our programs can provide the most relative connection between what is needed and what is being provided. This type of research can be useful and insightful to faculty as they strive to keep curricula timely and relevant.

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#### Editor's Note:

*This paper was selected for inclusion in the journal as a ISECON 2012 Meritorious Paper. The acceptance rate is typically 15% for this category of paper based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2012.*



## Appendix

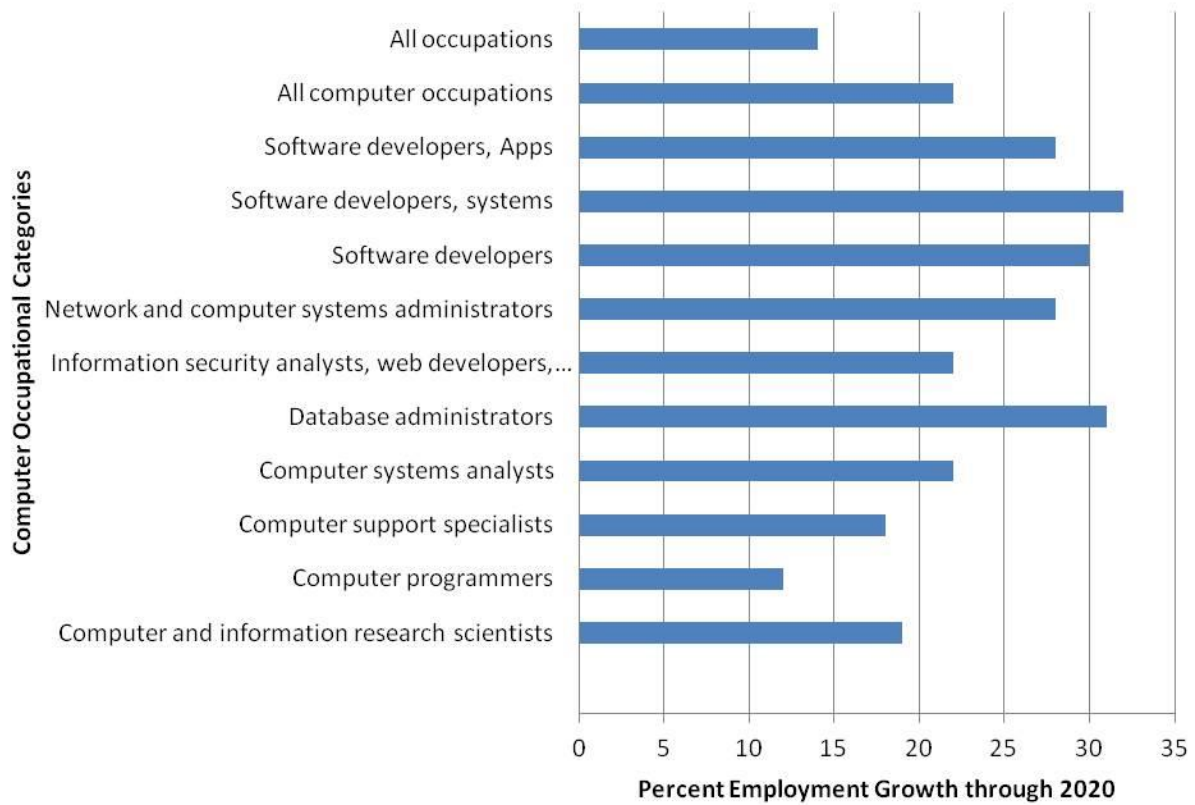


Figure 1. Comparison of computer and information occupational growth through 2020

# Effects of Social Networking on Adolescent Education

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## Abstract

In recent years, the use of social networking sites has grown tremendously especially among the teens and high school students. However, very little is known about the scale of use, the purpose, how students use these sites and, more specifically, whether these sites help or hurt their academic progress. This study investigates how high school students are using social networks for school- or education-based work. The study conducts survey among students of four schools in Rapides Parish, Louisiana and measures the usage, time spent on social networking sites, the specific websites that are being accessed, and the subjects being studied while on social networking sites, and tries to find out if these are helping or hurting the students' academic progress. The purpose of this research is to help education administrators, teachers and parents to discover how and whether social networking sites helping their students in their learning process. The study also provides recommendations to make the use of social networking sites effective and beneficial for the students.

**Keywords:** social networking, adolescent education, academic progress.

## 1. INTRODUCTION

Social Networking is the new wave of communication, whether it be for personal use, business, education and/or employment opportunities. Thanks to the growth in technology, individuals or groups in any area of the world can now access someone's information and connect through social networking sites (SNS). The users of social networking websites continue to grow rapidly. According to the Nielsen Company, global consumers spent more

than five and a half hours on social networking sites like Facebook and Twitter in December 2009, an 82% increase from the same time in the previous year when users were spending just over three hours on social networking sites. In addition, the overall traffic on social networking sites has grown over the last three years (Nielsen Wire Blog Page, 2010). Facebook (FB) currently leads the social networking sites in the number of users. Although anyone can freely become a member of other websites, FB is the leader of its kind. "We had 845 million

monthly active users at the end of December 2011. Approximately 80% of our monthly active users are outside the U.S. and Canada. We had 483 million daily active users on average in December 2011" (Facebook Newsroom, 2012).

All things have their positive and negative aspects. Even with social networking, there can be advantages and disadvantages of using the sites. Some advantages from using social networks are that one can be in touch with someone who is over a great distance within a few seconds as long as they have Internet access and a networking device such as a computer, cell phone, net books, tablets or game consoles like the Xbox and Wii. Another advantage is that one can easily communicate a message to a wide audience to view. For example, when a user posts a message on his or her Facebook wall, it is available for all of the user's friends to view. It is a great tool for marketing and getting a message out without sending multiple messages. One can also choose to send a private message for one person to view or to a specific group to view. The overall advantage of social networking is that it does what it is made for, which is communication. Although these things seem great, one must keep in mind the disadvantages of having such freedom and mobility in order to communicate.

A major disadvantage of using social networking websites is that most folks are not aware of the dangers they undergo once they display their personal information on these websites. Strangers, stalkers and hackers are able to possibly use someone's personal information for unethical reasons. For example, hackers can place a link on Facebook displaying information that a user may find interesting. The user who clicks on the hacker's link, may compromise personal information leaving the user's networking device open to pollution by spam, viruses and worms. Hacking is one of the main factors leading to identity theft. A person should never store their passwords, credit cards or personal information on their computer. It is important to have a good firewall installed on the computer if one chooses to engage in social websites to prevent such a cause. Hacking accounted for the largest number of compromised personal records in the last 12 months, involving an estimated 43 million in America (Computer Hacking and Identity Theft, 2012). Viruses can cause one to lose every piece of information on their computers, causing one to have to pay money to get their computer

back up and running; however, sometimes the important files stored on an infected computer can be lost forever. Another disadvantage is more personal. Since the rise of the popular social websites like Facebook and Twitter, users are constantly logging on to the websites to update their status, check their messages, add pictures, update locations and chat with another person online. This has caused many conflicts in the workplace, especially those that have not blocked social networking websites. Since one can now use a phone to log on, accurately monitoring workplace productivity is almost impossible, which can cause a company to suffer. The same can occur with students in grade school, who have many obligations to meet daily. Young teens are being affected the most because they are still learning what it is to be responsible. They are being targeted by predators and the academic progress of some may suffer because of it.

Teens continue to be avid users of social networking websites – as of September 2009, 73% of American teens of ages 12 to 17 used an online social network website, a statistic that has continued to climb upwards from 55% in November 2006 and 65% in February 2008 (Lenhart, Purcell, Smith, & Zickuhr, 2010). The question in hand remains how students are using these social networks in connection with doing school work and/or anything educationally connected. Although the educational side of technology is defined through the National Technology Plan, there is no definition in social networking as it relates to education and how it should be used. Social networking has become one of the biggest forms of communication since the growth of technology. This wave of technology is affecting the new generation of communicators beginning with adolescent scholars. Most are not aware of how posting something that is personal or even posting something that is inappropriate can compromise their security.

This study examines the decisions that teenagers are making with the use of social networking websites in terms of personal use and educational use. From that information, recommendations are provided as to what provisions may need to be made by parents, teachers, students, administrators and information technology departments of local schools. The rest of the paper is organized as follows: Section 2 provides the literature review, Section 3 describes the research methods,

Section 4 analyzes the data and provides the results, Section 5 describes the recommendations, Section 6 is the conclusions and Section 7 provides the references.

## 2. LITERATURE REVIEW

Greenhow & Robelia (2009) explore SNS uses and perceptions among high school teenagers from low income families, an adolescent subgroup rarely featured in either the scholarly or popular discourse. The study focused on three questions regarding social networking and learning: how do students view the social networks for learning in and out of school, what role does the SNS play in learning identities' formation and what kind of twenty-first century learning do the students demonstrate on the social networking sites. The study focused only on the subjects whose family income was \$25,000 or below. The first result focused on the students' view of learning on SNS. The researchers discovered that the students felt they learned technology skills, creativity, and communication skills by using MySpace (Greenhow & Robelia, 2008); however, they saw little connection between their use of this social software and the knowledge and skills they believed their teachers valued in school (Greenhow & Robelia, 2009). Using social and technical features, they engaged in self-discovery and self-presentation within a semipublic context (e.g., all profiles were set to be viewed by 'friends only'). The majority of the students (7 out of 11) posted truthful first and last names. Nine out of eleven students posted pictures of themselves.

In all cases, students believed they were developing technological fluency by using MySpace, although this varied according to their intensity of use, with the more intense MySpace users feeling most strongly that MySpace developed their fluency (Greenhow & Robelia, 2008). In talking with participants and viewing MySpace accounts in-depth, the authors learned that simply participating in the SNS to the extent they did required knowledge of arrange of information and communication technologies, including: the ability to seek, preview, select, incorporate, and share audio and video files; the ability to create, edit, copy, find, upload, tag, and arrange image files; the capacity to strategically monitor, respond, multitask, and navigate multiple communication channels (e.g., instant messaging, MySpace email, wall posts, blog comments, tagged photos, video shares,

etc.), and more (Greenhow & Robelia, 2009). In summary, students are utilizing the skills and technology for twenty-first century learning competencies, but not in the formal learning style expected by school standards.

Fodeman and Monroe (2009) focused on the social network of Facebook and why students should not use the website. The authors gave eight reasons to support their claim. Some include time usage, false sense of privacy, scams targeting teens, the unawareness of how they are being marketed, lack of social interaction and unethical behaviors. These indicators, although not measured through scientific study, should cause major concern among parents of adolescent children who use the social network. For many of our kids there is little or no "downtime." Since Facebook is available 24 hours a day and seven days a week, these teens, who have minimal to no responsibilities, may not be responsible in accessing and monitoring their time on the social networking sites, thus affecting their studies and grades. Another concern the authors expressed is how the young students are being targeted without realizing it. Their lack of experience on Internet sites causes them to fall prey to contacting often non-repairable viruses on the computer systems. An important aspect of this claim is the absence of privacy awareness by young adults.

Social network is also used by universities to find and select their potential students. According to Dr. Nora Barnes, Director for the Center of Marketing Research at University of Massachusetts, Dartmouth, more than 20% of colleges and universities searched social networks for their admissions candidates in fall 2007 (Fodeman and Monroe, 2009).

Kirschner & Karpinski (2010), examining the ability of subjects to multitask and the negative effects of attempting to simultaneously process different streams of information, show that such behaviors lead to both increased study time to achieve parity and an increase of in mistakes while processing information than those who are sequentially or serially processing the same information. In laymen's terms, those who choose not to multitask and stick to one project or assignment at a time, have a higher success rate than those who don't. The authors' purpose is to diffuse previous studies from prior research from other sources that claim students can multitask and be effective while using the social

network, Facebook. They chose this particular site because it is currently the leading social networking site used by all ages. Specific to FB use, Vanden Boogart in 2006, in an unpublished Master's thesis, found that heavy FB use (i.e., more time spent on FB) is observed with students with lower GPA, although no control variables were implemented in the analyses (Kirschner & Karpinski, 2010). In their study, Kirschner & Karpinski (2010) sampled 102 undergraduate students and 117 graduate students by using a survey which consisted of demographic information, academic, hours spent studying, computer and Internet use and specific FB use. The final section was based on the subjects' perception of the impact of usage and academic achievement. The finding supported the authors' hypotheses that FB, not Internet, usage negatively affected student achievement. Professor Kirschner said that he expected to see similar results in younger pupils (Nic Fleming, 2010).

The article by Kessler (2010), talks about the positive effects of social networking based on a report from a Portland, Oregon, classroom where students struggled with attendance and participation at school. For the first time in its history, the school met its yearly progress goal for absenteeism. The article gives six reasons that made social networking such a positive change in the classroom. The first reason, "social media is not going away", is basically self explanatory when one observes where technology currently stands on a global aspect. It is something that is not only going to grow, but consume the way of life in the future. "Don't fight a losing battle," says Delmatoff, an English teacher. "We're going to get there anyway, so it's better to be on the cutting edge, and be moving with the kids, rather than moving against them." The remaining reasons are as follows: when kids are engaged, they learn better; safe social media are available and they are free; replace online procrastination with social education, since social media encourages collaboration instead of cliques; and cell phones aren't the enemy. In summary, the article focuses on the positive outlooks of using social media and argues that it should be embraced, and that our students taught how to use it and become responsible, experienced positive learners with the use of social networking and technology. "Almost three-fourths of 7th through 12th graders have at least one social media profile, according to a recent survey by the Kaiser Family Foundation" (Kessler, 2010).

Prensky's weblog talks about the National School Board Association (NSBA) study on online behaviors and is based on three surveys: an online survey of nearly 1,300 9- to 17-year-olds, an online survey of more than 1,000 parents, and telephone interviews with 250 school district leaders who make decisions on Internet policy. The study was carried out with support from Microsoft, News Corporation, and Verizon (Prensky, 2007). To summarize, 96% students with online access use social networking technologies, such as chatting, text messaging, blogging, and visiting online communities such as Facebook, MySpace, and Webkinz. Nearly 60% of students reported using the Internet for school based discussions and 96% of schools districts say that teachers assign homework that sometimes require the Internet. Giving his opinion on the results of the findings, the author says, "Kids used to grow up in the dark intellectually, and educators were the people who showed kids the light. Today kids grow up in the light – they are connected to the world through television, the Internet, Social Networking, etc. If educators were smart, they would find ways to build on this to increase the kids' understanding. But instead they make the kids shut off all their connections to the world as they enter the building. In effect, rather than showing the kids the light, they bring the kids out of the light back into the darkness." (Prensky, 2007).

A session of the American Psychological Association entitled "Poke Me: How Social Networks can Help and Harm our Kids" (2011) features Dr. Larry Rosen's study of the effects of Facebook and education. Social media icon, Facebook, has changed our culture forever. Since its inception in 2004, Facebook has served as not only as a way to get connected and stay connected, but it has been a great way to waste serious amounts of time clicking from page to page, picture to picture (Youth Resources, 2011). Rosen found that middle school, high school, and college students who checked Facebook at least once during a 15-minute study period achieved lower grades. The study also concludes that the more windows students have opened while studying, the lower the students achieved. Rosen furthermore suggests the concept of implementing "tech breaks" (Youth Resources, 2011). It allows the student to work for 15 minutes straight and after completion get a one minute tech break, which caters to the students' awareness of their study time. He also mentions that parents play a huge part by

staying involved and knowing what is out there concerning their child's exposure on the Internet.

Lenhart and Madden (2007) studied teenagers' views on their personal privacy and online security. Pew Internet & American Life Project examined how teens understand their privacy through several lenses: by looking at the choices that teens make to share or not to share information online, by examining what they share, by probing the context in which they share it and by asking teens for their own assessment of their vulnerability. The study was covered in four sections that covered Internet use and teens' computing environment; teens and online social networks; online privacy: what teens share and restrict; and friendship, strangers and online safety.

### 3. RESEACH METHODS

The research involved data collection from high school students. Data collection was done by administering paper and pencil based questionnaires that sampled four schools in Louisiana. The researchers chose to administer 150 surveys for each school which resulted in the collection of approximately 569 surveys. Two out of the four schools were for junior high schools with students aged 11-14, and the other two schools were for high schools with students aged 14-18.

To conduct research on the topic, a quantitative data analysis approach was used. Four schools were visited all on different days. Each school had a contact from the schools' administrative department who led the direction of the classrooms from which the surveys would be gathered. In all except one school, the collector was able to administer the surveys; the collection was facilitated by school administration staff. Actual collection by the facilitator was done by first visiting the classroom and explaining to the students what they were participating in and what it was for. The surveys were all passed out face down to students. They were all constantly informed not to write their names on the surveys as the information was totally confidential. Instructions were given after the surveys were distributed. Students were allowed to ask questions while completing the survey. Junior high school students received a more in depth instruction on what to do and also had a read-through of all questions on the surveys. Once they completed

the surveys, they were asked to place their papers face down on the desk and pass them to the front, which ensured their anonymity. All students were asked to be honest on the surveys and were made aware that the information was all voluntary. The survey consisted of three demographic questions that asked their grade level, age and gender. The remaining eleven questions focused on the use of social networking, how they used it, and what they used it for. The total time period for collecting all data was approximately 3 weeks. The survey questionnaire is shown in the Appendix. The collected data was then analyzed and the findings shown in Section 4 (Data Analysis and Results).

### 4. DATA ANALYSIS AND RESULTS

The results of the study are described in this section. These results are supplemented with relevant figures.

Figure 1 indicates the results from 556 students who reported their grade level in the survey. According to the information, the majority of students were in the 8th grade.

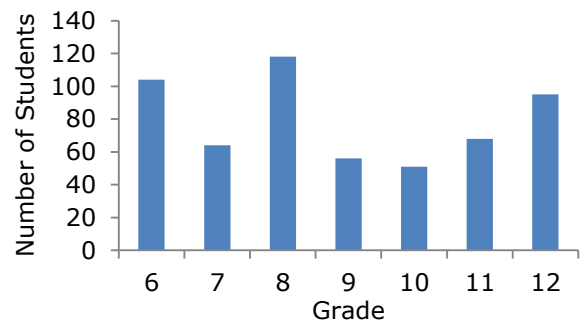


Figure 1: Students by Grade

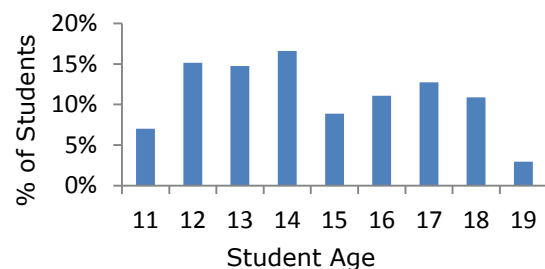


Figure 2: Percentage of Students by Age

Figure 2 shows the percentage out of 542 students who reported their actual age. More students reported to be 14 years old, which was the majority at 16.6%, while 19-year-olds, the fewest, constituted 3% of the total.

Figure 3 shows the percentage by gender of students who completed the survey. The graph also indicates that 4% of the students who took the survey did not report their gender. The majority of the survey takers were female (58%).

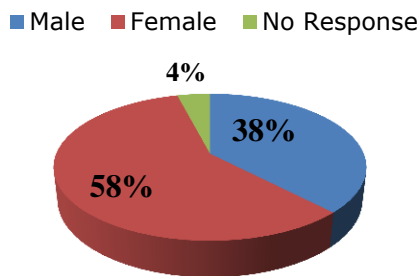


Figure 3: Percentage of Students by Gender

Figure 4 shows which social websites the students reported using, for which they have their own account. From the data collected, the majority of students use Facebook which made up 38% of the students. The least used website was MySpace at 8%.

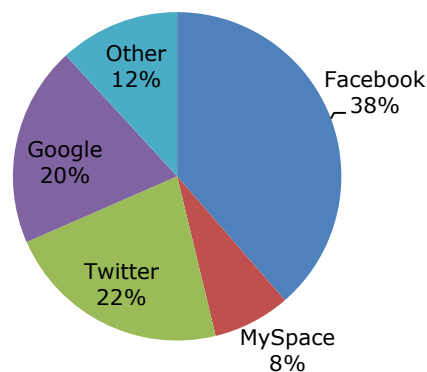


Figure 4: Percentage of Social Networking Websites Usage

Figure 5 shows the response in percentage of why students reported to have used social websites. Most of them talk to friends (42%).

Education in general was at 11% and homework was at 12%.

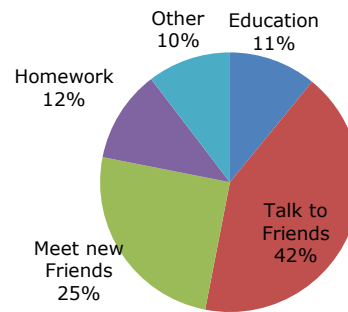


Figure 5: Reasons for Using Social Networking Websites

Figure 6 display the results of how many days per week on average they log on and use social networking websites. The majority of students were almost 250 responders who claimed that they use the sites at least 7 days a week, which was 42% of the total responders.

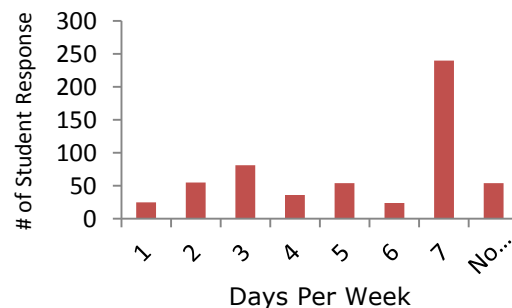


Figure 6: Average Days per Week on Social Networking Websites

Figure 7 shows the reported average hours a day that students are using social websites. The majority, 70.3%, used them at four hours or less. Eleven students reported their average daily usage at 20-24 hours per day.

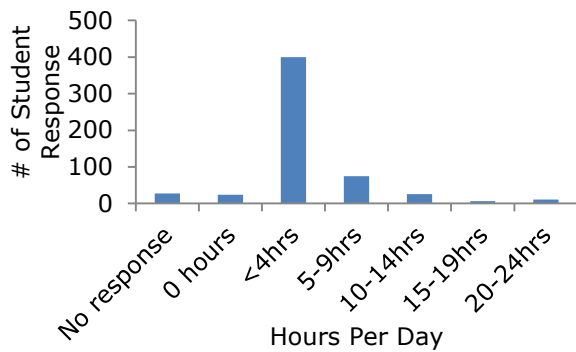


Figure 7: Average Hours per Day on Social Networking Websites

Figure 8 shows the results of the actions students reported to participate in while on social websites. The students were allowed to answer all that applied.

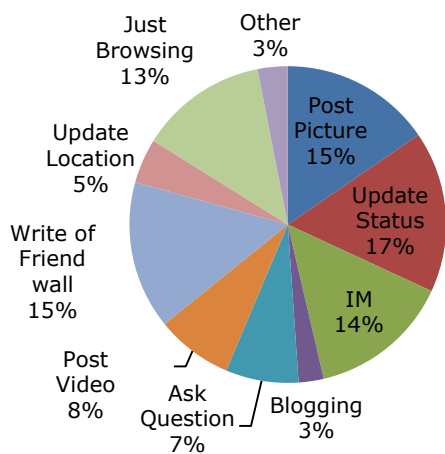


Figure 8: Percentage of Actions Spent on Social Networking Websites

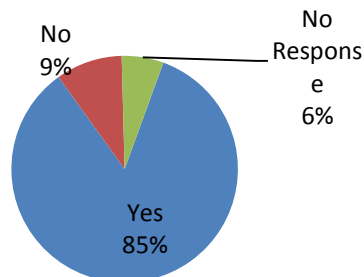


Figure 9: Percentage of Students who are Aware of Security and Privacy of Personal Information

Figure 9 shows the percentage of students who are aware of security and privacy problems resulting from their personal information on the social websites. The majority of students reported that they are aware of how their information is used on the Internet. Six percent of students did not respond to the question.

Figure 10 displays the students who felt that they were spending too much time on social networks. The majority, at 78%, said no, while 16% of students said yes.

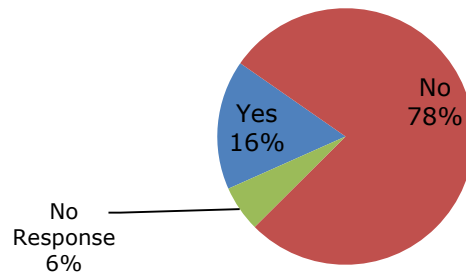


Figure 10: Student Opinions on Time Use of Social Networking Websites

Figure 11 displays the percentage of students using social network for classwork; 51% of students said they don't use social websites for class work while 44% said they do.

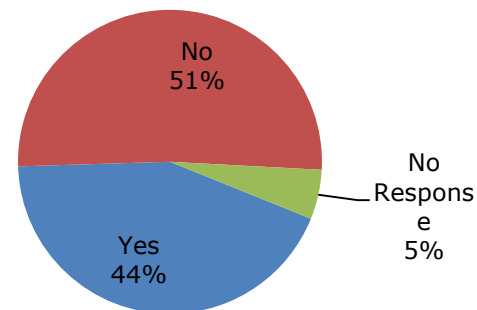


Figure 11: Percentage of Students Use of Social Networking Websites for Classwork

Figure 12 shows students who answered yes from the previous question. Those who selected yes were then able to select what subjects they used to complete class work via social networking websites. English had the most respondents at 139. The least selected subject was other, which included subjects such as science, art, A.P. classes, and research.



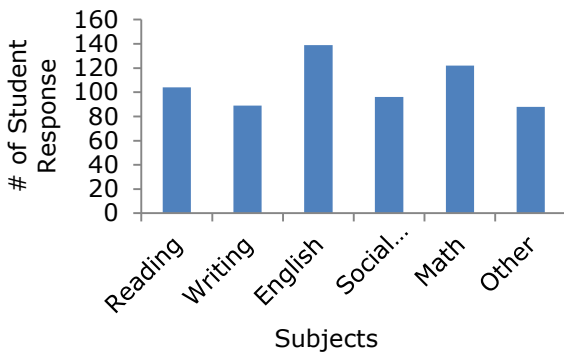


Figure 12: Subject Studied on Social Networking Websites

Figure 13 shows the number of students who felt that social networking websites were helping, hurting or causing no impact. The question was a general question and did not specifically ask whether they felt social networks were the problem academically. Sixty seven percent of the students felt that there was no impact on them. Five percent of the students did not respond. However, 16% felt that it was helping and 12% felt it was hurting.

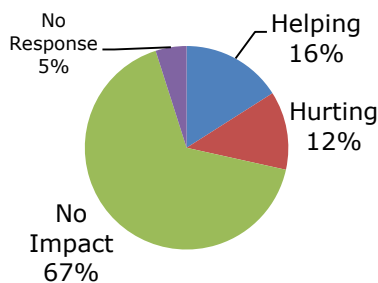


Figure 13: Impact of Using Social Networking Websites

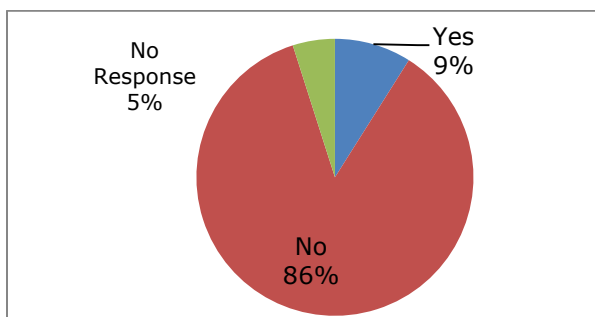


Figure 14: Troubles through Social Networking Websites

Figure 14 shows the students responses when they were asked whether they had been in any school related trouble because of social networking websites. The majority of students, at 86%, answered no. The remainder reported yes at 9% or gave no response at 5%.

Figure 15 displays the results of the student response to the question asking them whether they had ever been a victims of cyber bullying or whether they had ever been hacked. 83% of the students said no, while 12% said yes. The remainder did not respond.

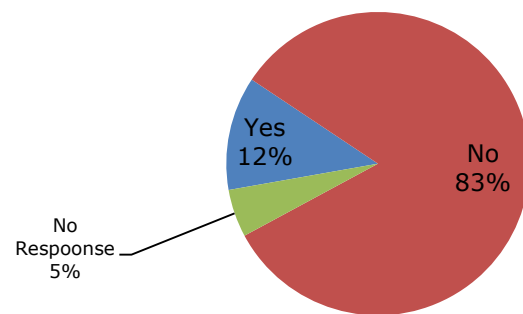


Figure 15: Cyber-Bullied or Hacked Using Social Networking Websites

## 5. RECOMMENDATIONS

Based on the survey results, the following recommendations are proposed. First, school administrations should create a technology policy that prohibits students from using social networking sites at school. According to the study, majority of students use social networking websites at least four hours per day, seven days a week. If schools can help cut the time that students spend on these social networking sites by blocking the websites, it could help students become more focused on their schoolwork while at school. Approximately 16% of students reported that they are spending too much time on social websites; and 12% reported that they feel that these websites are hurting them. There also needs to be awareness among students about what social networking is and the possible consequences of incorrect social network use. Attention should also be paid to ethical vs. unethical behaviors and how to protect security and privacy information. Local schools should ask volunteers in their communities to assist with this project. Technology teachers could give information

sessions to students at the beginning of the school year before technology is used for the school year. Since the second largest number of this study's students are 6th graders, awareness should begin before students leave elementary school. Although a majority reported that they are aware of how their information is being used on these websites, 9% did not know, and 6% did not respond, which means that there is a small gap in the awareness of security and privacy of personal information.

According to the analysis, 11% of reported students claim to use social networks for education-based reasons, while 45% of students said that they use social websites for class work, with English being the subject most studied. Since the majority of students use Facebook, school staff can adopt a social networking website that is educationally based that is similar to Facebook, such as Edmodo. It is free and it creates interaction between teachers and students keeping the outsiders out. Teachers can promote an ethical behavior of using social networks if it can be monitored.

## 6. CONCLUSIONS

The rise of social networking has increased dramatically in recent years, causing questions as to how young adolescent students are adjusting to this shift and means of communication, since it is the norm for their generation. Questions also remain on how it affects their learning process. To answer this question, this research collected 569 surveys from students at four Rapides Parish schools in the 6th-12th grades. The study measured the usage, time spent on social networking sites, the specific websites that are being accessed, and the subjects that are being studied while on the social networking sites; and tried to find out if these are helping or hurting the students in their academic progress. The questionnaire also surveyed students' awareness of security and privacy of the information that they post on social networking websites. The purpose of this research was to help education administrators, teachers and parents to discover how and whether the social networking sites are helping their students in their learning process. Some recommendations are made based on the findings from the survey results after analyzing the data.

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## Appendix

### Survey on use of social network

The survey is for research purposes only. No personal information will be obtained from this survey.

Please circle your grade: 7 8 9 10 11 12

Your Age: \_\_\_\_\_ Your Gender (circle): Male Female

1. Which social network website(s) do you use under your own account?

Facebook	<input type="checkbox"/>	Twitter	<input type="checkbox"/>	Other	<input type="checkbox"/>
MySpace	<input type="checkbox"/>	Google	<input type="checkbox"/>	_____	

2. Check all reasons for which you utilize the social network website(s)

Education	<input type="checkbox"/>	Meet new friends	<input type="checkbox"/>	Homework	<input type="checkbox"/>
Talk to friends	<input type="checkbox"/>	Talk to teachers	<input type="checkbox"/>	Other	<input type="checkbox"/>
_____					

3. On average, how many days a week do you use social network websites? \_\_\_\_\_

4. On average, how many hours per day are you on social network websites? \_\_\_\_\_

5. In what actions do you participate while on social network websites? (Check below all that apply)

Post pictures	<input type="checkbox"/>	Post videos	<input type="checkbox"/>
Update status	<input type="checkbox"/>	Write on friends wall	<input type="checkbox"/>
Instant messages	<input type="checkbox"/>	Update your location	<input type="checkbox"/>
Blogging	<input type="checkbox"/>	Just browsing	<input type="checkbox"/>
Ask a question	<input type="checkbox"/>	Other	<input type="checkbox"/>
_____			

6. Are you aware of the security and privacy of your information posted on social network websites?

Circle: YES or NO

7. Do you think you are spending too much time on social network websites?

Circle: YES or NO

8. Do you use social networks for any of your class work?

Circle: YES or NO

If YES, please check the subject(s) below:

Reading	<input type="checkbox"/>	Social Studies	<input type="checkbox"/>
Writing	<input type="checkbox"/>	Math	<input type="checkbox"/>
English	<input type="checkbox"/>	Other	<input type="checkbox"/>
_____			

9. Do you think that social networks are (helping) or (hurting) your grades in school?

Circle: Helping Hurting No impact

10. Have you ever been in any trouble related to school for using social network website?

Circle: YES or NO

11. Have you ever been a victim of Cyber bullying and/or hacking through social network?

Circle: YES or NO

# A Systematic Approach to Faculty Development - Capability Improvement for Blended Learning

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## Abstract

Blended learning (BL) provides an efficient and effective instructional experience. However, adopting a BL approach poses some challenges to faculty; the most important obstacle found in this research is faculty's lack of knowledge regarding the use of technology in their teaching. This challenge prompted the research project focused on improving faculty's ability to support their pedagogy with technology. A systematic Learning Management System (LMS) Process Improvement Model, named OASA, is proposed which enables educational institutions to establish a systematic and effective faculty development program for BL teaching and learning. OASA is structured into five levels, and transformation from lower to higher levels of capability in BL teaching and learning is based on prescribed processes, and is intended to provide a new foundation of practices. The conceptualization of OASA was demonstrated by means of a prototype with scope focusing on enhancing faculty's level of capability from Level Two to Level Three. The research has been validated using several validation methods. The main finding is that OASA is a well-founded approach that can help educational institutions overcome challenges relating to faculty's lack of knowledge in using technology in teaching. This study found that adopting OASA would make faculty development processes more understandable, give faculty a starting point for BL pedagogy, keep faculty focused on tasks, and show a process of BL improvement until faculty achieve best practices. The main contribution is that OASA expands the BL body of knowledge, generalizing a solution for problems relating to faculty's lack of knowledge about technology, and demonstrating the proposed solution by means of a Blackboard based prototype of a BL course.

**Keywords:** Blended learning, Higher Education, Process Improvement, Capability Maturity, Faculty Development

## 1. INTRODUCTION

Information Communication Technologies (ICT) provide opportunities for competitive advantage in various domains, such as e-economy, e-business, and also in e-education. In the education domain there has been an extensive transformation towards strategies that can provide more accessible education opportunities and services for educators and learners. Information Technology (IT) systems for education, also called e-Learning systems, aim to provide efficient and effective alternatives to traditional on-ground teaching and learning. E-Learning refers to a learning model utilizing electronic means such as the Internet, Extranet, Intranet, broadcast, satellite, audio/video, interactive-television and CD-ROM, to deliver and access course content. The concept of e-Learning has emerged over decades, and web-based software systems that support its adoption are of the most significant recent developments in the Information Systems (IS) industry.

Developments in technology have allowed education institutions to redesign their teaching and learning processes to take advantage of the features and capabilities of web-enabled ICT systems. Moreover it has become very important to support faculty in integrating appropriate technologies in their pedagogy when they engaged in e-Learning, as well as help them to be informed about the latest developments in the field.

The use of education technologies in support of traditional teaching of higher education coursework represents a real challenge for many faculty members (Travis & Price, 2005). One of these challenges is faculty's lack of knowledge to use technology effectively (Boggs & Pirani, 2003). A study in Saudi Arabia has found that there is insufficient empirical data and assessment of Blended Learning (BL) adoption in universities (Al-Sarrani, 2010). Blended learning here is synonymous with the term hybrid learning, where traditional on-ground teaching is complemented with online modes.

A preliminary literature review done for the research reported here determined that there is a lack of knowledge regarding adoption of BL at the tertiary level, and that this is among the key challenges in some developed and developing countries, and also in Saudi Arabia. This situation has stimulated research in the use of Learning Management Systems (LMS) for the BL mode of teaching and learning. This research aimed to

overcome the lack of knowledge factor by means of a Faculty Development Program that can aid faculty to gain higher levels of capability in using the LMS, including the various functions available in support of the pedagogy and didactics for BL.

The paper reports on the research context of the study, the research problem addressed, research planning for the investigation, conceptualization of the solution to the research problem, the demonstration of concept, and research validation. A summary and some conclusions are provided at the end of the article. More detail about the study is provided in Badawood (2012).

## 2. RESEARCH CONTEXT

### Background of the Study

Technology today allows a variety of teaching and learning models to be adopted in higher education institutions. These models range from face-to-face to hybrid and fully online models. With online technologies there are many approaches followed, such as e-Learning, m-Learning, e-Mentoring, e-Tutoring, web-based instruction, web-enhanced instruction, and BL approaches (Davis, 2007).

As universities strategize to make it a priority to utilize best practices in educating students through technology, and newer pedagogies, online learning, face-to-face learning, and unique combinations of the two are being explored. Plans to achieve these goals include transitional approaches to e-Learning and traditional classroom instruction in what is referred to as BL (Allen & Seaman, 2007).

BL is not a new learning model, though its use has steadily risen in higher education due to pedagogical, economic and other reasons (O'Laughlin, 2007). It is considered to be the "best" learning model since it has the convenience of the online delivery without losing the benefits of the traditional face-to-face learning model. Current research, supported by the Sloan-C Consortium, indicates that the use of the BL model is complex and varied, as well as reflecting a dynamic state of flux in higher education (Allen et al., 2007). In this article, BL is used as defined by Heinze and Proctor (2004): "a learning model that is facilitated by the effective combination of on-ground and online modes of delivery in support of different styles of teaching and learning, and founded on

transparent communication amongst all parties involved in a course”.

It is clear that adopting the BL model mandates that faculty members are prepared to use technology in their pedagogy since up to half of the course will be conducted online. The requirement that faculty have the capability to use educational technology makes the adoption of BL complex. Also, there is an intricate relationship between faculty pedagogy and teaching in BL mode, partly due to faculty's lack of knowledge to use educational technology in teaching.

### Research Problem

The Ministry of Higher Education of Saudi Arabia encourages university faculty to use BL in teaching, since it offers a more cost-effective and pedagogically sound way to blend traditional modes of teaching with new technologies (Al-Sarrani, 2010). The findings of the Al-Sarrani investigation highlighted the lack of empirical data about factors of perception of university faculty, and assessment processes on BL in Saudi Arabia. Further analysis revealed that little is known about Saudi faculty knowledge of BL to bring it into widespread use.

### Purpose of the Study

The focus of this study has been to address faculty's lack of knowledge to use technology in their teaching by means of BL delivery. Based on the problem analysis the purpose of the study aimed to identify and improve the processes involved in a Faculty Development Program, thereby aiding them to integrate the tools offered by the LMS in the pedagogy of BL courses. The research hypothesis was: *“Faculty capability to teach in BL mode of delivery supported by a LMS may be improved by means of a LMS Faculty Development Program, and aid faculty readiness for capability improvement”*.

## 3. RESEARCH PLANNING

After the research problem was identified, research planning was performed to organize the research in terms of the research strategy, approach, process model, and design as described in the next sections.

### Research Strategy

An empirical/positivist strategy was adopted which is characterized by observations and interventions using several methods (Remenyi et al., 1998; Boland & Hirschheim, 1987; Galliers & Land, 1987; Steenkamp & Basal, 2011). This strategy was appropriate for research focused on the phenomena, processes, and behaviors of particular interest to BL for tertiary education in Saudi Arabia. This called for an approach and supporting methods to conduct the literature review, data collection and analysis, derive a grounded theory based on insights obtained, conceptualize a theoretical conjecture, demonstrate concept, and validate the research.

### Research Approach

Formalized research processes have been used in the research domain for some time, since it helps researchers to conduct systematic research and attain the research objectives. The research process model for this investigation is depicted in Appendix 1. The research approach and consequent research design was supported by a number of methods as summarized in this section (also refer to Appendix 2 regarding research design).

The following methods were used for collecting qualitative data:

- Problem Analysis, to identify the focus, purpose and scope of the research, specifically on LMS and BL. The research proposal was formulated based on a preliminary literature review and empirical work with LMS and BL, and contains the research problem, questions, propositions, and research strategy.
- Literature review, in which the background theory (distance education) and focal theories (LMS and BL) and their applications were analyzed and interpreted in greater detail. Specifically the pedagogy of BL, faculty perceptions toward BL, process improvement, and established BL frameworks were reviewed, including their constituent models.
- Conceptualization, by grounding the theoretical conjecture in the Khan Octagonal Framework (Khan, 2005). While various issues relating to the eight dimensions of the Khan Framework have been reported in several studies on resources and tools for e-Learning programs, this framework was found to be contemporary and

comprehensive among similar other frameworks (Badawood, 2012). Additionally, concepts from the Capability Maturity Model Integrated (CMMI), developed at the Software Engineering Institute at Carnegie Mellon University from the original CMM, were adopted to design a conceptual solution, namely the Learning Management System (LMS) Process Improvement Model which is proposed for the faculty development program.

- Demonstration of Concept and experimentation by means of a prototype of a BL course within the Blackboard LMS, as part of action research. Evaluation of the prototype was done through open-ended interviews with independent reviewers at the research site and also stakeholders in Saudi Arabia, who evaluated the proposed approach. The interview protocol was semi-structured, informal and in person. The qualitative data collected in this way helped to refine the proposed approach.
- Methods for validating the research models and outcomes included face validation of the conceptual models, prototyping of the conceptual solution, independent evaluation of the prototype and its refinement, validating the support afforded by the research outcomes for the research hypothesis and questions.

#### 4. CONCEPTUALIZATION

The literature confirmed the contemporary reality that educational institutions are seeking to improve their BL teaching by implementing a LMS. Other important pre-conditions for a BL approach to be effective have been identified and have informed the conceptual models described in this section:

- There is awareness that BL integrated with LMS provides a number of advantages, including effective learning, ease of use, learner engagement, reuse, and innovative approaches (Anderson & McCormick, 2005).
- It is apparent that educational institutions need to know more about faculty and student attitudes, factors of satisfaction, and the outcomes of academic programs and courses.
- Faculty requires guidance and support to adapt the pedagogy, didactics and styles of assessment when designing BL courses.
- A sound understanding of the features and tools of the LMS is needed as faculty develops skills in teaching in the LMS environment.

- Faculty should be skilled in aiding students to study and learn in the LMS environment, setting up their computers to be ready for synchronous and asynchronous teaching sessions and be prepared to participate in synchronous presentations and peer evaluations.

The conceptual solution proposes a systematic LMS Faculty Development Program to support a BL teaching and learning model using a LMS Process Improvement Model, named OASA, which is described in the next section. The Development Program aims to enhance faculty capabilities to teach in BL mode to the benefit of student learning. This Development Program is based on a LMS Process Improvement Model containing levels of capability that are achieved by means of prescribed processes. The program requires that the capability of faculty to perform the activities of a particular process be assessed upon completion of the process. OASA is an empirical and descriptive process model along the lines of Wang and King (2000); it is empirical because it defines an organized and benchmarked model usable in practice and based on best practices; and it is descriptive because the model describes what to do according to a prescribed process.

The components of the proposed LMS Faculty Development Program are outlined in the following subsections.

#### OASA Processes

OASA is an acronym for Opening, Analyzing, Stimulation, and Achieving Processes of the LMS Process Improvement Model. The model is structured into five levels namely Level One (Aware), Level Two (Capable), Level Three (Knowledgeable), Level Four (Proficient), and Level Five (Practitioner), and is illustrated in Figure 1.

The transformation from lower to higher levels of capability in BL teaching and learning is based on prescribed processes (Opening, Analyzing, Stimulation, and Achieving). For example, to move from Level One to Level Two, the Opening Process is the starting point to meet the objectives of this transformation. OASA aims to provide a new foundation of faculty development practices that enables an academic unit to transform from lower to higher levels of capability.



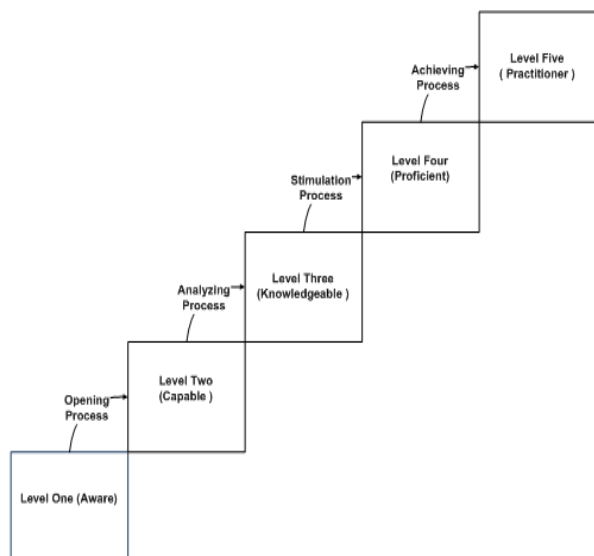


Figure 1. OASA - LMS Process Improvement Model

**Level One (Aware):** At this level faculty is *Aware* of what the LMS is, the purpose of the LMS Faculty Development Program, and what types of skills faculty would need to integrate LMS functions in their BL courses. In addition, faculty will be aware about all the levels and improvement processes involved in the LMS Faculty Development Program. This level is to be considered preparatory for faculty to get ready to start the LMS Faculty Development Program.

**Level Two (Capable):** At this level faculty is *Capable* to perform basic LMS functions. Further, at this level faculty will be able to support the pedagogy with the prescribed LMS functions for this level.

**Level Three (Knowledgeable):** At this level faculty is *Knowledgeable* to explore more of the LMS functions that are beyond the basic functions provided at Level Two. Functions at this level will equip faculty to effectively interact with students using appropriate tools. Additionally, faculty will be able to design their pedagogy with support from the prescribed LMS functions of this level.

**Level Four (Proficient):** At this level faculty is *Proficient* in functions that simplify the connection and interaction with students. Achievement at this level affirms that faculty is proficient in running VOIP meetings, as well as creating and editing podcasts, blogs, and wikis. Skilled in the mentioned functions will help faculty run BL courses at an above average capability. Furthermore, faculty will be able to

enhance the design of their pedagogy with support from the prescribed LMS functions for this level.

**Level Five (Practitioner):** At this level faculty is an effective and efficient *Practitioner* in using LMS functions that will enhance teaching. Faculty will learn how to run Safe Assignment functions that help in curtailing plagiarism. Also, at this level faculty will be practitioners in creating course dashboards that provide a synopsis at a glance of students' interaction in their courses, including review status, dates since last login, discussion board postings, grades, and information about adaptive releases. At this level faculty will be adept at exporting entire courses for the purpose of teaching a similar course in a future semester.

Once faculty reaches this level the best practices of all previous levels are integrated in the capability. This means faculty has acquired the needed skills to manage student assignments in terms of time, tasks, and collaboration, as well as to utilize the technology to offer a pedagogically effective learning experience.

### OASA Transformation Methodology

Transformation from one level to the next is based on faculty assessment. Faculty can only be trained in the practices at a higher level if they meet the requirements of the level they attained. The proposed transformation methodology for improved faculty capability, illustrated in Appendix 3, defines activities to use inputs of a level, to achieve the outputs, and then assessing the outputs. Once the output assessment meets the prescribed requirements of the level, improvement training can occur to develop a faculty member's skills for the next level of capability.

### OASA Assessment and Improvement Methodology

As mentioned faculty involved in the LMS Faculty Development Program cannot reach a higher level of OASA unless they meet the requirements of the level they are at. Moving from level to level will be based on assessments that help in identifying if faculty competency allows them to progress to the next level. Two types of assessment are defined to assess faculty competency:

1. Trainer Assessment: trainers will assess faculty at the start and end of the training period. Trainers will use online and on-

ground assignments to assess faculty competency in technology and pedagogy.

2. Peer assessment: faculty acting as peers will assess each other's assignments so that they can learn from each other.

OASA may be used to assess faculty for their capabilities in the use of LMS from the technological and pedagogical perspective. Improvement and progression to a higher level of capability is based on faculty effort. It is recommended that faculty gain experience before attending level assessments. Once the assessment for a level has been passed, faculty may attend faculty development sessions to attain the next higher level, and in time attain Level Five capability, where faculty is regarded as practitioners in the utilization of BL practices. Detail regarding OASA assessment is not elaborated in this paper. There are international standards for System Life Cycle Process Assessment, such as the ISO/IEC TR 15504 Part 6 (Bella, 2008) that can guide assessment initiatives.

### **OASA Conceptualization**

Appendix 4 illustrates OASA in a class diagram, which comprises a number of classes that are essential to BL faculty development and training. They are the class of Faculty; class of Student; class of Pedagogy, which covers online and On-ground classes; class of Technology; class of LMS; class of Development Program; and class of Levels of Improvement. Levels of Improvement has five types namely Level One (Aware), Level Two (Capable), Level Three (Knowledgeable), Level Four (Proficient), and Level Five (Practitioner), which calls for a generalization/specialization relationship (Is-a relationship) allowing for inheritance to be expressed in the model. Other classes are Assessment, conducted by trainers and peers; and class of LMS Process Improvement Model, which includes Opening, Analyzing, Stimulation, Achieving processes.

Two classes have a generic set of operations. First is the Level of Improvement class with operations applying to all levels under this class. The generic set of operations includes In-class Practice, Online Practice, Execute Case Study, and Evaluation. Also, the LMS Process Improvement Model has a generic set of operations that applies to all the processes under this class, namely Input, Activity, Output, and Assessment. To demonstrate the OASA concept, the researchers chose Level Two (Capable) and Level Three (Knowledgeable) functions, that are

covered under Analyzing Process, for the prototype.

### **OASA Road Map Diagram**

The road map of the proposed conceptual solution illustrated in Appendix 5 represents the conceptualization of implementing OASA. The road map shows the levels, constituent processes (except Level One which does not need a process to start), transformation methodology elements to develop faculty from lower levels to higher levels of capability, and the relationships between these elements.

## **5. DEMONSTRATION OF CONCEPT**

### **Overview**

The demonstration of concept involved the creation of a prototype of a BL course within an appropriate Learning Management System (LMS) environment. The course was developed based on the OASA Model, described in Section 4. The scope of the demonstration is transforming a faculty member's level of capability from Level Two (Capable) to Level Three (Knowledgeable).

The LMS functions demonstrated in the prototype are:

- Logging into LMS.
- Access Courses Page.
- Access a Course Control Panel.
- Add Course Documents.
- Send E-mail.

Every function demonstrated is given in terms of the following:

- Function description.
- Function requirement.
- Function demonstration steps and screenshot.
- Pedagogy needed.
- Faculty practice.
- Faculty evaluation.

### **Prototype**

The prototype course was created within the widely adopted the Blackboard 9.1 LMS available at the research site. Blackboard LMS is a software system with features and functionality that enhances virtual teaching and learning. It is also used in many education institutions to support on-ground courses. Blackboard LMS includes various functions and features such as course and content management, discussion

board, virtual classroom tools, and tools for collaboration such as email, blogs, wikis, and podcasts. It also includes an assignment repository, grade book, and a reporting performance dashboard (Blackboard Inc, 2011).

## 6. VALIDATION OF RESEARCH

Research validation is an essential part of a research project. Validation can occur once an adequate level of confidence exists that the researcher's claim truly reflects what is measured or observed (Remenyi et al., 1998). Several validation methods were triangulated to validate the findings of this research project, namely face validation of the conceptualization (Khazanchi, 1996), demonstration of the conceptual solution and evaluation of the prototype; validation of the research questions; support for the research hypothesis.

**Face Validation:** Concepts modeled in the conceptual solution were evaluated for plausibility in terms of the following and are supported:

- Is the Process Improvement Model (OASA) systematic?
- Does any theoretical rationale sustain the development of the Process Improvement?
- Does the Process Improvement Model (OASA) add value to the Educational Institution?

**Validation of the prototype:** The prototype demonstrating the conceptual solution was an instrument to validate the theoretical conjecture and constituent concepts in terms of the feasibility, effectiveness, pragmatics and repeatability. Additionally the prototype was evaluated by independent evaluators at the research site, and also by stakeholders in Saudi Arabia following a defined interview protocol, in terms of criteria including clarity and understandability, ease of application and use, information value, and completeness, seeking support for the following:

1. The LMS Faculty Development Program is clear and easy to follow.
2. Function descriptions are informative.
3. Function Requirements are understandable.
4. Function Demonstration and user interface is straightforward.
5. Needed pedagogy is informative and comprehensive.
6. The LMS Faculty Development Program covers Faculty Practice comprehensively and covers all functions needed in BL.
7. Faculty Evaluation is rational and practical.
8. The LMS Faculty Development Program is a comprehensive training program for faculty teaching in BL mode.

**Validation of research questions:** Answers were determined for the following questions:

1. What are the main challenges facing faculty when they are assigned to teach a BL Course?
2. How can educational institutions overcome this challenge?
3. How can a process improvement model address and resolve faculty's lack of knowledge to use technology in a BL course?

Triangulation of the outcomes of the adopted validation methods lead to the conclusion that the proposed OASA model and approach for faculty development is a valid response to the research problem addressed in the research study, and that the hypothesis is supported.

## 7. SUMMARY AND CONCLUSIONS

The research was motivated by the awareness that there is a lack of knowledge and experience in integrating traditional and online pedagogies to offer BL coursework in university education. In Saudi Arabia there are significant challenges to equip faculty to design courses with technology support, while also promoting confidence to use technology in teaching.

The proposed LMS Process Improvement Model for Faculty Development (i.e. OASA), described in this paper, aims to overcome some of the challenges, and has been demonstrated to aid faculty to integrate LMS tool support in the pedagogy of BL courses. The OASA approach establishes a systematic and effective faculty development program for BL teaching and learning. The process improvement framework has process categories that are structured into levels of capability. Having levels of capability makes processes more understandable, serves as process improvement starting points for specific capability levels, keeps faculty focused on the activities of the process involved, and provides steps to perform the activities along with their inputs and outputs.

Strong support for the OASA approach was expressed by university and department management and faculty at Taif University, where the approach is being implemented.

This research has made three main contributions:

- Expands the body of knowledge regarding BL. Enhanced understanding was obtained of

faculty's positive and negative perceptions toward BL and the challenges that faculty, students, and education institution leadership face when adopting BL.

- A generalized solution for problems relating to faculty's lack of knowledge regarding using technology in teaching was developed. The proposed solution can aid educational institutions to design a Faculty Development Program based on levels of capability.
- Demonstration of the proposed solution by means of a BL course using a LMS-based prototype. The demonstration shows how such a solution helps faculty to gain familiarity with the LMS, including the various functions and practices to support the pedagogy and didactics for BL.

The findings of this research is in agreement with other process improvement models that have been successfully used by organizations to improve their software and IT processes, services, and delivery (Software Engineering Institute, 2011). In education such a model may be used in several areas to assess the existing status of capability and determine the need for improvement. Further experimentation with OASA is being conducted at the time of writing, and potential refinements and enhancements of the approach are envisaged.

## 8. ACKNOWLEDGEMENTS

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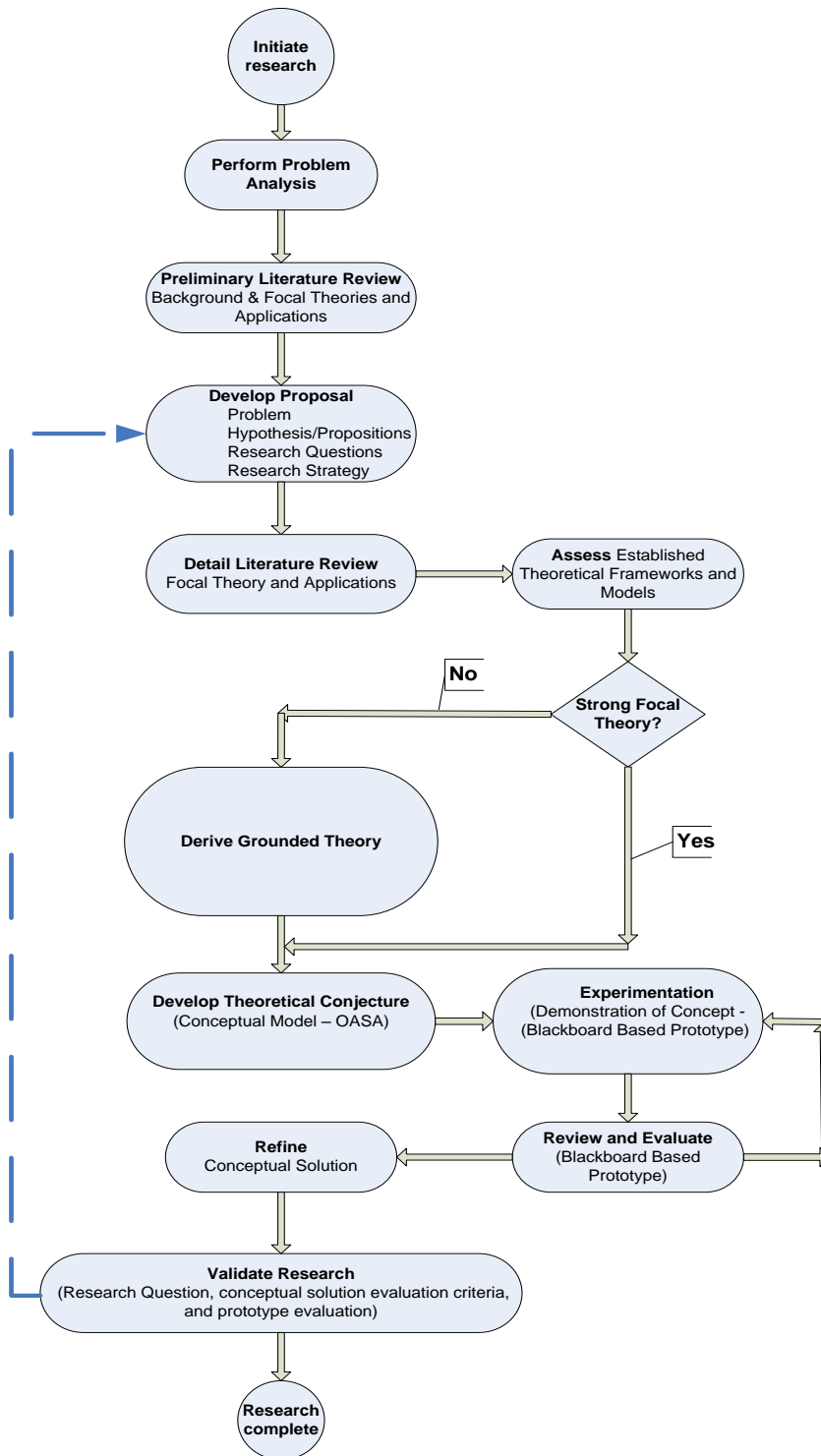
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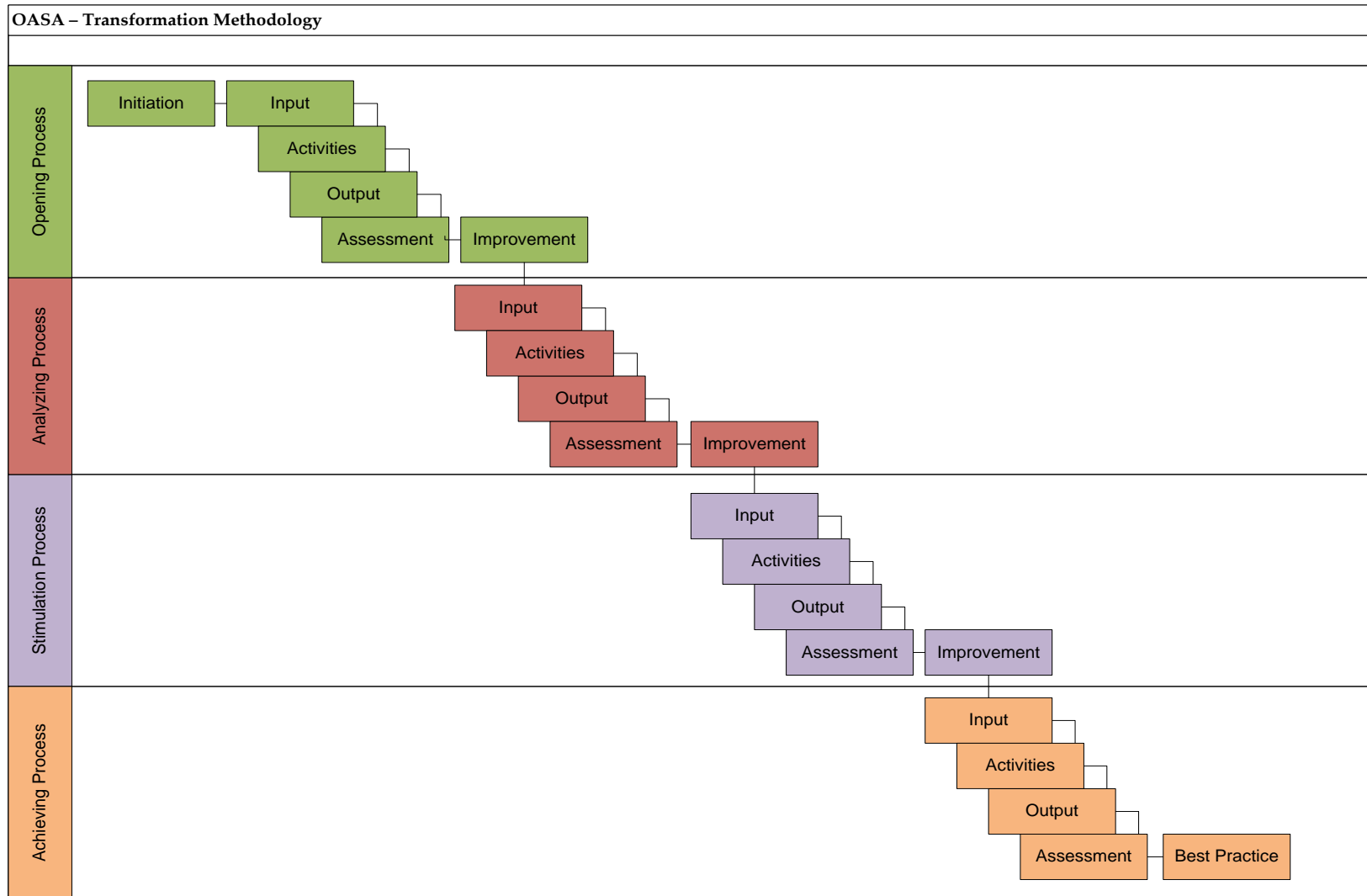
### Appendix 1. Research Process Model



**Appendix 2. Research Design**

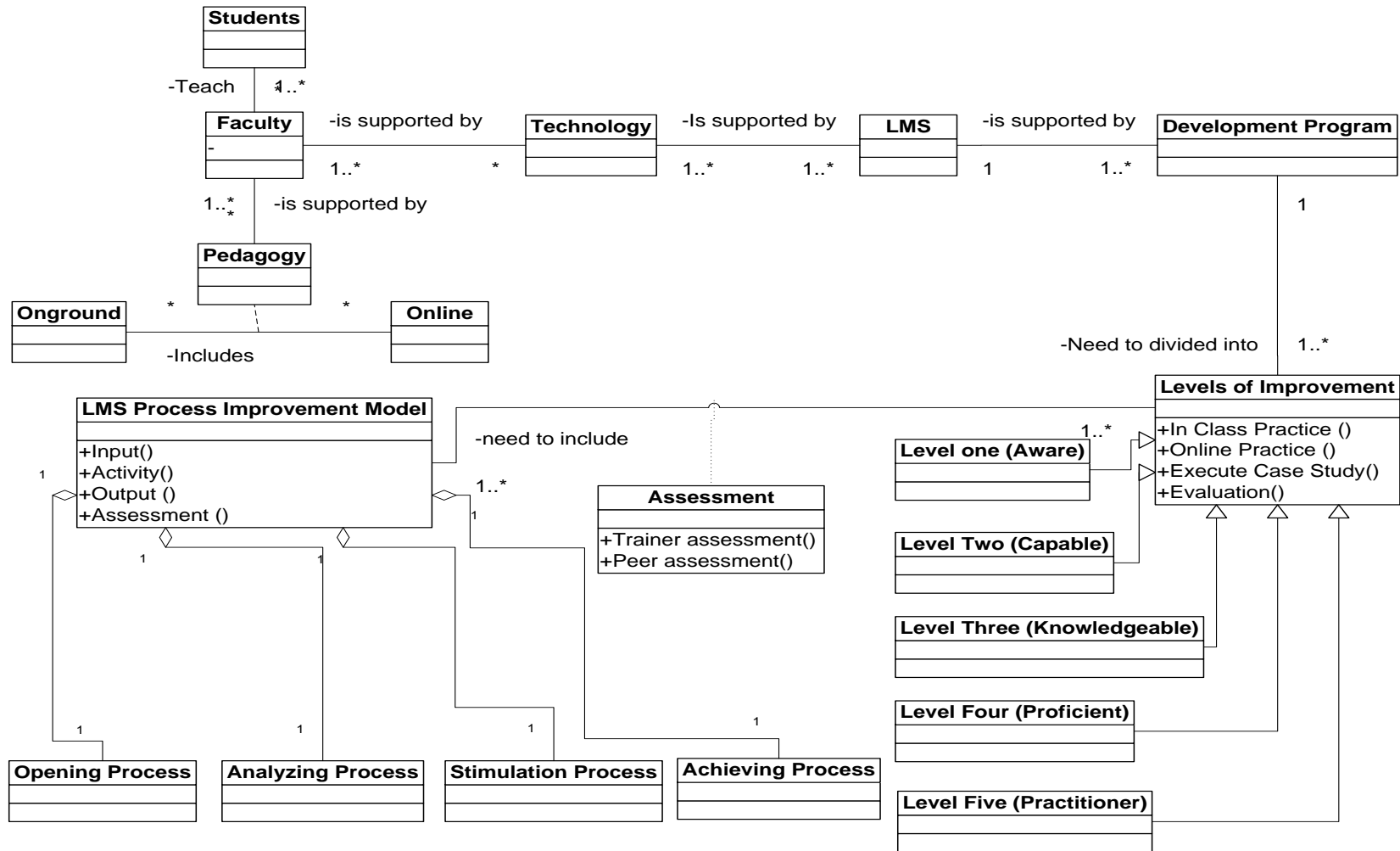
Purpose of Study	Research Questions	Research Proposition	Strategy of Inquiry	Research Approach	Research Method	Evidence Collection
<p>Identify processes needed to design and assess a development program for faculty that can help to integrate the tools offered by the LMS in the pedagogy of BL courses.</p> <p>Adopt a systematic LMS Process Improvement Model in order to establish a well-designed and effective BL teaching and learning approach.</p>	<p><b>Question 1</b> What are the main challenges faculty face when they are assigned to teach BL Courses?</p> <p><b>Question 2</b> How can educational institutions overcome the challenge of teaching BL courses?</p> <p><b>Question 3</b> How can a process improvement model address and resolve faculty's lack of capability to use educational technology in their BL courses?</p>	<p>Faculty capability to teach in BL mode of delivery, supported by a LMS, may be improved by means of a LMS Faculty Development Program, and prepare faculty for improving their level of capability.</p>	<p>Positivist/ Empirical</p>	<p>Qualitative/Narrative Analysis</p>	<p>Literature review</p>	<p>Published research relate to the domain investigated</p>
				<p>Grounded theories - Khan Octagonal Framework - Capability Maturity Model (CMM)</p>	<p>Observation Problem and solution conceptualization</p>	<p>Observation</p>
				<p>Demonstrating the conceptual solution</p>	<p>Prototype</p>	<p>Data collected from prototype evaluation</p>
				<p>Prototype Evaluation: Informal and in person Interviews</p>	<p>Action Method using structured open ended questions for prototype evaluation</p>	<p>Participants Observations captured</p>
				<p>Research Validation</p>	<p>Validation of conceptual solution, Validation of Demonstration of Concept (prototype) in terms of Conceptual solution, Validation of hypothesis, and research questions</p>	<p>Data collected re evaluation of conceptual models, the prototype, Support for hypothesis, Answers to research questions</p>

**Appendix 3. OASA Transformation Methodology**





Appendix 4. OASA Class Diagram



**Appendix 5. OASA Road Map**

