Computer Ethics Awareness: Implication to Responsible Computing

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Abstract

This study aimed to assess the level of awareness in computer ethics for responsible computing of the BS Information Technology students of the Leyte Normal University, Tacloban City. Descriptive survey method was used which involved a questionnaire, interviews, and observations. Three hundred sixteen (316) students from first year to fourth year who were currently enrolled during the first semester of school year 2015-2016 served as respondents. Results showed that overall assessment on the computer ethics indicators were (n=316, M=2.87) with qualitative description as "***Aware***". It showed that students has ideas of the indicator but not to the full context and extent of the details of this indicators as well as the corresponding penalties on the commission of such crime based on the applicable laws in the Philippines. This implies further that universities still have a vital role in generating awareness of ethical issues in the use, development and management of information technology.

Keywords: Computer Ethics, Computer Ethics Awareness, Responsible Computing,
                    Social Science, Descriptive Research.
                    Philippines

INTRODUCTION

Computer ethics deals with the procedures, values and practices that govern the process of consuming computing technology and its related disciplines without damaging or violating the moral values and beliefs of any individual, organization or entity (technopedia, n. d.). Anent to this, "Computer and information ethics", in the broadest sense of this phrase, can be understood as that branch of applied ethics which studies and analyzes such social and ethical impacts of ICT (Computer and Information Ethics, n.d.). Computer ethics is a profound and prolific understanding and misunderstanding of today's generation. Most of the time it is disregarded and abuse of some others in the cyberspace. A recent study associates computer ethics to moral luck wherein moral luck bears down most heavily on notions of professional responsibility, the identification and attribution of responsibility. It is immunity from luck that conventionally marks out moral value from other kinds of values such as instrumental, technical, and use value (Horner, D. S., 2010). Cyber ethics in the twenty first century greatly contribute to ethical dilemma that the world faced today. Many organizations have established proper norms in ethical understanding and proper use of Information and Communication Technology (ICT). Cyberspace is a wide range of collection of information stored electronically shared around

the world. Ethical issues arise in effect to this advancement of information sharing. Social networking sites nowadays are the primary source of personal information and interpersonal information which may affect of one's individual privacy and moral aspect. Some of those are envision to privacy due to cyber stalking, cyber sex, piracy, pornography, and alike. Schmid (2012) emphasized in his blog entitled "Should it be mandatory for Schools to Teach Cyber Ethics?", that education has seen an explosive growth of internet use and computer technology. The internet holds massive amounts of information, accessible by search engines such as Google. Teachers can find a plethora of information to add to their curriculum, and students have the amazing ability to research anything within a matter of seconds. There are no limits to what the internet can bring. Moreover, statistics shows in a recent study, Microsoft teamed up with the National Cyber Security Alliance (2005), surveying K -12 private and public schools all over the United States. The survey shows there are almost 60 million students and teachers today. The need for educating this enormous group of individuals is vital. In a recent Journal, Barbara Endicott (2009) stated, "the workable solution for students is to give them the tools to make decisions that support their safety as well as understand the agenda of their learning community." As a result, Social media has become a tool used by students and teachers on a daily basis (Schmid, D., 2012).

The Philippines had been in the revolutionary stage of information technology since e-commerce law also known as Republic Act 8792 – E-Commerce Law of the Philippines has been established in the year 2000. Currently, a blog from rappler reported that a Senator Nancy Binay wants students to learn cyberethics. According to the interview, Binay explained that the proposal she made in Senate Resolution 474 aims to promote responsible use of the Internet through education instead of laws that may restrict free speech (Macaraig, A., 2014). Moreover, the Philippine government itself is aware of the potentials of internet crimes in the Philippines. According to an article found in TechinAsia (2014), the Supreme Court of the Philippines has ruled on Cybercrime Prevention Act of 2012 also known as R.A. 10175 *"An Act defining Cybercrime providing for the prevention, investigation, suppression and the imposition of penalties therefor and for other purposes."* that the Philippine Cybercrime Law now in effect, punishing online Libel is declared constitutional (Magdirila, P., 2014). This proceed is an example of a serious governance in terms of computer netethics or computer network ethics. The Philippines is experiencing computing ethical dilemma in terms of moral values, privacy, and other norms that affects an individuals whole being. Among those were reported in different news organizations such as cyber sex, pornography, cyber stalking, identity thief, and financial thief and alike.

The Leyte Normal University, Tacloban City is one of the state universities in Region VIII. It is a training institution in education, arts and sciences, and management and entrepreneurships. As an institution it is expected to be a catalyst and produced a graduate that has the norms and values of the university as responsible citizens of the Republic of the Philippines. The university offered BS Information Technology (BSIT) program as one of its many undergraduate programs. The curriculum is patterned after the Rules and Standards for the Undergraduate Information Technology Education (CHED Memo Order No.53, s.2006). Such rules and standards is a result of the series of workshops initiated by the professional organization in Information Technology education, PSITE (Philippine Society of IT Educators), where IT educators, practitioners, students and stakeholders in the IT industry are invited as participants to the workshop with the presence of a technical panel from CHED. The curriculum includes courses that will facilitate the development of the students in the different disciplines of Information Technology. Hence, basic courses in the curriculum will help the student to become knowledgeable in the different academic areas that will mold them to become a

better student, professional, citizen and as a person. However, despite of being in the field of Information Technology and having the subject of computer ethics in the curriculum, students sometimes forgotten to act according to the norms and standards in the field.

The university is composed of a diverse students coming from different part of the country, region, and towns with different values, beliefs, intellectual understanding or educational background, experience, attitudes and others. Because of these, this makes the university vulnerable to computer ethics predicament. It is on this premise that this study deemed necessary to assess the level of awareness in computer ethics for responsible computing.

Framework of the Study

This study is anchored on James Moor definition on Computer Ethics (1985), defined as a field concerned with "policy vacuums" and "conceptual muddles" regarding the social and ethical use of information technology. In this context, the Leyte Normal University had a typical problem in Computer Ethics that arises from students because there is a policy vacuum about how computer technology should be used. It is understood that computer provide us with new capabilities and these in turn give us new choices for action. However, despite of an existing computer laboratory policies it seem that there is no strict enforcement from authorities concerned and such policies are obsolete or inadequate with the changing times. In which case there is a need to revisit and review in order to formulate a strong and appropriate policies attuned with the demand of the present time.

Further, this study is also supported with the golden rule, utilitarianism and pluralism theory as its theoretical underpinning.

• The Golden Rule: This rule is derived from ancient philosophers and it suggests simply that the best choice for a decision maker who faces an ethical dilemma is to treat others the way he or she wants to be treated.

• Utilitarianism: Utilitarianism is a consequence based theory developed by British philosophers Jeremy Bentham and John Stuart Mill. It states that one should consider only the consequence of the action and the number of people positively affected when making a decision.

• Pluralism: Pluralism theory is based on doing one's duty, and thus decisions should be made regardless of any consequences but only with the sense of duty to do the right thing. Researchers argue that IT evolution has created completely new ethical problems and thus expanded existing ethical questions.

The theory presented is very much applicable in the study regarding student awareness of computer ethics. Students has the responsibility as to how one should act in order to abide by ethical rules. However, every individual has a unique perspective towards ethics, which depends greatly upon factors such as culture, environment, and personal development.

Objectives of the Study

The main thrust of this research is to gauge the degree of awareness for responsible computing relative to computer ethics.

Specifically, this study would like to answer the following questions:

1. What is the profile of the respondents in terms of:
    - 1.1 age;
    - 1.2 gender;
    - 1.3 access to the internet;
    - 1.4 internet usage;
    - 1.5 knowledge in computer ethics?
2. What is the level of awareness in computer ethics in terms of:
    - 2.1 hacking;
    - 2.2 fraud;
    - 2.3 internet libel;
    - 2.4 identity thief;
    - 2.5 child pornography;
    - 2.6 cyber sex;
    - 2.7 cyber squatting;
    - 2.8 domain squatting;
    - 2.9 espionage;
    - 2.10 copyright infringement;
    - 2.11 financial thief;
    - 2.12 cyber stalking;
    - 2.13 cyber bullying;
    - 2.14 spamming;
    - 2.15 copyright and software theft;
    - 2.16 digital plagiarism?
3. What are the least computer ethics indicators that the respondents are not aware of?
4. What input can be develop to increase the level of awareness for responsible computing based on the findings of the study?

METHODS

Research Design

The research method used by the researchers in this study was the descriptive method, which involved a questionnaire to assess the computer ethics awareness of the BS Information Technology students of the Leyte Normal University, Tacloban City for SY 2015-2016.

Research Procedure

The researcher sought permission through the University President of the Leyte Normal University, Tacloban City. This was done for the determination of samples directly involved in the study and for the distribution of the questionnaires.

Respondents of the Study

This study was confined to all the BS Information Technology students currently enrolled at Leyte Normal University, Tacloban City during the first semester of school year 2015-2016. The data is presented on the table below.

Research Population

Respondents	MALE	FEMALE	TOTAL
First Year	98	86	184
Second Year	47	61	108
Third Year	27	38	65
Fourth Year	38	42	80
Grand Total			437

Further, out of 437 expected respondents there were only 316 who participated the actual survey which is almost 72.31% of the entire population.

Data Gathering Instruments

The researcher used surveyed questionnaires as main data gathering tool for this study. The instrument consists of two parts; the first part is composed of the demographic profile of the respondents the second part focused on the computer ethics awareness. Data collections was done through personal distribution and were given enough time to think about the questions as stated on the questionnaire, thus producing more accurate information period.

Statistical Treatment of Data

Responses from the questionnaires were directly encoded in an excel format. The data were analyzed using the Statistical Package for Social Sciences (SPSS) software – descriptive statistics (frequency counts, percentages, and mean).

The weighted mean of each item in the instruments was determined based on the following formula:
$$\overline{x} = \Sigma fw/ n$$

where;

$\overline{x}$ = weighted average
Σ = summation
f = number of responses under each scale
w = the weight assigned to each scale
n= number of responses

Figures and tables presentation format followed the American Psychological Association Style (APA Table Guidelines, 2007).

RESULTS AND DISCUSSION

This section presents the results of the study. It deals with the profile of the BS Information Technology students, Access to the Internet, Internet Usage, Knowledge in Computer Ethics and Level of Awareness in Computer Ethics.

Table 1
Distribution of Respondents by Profile

Age	N	%
15	16	5.06
16	57	18.04
17	84	26.59
18	71	22.46
19	53	16.78
20	33	10.44
21	2	0.63
Total	316	100.00
Gender		
Female	168	53.16
Male	148	46.84
Total	316	100.00

The data as shown in Table 1 contains the profile of BSIT students which consist of age and gender.

Age. The most number of respondents as shown in the table were 17 years old (26.59%; n=84), came next is 18 years old (22.46%, n=71), this was followed with 16 years old (18.04%, n=57), while 21 years old represent the smallest portion of the sample (0.63%, n=2).

Gender. The data disclosed that female respondents dominates having (53.16%; n=168) and male which has (46.84%; n=148) from 316 respondents.

Table 2

Distribution of Respondents by Access to the Internet

Access to the Internet Indicators		Yes	%	No	%
I have internet connection at home		227	71.84	89	28.16
rented at the internet station or internet cafe	224		70.88	92	29.12
I use my mobile gadget for internet subscription and surfing		254	80.37	62	19.63
I have an internet access at school		316	100.00	0	0.00

The data in Table 2 disclosed that majority of the respondents has internet access may it be at home, internet station or internet café, from their mobile phones as well as internet access from school. This only implies and very evident that **Access to the Internet** is not just a necessity but a basic human right nowadays. This can be supported by United Nations declarations in its resolution that says all people should be allowed to connect to and express themselves freely on the internet, (Fitzpatrick, 2012). Further, the impact of bridging digital divide could dramatically improve in areas like education. Improved technology access increases the likelihood of higher education, which ultimately leads to higher employment rates, greater tax revenue and a more productive society.

Table 3

Distribution of Respondents by Internet Usage

Internet Usage Indicators	f	%	Interpretation
4 – 10 hours per week	139	43.98	Very Frequent
2 – 4 hours per week	81	25.63	Frequent
1 – 2 hours per week	73	23.10	Moderate
Less than 1 hour per week	23	7.27	Seldom
0 or No Internet Usage per week	0	0.00	Not at all

Table 3 revealed that majority of the respondents have 4 – 10 hours per week internet usage (43.98%; n=139) while the least is less than 1 hour per week internet usage (7.27%; n=23). The data implies that despite of having an internet access there is always a digital divide. Public school students differ greatly than private school students in terms of the use of these technologies because of the limited facilities offered by public institution just like the Leyte Normal University in Tacloban City. Further, students living with more highly educated parents are more likely to use these technologies than those living with less well educated parents, and those living in households with higher family incomes are more likely to use computers and the Internet than those living in lower income households.

Table 4

Distribution of Respondents by Knowledge in Computer Ethics

Computer Ethics Knowledge Indicators	f	%
YES	226	71.51
NO	90	28.49
Total	316	100.00

It can be gleaned in Table 4 that majority of the respondents have knowledge in Computer Ethics having (71.51%; n=226) while only (28.49%; n=90) expressed themselves that they don't have any computer ethics knowledge. The data implies that there is still a need for the university to advocate in the promotion of responsible computing.

Table 5

Distribution of Respondents by Level of Awareness in Computer Ethics

Computer Ethics Indicators	n	Mean	Interpretation
Hacking	316	3.09	Aware
Fraud	316	2.70	Aware
Internet Libel	316	2.83	Aware
Identity Theft	316	2.97	Aware
Child Pornography	316	3.13	Aware
Cyber Sex	316	3.16	Aware
Cyber Squatting	316	2.40	Less Aware
Domain Squatting	316	2.25	Less Aware
Espionage	316	2.31	Less Aware
Copyright Infringement	316	2.90	Aware
Financial Theft	316	2.80	Aware
Cyber Stalking	316	3.15	Aware
Cyber Bullying	316	3.47	Moderately Aware
Spamming	316	3.09	Aware
Copyright and Software Theft	316	3.09	Aware
Digital Plagiarism	316	3.09	Aware
Overall	*316*	*2.87*	*Aware*

The data presented in Table 5 shows that majority of the respondents expressed themselves as *Aware* in almost all indicators except in Cyber Bullying with a mean of (n=316, M=3.47) which they expressed as *Moderately Aware*. However, three indicators such as Cyber Squatting, Domain Squatting and Espionage, they expressed as they are *Less Aware*. The results indicated that despite of their degree or program BS in Information Technology still they lack this computer ethics awareness and practices. The implication from this

finding is that the universities still have a vital role in generating awareness of ethical issues in the use, development and management of information technology. Further, the overall assessment of the computer ethics indicators were expressed as ***Aware,*** these indicates that they know of this indicators but not to the full extent of the details of each of this indicators and the corresponding penalties on the commission of such crime based on the applicable laws in the Philippines.

Least Computer Ethics Indicators

To determine the least computer ethics indicators, Table 5 above disclosed that Cyber Squatting (n=316, M=2.40); Domain Squatting (n=316, M=2.25) and Espionage (n=316, M=2.31) are among the computer ethics indicators that respondents are not aware and therefore it needs further advocacy and promotion in the dissemination on the details of each of this indicators and the corresponding penalties on the commission of such crime based on the applicable laws in the Philippines.

Inputs to Increase Level of Awareness for Responsible Computing

In relation to the findings of the study, the following will serves as inputs in order to increase the level of awareness among students in the university:

1. The university should revisit and review existing computer laboratory policies if it is attuned with the demand of the present time.
2. Develop an Information Technology Security and Awareness Training Program of the university relative to Responsible Computing.
3. The university should conduct an orientation program during the start of classes especially to the freshmen IT students on the developed IT Security and Awareness Training Program.
4. Establish a strong policies and corresponding penalties for the commission of the crime.
5. The Management Information System office of the university should establish mechanisms and measures for the prevention of unethical or irresponsible computing.

Conclusion

Based on the findings of the study, the researcher established an idea that students are aware of the different indicators towards responsible computing. However, despite of this awareness and being part of their subject in information technology, students still seems blind as to full context and extent of this ethical indicators as there is a policy vacuum in the university.

AUTHOR INFORMATION

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