Comparisons of International and American Students' Microethics

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ABSTRACT

In today's environment of the wide availability of educational resources and the easy, create extra work for the instructors to make sure students turn in their work rather than downloading the answers from the Internet or sharing homework assignments. Most international students believe in sharing the answer simply because has been in their country due to cultural environments. The instructors in the American colleges should understand that in some countries believe that knowledge must be shared, therefore, the emphasis is on team learning rather individual work. Also, in some countries copyright laws are either ignored or nonexistent.

In this paper, we try to find answers to correct the problems the incoming international students deal with when taking classes in the U.S. as well address the unethical consequences and ramifications.

We will present the results and analysis of a survey completed by the American and International students in the Computer Science and information Systems courses.
The survey consists of 30 questions related to ethical behavior of students at the different college levels and different majors as well student's nationality (American and International). The results of the survey will be analyzed to evaluate student perceptions of ethical behavior in regard to oblige, opportunities, and intent, and professional responsibility as well understandings of Microethics. The survey questions are created to address these 4 aspects and are presented ethical situations to which students will respond. The results of the survey will be used to teach students to understand ethical issues and professional responsibilities related to computer science and information systems.
The results will also be discussed when teaching as well professional responsibilities of the technological, economic, and environmental point of views.

INTRODUCTION

Ethical challenges facing the tech industry include issues in areas such as security, privacy, ownership, accuracy and control; for example, the question of whether a tech company has a duty to protect its customers' identities and personal information is an example of an ethical challenge relating to security and privacy. Some of these ethical issues are defined by laws relating to information security, intellectual property and financial transactions, but as with ethics relating to other areas of the human experience, the law is not necessarily the same thing as a set of ethics. Some information technology professionals feel that ethical behavior is essential for the industry, regardless of how that behavior adheres to the law [14]. As the amount of corporate and personal information continues to grow, and access to that information by information technology (IT) professionals increases, ethics and value judgments by computer and information systems professionals becomes more important [4]. [1], defined three factors which require

further study of ethical behavior of IT professionals. These include a greater reliance on IT systems across business enterprises, increasing the future use of system-generated information for computer science and information system students in the workforce [3].

> Computer science and information systems ethics entails three frames of reference: individual, professional, and social. "Microethics" considers individuals and internal relations of the engineering profession; "macroethics" applies to the collective social responsibility of the profession and to societal decisions about technology. Most research and teaching in engineering ethics, including online resources, has had a "micro" focus [15].

> While **micro-ethics, professional** relationships between individual professionals and other individuals who are their clients, colleagues and employers, **macro-ethics** problems confronting members of a profession as a group in their relation to society (i.e., Social responsibility of professionals as a group [17].

Research in information systems, security, and control has reported large losses attributable to unethical activities [10], Professional organizations such as the Association of Computer Machinery (ACM) and the Institute of Electrical and Electronic Engineering (IEEE) have suggested ethical codes of conduct for internal and external uses, including as a part of standard school curricula, because students studying general business or information systems should be knowledgeable about ethics issues.

Information security professionals must take professional codes of ethics and apply it appropriately to their own unique environments. Moreover, most information and computing professional organizations, and non-information system organizations have codes of ethics specific to their organizations which emphasize occupational responsibility.

To assist with this, describes [2] the following five ethical principles that apply to processing information in the workplace, and also provides examples of how they would be applied.

1. Informed consent. Try to make sure that the people affected by a decision are aware of your planned actions and that they either agree with your decision, or disagree but understand your intentions.
2. Higher ethics in the worst case. Think carefully about your possible alternative actions and select the beneficial necessary ones that will cause the least, or no, harm under the worst circumstances. Example: A manager secretly monitors an employee's email, which may violate his privacy, but the manager has reason to believe that the employee may be involved in a serious theft of trade secrets.
3. Change of scale test. Consider that an action you may take on a small scale, or by you alone, could result in significant harm if carried out on a larger scale or by many others.
4. Owners' conservation of ownership. As a person who owns or is responsible for information, always make sure that the information is reasonably protected and that ownership of it, and the rights to it, are clear to users.
5. Users' conservation of ownership. As a person who uses information, always assume others own it and their interests must be protected unless you explicitly know that you are free to use it in any way that you wish.

The ACM and IEEE also have codes of ethics to remind us that a computer professional has obligations to society, to their employer, their clients, their colleagues, and to professional organizations.

For example, the ACM Code of Ethics creates duties for computer professionals to “avoid harm to others,” to be “honest and trustworthy,” and to “strive to achieve the highest quality” in both the processes and products their professional work (ACM Code of Ethics, Sections 1.2, 1.3, 2.1). Further, professionals must thoroughly evaluate computer systems “with special emphasis on possible risks,” and

must honor contracts, agreement and assigned responsibilities," including social responsibilities as a member of the organization within which they work (ACM Code of Ethics, Section 2.5, 2.6).

Further, the general Moral Imperatives section of the ACM Code includes responsibilities for computer professionals such as contributing to "society and human well-being," and minimizing "negative consequences of computing systems, including threats to health and safety" (ACM Code of Ethics, Section 1.1). From the duties and the moral responsibilities compelled, we clearly see how important ethical behavior is in the view of the ACM.

Similarly, the IEEE Code of Ethics begins with the obligation for computer professionals to commit to the "highest ethical and professional conduct," "to accept responsibility in making decisions consistent with… [The] welfare of the public," and to promptly disclose "factors that might endanger the public or the environment" (IEEE Code of Ethics, Section 1.1).

As we believe that software developers are engineers and scientists, they should abide by such guidelines, and produce reliable and safe products. Ethical issues play a big role in the analysis and development of software and application products.] 13], discuss the need for the information-systems person to receive training in ethical implications, and argue that the existence of professional codes of practice is a clear indication that ethical neutrality is not possible. They contend, "Self-reflection by systems analysis on the ethical implications of their practice should ensure that ethical decisions are not made implicitly for [the IT professionals themselves]." [7, 13].

[5] Has identified four ethical issues that face the information age, which provide the framework for the data we have collected.

> Privacy: What information about one's self or one's associations must a person reveal to others, under what conditions and with what safeguards?
>
> Accuracy: Who is responsible for the authenticity, fidelity and accuracy of information? Similarly, who is to be held accountable for errors in information and how is the injured party to be made whole?
>
> Property: Who owns the information? What are the just and fair prices for its exchange? How should access to this scarce resource to be allocated?
>
> Accessibility: What information does a person or an organization have a right or a privilege to obtain, under what conditions and with what safeguards?"

Our survey of ethical attitudes, conducts, and behaviors were administered in both computer science and management information courses [6]. The results, conferring the students' ethical attitudes, may be used as a proxy for ethical attitudes of entry-level software engineering and information technology workers.

THE SURVEY QUESTIONS

Undergraduates also need to understand the basic cultural, social, legal, and ethical issues inherent in the discipline of computing. They should understand where the discipline has been, where it is, and where it is heading…. Students also need to develop the ability to ask serious questions about the social impact of computing and to evaluate proposed answers to those questions. Future practitioners must be able to anticipate the impact of introducing a given product into a given environment [16].

Previous surveys of business students have shown that more than one-half of respondents claimed they had engaged in unethical computer activity, including hacking or illegal copying of software [9]. These results correspond with the results of surveys of industry abuse regarding the ownership of intellectual property. Losses for software developers attributable to piracy in 1996 were estimated to be 11.2 billion (SPA/BSA, 1997). The potential economic harm of unethical behavior further emphasizes the need for continued study of the ethical beliefs and value judgments made by students [8].

The questions distributed in our survey are a modified version of the survey written at Baylor University's Hankamer School of Business, entitled "Workplace Ethics Questionnaire." [14]. The survey questions were given to students who took computer science courses, but also management information systems classes as those students often take classes from a different field of study. The survey consisted of thirty (30) questions related to ethical issues in information systems. Students were asked to answer each question (except Question 30) strongly agree, agree, if they felt neutral in their response, or if they disagree or strongly disagree with the question statement. For statistical analysis purposes, students were also asked to indicate their gender, age, major and class standing. Following is the list of questions submitted to students. The survey questions were divided into following categories for both International students who were commuter science majors and American students who were Information Systems and Business majors. These categories were: Product (Software), Public (ethical ramifications of software engineering); Judgement (when to make an ethical decisions while are dealing with deadlines and errors in the software); Client and Employer (ethical issues related to conflict of interest and intellectual properties); Management (how to make ethical decisions as team leaders or as a business manager); Profession (No matter the field of study, each student must recognize that he/she is a part of a profession and is representing that professions, therefore, he/she must be competent and professional); Colleagues 9whther as a software engineer or a business manager, one is responsible for to the team. So team's goals always precedes individual interest); and finally Self (a professional must be competent, self-reliant, leader, and ethical).

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ETHICAL ISSUES SURVEY QUESTION TABLE

1. There are more ethical people than unethical people in the Internet world.
2. I cannot be accused of lying or cheating or acting immorally or unethically, until I say, "I never lie or cheat or act immorally or unethically."
3. I don't often concern myself with other people's lying, cheating, and being immoral and unethical.
4. An action is not immoral, unethical unless it directly hurts someone.
5. Should all immoral, unethical acts be crimes under the law?
6. Stealing something and then use it for a good purpose is ethical.
7. Promoting a less worthy person ahead of a more worthy person for an irrelevant reason is ethical.
8. If in my business I promote a less worthy person ahead of a more worthy person for an irrelevant reason, am I treating the less worthy person unethically?
9. If in my business I hold back a more worthy person because I need to promote a less worthy person, is that ethical?
10. If I don't cooperate as much as I can with my coworkers, am I being unethical?
11. If, as an employee, I don't work to my full potential, am I being unethical?
12. If I don't work to my full potential, do I earn all the money I am paid?
13. It is possible to teach ethics at the collegiate level to actually upgrade students' ethical behavior.
14. An executive earning $100,000 a year padded his expense account by about $3,000 a year. The Executive's action is unethical.

15. In order to increase profits, a general manager used a production process that exceeded legal limits for environmental pollution. The manager's action is ethical.
16. A small business received one-fourth of its gross revenue in the form of cash. The owner reported only one-half of the cash receipts for income tax purposes. The owner's action is ethical.
17. A company president found that a competitor had made an important scientific discovery which would sharply reduce the profits of his own company. He then hired a key employee of the competitor in an attempt to learn the details of the discovery. The action of the company's president is unethical.
18. The employee's action who joined the above company is unethical.
19. A manager promoted a friend to manage a divisional office and passed over a better-qualified employee with whom he had no close ties but has a better qualification. The action of the manager is ethical.
20. A software engineer discovered what he perceived to be a product design flaw that causes system a failure. His company declined to correct the flaw. The software engineer decided to keep quiet, rather than taking his complaint outside the company.
21. As part of the marketing strategy for a product, the producer changed its size and color and marketed it as "new and improved," even though the product's other characteristics were unchanged. The producer's action is ethical.
22. An owner of a small business firm obtained a free copy of a copyrighted computer software program from a business friend rather than spending $500 to obtain his own program from the software dealer. The owner's action in unethical.
23. A salesperson tells a customer that a product she is interested in will not available the next day, even though he know this is not true. The salesperson's action is unethical.
24. A company overstated its expected revenues in negotiations with a potential buyer of the organization. The company's action is ethical.
25. Joe purchases a Spreadsheet software on-line, but he also receives a copy of a Word Processing with the Spreadsheet. Although he has not paid for the Word Processing he did not return it to the seller. Joe's action is unethical.
26. Joe realized that he wrote a check which causes his bank account to fall into the "Insufficient amount" category. Joe asks his friend Mary, who is a software engineer working for the bank to manipulate his account for a day so he can deposit money in his account and avoid the fine. Joe's action is unethical.
27. If Mary agrees to do a friend a favor and manipulate Joe's account, her action is unethical.
28. Pat realizes that his/her friend has a copy of the final exam questions. a. Pat should report this to his/her instructor. b. Pat may obtain a copy of the questions from her/his friend by promising not to report the incident. c. Pat should keep quiet about the matter. It is not her/his business. d. They should sell the questions to other students in the class. **(**Baylor University: "Workplace Ethics Questionnaire," 2015)

ANALYSIS OF DATA

The survey was administrated at the start and at the end of term. The comparison between the sets of results are also shown in the graphs and data tables.

The raw percentage data sets of the comparisons between computer science (CS) and non-computer science majors (others) are found below. The results are expressed in the percentage each group selected

their desire answers. The non-computer science students were from the following courses: Mechanical Engineering, Business Economics, Agricultural Economics, Entrepreneur Studies, Music, Electronics Engineering, Sociology, Psychology, Economics, Geographies Information Systems, Graphics Design, and Informatics Technology.

The differences between CS students and the "others" students' attitudes and behavior related to ethical issues in computing are shown. The tables and graphs also show the relationships among students. We considered each gender's attitude as a means of comparison.

Finally, we considered questions for the comparison between male and female as well as computer science and non-computer science students to determine their perceived action related to an actual situation. The results of the comparisons are also presents in both data table and graph.

MIS_VS_CS										
	1		2		3		4		5	
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	5.99	30.00	4.2	0.00	0.625	0.00	6.525	10.00	7.065	0.00
Agree	37.44	10.00	17.255	20.00	21.54	40.00	37.095	30.00	21.815	0.00
Neutral	28.33	50.00	24.04	10.00	29.855	30.00	26.09	30.00	13.315	40.00
Disagree	23.955	10.00	32.34	20.00	30.465	10.00	23.05	20.00	39.04	50.00
Strongly Disagree	4.29	0.00	22.165	50.00	17.515	20.00	7.24	10.00	18.765	10.00

MIS_VS_CS										
	6		7		8		9		10	
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	5.365	20.00	1.165	0.00	4.2	0.00	12.515	30.00	3.04	0.00
Agree	22.79	20.00	10.815	20.00	7.24	0.00	32.53	0.00	9.115	10.00
Neutral	32.255	50.00	34.58	60.00	21.8	40.00	29.665	60.00	28.955	50.00
Disagree	28.415	10.00	36.28	10.00	45.22	40.00	24.13	10.00	42.265	20.00
Strongly Disagree	11.175	0.00	17.165	10.00	21.54	20.00	1.165	0.00	16.63	20.00

MIS_VS_CS					
	11	12	13	14	15

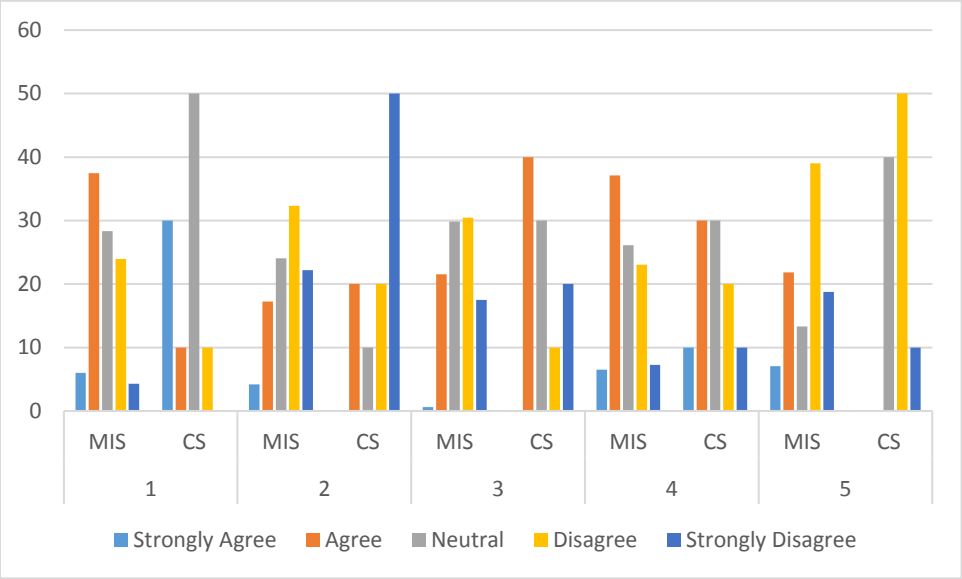
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	6.525	10.00	9.475	10.00	6.44	0.00	11.35	20.00	11.525	10.00
Agree	34.765	0.00	42.545	50.00	18.765	10.00	55.405	60.00	31.54	60.00
Neutral	29.665	50.00	26.8	20.00	31.63	30.00	21.89	20.00	37.89	20.00
Disagree	24.84	40.00	18.765	20.00	35.48	40.00	9.025	0.00	16.09	10.00
Strongly Disagree	4.2	0.00	2.415	0.00	7.69	20.00	2.325	0.00	2.95	0.00

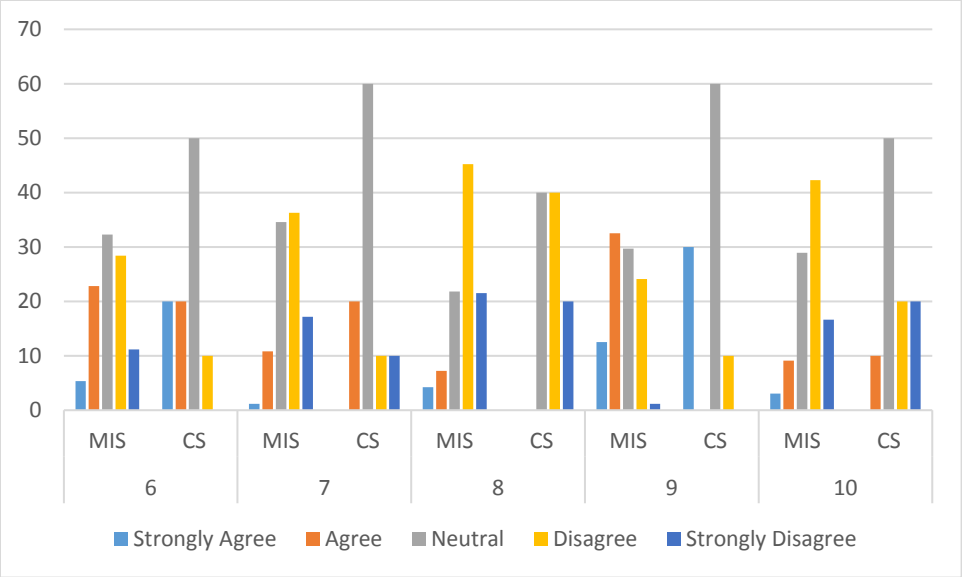
MIS_VS_CS										
	16		17		18		19		20	
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	3.665	10.00	3.04	0.00	12.775	20.00	11.44	20.00	4.115	0.00
Agree	18.675	30.00	15.015	20.00	24.665	10.00	27.34	0.00	10.99	10.00
Neutral	20.725	20.00	20.55	20.00	38.065	60.00	33.78	50.00	30.655	40.00
Disagree	32.44	10.00	36.105	30.00	19.84	10.00	25.03	30.00	41.555	30.00
Strongly Disagree	24.49	30.00	25.29	30.00	4.65	0.00	2.415	0.00	12.69	20.00

MIS_VS_CS										
	21		22		23		24		25	
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	20.55	50.00	8.575	30.00	2.415	10.00	9.565	40.00	7.24	20.00
Agree	37.44	10.00	37.355	20.00	17.515	0.00	41.105	10.00	62.47	40.00
Neutral	27.79	30.00	34.315	40.00	37.44	60.00	29.13	50.00	22.6	40.00
Disagree	12.425	10.00	17.965	0.00	30.655	0.00	14.925	0.00	5.365	0.00
Strongly Disagree	1.79	0.00	1.79	10.00	11.975	30.00	5.275	0.00	2.325	0.00

MIS_VS_CS

	26		27		28		29		30	
Major	MIS	CS	MIS	CS	MIS	CS	MIS	CS	MIS	CS
Strongly Agree	8.49	0.00	2.5	20.00	25.55	20.00	30.74	30.00	51.745	50.00
Agree	19.215	20.00	37.98	60.00	36.73	30.00	36.64	40.00	10.725	0.00
Neutral	31.905	20.00	34.49	10.00	25.915	50.00	22.515	30.00	28.33	20.00
Disagree	31.19	40.00	21.455	10.00	10.64	0.00	4.74	0.00	8.575	30.00
Strongly Disagree	9.2	20.00	3.575	0.00	1.165	0.00	5.365	0.00	0.625	0.00

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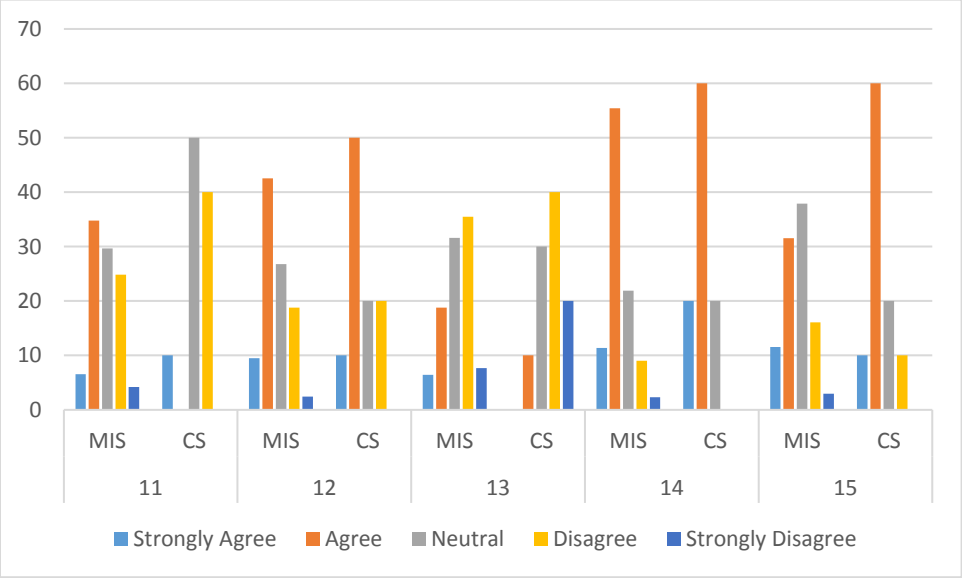
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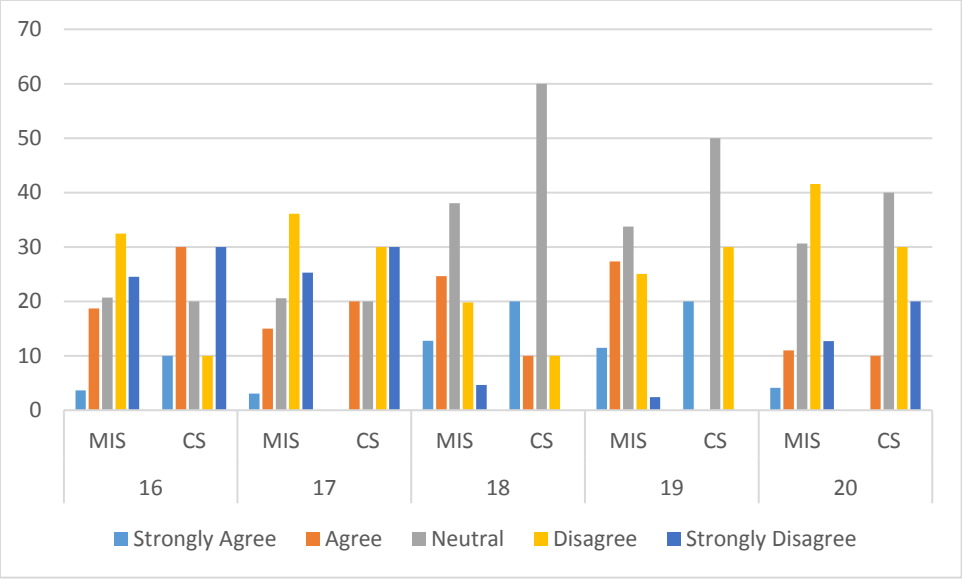
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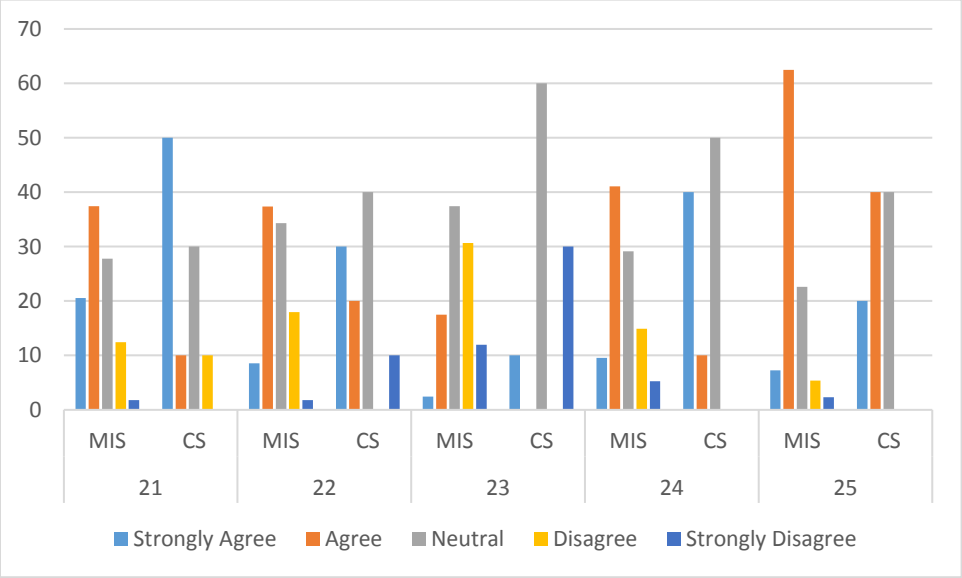
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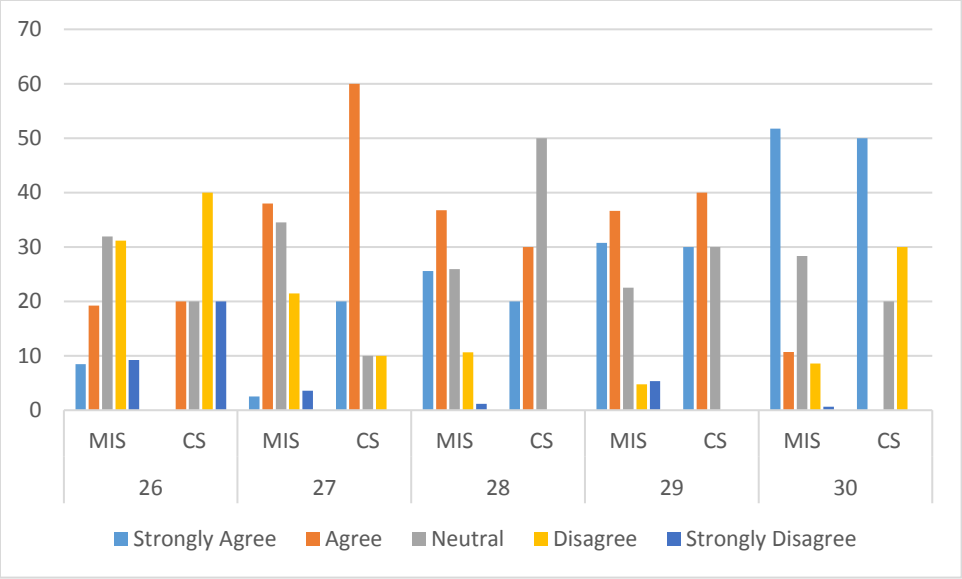

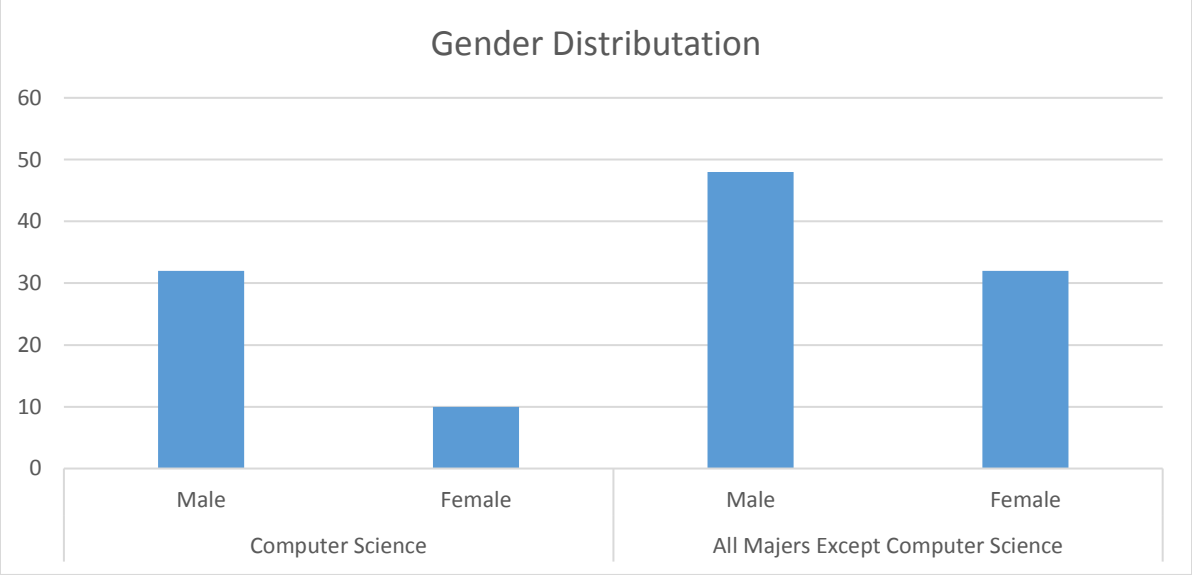

SUMMARY AND CONCLUSION

- In this research paper we have presented the analysis and results of a survey completed by computer science and information systems students. The survey consisted of 30 questions related to the ethical behavior of students at different college levels and with different majors. The results of the survey were analyzed to evaluate student perceptions of ethical behavior in regard to obligations, opportunities, intent, and professional responsibility. The survey questions are created to address these four (4) aspects, and presented ethical situations to which computer science and non-computer science students responded. The results of the survey will be used to teach students to better understand ethical issues and professional responsibility related to information computer science (international students) are more responsive to the product,

Profession and public principles of the ethical issues while the Information systems (American) students relate more to the Judgement; Client and Employer; Management; Colleagues Self principles. The analysis of data clearly show that computer science students and when teaching professional responsibility within technological, economic, and environmental points of view.

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