A Student's Perspective on the Importance of Teaching Social Issues in the I.T. Curriculum

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ABSTRACT
With the rapid growth and popularity of information technology in our society, societal issues as they pertain to IT have become a key component of the IT model curriculum. Mount Royal University offers a course titled 'Information Technology and Society' which enables students to gain an understanding about how the technology they use affects society as a whole in positive and negative manners. This paper provides a student's perspective on the effectiveness of this course. In addition, this paper provides the argument for the incorporation of a dedicated course on social issues pertaining to technology in IT curriculums.

Categories and Subject Description
K.3.2 [**Computers and Education**]: Computer and Information Science Education – information systems education

General Terms
IT Model Curriculum, SPE, Technological Change.

Keywords
IT Education, social issues, ethics, social change

1. INTRODUCTION
"Working together, we protected our children from the lion and the hyenas. We taught them the skills they would need. And the tools. Then, as now, technology was the key to our survival" [1]

Technology has always been a focal point of our society. With the rapid growth of information technology, we live in an age where IT affects everyone's lives in some way and plays a key role in how we interact with our society. To ensure IT professionals have a fundamental understanding of this topic, the IT model curriculum requires graduates to have an understanding of professional, ethical, legal, security, and social issues pertaining to IT.

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A 2010 ITiCSE working group under the direction of Mikey Goldweber found that nearly ninety-five percent of all ICT programs provide some coverage of social, professional, and ethical issues (SPE) in their curriculums [2]. That is, since the 1991 report on the importance of incorporating social issues into curriculums, almost all ICT programs now incorporate SPE into their curriculums. Each curriculum has its own methodology of incorporating social issues into it.

History of computing, professional ethics, computer crime, security, and intellectual property are among topics that are well established in curriculums across the board. However, topics such as cultural issues, accessibility issues, the impact of the free-open source software movement, and green computing are often not included or given brief coverage in IT programs. This paper will argue for incorporating these less frequently covered topics. In addition, this paper will describe how one student in an SPE course perceived the course and its relevance.

2. REVIEW
As part of their Bachelor's program in Computer Information Systems, Mount Royal University offers a required course called COMP 3309: Information Technology and Society. This course allows students the chance to gain a fundamental knowledge of the implications of technology on society. It covers historical perspectives as well as the legal, ethical, political and social contexts of computing. The course requires students to complete journal entries on a set of readings designated by the professor as well as write two research papers that are based on topics covered in these readings.

The readings and journal entries are a unique aspect of this course. Other reported versions of this course generally work with one of several available textbooks on computer ethics. The more popular SPE textbooks, such as "Ethics for the Information Age" by Michael J. Quinn and "A gift of Fire" by Sara Baase, offer a very linear way of teaching the subject. In Quinn's book, each chapter beings with an introduction followed by giving the reader a brief overview of the topic, and conclude with a few case studies pertaining to the topic.

Although these books provide a structured way of teaching the course, they do not foster and environment that is

engaging to the students. According to the study conducted by Goldweber, "students need to be challenged to see the impact of computing from different perspectives, confronted with complexities that they have not considered previously, and engaged in situations having unexpected consequences or undesired behaviors" [2]. That is, in order to help students understand more complex issues a different approach needs to be taken.

Based on the author's experience, the way COMP 3309 was taught seems more engaging as opposed to the more traditional method of using textbooks. Perhaps the reason for this higher feeling of engagement is that the assigned readings put the topics covered in class in a real setting. It moves the student from only being able to talk about ethics and morals in IT from a hypothetical standpoint to learning about real situations and reviewing them.

As a student in a technical discipline this author found the exposure to the social and ethical issues of technology to be very eye opening. Other courses in this program cover ethics on a small scale, and having an entire course dedicated to social issues helped make the connection between the technologies being studied, and how they affect society.

The reason this approach is more effective is because it is more engaging. That is, a dedicated course allows a student to go more in-depth into these issues. The level to which a student partakes in participating in this type of a course is dependant on the student's interest in a topic. By discussing a variety of topics that are fairly applicable to the students' use of technology, such as the free open source software movement or legal cases on downloading music, the level of student interest is likely going to be higher. Perhaps the topics popular among students can be used to help them realize the importance of the more traditional topics the IT model curriculum suggests to incorporate.

One of the course topics that stood out was learning about how unpredictable it is to predict technological change in terms of how technological progress affects society. For example, a topic covered in the course was how the original inventors of the first computer did not see how it could transform the world. The reason being, the technology at hand was only being analyzed based on its functional capabilities.

The same is true in courses that are dedicated to a specific topic in information systems and cover ethics while students are working on projects. For example, a network should be configured in a way to ensure security of data, databases should be designed to ensure data integrity, and so on. The reason social change or how a society reacts to new technology seems very unpredictable is because it is not given as much thought as a technology's functional capabilities.

This is one of the main benefits of this course. In order for students to learn about complex social issues pertaining to technology and how the technology they use affects them as well as others, there needs to be a course that engages students and shows them how the technology they use affects them and their society.

3. RECCOMENDATIONS

As mentioned earlier, this course offers students a chance to gain an understanding on a variety of different topics. Another great aspect of this course is that the research paper allows students to pick a topic of their choosing and write a paper on that topic. This way a student can go more in-depth on a topic of their choosing as opposed to being limited to the same topics being covered in class.

The IT model curriculum encourages schools to produce graduates that can make value judgments on a daily basis and therefore students must be provided the skills to accept their roles and begin to understand their responsibilities as IT practitioners [3]. This type of learning by students can only be done in senior courses and once a basic understanding of social issues in technology has been established.

The author's recommendation is to allow students a chance to take a senior level course that covers social issues in more depth. As a student, taking such a senior level course that would aid conducting in-depth research on a relevant social issue as it pertains to technology would be beneficial for a couple of reasons. The first reason being that when we look to the past, it easy to see that technological change is unpredictable since most people did not analyze technology other than from its functional capabilities. Now that it has been established that this was the cause for unforeseen change, this should be incorporated into curriculums in order to make students more aware. Technological change is something that is always going to be unpredictable but we should at least attempt to get students thinking of technology that they use as more than just tools for the functional purposes in order to view the entire spectrum of technology in our society.

Another reason a senior-level is recommended is because there has not been a vast amount of research done on some of these topics. For example, when learning about how online communication technologies have affected adolescents we discovered that although the research is very interesting, it is limited since there have not been many studies conducted on the topic. Thus, the chance to have a significant contribution pertaining to a current social issue regarding technology is very appealing.

4. CONCLUSION

Over the last twenty-years, most IT programs in North America have realized the importance of incorporating ethics and social issues into their curriculums on different levels.

ImpactCS, which laid the foundation of how ethical, moral, and social issues should be taught in computer science programs, has been used since as a building block by other ICT programs. The IT model curriculum also strongly suggests that programs should incorporate these topics into curriculums at and early stage. As the rapid growth of technology continues, so does the increase of social issues pertaining to these advancements privacy, intellectual property, and freedom of speech.

In order to achieve the goal of having graduates entering the information technology industry with a fundamental understanding of social concepts that relate to new and emerging technology, it is vital that this subject is taught the most efficient way. By having a dedicated course, the well established topics, such as history of computing and professional ethics, can be covered as well as emerging topics on accessibility and cultural issues. This allows students to understand computer on a much wider spectrum in terms of how a technology could affect their society as opposed to only looking at a technology's functional capabilities. By doing so, we will move towards a generation that understands information technology from both technical and social perspectives.

"They will marvel at how vulnerable the repository of raw potential once was. How perilous, our infancy. How humble, our beginnings. How many rivers we had to cross before we found our way" [1].

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6. REFERENCES

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