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Teaching Information Ethics in an iSchool

Abstract

The iSchool movement is an academic endeavor focusing on the information sciences and characterized by a number of features: concern with society-wide information problems, flexibility and adaptability of curricula, repositioning of research towards interdisciplinary and multidisciplinary exchange (Harmon, 2006). Teaching information ethics in an iSchool would seem to be a requisite for students who will have an enormous impact on the information technologies that increasingly permeate our lives. The case for studying ethics in a college of information science and technology, as opposed to the liberal arts and humanities, has been regarded only marginally, however. In this paper I explore how I developed and delivered an information ethics course, paying attention to student receptivity and learning, course structure and assignments, as well as its connection to the wider curriculum and its efficacy.

Agenda

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iSchool Context

The iSchool movement is an academic endeavor that focuses on the information sciences. It is characterized by a number of features: concern with society-wide information problems and their concomitant problem focus, flexibility and adaptability of curricula, repositioning of research towards interdisciplinary and multidisciplinary exchange (Harmon, 2006). It consists of about 20 colleges and universities, including Penn State, Syracuse, UC Irvine, Michigan, Washington, UC Berkeley, UCLA, Drexel, Florida State, Georgia Tech, Illinois Urbana-Champaign, Indiana, Wisconsin, Maryland, North Carolina, Pittsburgh, Rutgers, and Texas at Austin. They have established the yearly *iConference*[1] that reflects the diverse nature of the iSchools' research, ranging from the computational to the sociocultural to the philosophical.

IST

The development of the iSchools at each university has its own heritage. Some developed out of the library science tradition, such as UC Berkeley. Others had their roots in computer science, communication, or business departments and schools. At Penn State, the College of Information Sciences and Technology (IST) was unique in that it was created independently of any department or school within the university in 1999. IST has no departments, by design, to foster collaborative interdisciplinary research among its scholars, who often develop grant proposals that incorporate elements of social science and engineering disciplines into cohesive research projects.

IST Undergraduate Curriculum

IST undergraduates are trained as interdisciplinary professionals and hired by organizations to help develop, manage and integrate information in a variety of contexts. The IST curriculum[2] is built around the concept of an ITP triangle (information-technology-people) and that any understanding of one point of the triangle must also include an understanding of the other two points. The curriculum is interdisciplinary, with three focal options for its undergraduates: design and development of information systems (ISDEV); integration and application of information technology (ITINT); and, informational context of people, organizations and society (ISPP). ISDEV focuses on software development and its production cycle, user-centric design and development, software development on distributed platforms, and software development tools. ITINT focuses on value chains, process modelling, workflow analysis, change management, enterprise systems and middleware solutions. ISPP focuses on how people influence the design, development, diffusion, use, and management of IT, implications for social change affecting individuals, communities, organizations, economies, nations, and global environments.

The lack of a course focused solely on ethics in an interdisciplinary field such as IST is understandable in some ways. Unlike traditional disciplines with an established academic canon, IST is new and interdisciplinary without an established academic canon. The faculty often have experience in the applied ethics of their particular discipline, but translating ethical precepts across social science and engineering disciplines presents a challenge. IST deals with new and emerging technologies, for which ethical analyses have yet to be conducted. IST often works in the "vacuum space" that information technology creates (Moor, 2008). The policy-focused courses are heavily based in law studies, and as such present a legal framework rather than an ethical framework from which to assess information issues. Technology-focused courses, (e.g., on information privacy and security) are approached from an engineering perspective and the ethics of privacy, security, hacking, etc. are not addressed. Courses that address cross-cultural or intercultural issues assume a political ethics of inclusion, only rarely exploring the ethics of technology transfer across cultural boundaries. Exploration of the issues of legality and inclusion are assumed to be sufficient in developing an understanding of ethics for IST undergraduates.

Motivation for an Ethics Course

The decision to create an Information Ethics course in IST arose from my experience teaching *IST 301: Information and Organizations*[3] in Spring 2009. It is a core course within the IST curriculum and required for IST majors. The primary goal of the course is to

[1] http://www.ischools.org/site/conference/

[2] http://ist.psu.edu/currentstudents/undergraduate/bachelors/options/

[3] http://bulletins.psu.edu/bulletins/bluebook/university_course_descriptions.cfm?letter=I&courselong=IST%7c301%7c200203S1

provide students an understanding of the variety of organizational structures, conduct an array of analyses and examine the information flows among information systems in a variety of organizational structural contexts. It is a writing-intensive course in which IST undergraduates are challenged to write extensively (often for the first time) and articulate their understanding with several papers over the semester. One of the modules of the course focused on organizational culture, in which ethics was considered. The module did not include formal frameworks for considering the ethical behavior of organizations. Students, when challenged, had no means of assessing the ethics of a situation other than an implicit understanding of their cultural values that privileged privacy of personal information but public sharing of non-private information. They had an implicit sense of fairness, but could not articulate the basis for it, the boundaries of its application, or describe why their ideas of fairness resulted in different outcomes. Based on what they felt, they could often make a rational case for why they believed something was ethical or unethical, but they couldn't recognize the reasoning at its foundation. Following this discovery, I found that the only exposure to ethics in the curriculum was in a small module of two courses—the *Information and Organizations* course and the *IST Integration* course[4] taken by seniors.

In response to this lack of a formally structured ethics course, I developed one I believed would be helpful to IST students and would allow them to analyze the ethical dimensions of new and emerging technologies in a variety of personal, organizational and societal contexts. The course was designated as an *IST 402: Emerging Issues in Technology* course, which covers a range of special topics but which is also required for undergraduates. "Hot issues" (i.e., information privacy in social networking sites, violence in video games, cyber-bullying, etc.) may engender lots of discussion and debate, but what issues become "hot" changes quickly, in label if not in substance. Rather, the goal for this course was to provide students with an enduring ability to assess the ethics of a variety of emerging technologies using traditional normative ethics frameworks, i.e., virtue, consequentialist, deontological and feminist/care. Because information is a central focus of the IST curriculum, the newly developed information ethics framework (Floridi, 1998, 2008a, 2008b) took a primary role and was used as a contrast to the other frameworks.

Structuring the Course

IST students, who study programming languages, systems integration, interface design, and organizational and human information behavior, are accustomed to problem-based learning (PBL; Evensen & Hmelo-Silver, 2000; Schmidt, 1993) and this course needed to provide the basic structure of each philosophical framework while allowing them to discover on their own or in teams how many of the pieces fit together practically.

Materials and Course Structure

The students' lack of experience with complex philosophical texts posed a challenge that was addressed in several ways. Many of the texts available focused specifically on "hot topics" and were divided into sections such as privacy, security, risk assessment, access and inclusion, censorship, corporate responsibility, environmental ethics, genetic modification, nanotechnology, etc. (e.g., Budinger & Budinger, 2006; Himma & Tavani, 2008; Moor, 2008; van den Hoven & Weckert, 2008). While they had individual chapters that provided good examples of the application of traditional and emerging ethical frameworks in informational contexts, they did not provide a comprehensive solution to the approach devised for this course. The solution was to excerpt chapters from such texts, include journal articles that spoke to application of normative ethics to informational technologies (e.g., Vallor, 2009 is a good example of this), and to use accessible text and video resources available via the web.

This needed to be an IST course, not a philosophy course, but focused on normative ethics primarily and applied ethics secondarily. Because the study of normative ethics was unfamiliar to most IST students, structuring the course in a way that kept them engaged in the learning process was significant consideration and a challenge. As information science students, a normative framework focused on Information Ethics (IE) was critical for their education and needed to be central to the course. We also needed to cover virtue, consequentialist, deontological, and feminist/care ethics frameworks. Rather than cover the material in historical chronological order, I decided to make IE the first framework covered. The traditional frameworks could

[4] http://bulletins.psu.edu/bulletins/bluebook/university_course_descriptions.cfm?letter=I&courselong=IST%7c440w%7c200203FA

then be covered in a comparative way to IE. Table 1 delineates the course progression.

Table 1. Original IST 402 Course Topics by Week

Week 1	Introduction to the Course
Week 2	Meta-ethics
Weeks 3-6	Information Ethics
Weeks 7-8	Virtue Ethics
Weeks 9-10	Deontological Ethics
Weeks 11-12	Consequentialist Ethics
Weeks 13-14	Feminist/Care Ethics
Week 15	Team Project Presentations

As the course progressed, it became clearer as to the level of reading difficulty the students could handle. They weren't responsible for the details of each assigned reading or video since they weren't given formal tests. Rather, they were tasked with grasping the basic and essential elements of each framework in order to compose short essays on topics that required them to explore and/or apply the frameworks on IST-related issues. The final paper reflected their learning over the semester, their understanding of the frameworks, what were their preferred frameworks and how they manifested in their lives.

The original selection of readings was too numerous and too vast (33 assigned and 49 recommended readings and videos). In class, I often made a conscious choice to follow the discussions wherever they led, at the expense of some readings. I felt that active discussion was not only more important than written material but also essential to the PBL methodology with which IST students were familiar. Allowing them to struggle with the essential elements of each framework as part of an active discussion, along with guiding questions on important topics and elements as necessary, fostered ownership of their own learning in a way in which they'd become accustomed with PBL.

Facilitating Participation

In order to involve the students in philosophical discussions for which they had little experience, I used some of the videos in the *Justice* series (Sandel, 2009) available on the web as a vehicle for discussion during the first week of class. Using established ethical dilemmas, e.g., the trolley problem (Foot, 1978; Jarvis Thomson, 1976), to springboard discussion, and subsequently seeing their responses mirrored by students in the web video, reinforced for the students that they had the ability to engage in philosophical debate despite their lack of philosophy background.

Participation in class discussion was also a challenge that also needed to be addressed. To overcome the reluctance of students to express themselves verbally, I created other avenues for expression. The first was a requirement for *daily feedback*—a simple online textbox where the students could indicate what it was they learned that day, what activities they thought worked or didn't work, vent their frustrations, or simply reflect on the readings or discussion, etc. This feedback mechanism allowed less vocal students to express themselves and participate in a way that was comfortable, and I selected several daily feedback entries that seemed to reflect shared understandings or common concerns to review at the start of the class each day. Through daily feedback, several students expressed how much they liked hearing the opinions of their classmates, that it was stimulating and engaged them in the subject matter:

> *Today's class was one of my favorites…I actually wanted to be following along and listening to everyone's opinions.*
>
> *…interesting to hear the various arguments brought up by the challenging ethical situations presented. I liked hearing the class opinions and the varied responses.*
>
> *Some of the questions and concepts are really hard to comprehend and therefore it helps to hear other opinions.*

I provided this feedback to the class during the first few weeks of class and reinforced the idea that they liked hearing their fellow students' insights, arguments, and opinions. Learning that their classmates liked and wanted to hear what they had to say facilitated greater involvement in class discussions, especially among those who were normally reluctant to speak openly:

> *It's reassuring to know students are becoming more interested in voicing their opinions.*
>
> *I feel that some of these topics are finally engaging the students not just because we have to but because we do have justified opinions on the ethical situations we discuss.*

The course management software allowed students to use a discussion forum, pose questions, and rate

the contributions of their classmates. It was enthusiastically endorsed by our tech-savvy students:

> *I felt really willing to share my opinions and discuss different topics in the forum today—much more willing than I usually feel in class when I don't always know how to interpret my ideas to wrap around what we're discussing.*
>
> *The forums exploded with ethical problems and concepts. …it was effective because the people who felt that they didn't want to talk in front of the class had a chance to voice their opinions and insights.*
>
> *I really enjoyed class today because it allowed us to see what all of our classmates were thinking. Usually during class discussions not everyone expresses their thoughts opinions or questions for whatever reasons. The forums are a great way to bypass this problem.*

PBL through Team Projects

Finally, the challenge of PBL was addressed in both classroom activities and as part of the team project. One of the goals for this course was to ground complex, abstract frameworks in real-world technological contexts. This required two things: 1) that the students be able to connect the variety of elements of each framework in a way that made sense to them conceptually, and 2) that the students be able to implement those conceptual frameworks in a practical way. To accomplish the first, we engaged in a variety of classroom activities that ranged from straightforward discussion to concept mapping to creating and presenting visual representations of the normative frameworks. The second was embodied in their team project, which initially caused extreme anxiety among the students. The teams were given two guidelines for their information organism (or "inforg" as Floridi refers to it) creation project: 1) the inforg be able to assess the ethical framework(s) of a user in an online, virtual, or gaming environment, and 2) the inforg offer advice to the user based on that framework. They were told that they could take their inspiration from the *Oracle at Delphi* and the *experience of supplicants*[5]. Their assignment was not to recreate the Oracle, per se, but to be creative in developing their inforg. The lack of specification, combined with the unfamiliar territory of philosophy and ethics, created significant anxiety among the students for several weeks, which was voiced in class, in one-on-one meetings, and in daily feedback.

As they began to outline their ideas and tackle the implementation of the ethical frameworks in the development of their inforg, enthusiasm supplanted their anxiety. In their final assessments they expressed a desire to see the anxiety-producing project remain unchanged for future classes and an appreciation of the project in helping them ground these abstract philosophical frameworks in ways that truly facilitated their learning.

One of the outstanding projects was based on the MMO (massive multiplayer online game), *Bioshock*. The team isolated 17 decision points where the player is forced to decide upon a course of action—acquiring resources, saving or killing, selling or destroying, enhancing their physiology, etc. At each point, their inforg offered a choice using explanatory scenarios that reflected the reasoning of each framework. The player could make any choice they normally would make. The scenarios were used to track the reasoning behind their choices and provided implicit advice based on the frameworks naturally employed by the player. Upon reaching the end of the game, the player was provided a complex assessment of which normative framework they primarily used to make ethical decisions, including where they tended to diverge from the framework. The team presented their inforg design using a comic book motif with artwork from the video game, and included a detailed flow chart of the decision-making paths that facilitated the assessment.

Reflections

By the end of the course, I learned a lot about how IST students assimilated the various ethical topics and frameworks. IE is an *ontocentric* and patient-centered framework, which is difficult to understand, especially without a foundation in ethical discourse. It advocates a view that moves beyond anthropocentric or biocentric perspectives to one in which all entities are considered informational and worthy of respect and attributed an inherent dignity. Entropy, considered as destruction or denigration of informational entities, is the significant evil in this framework and needs to be removed from the Infosphere. It is a complex framework and it became clear as we worked through the remaining normative frameworks that understanding many of its ideas depend on an understanding of the elements of those traditional frameworks, as well as

[5] http://en.wikipedia.org/wiki/Oracle_at_Delphi#The_experience_of_supplicants

the meta process of the evolution of ethical thought and discourse, if the students were to fully grasp IE's significance in assessing ethical behaviors and choices, from multiple cultural and informational perspectives. The critical perspectives of IE (e.g., Capurro, 2007; Capurro, 2008; Ess, 2008) were also difficult for students to assimilate because of their unfamiliarity with Heideggerian discourse in particular and ethical discourse in general.

Restructuring the Course

Upon reflection, it also became clear that there was too much time spent on some topics (e.g., meta-ethics), and not enough on others (e.g., using instructional tools, deontological ethics), while complex topics could have been better structured (e.g., information ethics, feminist/care ethics). Future versions of the course will spend more time on understanding and using instructional tools like collaborative concept mapping[6] in the first few weeks and devote more time to team presentations in the last few weeks.

Assigned readings and videos have been streamlined so that those more readily assimilated by learners and which evoked more lively discussion are kept, while those that seemed too difficult to read or engendered very little discussion have been removed. The course has been reworked into seven modules, with a variable number of topics or spheres of application in each. There is a maximum of two text articles and/or three videos required for each topic. Woven into the IE module are four class sessions devoted to team project time. The number of essay assignments has increased to four, and students now write essays concerning (1) virtue or consequentialist ethics, (2) deontological or feminist/care ethics, (3) information ethics, and (4) a final reflection paper. The restructured progression is illustrated in Table 2.

Table 2. Revised IST 402 Course Structure

Weeks	Module	Topics
1-2	Introduction	Introduction & Expectations
		Meta-ethics
		Concept Mapping practice & Team project introduction
		Reality and Virtuality
3	Virtue Ethics (VE)	VE Introduction
		VE in Social Networking
4-5	Consequentialist Ethics (CE)	CE Introduction
		CE in Computing and Gaming
		Review VE & CE
5-6	Deontological Ethics (DE)	DE Introduction
		DE Supreme Principles
		DE in Robotics
7-8	Feminist/Care Ethics (F/C)	F/C Introduction
		F/C Gender and Virtue
		Review DE & F/C
8-13	Information Ethics (IE)	IE Intro
		IE Framework
		IE Global & Intercultural
		IE Critiques
		IE Machines & Things
		IE Pervasive Technology
14-15	Inforg Design	Team Presentations
		Course Reflections and Wrap-up

Concluding Remarks

Overall, the course was successful, and its assessment by the students, positive:

> *The growing I did from the class is immeasurable....I think everyone should be required to take one ethics class in college because it helps open your mind and takes you outside your comfort zone.*
>
> *…I've gained much new insight about ethics and the way I look at situations.*
>
> *…We were able to have some great discussion in this class and we were able to approach concepts that needed to be learned in a variety of ways. The ethical frameworks we studied will be stuck in my mind for years to come.*

The students were able to grasp the abstract nature of core ethical frameworks and apply their principles to a variety of informational and technological

[6] We used Cmaps: http://cmap.ihmc.us/

contexts. The students came to understand the complexity of their own ethical behaviour and decision-making. And perhaps most significantly, the course enabled the students to use information technologies to provide answers to ethical analyses in creative and lasting ways.

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