How To and How Much?
Teaching Ethics in An Interaction Design Course

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CHI 2020 EduCHI Workshop, April 25–30, 2020, Honolulu, HI, USA.

ACM ISBN 978-1-4503-6819-3/20/04.
DOI: https://doi.org/10.1145/3334480.XXXXXXX
*update the above block & DOI per your rightsreview confirmation (provided after acceptance)

Abstract
How much is sufficient and how should one teach ethics in an Interaction Design curriculum in undergraduate computing program has been a point of dilemma for many HCI educators. We conducted a preliminary study using a mixed method to gather perception on ethics in our interaction design courses at two of the leading Singapore Universities. We answer three research questions specific to an undergraduate HCI course: Is there a need for ethics? Is there sufficient ethics coverage? and how to teach ethics? We surveyed 140 students and interviewed six teachers in two Singapore Universities. Our findings suggest that 92% of students and 100% of teachers see a need for ethics in design courses but more students see it as a need in general computer science or undergraduate education. We find that there is no lack of ethics coverage in our courses. Most participants prefer ethics to be covered in a use case to be discussed in class instead of a lecture or questions based on research articles.

Author Keywords
Interaction Design; Teaching ethics

CSS Concepts
• **Human-centered computing ->Human-Computer Interaction**; *Education*; *Ethics*

Questions		Agree	Disagree				
Q1.S1	There should be ethics topics to introduce students when doing student projects with users.	92.86%	7.14%				
Q1.S2	I am aware that an important component of doing User research/study/experiment is gaining participants' informed and voluntary consent to take part.	Agree	Disagree				
		100.00%	0.00%				
Q1.S3	This is my perception of ethics during my undergraduate studies at my university. I do not understand why ethics is necessary in Option 1 - ID courses. Option 2 - computing courses. Option 3 - any undergraduate courses. Option 4 – Others.	Option 1	Option 2	Option 3	Option 4		
		26.39%	10.42%	4.86%	58.33%		

Table 1: Percentage of Students choice in each option for question Q1 for students: S1, S2 and S3.

Introduction

Many efforts have been made in the past to address ethical issues in research and practice of HCI. However, few are on teaching ethics in undergraduate HCI curriculum. This paper reflects on the findings from a preliminary mixed-method study, at two Singapore Universities, which investigated students' and teachers' perceptions of ethics in ID courses. We believe that ethics should be embedded into the ID course. Students should be taught ethical reasoning to argue if a design supports human rights, respects human effort, and enhances human experience by making life better for the people using it. The purpose of this study is to gather information on teaching ethics specific to ID course. We hope the study will help us justify our time to develop teaching materials on ethics and to identify the right teaching method(s).

Background

In recent years, workshops and town hall meetings on ethics in HCI have regularly appeared at CHI conferences [1, 4-5, 10-11]. More research shows that CS academics as a whole are not "asleep at the while" when it comes to teaching ethics [2-3]. However, there have been only a few discussions on ethics in HCI in undergraduate teaching. One of the reasons is that ethical reasoning in the undergraduate curriculum is generally offered as a stand-alone course, although ethics are thought across existing technical classes such as algorithms, data science, machine learning and artificial intelligence [2-3]. Recent efforts of habituating students to think ethically in HCI [6-8] has shown the potential for students to develop ethical reasoning in the context of an existing technical course. These interventions have been experimented with a variety of topics and teaching methods. The embedded ethics module for the ID course focused on the topic of inclusive design [7]. Teaching methods included facilitating discussions and a group-based ethics simulation. Study [8] expanded on learning activities that required ethical judgment. We agree with [5] that a beneficial side effect of embedding ethics in ID course is that of faculty gaining competence in ethical reasoning and acquiring greater depth of understanding of technology and its social impacts.

We find that ethical issues are constantly changing due to increasing complexity of technology, and the diverse ways in which it is used. This in turn then demands constant review of ethics teaching materials and methods. With above background and inspirations, we were motivated to answer our research question.

Methodology

Our research is a mixed method with surveys and semi-structured interviews. 141 students completed survey. 6 ID course teachers participated in a semi-structured interview. Survey and interview questions are listed below, categorized by our 3 research questions.
Q1 Is there a need for teaching ethics in an ID course?
Q2 Is there sufficient ethics coverage in ID courses we teach?
Q3 What teaching methods should be used for teaching ethics?

The student questions *(See Tables 1-3)* are numbered by question category (Q#) followed by S for student and a number (S#). The teacher questions (see below) are numbered by the question category (Q#), followed by T for teacher and a number (T#).
Q1.T1 Is there a need for ethics in undergraduate CS/IS design course?

Questions		Agree			Disagree		
Q2.S1	My course on ID has ethical topics covered	70.00%			30.00%		
Q2.S2	This is my undergraduate experience on ethics. Option 1 - I have taken an ethics course. Option 2 - I come across concept and value of ethics in another course. Option 3 - I come across concept and value of ethics in my ID course. Option 4 - I come across concepts and value of ethics in other experiences in my university. Option5 – Others.	Option 1	Option 2	Option 3	Option 4	Option 5	
		16.10%	31.09%	22.85%	28.84%	1.12%	

Table 2: Percentage of Students choice in each option for question Q2 for students: S1 and S2.

Q2.T1 Do you cover ethics in your class?
Q2.T2 Are there sufficient ethics coverage?
Q2.3 and Q3 questions are the same for both students and teachers.
Q2.3 List ethical topics covered.
Q3.1 See Table 3.

Results

With regard to Q1.S1 and Q1.S2, at least 90% of the students agree that ethics topics are important and needed (Table 1). Referring Q1.S3, majority, 58.33% of the students chose 'others' to indicate the necessity of ethics in education. 26.39% of students express that they do not understand why ethics is necessary in an ID course. This may be a small percentage, but it shows that we may not get complete support from students to include ethics in the ID course. Although students are not experts in deciding their curriculum, their feedback should be considered. The 26.39% response to not understand importance of ethics is necessary in ID courses is higher than both in computer science courses and in general undergraduate courses, 10.42% and 4.86% respectively. This suggests that there is more resistance to include ethics in ID then in CS or general undergraduate. The responses to Q1.T1 for teachers indicate all 6 of them agree that there is a need for ethics in an undergraduate design course.

With regard to the coverage of ethics topics, Table 2 for Q2.S1 shows that 70% of the students agree that ethics topics are covered but Q2.S2 shows that only 22.85% of all the students have come across concept and value of ethics in an ID course. 33 out of 77 students from university A and 28 out of 63 students from university B says there is ethics coverage in ID course. The responses to Q2.T1 for teachers indicate 4 out of 6 cover ethics in the class and only 1 out of 6 agree that there is sufficient ethics coverage for Q2.T1. In terms of ethical topics covered in class for Q2.3, student cited most are informed consent (53), followed by ethics for user research (11). Teachers cited ethics for user research by 4 out of 6. There are many directions from teachers on topics to cover. Here are some teacher comments "focus more on marginised population (gender, disability), controversial research (e.g. use of deception)", "Classical schools of ethics. Plato. Utilitarianism is a normative ethical theory"

With regard to the presentation style of ethics in an ID course, specific use cases method is the most preferred as shown in Table 3 for Q3.1. This outcome is the same for teachers.

Conclusion

The unresolved challenge is how much is sufficient and how should one teach ethics. Our study indicates that majority agrees on the need for ethics in an ID course. While teachers overwhelming agree, students are not conclusive. Not every student agrees on the need for ethics in ID courses, 26.39% do not understand why it is necessary. This may be a small percentage, but it shows that it may be hard to get complete support from students to have ethics coverage in ID courses. It may be easier for ethics to be covered in computer science or undergraduate with only 10.42% and 4.86% not understand the necessity respectively. This does not mean we do not need ethics in ID courses, it just means we may not have enough support to add ethics. We need to establish relevance and importance of ethics to students. How best to do it? We need to ensure that students know and articulate what

Questions		Option 1	Option 2	Option 3	Option 4	Option 5
Q3.1	In an ID course, ethical issues could best be presented through. Option 1 - A series of lectures on ethical code Option 2 - Specific use cases to be discussed in class. Option 3 - Specific use cases dilemma to be answered in a report. Option 4 - Role playing exercises. Option 5 - Questions to be answered based on a series of research papers.	12.24%	43.01%	12.59%	25.52%	6.64%

Table 3: Percentage of Students choice in each option for question Q3 for students and teachers.

constitute ethics courses or its potential value. How do we best do it?

Is there sufficient ethics coverage? Students in our universities get sufficient coverage in undergraduate curriculum. There is no real lack of coverage in both the university curriculum. But could we say it for all the universities in Singapore or for the HCI curriculum in general?

We need to focus on how to teach ethics, not just ethics need or coverage. Students and teachers both agree that lectures and questions based on research are not the best teaching methods. Most agree to discuss with use cases. One teacher dislikes all methods and suggests using experiential learning method with a project to teach ethics.

To ensure that ethics content developed is suitable, relevant, and is based on latest pedagogical practices, a review into how ethics is taught in ID at various undergraduate curriculum needs to be undertaken. With this purpose, we aim to explore the option of surveying educators attending the workshop EduCHI'20.

References

[1] Hilary Davis and Jenny Waycott. 2015. Ethical encounters: HCI research in sensitive and complex settings. (OzCHI '15), 667-669.

[2] Casey Fiesler. Tech Ethics Curricula: A Collection of Syllabi. Retreived on 2/10/2020, https://medium.com/@cfiesler/tech-ethics-curricula-a-collection-of-syllabi-3eedfb76be18.

[3] Casey Fiesler, Natalie Garrett and Nathan Beard. 2020. What Do We Teach When We Teach Tech Ethics? A Syllabi Analysis. SIGCSE 2020

[4] Casey Fiesler, Jeff Hancock, Amy Bruckman, Michael Muller, Cosmin Munteanu and Melissa Densmore. 2018. Research Ethics in HCI: A Roundtable Discussion. ICHI EA '18, panel05, 1-5.

[5] Christopher Frauenberger, Amy Bruckman, Cosmin Munteanu, Melissa Densmore and Jenny Waycott. 2017. Research Ethics in HCI: A town hall meeting. CHI EA '17, 1295-1299.

[6] Christopher Frauenberger and Peter Purgathofer. 2019. Responsible Thinking Educating Future Technologists. CHI '19. ACM, USA, 5 pages.

[7] Barbara J. Grosz, David Gray Grant, Kate Vredenburgh, Jeff Behrends, Lily Hu, Alison Simmons and Jim Waldo. Embedded EthiCS: integrating ethics across CS education. CACM 62, 8 (Jul 2019), 54–61. https://doi.org/10.1145/3330794

[8] Michael Skirpan, Nathan Beard, Srinjita Bhaduri, Casey Fiesler and Tom Yeh. 2018, February. Ethics education in context: A case study of novel ethics activities for the CS classroom. *49th ACM Technical Symposium on Computer Science Education*, 940-945.

[9] John Vines, Roisin McNaney, Rachel Clarke, Stephen Lindsay, John McCarthy, Steve Howard, Mario Romero & Jayne Wallace. Designing for and with vulnerable people. CHI EA'13, 3231-3234.

[10] Jenny Waycott, Anja Thieme, Hilary Davis & Stacy Branham. Ethical encounters in HCI: Research in sensitive settings. CHI EA '15, 2369-2372.

[11] Jenny Waycott, Cosmin Manteanu, Hilary Davis, Anja Thieme, Stacy Branham, Wendy Moncur, Roisin McNaney and John Vines. Ethical Encounters in Human-Computer Interaction. CHI EA '16, 3387–3394.