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Ethical Complexity in Youth-Led Computer Science Curriculum Writing: Emergent Ethical Deliberation in Curricular Co-Design

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Abstract: Questions of ethics and politics are typically missing in computer science education (Vakil, 2018). Amid growing concerns about the intersections of ethics, race, and technology (Benjamin, 2019), youth voices are seldom centered. This study explores the emergent practices from youth who interrogated themes of ethics and technology in an OST community learning space as a part of our research practice partnership (RPP). We follow two vignettes where participants collective debates of morality; which we term ethical deliberations.

Research design, data collection, and methods

In our exploration we ask: (1) what pedagogical moves and framing did facilitators use to support sensemaking about ethics of tech and (2) what was the nature of student ethical thinking and discourse, and what shifts were observed over the course of the program? This program is centered around a design-based RPP project which focuses on the interests and perspectives of youth. Using a grounded theory (Corbin & Strauss, 1990) approach to identify trends in youths' negotiation of ethics and technology, a team of educators and researchers analyzed 10 hours of recordings and field notes to develop codes to identify patterns in participants' speech and interactions (Saldaña, 2015). We used a constant comparative method (Charmaz, 2014) involving iteratively working between codes and transcripts to identify the patterns and generated codes We describe as contributing to a collective deliberation of morality; which we term ethical deliberations (see Table 1 below).

Table 1
Counts of the codes for elements of ethical deliberation across vignettes

Code	Definition	Vignette 1 Counts	Vignette 2 Counts
Legitimacy	What is it?	17	6
Ownership	Who gets to?	0	2
Rules	How does it work?	1	0
Infraction	What was violated?	3	3
Consequence	What happened next?	0	3
Other		27	11
Total no. of turns		48	25

Findings: Elements of ethical deliberation

This poster presents data from two vignettes representing early shifts in ethical deliberations during our study. These conversations illustrate how participants took up a practice of using discussions as a way of interrogating and evaluating ethics both within and outside the realm of technology. In both cases, the data presented represents a zoomed in section to a larger conversation presented to participants as an ethical concept.

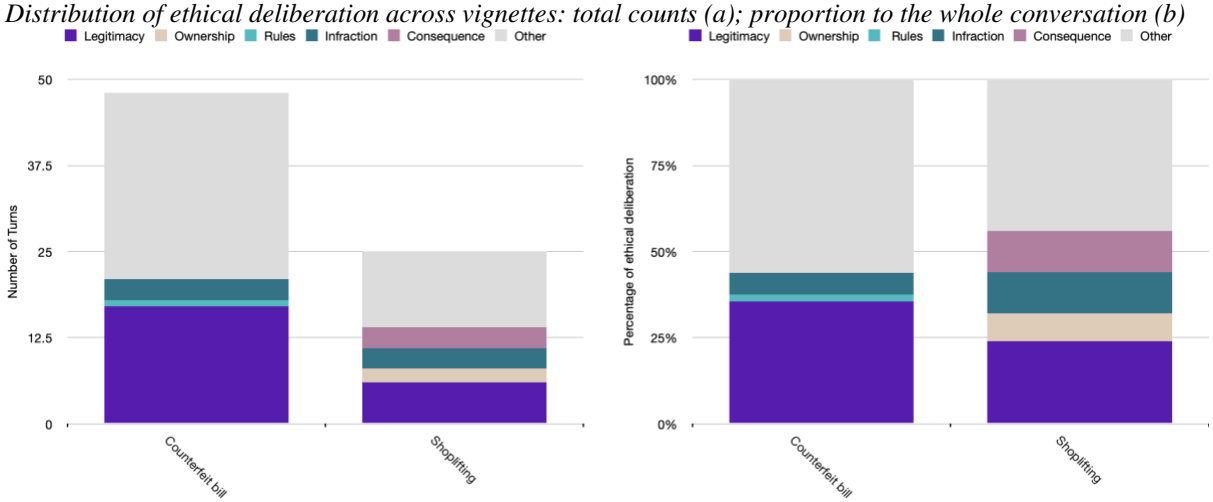
In the first vignette, we highlight a segment of a conversation that takes place on the first day of the program about the murder of George Floyd and the technologies present. Drawing on Winner's (1980) expansive framing of technology and ethics, Facilitator Moore presents the counterfeit bill as central technology to the case and prompts participants to consider how the clerk might have assessed the legitimacy of the bill; a determination that ultimately led to Floyd's death and the world-wide recognition in the weeks that followed. While racialized violence was quickly identified as a salient ethical issue by participants, there was little uptake on the role of technology or artifacts despite multiple attempts by facilitators. However, even in this introductory conversation, participants were able to use the discussion to interrogate how a counterfeit bill might differ from a federally minted bill (coded as rules) and how a counterfeit bill might be created (coded as infraction).

The second vignette highlights a discussion that takes place about halfway through the program on the ethics of shoplifting. We see collective and complex ethical sensemaking through participant-led cross talk through deliberating the ethics of shoplifting in a luxury retailer. In these quick turns, there is a judgment made

of the luxury retailer by the collective that there are places where shoplifting might be considered appropriate due to need. In contrast with society's laws around shoplifting, this deliberation illustrates how participants were engaging in serious deliberation rooted in their lived experiences. Noticing the way participants responded to a luxury retailer, Facilitator Ian considered posing the same question based on human necessities and reframed his prompt to question how their stance may shift if someone was shoplifting food. We see an implicit uptake of justice and power in discourse by the participants that shows significant movement between the two vignettes.

Figure 1

Distribution of ethical deliberation across vignettes: total counts (a); proportion to the whole conversation (b)



(a) (b)

While the conversation in Vignette 1 was nearly twice as long as Vignette 2, there was significantly more concentrated ethical deliberation in the latter conversation. Additionally, participants have created a quasi "court" structure where they become the arbiters of what is deemed legal. In these vignettes, participants exhibited a practice of creating legal structures for societies. Critical race theorists have advocated for returning to the legal origins of modern policy (Ladson-Billings and Tate, 1995). We see this return as a natural way of engaging in ethical deliberation and a counter-narrative to normative ethics as they are defined in CS education.

Significance and implications

Our findings have implications for the design of computer science education that seek to center youth as equal partners in the complex work of ethical sense-making of emergent technologies. Deliberative discussions can serve as a powerful vehicle for rich engagement with the ethics in technology and should become a part of standard in computer science and technology education. While youth are ready to engage in deep, rich discussions, facilitators must create room for questioning and engage expansive views of tech ethics. We argue for standard practice in regular conversations in group discussion to increase complexity in ethical deliberations. Our future work will look at additional conversations to determine deeper relationality between the elements of ethical deliberations identified here.

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