Facilitating Teens as Ethical Sensemakers of Technology

Rotem Landesman
University of Washington
Seattle, Washington, USA
roteml@uw.edu

Jean Salac
University of Washington
Seattle, WA, USA
salac@uw.edu

Amy J. Ko
University of Washington
Seattle, WA, USA
ajko@uw.edu

ABSTRACT

With the growing awareness of emerging technologies' impacts on teens' lives, families, and communities, rethinking the ways in which we educate and talk about these innovations and their moral and ethical complexities are gaining steam. We present a novel pedagogical intervention that blends techniques from *Philosophy for Children (P4C)*, a pedagogical approach that teaches youth reasoning and argumentative skills, with *Youth as Philosophers of Technology*, a framework for computing education that foregrounds learning how to decode and unmake tech's relationship with power through artistic, moral and humanistic inquiry, without devaluing core computing practices, such as design, making, coding, and tinkering. We studied this intervention in a summer elective class with 12 students ages 14-18 in the US. Our ongoing data analysis revealed two categories of themes: (1) 'launchpads for ethical sensemaking', namely instances *when* we observed ethical sensemaking around technology, and (2) 'expressions of ethical sensemaking', namely *what* students' ethical sensemaking looked like when discussing the ethical implications of technology. We hope to catalyze discussions for both researchers on characterizations of and growth around ethical sensemaking of technology, as well as practitioners on implementations of *Youth as Philosophers of Technology* and *P4C* ideas in their classrooms.

1 MOTIVATION & BACKGROUND

From the controversies around large language models in schools [5] to social media algorithms encouraging compulsive technology use [1], emerging technologies have indelibly shaped the lives, families, and communities of today's teenagers. Scholars in computing education research (CER) have thus explored ways to educate teens that prioritizes the questioning of the moral and ethical implications of technology, also known as critical computing education [2, 3]. Critical approaches to computing education have largely comprised of 'critical inquiry', which centers the analysis of power dynamics and suggestions of possibilities for change, to 'critical design', which

centers the (re)design with computing in ways that aspire towards justice and change, to 'critical reimagination', which centers rethinking the present and the past to critically reimagine computing and technology for more equitable and just futures [6].

One approach to critical inquiry positions youth as 'philosophers of technology' [9], as active thinkers of the role of technology in their lives. In this approach, core computing practices are decentered without being devalued. Instead, what is pedagogically prioritized is youth learning to wrestle with the multiplicities, inconsistencies, and ethical implications of technology in local and global contexts. Consistent with this approach, the field of philosophy for children (P4C) offers techniques to support youth in this type of learning. P4C [4, 8] emerged as an approach to engage children in representing, discussing, and working through the fundamentally philosophical questions that they often encounter as they go through the world. P4C requires developing both critical thinking and good discourse skills — being able to think beyond simply recalling the facts, reflecting on one's own positionality and listening to a peer speak and respond thoughtfully. These are all skills that are crucial to develop if youth are to be active thinkers of technology's effects on their lives, families, and communities.

2 METHODS

To investigate how students may grow as ethical sensemakers of technology, we developed a novel pedagogical intervention which combined *Youth as Philosophers of Technology* [9] with techniques from *P4C* [4]. In our intervention, we drew from the basic principles of Vakil & McKinney de Royston's framework: (1) centering the relationality of the subject matter to others, to place, and to sociopolitical realities and histories, (2) highlighting analyses of both the tech stack and the cultural, social, and political contexts in which technology is used, and (3) encouraging design as a way to express ethical sensemaking. Simultaneously, we also leveraged some P4C techniques, namely creating a community of inquiry and adapting tools from philosophy as age-appropriate scaffolds. We specifically drew from a tool called *Moral Prisms*, which offers age-appropriate representations of common Western moral theories [7]:

- The Existentialist prism asks: "What course(s) of action will set people most free?"
- The Deontological prism asks: "What would I do if everyone in the world were to do as I did?"
- The Ethic of Caring prism asks: "What course(s) of action will best sustain and nurture a caring relationship between myself and others?"
- The Communitarian prism asks: "How would I act if everyone in my community knew exactly what I were doing?"
- The Utilitarian prism asks: "What course(s) of action will best maximize total happiness in the world?"

Week (Topic)	Activities
Week 1 (Intro)	Formation of the Community of Inquiry
	Intro to the Moral Prisms through debate around a local ban on cashless businesses in *Anon. City*
	Student selection of class topics
Week 2 (Data Privacy)	'What is my Digital Footprint?' Activity
	Analysis & Discussion of *Anon. State* Bill to Protect Children's Rights in Parent-Influencer Content
Week 3 (Social Media)	'Social Media Scavenger Hunt' Activity
	Analysis & Discussion of *Anon. City* Public Schools lawsuit against Social Media companies
Week 4 (AI)	'Train your own ML Model' and 'Break ChatGPT' Activity
	Analysis & Discussion of *Anon. City* Public Schools' ban on ChatGPT
Weeks 5-6	Final Project: Analysis & Design of an Alternative Future story on a student-selected contemporary moral dilemma

Table 1: Timeline and Overview of Class Activities

- The Virtue Ethics prism asks: "What would the most virtuous person I know of do in this situation?"
- The Egoist prism asks: "What course(s) of action will most effectively ensure that my short- and long-term goals are reached?"

We implemented our intervention in an elective class within a 6-week summer program (June-August 2023) at a northwest United States university aimed at students ages 14-18 from local under-resourced schools who were low-income and/or the first in their family to pursue a post-secondary education (i.e. first-generation). After we described the risks of research participation (namely discomfort from discussing potentially negative experiences with technology), all 12 students enrolled in our class assented to their classwork being analyzed for research through a form administered on the first day of class. In the first week of class, students engaged in rapport-building activities to develop their community of inquiry and collaboratively selected the three topics covered in the class. To introduce them to the Moral Prisms tool presented above, we discussed a social dilemma centering around technology use, and then showcased how a possible solution to the dilemma could be altered by choosing to look at it through one, or several, of the moral prisms. In Weeks 2-4, we covered each of the student-selected topics, adhering to the following structure. We started each week with an activity to introduce them to the topic, then in groups of 3-4, students analyzed a local contemporary issue related to the topic through a subset of the moral prisms, and finally, students presented their analysis to the class to spark a class-wide discussion. In Weeks 5-6, students worked on their final projects where in groups of 3-4, they selected a contemporary moral dilemma to analyze and designed an alternative future story based on that dilemma. An overview of class activities is shown in Table 1. Data analysis included a mixed inductive and deductive thematic approach, with students' classwork and daily instructor reflections as our main data source.

3 PRELIMINARY RESULTS

Our ongoing analysis has revealed two categories of themes. The first category is comprised of 'launchpads for ethical sensemaking', namely instances *when* we observed ethical sensemaking around technology. Students often made sense of the moral and ethical complexities around technology when they (1) made connections to their lives outside the classroom, (2) collaborated with their peers, and (3) engaged with the scaffolding provided by the moral prisms. The second category consists of students' 'expressions of ethical sensemaking', namely *what* students' ethical sensemaking looked like when discussing the ethical implications of technology. Students' often showed their sensemaking and made sense of such implications through (1) questioning the definitions of ideals, such as happiness and freedom, (2) rejecting the dichotomy of a binary good and bad with respect to technology, (3) wrestling with dissonance and contradictions, and (4) deciding whether or not to be flexible with their principles.

Through a SIGCSE 2024 poster presentation, we hope to spark discussions for both researchers and practitioners alike. Among researchers, we invite conversations around how we may characterize and evaluate ethical sensemaking around technology, and what student growth as philosophers of technology could look like in different contexts. As for practice, we would like to discuss how teachers and curriculum developers could incorporate principles of *Youth as Philosophers of Technology* and *P4C* in their classrooms.

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