the ethi{CS} project: Professional Development on Ethics and Ethics Pedagogy for CS and Tech Educators

Abstract
The ethi{CS} project—a project run by educators at Phillips Academy, Andover, and incubated by the Tang Institute—focuses on a pedagogical method for introducing ethics into computer science classrooms and has, since 2019, built a community of computer science (CS) and technology educators and philosophers.

In the 2022-23 school year, the ethi{CS} project will partner with Open Design Studio at Duke University to launch two projects: (1) a professional development program designed for CS and technology educators, and (2) begin to design and build a digital, open-access version of the same. We are in conversation with the Massachusetts Department of Education (DESE) to develop this PD to meet state standards for CS education (and to become approved as a Professional Development provider), and thus can be directly useful to public school educators in the state (and others with similar standards).

Basic Information
Project Coordinator(s)
Kiran Bhardwaj

Steering Committee
- Nicholas Zufelt, Phillips Academy, Andover
- Aria Chernik, Duke University
- Andy Housiaux, Phillips Academy, Andover
- Ryan Ravanpak, MIT/Phillips Academy, Andover.

Funding Amount Requested
$3,550

Expected Project Completion Date
August 2023

Project Description
Many educational institutions recognize that ensuring that students engage with ethics while learning CS is an important problem—and the most familiar method to do so is to bring philosophers in to run modules in computer science courses at their university (for example, as done by Harvard, Stanford, Northeastern, and University of Toronto).
We work at a K-12 institution, and our community members for our project are others in K-12 education. Most do not have philosophers available to partner with, and even for those who do have access to philosophers (like at Andover), our intuition is that CS students will be better served to have the faculty they model themselves on—their CS teachers—be engaged and thoughtful co-deliberators about ethics with students.

However, there are a few typical patterns of resistance to introducing ethics into the classroom—(1) a concern that there’s not enough time to do ethics, given everything to learn in the CS curriculum, (2) worries about how talking about ethics might put the teacher in a vulnerable position, and (3) having no idea where to start.

Our base pedagogical method—to redesign projects and assignments so that they require ethical engagement, as well as technical skill—is meant to assist those with concern (1). As for those with concern (2) and (3), our Professional Development program is designed to assist with techniques sourced from ethics pedagogy, and a set of basic understandings about ethics, to equip teachers to explore doing this kind of work themselves.

We suggest that, if framed well, CS and technology teachers can see philosophy as a resource for further kinds of expertise and personal growth as educators, as well as introduce philosophy to students who might not have chosen to study our discipline directly. (As Daniel Lim of Duke Kunshan University—and an informal advisor for this project—suggests in his forthcoming book, Philosophy Through Computer Science, this smuggling-in might be one of the most powerful ways to get philosophy in front of students who may not have come to the discipline otherwise.)

**Project Impact**

As mentioned, we have been workshopping our methodology in our own CS and technical courses at Andover, and developed a community of like-minded educators for whom we run workshops, webinars, and offer a regular newsletter. The ethics pedagogy to be introduced in the Professional Development practice is a result of our work in discussing ethics pedagogy and training CS colleagues how to do similar work in their classrooms.

In 2021-22, we also trialed the Professional Development in a Professional Learning Community, which used a Critical Friends Group protocol to allow educators in the group to workshop assignments of their own with other interested persons, and to develop the components of the ethics pedagogy practices that are most useful to CS educators. We ran multiple sessions of this PLC in 2021-22.

**Project Goals**

- Our hope is to offer six sessions of Professional Development programming, which is a more formal training than the Professional Learning Community from 2021-22—(1) an all-day program on August 17, 2022, (2-3) two evening sessions in the early fall, (4-5) two evening sessions in the early spring, and (6) a follow-up session at the end of the school year. We also hope to interleave a few drop-in workshopping sessions in the late fall and spring, as well as offer a certificate.
• We plan on evaluating (a) faculty responses (during and after the PD), (2) their students' responses, as well as (3) an assessment of educator's redesigned lesson plans or assignments, using a qualitative method for assessing student engagement in ethical questions. With the information we gather during and after the PD, we plan on confirming that the PD meets the Professional Development standards for Massachusetts educators.

**Project Timeline**

As previously mentioned, we plan on offering six sessions during the academic year 2022-23 (on August 17th, 2022, and provisionally in September, early October, late January, early February, and June). We plan to offer drop-in sessions using a Critical Friends Group model, most likely in October, November, March, and/or April. We will need specific administrative support to help run these programs.

We plan on using time in the summer following the PD program to evaluate and (if needed) revise the program, as well.

**Project Outreach**

We have presented our work to computer science education programs, including both our regional and the national conferences for the Computer Science Teachers Association (CSTA). We would like to continue to advertise to the general population of computer science educators, including applying to present at SIGCSE and FAccT.

We also, as mentioned, are beginning the design of a digital version of the professional development materials for open, on-one’s-own engagement (to complement the person-to-person PD, or as a general entry point). We continue to work closely with others working on similar projects, including the Embedded EthiCS organizations and the Computing Ethics Narratives projects to cross-post.

**Accessibility Plan**

Our PD workshops (held on Zoom) will include (a) live-captioning, (b) verbal descriptions of all visual material (though visual materials would be rare) along with direct access to (c) supplementary resources that will allow for all users to be able to review content covered in the courses both prior to the PD session as well as afterward.

One reason we would need administrative support is to allow someone to serve as the point person for accessibility, including being the point of contact for the registration (Eventbrite) for the Professional Development sessions, and to monitor any live-captioning or other accessibility arrangements during the conference.

We would be able to consult with Laura Warner, Andover’s APA coordinator, as well as Duke’s APA coordinator.

**Evaluation Plan**

Again, we plan on evaluating (a) faculty responses (during and after the PD), (2) their students’ responses, as well as (3) an assessment of educator's redesigned lesson plans or assignments, using
a qualitative method for assessing student engagement in ethical questions. With the information we gather during and after the PD, we plan on confirming that the PD meets the Professional Development standards for Massachusetts educators.

The method in question we plan to use will be largely qualitative in terms of ethical understandings on the part of educators or their students, with quantitative questions reserved only for general satisfaction and efficacy questions for participants.

For students, we would use an exit-ticket method, asking questions that students could answer in a number of different ways, and evaluate whether they show engagement with ethical considerations (or not) and the level of consideration they show in their engagement with ethical considerations.

For example:

- What is one big or bite-sized takeaway you have from class right now?
- What skills, habits, and perspectives are important while developing software?

Or:

- What is one connection between the content you learned for this project and the world outside our classroom?
- What advice would you give a coder working on a real-world project like the one you just completed? What do they need to watch out for/be aware of?

**Online Presence**

We will continue to use the Tang Institute’s website as a host for our website (they are in process of hiring a website designer to improve the function of the overall Tang Institute), as well as their communications platform for both our newsletter as well as Twitter. We would welcome a link from the APA website.

https://tanginstitute.andover.edu/ourwork/interdisciplinary-teaching-and-learning/teaching-ethics-in-computer-science

**Budget Narrative**

Since we receive a great deal of in-kind support from the Tang Institute at Phillips Andover (e.g., use of a Zoom account, access to staff with communications and partnerships expertise, etc.), we have been able to accomplish a great deal of the work so far with solely that support.

Our funding request is to cover two kinds of administrative expenses that cannot be covered by the Tang Institute in 2022-23, as well as an accessibility expense:

- Per-hour administrative help to cover the organization of the Professional Development programming (if time permits, we would also like to duplicate each session of the program as a public-facing webinar, rather than the PD program solely for CS, technology, and other interested educators), and to support the accessibility features for each session. We have been working with a
temporary administrative assistant this summer, and we budget $75 per hour for payroll if we continue to work with her or someone similar. We expect to require 5 hours of support per session (x6).

- We would also like to hire the same person to create documentation to allow further accessibility for pedagogy practices, examples, and similar for community members, and to be used on the digital platform for this pedagogy program. We would like to hire the same administrative assistant to complete 5-7 projects (spending 2-3 hours per project).

- Finally, since we plan to primarily do our workshops via Zoom, we would like to use a product like Streamtext to allow for live-captioning to allow for better accessibility. Given their quoted rates, we suggest that we would need to budget $175 for that work.

Other Funding Sources
The Tang Institute as an incubator for the project has provided various in-kind support, including course release funding for involved faculty members, and (as mentioned above) the assistance of Tang Institute staff (including those with communications and partnerships). However, the major gap for us in the coming academic year due to a restructuring of the Tang Institute’s staffing is someone to assist with the administrative tasks of running a PD program (emails, registration, documentation, design), hence our request for support from the APA.

We hope that this would be a one-time grant in order to present the first year of the Professional Development course we are hoping to explore the possibility of receiving future funding from the NSF, the Mozilla Foundation, or similar sources.