Teaching Statement

My overarching pedagogical goal is to not only support students in understanding the algorithms and abstractions of computing, but to help them contextualize computing within society. This looks like focusing on real world applications, considering how humans will interface with software, and integrating the perspectives of a diverse group of stakeholders during the design process. I prepare CS students to consider many ways of knowing, to approach situations from diverse perspectives, and to consider the ethical implications of their work.

Here I give two example lesson progressions that integrate diverse ways of thinking. 1) Large language models: Voice assistants and chat bots (e.g. ChatGPT) have steadily improved their manipulation of natural language. However, it's worth investigating the extent to which these algorithms understand language. We will question the narrative of artificial "intelligence" by combining both a technical analysis of the underlying technology and a rhetorical analysis of chatbot output. 2) Data science: Analyzing large amounts of data can help us answer some questions about society while reducing the bias inherent in anecdotal observations. However, to what extent is one kind of bias replaced by another? We will look at different contentious applications of data science (e.g. COMPAS recidivism algorithm) and construct written arguments on the pros and cons to using data-driven approaches.

As an educational psychologist, I have an extensive background in theories of learning. In fact, I have served as the main instructor of a class on learning and teaching for several semesters at MSU. I aim to productively challenge my students using the following theories: 1) Zone of proximal development (ZPD) refers to challenging tasks that students can accomplish with assistance (not too easy, not too hard). I maximize students' learning in the ZPD by scaffolding new concepts over a lesson progression to steadily build up skills. 2) Problem-posing education involves collaborating with marginalized communities and developing education to transform systems of oppression. I use problem-posing education in my teaching by facilitating discussion around the intersection of social justice and technology. Instead of giving my students answers, I give them questions and help them analyze real world impacts of technology from multiple perspectives.

Over the course of a decade, I have taught a wide variety of students across a range of environments. I have worked with youth of color in Seattle, international students at University of Washington, and white students raised on farms at Michigan State University. I bring a broad range of pedagogical skills, having taught STEM and social science classes. I build relationships with my students by demonstrating that I care about their wellbeing and their perspectives, even if we come from different backgrounds and disagree. This work starts at the beginning of the term, when I memorize as many students' names and pronunciations as possible, and continues as I check in with them when I see a drop in the quality of their work or a pattern of absences. The rapport that I develop with students is critical to increasing student success and retention by changing their view of instructors from an adversary (someone who threatens to punish them for poor work) to an ally (someone who builds on their strengths, even when they experience adversity).

Curriculum Development

The syllabus I have provided for CSE 374 is representative of the computing curriculum I have developed. When I was assigned as the instructor of record for that course, it had not been significantly improved in approximately 10 years. I updated every aspect of the course: I created a new set of lecture slides that emphasized active learning with check-for-understanding questions. I created autograders for all of the homeworks, redesigned a few of the homeworks, and created two new assignments. I designed a set of exercises, which were small short answer, autograded assignments that were due one week after the lecture content that they assessed. I am particularly proud of the exercises, which I designed in collaboration with my TAs, building off of my experience introducing a similar set of exercises into CSE 333 when I taught it with Justin Hsia. These exercises are included in the folder attached to this portfolio.

Further examples of curriculum development can be seen on the teaching section of my personal website.

Awards

I received the Husky 100 award in 2020 from the University of Washington. This is a prestigious award, given annually to only 100 upper level undergraduate and graduate students across all campuses of the University of Washington. The size of the potential applicant pool is approximately 40,000 students.

My application focused on my interdisciplinary teaching and research as the first student to double major in *Computer Science* and *Education, Communities, and Organizations*. Building connections across communities with disparate value and knowledge systems has been a central theme of my career. As a computer science educator with a PhD in *Educational Psychology and Educational Technology*, I am uniquely qualified to facilitate innovative educational experiences.

Teaching-related Scholarly Activities

Almost all of my scholarly publications have been related to computing education. I have published in venues including ACM's Special Interest Group on Computer Science Education (SIGCSE), the American Educational Research Association (AERA), International Conference of the Learning Sciences (ICLS), Communications of the ACM, Koli Calling International Conference on Computing Education Research, Taylor & Francis' journal Computer Science Education, and the Journal of Research on Technology in Education.