Teaching Statement

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I think of myself as having three roles as a teacher. First, to teach the subject: students should pick up something from the course. Second, to help students navigate our field: to be an accessible point of contact for them to understand options and courses and careers. Lastly, and perhaps most importantly, I try and inspire a little bit of the joy that I get out of Computer Science in my students.

The Teaching Itself

I like to think of teaching as a visualization or depiction problem. Students come into a class with some amount of knowledge and some amount of experience. Some of it is shared among all, some of it is not. My role is simple: produce the right depiction of the subject matter for the students to induce the right understanding.

I had the good fortune to experiment with depictions by teaching three sections of Northwestern’s CS101 course in 2012 and 2013. In each of these years I taught my sections consecutively, with no more than five minutes to replan or update the lesson plan based on how the sections went. I could only really use the immediate feedback from how the students responded to adjust the lesson for the next section. I expected going into the course that this would not be enough to materially change the lessons or what students got from the lesson. But rather, I found that tiny changes in framing or emphasis led to huge changes in how simple or how inspiring or how complicated a topic seemed.

As a result, in my lesson planning I try and think a lot about these small things: the framing of a problem, and thinking about how challenging or straightforward a concept can be. A lot of times, I try and do this with actual visualizations. I find focusing on developing a pictorial version of a proof or concept or algorithm forces me to think of the framing required to make a concept really very simple.

Darrell was a really good TA - he showed a strong interest in teaching the course, explained complex topics in a simple way, and gave very strong concrete examples of the subject matter. His teaching skills are better than many teachers I have had. Maybe Northwestern should consider having graduate students with strong teaching skills teach more classes. (CS101 2012 Student Review)

Support and Guidance

One of the wonderful things about Computer Science is that there are so very many options for our students. There are startups to join or launch; larger companies like Google and Facebook to consider and research projects in so many seemingly totally disparate areas. It is an envious, wonderful, complicated position to be in.

It is one that I relate to. Leaving college, I applied everywhere, eventually started doing software development for a hedge fund, before working on a website to help cyclists find good roads to ride. I loved my work at both of these places and decided to go to graduate school in computer science because I viewed it as the best of many options.

I think this perspective is valuable for students. I try to spend a lot of time being open to talk with students about my experiences and their options or goals, about what I have liked and not liked about my various experiences in computer science. I find that just trying to be approachable and relatable can help students so much when figuring out if a path is something they can do, a direction they can work towards.
Darrell is a fantastic teacher. He showed honest enthusiasm about each topic, and every week’s discussion sections were fun and interesting. He was always willing to talk after class about any computer science topic or his own computer science experiences. (CS101 2013 Student Review)

Inspiration

A long-term study (Chambliss and Takacs, 2014) of students at Hamilton College by sociologists (one of whom began work on the project as an undergraduate) has shown successful college students are often primarily inspired by relationships with one or two of their professors (usually from introductory classes) and these interactions drive many of the paths of students. This was certainly the case for me: it was in Prof. Prasad Jayanti’s Introduction to Algorithms course at Dartmouth where I was first exposed to the joy of algorithms and theoretical computer science, which dictated much of the rest of my undergraduate coursework at Dartmouth and eventually led me to pursue a Ph.D in the field.

Aside from challenging my students, I try to relate to my students, I try and understand what they are going through and appreciate the other challenges they face. Chambliss and Takacs found these mentoring relationships happened more with professors they had for early courses who had challenged them and been accessible to them. Again, this rings true to me: it was not only the challenge of Prof. Jayanti’s course that inspired me, but that I could talk to him about it, and I kept going back to talk to him about my other courses, my major plans, and after I graduated, my career plans.

A few months after one of the courses I was the TA for finished up, I received an email from one of my students asking me about how I got into research as an undergrad, and if I had any recommendations for her. I was very excited: I want to be someone students feel comfortable reaching out to, and I want to be the type of active mentor I was lucky enough to have during my undergraduate degree.

Courses to Teach

I am most interested in teaching courses in game theory, mechanism design and algorithms at both the undergraduate and graduate levels, but am very happy to teach other courses in other theoretical computer science topics or optimization as needed.

References