

Teaching Statement

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I find teaching mathematics incredibly rewarding. Through teaching we communicate more than the facts of our subject; we tell a narrative that weaves meaning with application and logic with creativity. As a teacher, I want to help my students to develop the critical reasoning skills and technical skills they need in their professions. Yet as mathematician, I hope to instill an appreciation for how mathematics is built and practiced. These two guiding principles, along with my enthusiasm, organization and care, inform my style as an educator.

I was fortunate to begin my teaching career so early. As an undergraduate co-op student at Waterloo, my first work term began after just four months. I was lucky to be hired as a full time computer science tutor in Waterloo's Instructional Support Group (ISG) – precisely the job I wanted. So, it was very early on that I began working directly with students during classes, tutorials, and office hours. I was also heavily involved in designing assignments and organizing teams of graduate TAs to do the marking. As my colleague Dave Laemers would say, “I run Andrew and Andrew runs the course!”

I worked for the ISG for five of my six work terms, leaving only to take a research assistantship. The most rewarding part of the work was interacting with students. I carried this enthusiasm into my school terms by tutoring for Waterloo's Office of Persons with Disabilities. I find students respond to the patience and care that I bring and it helps them to feel more invested in their assignments and courses.

As a graduate student at Dalhousie University, I've had the chance to teach in much more traditional settings. For a number of years, I mixed teaching calculus tutorials with holding office hours in our math resource centre. Calculus tutorials are a great way to connect with first year students. With fewer students and a narrower focus than their lectures, it's easy to impress students by outlining the salient points that they missed in class. Working through examples also helps them to build confidence and to see their progress.

In the math resource centre, we work with students from a wide range of courses including everything from business math to engineering calculus and undergraduate algebra. I am always fascinated by the range of the students' abilities and diversity of their questions. A part of this interest has led me to go outside of the university and volunteer with the Halifax Community Learning Network which runs adult literacy and mathematics programs out of our public library. I was interested in facing the educational challenges that come before the university level and it has given me an appreciation of teaching techniques that I would otherwise rarely use.

My fondest teaching experience was certainly when I taught an undergraduate class in linear algebra. As it was only a seven week course, I worked hard to structure the assignments and lectures to make the best use of our time. My students could clearly see the efforts I had gone through as one student wrote on my course evaluations that

I was the most organized professor they had ever had. However, what I think they appreciated most was the clarity with which I explained the themes of linear algebra and how it connects to other areas of mathematics.

I remember pausing in one of my linear algebra classes when a student asked why I was proving so many theorems. This led to an interesting discussion about the structure of mathematics, the way it is taught and the way it is practiced. I think students appreciate moments when we step outside the curriculum to speak candidly about the bigger picture.

As a graduate researcher, I have also sought opportunities to collaborate through teaching. When I discovered connections between my research and that of Jason Brown, a Dalhousie combinatorialist, I suggested that we start a seminar. We both took turns lecturing on the connections between commutative algebra and network reliability for the benefit of a group of Dalhousie graduate students. Due to the intimate setting and detailed discussions, this was a vastly different teaching environment from what I had experienced prior.

Through these varied teaching experiences, I've learned to teach with clarity and purpose along a strong narrative; to build connections with students through my patience and enthusiasm; and to effectively communicate mathematical content and the human content of mathematics. But more importantly, working with students reinforces my desire to teach and encourages me to strive and to improve.