It seems that the best way, and possibly the only way, to properly absorb mathematics is to do mathematics. This makes the usual lecture format for teaching mathematical ideas challenging. I often discuss teaching strategies with colleagues and in teaching seminars. My discussions usually revolve around techniques to engage students to enjoy and think deeply about the material.

Undergraduate teaching

Early in 2010 I gave the undergraduate course on Logic and Computation in the mathematics department at the University of Cape Town. Student abilities in the class were very mixed which meant I had carefully structure the course and its pacing. I slowed the lectures down a bit and moved harder questions to the tutorials. One of the strongest students sent me an email at the end of the term:

> I have enjoyed your maths course the most of all the maths courses I've taken so far at UCT. Even more than the content, your delivery was excellent. I made the decision during one of your lectures to do honours in mathematics and computer science next year at UCT.

Prior to this I taught three semesters of Calculus for Engineers at Cornell, essentially a second course in calculus for freshmen that follows a textbook very closely. After each lecture I reflected on how I could improve presentation of the material. This usually involved improving the pace, refining what to write on the board, and finding better ways to break up the material into chunks that the students could follow. These students were generally capable of acquiring, on their own, the skills to work routine problems. Consequently my main goal was to get them to reason mathematically, both verbally and in writing. I noticed that students are very sensitive to the wording I use. I keep a list of phrases to which they seem to respond, eg. 'can anyone help A with her answer?', 'can you explain B's idea to me?', 'what do you mean by X?', 'are you sure?', 'who will summarise today's class?', 'if all I do is teach you skills I'm short-changing you'.

I received reviews to confirm my strategy had the desired effect:

> Professor was very well prepared . . . Instead of memorizing formulas, he helped us understand what we were learning, why we were learning it and why it was useful.

Supervision

In 2009 I supervised six undergraduate students for a two month research experience (REU). The student selection process was very competitive and so I received exceptionally talented undergraduates. We worked on two projects and have interesting and results, some of which have been submitted to *Theoretical Computer Science*. During this time I learned the value of giving students a few days to brew and filter their ideas before group discussions. Overall it was a rich experience for both me and, I gather, for my students. One exceptional student expressed to me that the experience helped him decide to pursue a career in research.

Graduate teaching

In 2009 I taught a course on logical aspects of random graphs. I improved my ability to give intuition behind tricky definitions and proofs. The course was self-contained and the students remained engaged throughout. There were no exams – each student presented a lecture on a topic that built on the material presented in class.