TEACHING STATEMENT

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1. My goals for student learning

My goals in the classroom are to equip my students with concrete problem solving skills, the confidence to reason critically about problems, and an awareness of the possible applications of mathematics to other scientific problems.

2. My teaching methods

"Show, don't tell.'

My method of teaching is built upon the twin practices of teaching by example, and relating my thoughts honestly to my students as we work through problems. The excellent success I have with this overall method is based on two things. The first is the extremely powerful ability that people have to learn by mimicking competencies that they observe in others. The second is the intrinsic motivation people have to practice activities that they perceive as being enjoyable, interesting and where success is - reasonably - within reach. The basic building blocks of mathematics that I emphasize in the classroom are calculation (procedure) and thoughtful design (planning a solution).

"For example, . . . "

My method for helping students to acquire sound skills in calculation is to work through - and write up explicit solutions to - chosen problems in full detail, all the while working interactively with my students in the classroom. I use classroom time to initiate the process of building a library of techniques and solution templates, that my students can continue to develop outside the classroom. I also use such sample questions and their explicit solutions to illustrate and motivate the main definitions and theorems from the material.

"We don't know for sure that this will work, but let's see what happens."

To help my students acquire the ability to think critically about a problem, and plan out a strategy for solving it, I lead my students through an honest discussion of the obstacles they are facing. I take care to relate to them the thoughts and concerns I would have, if faced with the problem myself for the very first time. For example, I may start the class off on a problem by prompting a discussion of what the question is asking for and what information we are given. This helps to establish the likely form of the solution we will work towards. Once we have (as a class) clarified the goal, I will weave a discussion of the strengths and limitations of the various techniques that we use, or have otherwise learned, into the process of collaboratively writing up a solution of the problem with my class. This process also has the added benefit of reinforcing students' understanding of the calculation techniques they have learned, since it provides context for the use of these techniques, as well as the opportunity to use the techniques to solve an application.

Check your `email`, or: `http://web.missouri.edu/sds2p8/teaching.html`

I post notes and solutions to many questions my students have on my website for their future reference. In the first instance, this provides my students with an easily accessible template for how to communicate their solutions in writing. Secondly, this practice allows me some discretion and flexibility on what to focus on during class, since I am able to compensate for class time spent

either answering particular questions that students have difficulty with, or on tricky aspects of the theory. These various written materials now constitute my course archives, and are available from my teaching webpage [web.missouri.edu/sds2p8/teaching.html].

"We can ask any question and he will answer it."[1]

This practice of posting notes, examples and solutions also allows me to adapt my teaching to students with divergent levels of preparation, as I often post materials in response to individual students' emails or questions. This is in addition to providing personalized guidance during my office hours.

"Soumya was very knowledgeable, and took the class seriously, and was concerned with the personal development of the students."[2]

It is clear to my students from my approach to teaching that I am interested in facilitating their progress, and helping to bring their goals within their reach, rather than judging and sorting them. For this reason, I find that the very students who most need my individualized attention will faithfully ask questions in class, visit my office hours, and ask for help by email. Because of this rapport that I am able to build with my students, I find that I am able to effectively use email and office hours to provide specific guidance to each student in ways that are difficult to accomplish in a classroom setting with 30 to 60 students. I have had excellent success with this method of adapting to the range of my students' learning styles. My availability by email and at office hours features frequently in many favorable student evaluations at the end of each semester. An archive of my student evaluations since Fall 2010, including numerical data and student written comments, is available on my teaching webpage `http://web.missouri.edu/sds2p8/teaching.html`.

3. Assessment of goals (measuring student learning)

I use course assessment as a way to provide honest and objective feedback to my students about their progress with the course material, and to identify areas in which they need to improve. This practice also gives me feedback on what my students have trouble with, and helps me gauge whether my students need help with certain parts of the material. However, the introduction of assessed components to a course has the inevitable, and unfortunate, side effect of generating a great deal of student anxiety about their performance. I am always careful to emphasize to my students the far greater importance of making steady and sure progress over time, as well as taking a long term view of their development over their university career. I have also found it extremely useful to provide a large supply of practice problems as unassessed homework to my students at the very start of the course, and to make sure that this problem bank adequately prepares them for all the assessment they will undergo. I have found that this is successful in encouraging students to practice the material they learn in class regularly. It also allows them to work through the course material at their own pace, if they choose to. For a student, the combination of making regular, tangible progress with the material, and being allowed to experiment with the material in settings where a setback or failure is safe, helps them to take a long term, healthy perspective on their mathematical progress in the course, improves their confidence in their abilities, and helps them to take control of their progress and goals.

Over the last 8 years of teaching mathematics at the university level, I have taught courses from college algebra, to service courses for business and social science students, to the entire standard calculus sequence - including an honors level course - and a cross listed undergraduate/graduate course in abstract algebra. I have taught small classes covering graduate level material (to approximately 10 students), and larger lecture courses (to 60 students). Through these experiences, I have gradually developed a set of techniques that have served me and my students well in the classroom. I have taken immense pleasure in the success of my students, and have enjoyed the hard work involved

[1] quoted from my student evaluations, Spring 2013.
[2] quoted from my student evaluations, Fall 2012.

in becoming a more effective teacher over time. I look forward to developing my skills as a teacher at a new institution, with a new student body, and with the same goals of facilitating my students' intellectual and personal development.

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