TEACHING STATEMENT

JOSÉ SIMENTAL

One big part of my decision to pursue a Mathematics career is the inherent beauty I see in Math. Thus, it has always been important to me to share this vision with the hope that, perhaps, other people will see this beauty. Of course, teaching is the best opportunity to do this. Therefore, I have always seen teaching as a great complement to research, and a necessary one.

During my master studies I was the instructor of a course all six quarters I was at Ohio University. At Northeastern, I have been privileged to be the instructor of a course for three terms, one of them a summer term. All these classes have been basic level Math - the most advanced of them was a Calculus class for Business majors I taught at Northeastern. While this at first glance may seem off-putting for some colleagues, it creates an interesting challenge. How to transmit enthusiasm for Mathematics to students who have spent most of their lives avoiding Math? This is, of course, a question that is as old as it is hard. Nevertheless, it is an important one, and it does not have a unique answer. For me, the first step is to take as much input from the class as I can. This input can be explicit (students asking questions, or giving ideas to solve a problem) or implicit (students getting distracted, or not participating in class). This will decide, for example, how interactive the class will be. While it is always rewarding to see students helping each other and learning by themselves, this is less likely to happen at an 8am class than at an 11am class, so the earlier class may require for me to work harder in motivating the students. I usually do this in two ways. First, by showing them an interesting, non-straightforward example of what Math can do and trying to break it into pieces they already know - this will keep the students interested while helping them build confidence. Second, by always treating them with respect, and trying to be understanding without underestimating them. This may seem like a small thing, but I believe students feel more motivated if their instructor is a friendly figure of authority.

When teaching, I usually give weekly or bi-weekly quizzes. While these serve to fulfill the departmental obligations of evaluating the students, I try to also use them as a learning device. On the one hand, quizzes are a way to keep the students up to date with the material in class, and a bit of extra motivation for them to learn. On the other, periodical quizzes help the students to identify their weaknesses in time. For this reason, I try not to make quizzes so challenging that they may demotivate students.

For me, the challenges to students should come from homeworks and in-class problems. During homework, students can discuss and collaborate, and they have more time to ruminate on a given problem. During class, I try to guide them, always taking their ideas as a starting point. If I see that they are getting too far from a correct path to the solution, I ask an easy question to help keep them on the right track. As I have mentioned before, it is not always possible to do this - sometimes I have to intervene more - but I try to keep my interventions to a minimum. This pays off: it is very rewarding to see students getting more acquainted with mathematical concepts and ideas, sometimes even commenting me how Mathematics is helping them in their own major. Of course, it is also very rewarding to get positive feedback from students. The following are a few examples of those.
“José is obviously very passionate about Math and never seemed to get frustrated when we didn’t understand.”

From the course MATH 1215, Mathematical Thinking. Spring 2014.

“His enthusiasm for the class is fantastic. He is also helpful whenever we have questions. Relates the class to economics/business.”

From the course MATH 1231, Calculus for Business and Economics. Summer 1, 2014.

“He will definitely challenge you, and force you to think differently.”

From the course MATH 1215, Mathematical Thinking. Fall 2015.

My teaching experience for higher level Mathematics has usually come in form of seminars. I am a regular speaker at the MIT-Northeastern Representation Theory seminar, and at the Northeastern Graduate Student Seminar. Of course, here the audience is already motivated, so one should worry less about that. From these seminars, I have learned that a good Mathematics speaker also has to be a bit of a showman. By this I mean, one has to be careful to not present a too-technical proof that will bore the audience, to always show enlightening examples, to modulate your voice so that the most important concepts are highlighted by it, and even to try to lighten the mood when the topic is too heavy. Finally, and perhaps most importantly, one should be energetic: it is more likely to keep the audience engaged when the speaker shows enthusiasm!

Of course, I still have many things to learn and polish. I look forward to continue having teaching experiences that are as helpful for me as they are for the students.

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