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I don't want anyone to be comfortable in my classroom, and that rule applies to me too! If my students aren't challenged by grappling with new ideas, if I'm not trying something new and different, then I'm not doing my job. This joyful discomfort is encapsulated in a few key philosophies: I believe that math is best learned by doing, not watching, and I want to make math engaging and human.

My discussion sections and lectures are never the same. It is a mix of group work, individual work, student presentations and me at the board, using their suggestions to solve a problem. Not one gets the comfort of routine. I've used iclickers, youtube, interactive applets and Mathematica to get students to actively participate and play with new ideas. I see myself as an assistant, asking questions to illuminate errors or to help someone see the next step, which takes much more energy and planning than the traditional lecture format. But math is learned by doing, not watching, and I am always on the lookout for ways to get students to actually do math! It's not helpful for them to dutifully copy my work only to get home and have no idea what happened. I want them to get stuck in class, with me.

Most students are initially hesitant about this approach, often out of fear of being wrong. I've found that fostering a supportive classroom environment that emphasizes hard work and collaboration greatly minimizes these fears. This can be easily achieved by acknowledging the intuition or correct parts of a wrong answer, as well as not being ashamed of my own errors and using them as teachable moments. Having them be so responsible for their own education rewards initiative, fosters cooperative collaboration and develops the ability to convey complex ideas to others, critical skills in every profession.

I also focus on making mathematics an interesting, approachable and human subject. It's not just lines of formulae, but has a bizarre history filled with fascinating characters. Someone came up with this stuff! For example, I believe that students will remember l'Hôpital's rule if they know that Bernoulli was the one who proved it, while l'Hôpital was his student, and l'Hôpital bought it from him. Such a short digression also allows students to finish writing something down or think out the next step.

I love to show my students current research in the sciences as well. There are many videos with very high production value showing scientists' work on open problems. In many cases, the students can understand the problems, and see how complexity is tackled with trial and error, the basis for all creative problem solving. By emphasizing this method in class as well, rather than the "one correct answer" paradigm, students become less afraid of being wrong, and more adventurous and

imaginative.

These methods aren't canon. They require more preparation, more technology and more student enthusiasm, which can't be forced. But the payoffs make it worthwhile every time: less boredom, better comprehension and fearless students versed in creative problem solving.