PATCH TWENTY-ONE: JUST LISTEN

https://openfacultypatchbook.org/classroom-skill/patch-twentyone-just-listen/

The Nugget

I honestly don't remember the point in my teaching career when I realized how hard mathematics was for most of my students.

It's not that I've ever been especially *brilliant* at mathematics. Sure, I can do a great deal of number crunching in my head without a second effort. But when the vector calculus or the differential equations got too sophisticated for my calculations in my own graduate research, I just looked for somebody else's software or algorithm and twisted the mess out of it to make it do what I wanted it to do. I could handle the rudimentary stuff. I was horrible at setting up any integral but the simplest, for crying out loud. I knew the guys in my discipline who could handle the hard stuff and who were on another plane, and I wasn't one of them. Surely I'm the guy who can relate to students who fight the mathematics.

My Response

Most of students find mathematics a difficult subject. We, professors can modify our teaching approach a bit to fit according to students abilities.

In my view, the two main aspects of mathematics education are conceptual understanding and mastering practical problem-solving skills. Neither of these can be the sole focus of an effective mathematics course. My aim as a teacher is to strike the right balance between the two. I believe a strong conceptual understanding is necessary for success in an undergraduate mathematics course. Many of the most beautiful ideas in mathematics are simple at their core or are built upon previous ideas in simple ways. One of my teaching goals is to expose this simplicity to my students, to increase their conceptual understanding and decrease the intimidation factor of mathematics. To a mathematician, the ultimate understanding of a mathematical result is typically delivered by mathematical proof. But students, especially first or second-year non-math majors, generally do not think like mathematicians and thus are not necessarily equipped to handle such things. My job is to distill these ideas down to their essence and explain them in as simple of terms as possible. A brief translation of mathematical language into "layman's terms" is the most effective way to communicate a mathematical idea.