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Listening Before Teaching: Building mathematical understanding by understanding our students

Despite generations of curricular reforms and investments in outreach activities, mathematics remains one of the most misunderstood fields of study. Tied to this problem of reputation is a representation problem: the numbers of women and those from racial minorities are still unacceptably low in math, especially at the senior ranks. How can we make progress towards solving the dual reputation and representation problems that face math? I will discuss recent research in the social sciences that points towards the importance of listening to and understanding our students and mentees at all levels, from grade school through grad school. I will give examples of concrete practices that build understanding by first understanding students and discuss how listening has played a key role in recent innovations to an introductory calculus program at the University of Toronto.