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Assessing student mathematical thinking using portfolios, self-assessment, and silent group exams

What do we teach (or assess) in our classes? In my first-year undergraduate mathematics courses, including calculus, multivariable calculus, and math for liberal arts majors, I want students to learn how to do (their own) mathematics – not just mimic me! During class, students explore ideas, ask questions, generate data to find patterns, propose conjectures, and engage in various forms of mathematical debate as they refine their new understandings. Unfortunately, my traditional assessments inadequately captured these student practices and instead felt more like rote mathematical ‘spelling tests’.

In this talk, I’ll share examples of how I’ve used student portfolios, homework self-assessments, and silent group exams to both let my students explain their mathematical thinking to me and to incorporate learning into the assessment process. And, I’ll share how it has surprisingly decreased my grading load and provided meaningful feedback about my teaching.