One challenge of mathematics learning is to see mathematics as a sensemaking endeavor – to not only connect concepts and practices, but become a problem solver, develop metacognitive understandings, and develop productive mathematical beliefs. Opportunities for such understandings are rare in schools. Moreover, understanding mathematics is only one component of effective or “ambitious” teaching – better framed as the creation of mathematically rich and equitable learning environments. The challenge is to create robust learning environments that support every student in developing not only the knowledge and practices that underlie effective mathematical thinking, but that help them develop the sense of agency to engage in sense making. This implicates issues of race and equity, which are a challenge not only in classrooms but in society at large; structural and social inequities permeate the schools, as well as below par curricula, assessments, and professional development. I point to existence proofs that at least some these challenges can be addressed, while documenting the substantial challenges to making progress at scale.