Improving science education at the university level is an international priority. The path forward will rely on evidence-based teaching practices, grounded in research on how people learn. A promising approach is Three-Dimensional Learning (3DL), in which curricula center on connections to fundamental tenets of a discipline (Core Ideas), with opportunities for students to make use of their knowledge via engagement with skills used by disciplinary experts (Scientific Practices), with consideration of themes common across the sciences (Crosscutting Concepts). This talk will focus on Scientific Practices and the challenge of engaging students with meaningful use of their knowledge. Specifically, three areas of university teaching and learning will be discussed: (1) how instructors might engage students in Practices in a lecture setting, (2) insights into the needs of teaching assistants (TAs) who lead Practice-centered classes, and (3) the development of assessments to gauge students’ ability to use Scientific Practices. This work is situated in the broader context of multi-disciplinary, multi-institutional efforts to reform undergraduate science education.