

Applied Geology Problem Solving Standards Rubric creation reflection

Problem solving is an crucial component of the field of geology. Whether unravelling the secrets of the geologic record or predicting the location and variety of future natural disasters, all geoscientists are directly involved in gathering data to solve myriad problems. The complexity of most geological questions requires not only a solid grounding in the fundamentals of geology, chemistry, physics, maths and/or biology, but the professional practitioner needs outstanding problem solving skills to tackle problems that are never straight 'out of the box'.

Too often, students begin university with a view of science as a set of immutable facts that require memorisation and application to clearly defined problems with definite outcomes. Overcoming this set belief is challenging, but even more difficult is helping students accept that we may never have enough evidence to confidently support a single solution and that providing sufficient evidence to disprove possible answers is therefore paramount. Designing a rubric that highlights the growth process from beginner to expert, including the breakthrough that occurs when one recognises the indefinite nature of science and the importance of reporting uncertainty, may aid students to overcome this perennial hurdle.

Throughout their course, our students encounter multiple poorly constrained problem solving activities designed to give them experience grappling with and (we hope) overcoming geological puzzles similar or identical to those they will need to solve in their professional lives. Students frequently find these experiences distressing and are unable to link their generic learning experiences to the overarching course experience, focusing instead on getting 'the right answer'. I hope that in providing both students and unit coordinators with these generic attribute rubrics the importance of building and assessing students' problem solving skills, rather than performance alone, will gain greater footing.