If you ask teachers what they feel is most rewarding about their work, nearly all will say it’s the joy that comes when students “get it,” and when students are motivated to learn, enjoy learning, and find it a rewarding experience. When asked about which tasks are most disagreeable, grading usually ranks quite highly. Similarly, students generally rate engaging learning activities highly and, with a few exceptions, don’t relish taking exams. We typically use exams to assess student learning, and grades provide a means of recognizing specific levels of achievement or mastery. But can we effectively assess the diverse competencies and real-world skills that we want our students to develop with exams alone?

Range science education programs structure their curriculum by identifying desired learning outcomes—what do we want our students to be able to know, what skills and abilities will they need in order to succeed in the profession? Well-trained rangeland professionals are expected to have discipline-specific knowledge in the areas of rangeland ecology and management, basic sciences, and soil, plant, and animal sciences. In addition to knowledge and technical proficiency in core-content areas, rangeland professionals need well-developed oral and written communication skills, need to be able to work well in interdisciplinary teams (either as leaders or team members), need “people” skills to successfully interact with a diverse set of colleagues and stakeholders, and need a well-developed appreciation of professionalism and ethics. Indeed, program accreditation standards set by the Society for Range Management specify discipline-specific coursework and strongly recommend that programs provide ample mechanisms for students to develop competencies in the additional areas mentioned above.1

The fundamental point of education is to induce learning, and assessment is the process by which we can determine whether learning is occurring, if it has occurred, and to what level students have learned.2 We use assessment to address these questions: have students learned what we want them to learn, and do they possess the knowledge, skills, and abilities encompassed by the desired learning outcomes? A basic tenet of educational process is alignment between desired learning outcomes, learning activities, and assessment (Fig. 1).3 If we want students to be able to do X, aligned activities give students opportunities to learn fundamental information about X if it is content or knowledge-based, or opportunities to practice doing X if it is a skill or ability, and aligned assessment addresses how well students can do X. Although alignment between learning outcomes, activities, and assessment might seem elementary, it can be elusive. Learning occurs at different levels, classically described as a hierarchy of educational objectives that separates fundamental from higher-order learning. A recent revision of “Bloom’s Taxonomy” identifies six levels of the cognitive process in order of increasing complexity: remember, understand, apply, analyze, evaluate, and create.4 Traditional assessment generally takes the form of exams (or quizzes) in which students select responses from a set of potential answers provided to them (e.g., multiple choice, true–false, fill-in-the blank) rather than create their own responses. In general, assessments that are centered on selection of a response tend to test at the lower-order levels of learning. It is possible (yet quite difficult) to create multiple-choice exams that test at higher levels of learning, and although a student might select the correct answer, there remains at least some probability that the correct answer was selected by chance, and doesn’t truly reflect learning. Although short answer-essay questions can scratch at the surface of higher-order cognitive skills, it remains a challenge to assess deep learning, complex problem-solving, interpersonal skills, or to foster creativity using traditional exam formats.

By diversifying our approaches to assessment, we meet the needs of diverse students—our students might have diverse learning styles and diverse backgrounds, and by offering a broader range of assessment formats, we provide a variety of means for them to learn and to demonstrate the depth of their learning.2,5 In addition, diversification of assessment formats gives students opportunities to develop...