A Vision of Highly Effective Teaching at Mines

Moving all instruction towards highly effective teaching is critical to achieve the goals and mission of the Colorado School of Mines. A taskforce was formed by Mines’ Faculty Senate to revisit how we evaluate teaching on campus. As part of their effort, and in conjunction with the Trefny Center, the team defined a vision of effective teaching so that everyone at Mines has a common vision of what constitutes highly effective teaching. This vision provides each instructor the goal to strive towards, the criteria for assessing progress towards that goal, and the standards to use for the evaluation of teaching. This vision of effective teaching reflects teaching and learning in both residential and online modalities.

The following characteristics are identified as core to highly effective teaching based on a review of the empirical literature on teaching and learning.

**Highly effective teaching is:**
- Supportive of students,
- Focused on learning,
- Intentionally designed, and
- Reflective

While each characteristic is distinct enough to assess individually, it is the combination of the four that the research indicates creates highly effective teaching. The overlapping nature of these categories is critical to effective teaching, and is reflective of the complex nature of teaching and learning. Below we briefly describe each of the four core areas, provide examples of how other institutions use similar criteria, and include a reference list of empirical work and other recommend readings. The Task Force is working to define ways to assess these characteristics (data sources, organization of data, and reporting) and to develop a process to evaluate teaching (rubrics and analysis methods) so that Mines has a rigorous, consistent and manageable process to evaluate teaching for all faculty who are teaching (both residential and online).
Four Characteristics of Effective Teaching at Mines

1. Supportive of Students
Effective teaching is supportive of all students as learners and as people (Cornelius-White, 2007). When students feel supported as part of a positive learning community, they are, for example, more likely to seek help from the instructor (e.g., Ishiyama & Hartlaub, 2002), persist in challenging tasks (e.g., Cohen, Steele, & Ross, 1999), and persist in science majors (e.g., Seymour & Hewitt, 1997). Support can be communicated and facilitated in a variety of ways, for example:

a. In classroom policies, such as using language in the syllabus that is encouraging rather than punitive, establishing explicit classrooms norms for respectful and inclusive interaction, and similar practices.

b. In course content, for example, by choosing examples across multiple domains or representing a variety of perspectives, finding ways to draw on students’ past experiences, and making content fully accessible (e.g., closed captioning, formatted for text readers).

c. In student-instructor interactions that communicate care for students as learners, such as being present and responsive to students’ needs, combining high expectations with learning supports to provide each student with the opportunity to succeed, and communicating to students that mistakes are part of learning.

d. In student-instructor interactions that communicate care for students as people, such as learning and using student names, mentoring students, showing compassion when students confront personal issues that might impact their course work, and taking an interest in students’ lives outside of the class, among other practices.

e. In guided student-student interactions that communicate structure for collaboration and community building opportunities

2. Focused on Learning
Effective teaching is focused on learning and on creating learning opportunities. It considers how students’ prior experiences shape their learning, is based on research about how people learn best, and frames the content in terms of its relevance to students’ lives and future careers (e.g., Ambrose et al., 2010; Seidel & Shavelson, 2007). An instructor who focuses on learning:

a. Activates students’ prior knowledge, helping them make connections between what they have previously learned, what they are currently learning, other coursework, their lives outside of school, and their future careers.

b. Helps students learn to think like disciplinary experts by modeling their own thinking, helping students see meaningful connections among course concepts, and providing students practice with authentic tasks.

c. Motivates students by communicating the value of the content, emphasizing learning rather than grades, making expectations clear, setting an appropriate level of challenge, and similar practices.
d. Provides multiple opportunities for students to actively practice the skills required by the course learning outcomes, paired with timely feedback that is clearly tied to those learning outcomes.

e. Helps students become part of the learning community, maintaining a safe, respectful, and open learning environment for all (see characteristics 1 – Supportive of Students).

f. Supports students in learning how to monitor, assess, and adjust their own learning.

3. Intentionally Designed

Effective teaching begins with a course that is intentionally designed to support student learning and motivation, leveraging the research-based mechanisms identified in characteristic 2 – Focused on Learning while also maintaining a reasonable workload. A well-designed course includes:

a. A well-articulated purpose that communicates how the course is relevant to the field as well as students’ careers, interests, and/or lives outside of school. This can be reflected in the content chosen for the course and can take into consideration the students who are anticipated to enroll in the course.

b. Clear, relevant, and measurable student learning outcomes to guide instruction, assessments, and opportunities for practice and feedback.

c. Formative and summative assessments that directly align to the learning outcomes and that give both students and the instructor information about students’ progress towards mastery of the learning outcomes.

d. Instructional activities that provide students sufficient time to actively practice the skills and knowledge reflected in the learning outcomes, as well as feedback about their current level of mastery.

4. Reflective

Effective teaching is reflective. Schön (1983) coined the phrase “reflective practitioner” to capture the intellectual work that effective instructors do as part of their professional practice. It is consistent with the notion of “intellectual work of teaching” (Bernstein, Burnett, Goodburn, & Savory, 2006) and “scholarly teaching” (Glassick, Huber & Maeoff, 1997), which have been found to lead to gains in student learning (e.g., Condon, Iverson, Manduca, Rutz, & Willett, 2016; Meizlish, Wright, Howard, & Kaplan, 2017). All of these capture the idea that an instructor who is reflective and scholarly in his or her teaching:

a. Reflects (self-reflection) and iterates on their teaching by gathering, considering, and acting on relevant evidence of student learning and motivation. Evidence that an instructor could collect and learn from include, among other sources, mid-term feedback from students, student performance on course learning outcomes, and a formative teaching observation by a colleague.

b. Seeks opportunities to continue learning about and developing in their teaching, for example, by attending professional development opportunities, observing their colleagues teach, completing self-study modules and webinars, attending teaching-focused conferences, and similar activities.
c. *Shares* what they have learned and collaborates with colleagues to build a culture of shared responsibility for student learning and success. This can be accomplished through activities such as publishing scholarship related to teaching and learning, working at the department- or university-level to support student learning, and mentoring other faculty in their teaching.
Similarities to How Other Institutions Define Effective Teaching

In addition to being based in the empirical literature on teaching and learning, the four characteristics of effective teaching identified here have many similarities with the characteristics identified by other institutions (linked), which also provide useful models:

University of Oregon
University of Southern California
University of Michigan (modified from Carnegie Mellon University)
Pennsylvania State University
University of Tennessee at Chattanooga

Similar to Student Supportive, other institutions define effective teaching as:

- **Inclusive** (UO)
- **Inclusive and Diverse; Respectful and Professional** (USC)
- [Recognizing that] students’ current level of development interacts with the social, emotional, and intellectual climate of the course to impact learning (UM/CMU)
- [Being a] student-centered mentor (Penn)
- **Communicating high expectations; encouraging contact between students and faculty; respecting diverse talents and ways of knowing** (UT)

Similar to Focused on Learning, other institutions define effective teaching as:

- **Research-led** (UO)
- **Challenging and Supportive; Relevant and Engaging** (USC)
- [Recognizing that] Students’ prior knowledge can help or hinder learning; Students’ motivation determines, directs, and sustains what they do to learn; students must learn to monitor and adjust their approaches to learning (UM/CMU)
- Pedagogical expert; subject matter expert (Penn)
- **Emphasizing time on task; giving prompt feedback; encouraging active learning** (UT)

Similar to Intentionally Designed, other institutions define effective teaching as:

- **Prepared and Purposeful; Fair and Equitable** (USC)
- [Recognizing that] goal-directed practice coupled with targeted feedback enhances the quality of students’ learning (UM/CMU)

Similar to Reflective, other institutions define effective teaching as:

- **Research-led; Engaged** (UO)
- **Evidence-based** (USC)
- Systematic and continual assessor (Penn)
Select Empirical Literature and Suggested Readings (Bolded)

Supportive of Students


Focused on Learning


Intentionally Designed

Reflective


**Suggested Readings: Evaluating Teaching**