The Engaged Classroom Across the Disciplines

Debjani Bhattacharyya, Michelle Dolinski, Adam Knowles, Jonathan Seitz – *College of Arts and Sciences*
Jacob Lahne – *Center for Hospitality and Sport Management*
Drexel University

Faculty seeking practices to increase student engagement in their courses often confront practical barriers to implementation. Some practices require wholesale restructuring of a course; others require substantial up-front investments of time or money. And many practices are tied to the pedagogies or subject matter of a particular field. We present here a range of lightweight, high-impact practices for fostering student engagement across disciplines. In particular, we emphasize practices that do not require learning or implementing new technologies and can be put into practice with minimal disruption to existing course structures.

Engaging through Historical Records

Students read history books. If you ask a student what history is they answer that it is about the past. History is often very uninteresting to non-majors and a required credit they fear. The challenge is: How do we teach students the process of historical thinking, how history is produced and simultaneously immerse them in the joys of historical research? As an experiment you ask students to be historians for a few sessions, and engage them in history in a way that helps them reflect on the discipline of history. As a class you divide them into groups and give each group a historical report about one particular incident. One group gets a newspaper record, one a diary, one gets a section of a memoir about that event, one perhaps a police record: each a different genre and format of writing. Each group reconstructs the event from one particular genre and then they arrive at very different narratives and this helps them realize the biases in the evidence they are using. You follow this up with each group picking an event and three kinds of historical records about it and reconstructing that narrative as part of in-class assignment.
(Debjani Bhattacharyya)

Classroom Experiments with Self-Organizing Governance

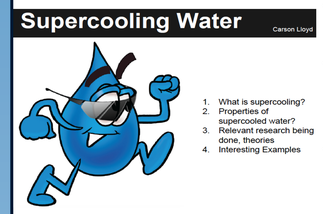
You enter an introductory philosophy class silently midway through the term. The students have worked their way through such great thinkers as Plato, Aristotle, Hobbes and Descartes. Their hard work is now to be tested by applying a number of the ideas that they have only read about. You enter silently and distribute the same note to all students: "You are now in the state of nature, a war of all against all, and you must emerge from this state to create a government capable of putting Socrates on trial (with the winning side to be awarded a limited number of donuts)." The references to Hobbes' *Leviathan* and Plato's *Apology* are unapologetically anachronistic, but the point of the experiment is not historical fidelity. The point is to watch a government form itself. Inevitably the students fidget. They look at each other awkwardly and squirm in their seats. They ask for help from the instructor, but you remain steadfastly silent. At this moment a would-be tyrant seizes the vacuum of power and declares him/herself to be the dictator. A spontaneous backlash by a select few emerges to quash the tyrant's claim to authority. Having recognized the twin threats of dictatorship and oligarchy, a democracy—at first quite sluggish and tentative—is formed to impose order on the chaos. The democracy chooses a judiciary and the trial ensues. Socrates may win or lose in the mock trial—but all the students win once they realize that they were tricked into believing that there were not enough donuts for all to share!
(Adam Knowles)

Material Objects to Guide Group-Based Research

Group projects are an excellent way to break students' dependence on the instructor and to foster peer-to-peer engagement. Group-based projects also allow students to engage in work on a scale that they would not otherwise be able to complete in our short, 10-week terms. However, students can have difficulty focusing their group work — especially students new to a particular discipline. Providing students with a concrete, material, real-world focus for their project gives them a straightforward means of bounding their project and organizing their work. For a course on the history of ancient and medieval world civilizations, a trip to the University of Pennsylvania Museum of Archaeology and Anthropology allows students to choose an engaging object. Students then explore what the object can reveal about the context from which it came, research the existing scholarship on civilization that produced it, and propose further research that would deepen our understanding of the object and the society that created it.
(Jonathan Seitz)

Engaging with Physics Through Self-Directed Group Inquiry

The physics classroom can be an intimidating environment, and learners have a variety of reasons for being there. Self-directed projects allow students to focus on their own motivations, exploring everything from cutting-edge research to real-world applications they encounter in their own lives. By grouping students into rough topic areas, they are given a network for seeking help and are held acountabie to their peers.
The discussion board feature on Blackboard Learn can be used to enhance the group project experience by encouraging students to engage across group boundaries. Each student is required to post a short statement about his or her own topic, and students are awarded extra credit for sharing thoughtful, content-rich comments, both before and after the in-class presentations.



Real comments from students:

- Carson, your presentation was really, "cool", see what I did there? Either way, do you have a link on that super cooled water in your freezer? My kids are coming up this weekend and I want to impress them.
- You did a great job with the presentation today, and I probably should have asked this during class, but I remember that you saying that supercooling water is different from superheating. They seem similar to me since they both involve a lack of nucleation causing no phase change, so I was wondering if it's still valid to compare them.
- After listening to your presentation today, I became very interested in the idea of supercooling fish. Just the thought of supercooling a living species and have it survive and thrive under those conditions is something incredible. I started looking around a little bit more at what kind of research people have done with supercooling fish and it turns out many people have conducted experiments (Unfortunately, it seems many fish have also died during this process).

An example of the kind of discussion that can be achieved is shown here. This slide was part of Carson Lloyd's presentation from Thermodynamics in Fall 2014, with selected comments from other students. (Michelle Dolinski)

Consuming Food, Consuming Knowledge: Multisensory Engagement in the Classroom

In pedagogy (as in many fields) we deprecate some of our senses (taste, smell, and touch) in favor of sight and hearing. In diverse fields, the preparation and consumption of food is a powerful tool for engaging these neglected modalities. Some examples:

•Chemistry: cooking is the coordination of many sophisticated chemical reactions. A large literature exists on "kitchen chemistry" that provides students not only with laboratory and material experience, but the opportunity to taste the fruits of their labors. For example: producing calcium-alginate "gummi worms", crystal formation through chocolate "tempering", basic cheese-making (or tofu-making)…

•Anthropology: food is a unique, cultural "boundary-crossing" object; from Levi-Strauss' famous formulation of "the raw and the cooked" to modern food anthropologists like Trubek or Paxson, food is an important nexus of practice. Preparing and consuming meals allows students the opportunity to experience and ingest practices of "others". Preparing meals according to specific practices and beliefs, eating the "inedible", and even eating in new ways (with the hands, with other utensils) provides incomparable options for engagement.

Overall, bringing a meal into a classroom is a simple intervention that can be scaled to available facilities: the classroom itself can travel (to an on-campus kitchen or even the instructor's home); the instructor can assign preparation and use it as an experience to add a reflective element to the assignment; or, given appropriate facilities, cooking can take place in a culinary lab.
(Jacob Lahne)

- *Allowing students the opportunity for democratic decision-making processes increases student engagement.*
- *Non-traditional pedagogical practices increase student buy-in, engagement, enthusiasm, and ultimately learning.*
- *This experiment not only engages students, but also teaches them skills of evidence use that can translate across classes they take and finally, they are introduced to the joys of historical work.*
- *Real-world links help students navigate the difficulties of learning a new discipline.*

Drexel University Center for Academic Excellence