

Vanderbilt University. Center for Teaching

Teaching Large Classes

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Teaching a large class poses many challenges, both in and out of the classroom. In the classroom, large enrollments can promote student disengagement and feelings of alienation, which can erode students' sense of responsibility and lead to behaviors that both reflect and promote lack of engagement. Logistics can also be a challenge when teaching a large class. How does one best manage the daily administration of what can often feel like a small city?

Here, we present strategies to help instructors deal with some of the challenges associated with teaching large classes:

Promoting Student Engagement

What causes students to not participate?

While encouraging class participation can be challenging in any class, it can be especially difficult for instructors of large classes. To effectively evoke participation in such teaching contexts, it is helpful to understand the factors that discourage involvement. In the article, "[Putting the Participation Puzzle Together](#)," Dr. Maryellen Weimer attempts to uncover precisely what motivates students to be active participants in the classroom. Weimer does this by analyzing a recent study that tests common hypotheses about the nature of student participation. The study found that while a multitude of issues affect student participation levels, a few emerge as particularly important. First, students' **perception of faculty authority** can make a substantial difference in determining whether or not students participate. Second, students' **perceptions of the instructor**, developed through interactions outside of the class, have a large impact on student participation. Finally, student **fears of peer judgment** explain why many students choose not to participate.

Faculty Authority: Combatting perceptions of the instructor as fount of knowledge

The issue of faculty authority requires particular attention. In our often freshmen-heavy large classes, many students feel that the instructor is the arbiter of knowledge. To these students, the ideas and arguments of the instructor are not meant to be challenged. Certainly, students like this are more likely to sit silently in class and take it all in. If, as instructors, we hope to avoid this, we must make sure that our courses are content-centered, not instructor-centered. How does one do this? We can model the kind of questioning inherent in our disciplines and ask students to practice those questioning skills through exercises, in-class and out. We can also be careful to underscore the degree to which knowledge in our fields is contested and constantly evolving.

To allow students to practice the skills they should develop, it can be helpful to break up the class into 10-20 minute segments, incorporating a specific question or exercise that requires student participation in each segment. The question or exercise can take several forms.

Think-pair-share – In this simple exercise, the instructor poses a question or problem to the class. After giving students time to consider their response (think), the students are asked to partner with another student to discuss their responses (pair). Pairs of students can then be asked to report their conclusions and reasoning to the larger group, which can be used as a starting point to promote discussion in the class as a whole (Angelo and Cross, 1993). This exercise helps promote engagement because students feel greater responsibility for participation when paired with one other student; lack of participation becomes obvious and problematic. In addition, the inclusion of “think” time and the initial opportunity to talk about a response with a single peer reduces the anxiety some students feel about responding to instructor prompts.

Minute paper – This classroom assessment technique (Classroom Assessment Technique Teaching Guide) can also be used to promote student engagement (Angelo and Cross, 1993). At the end of a class segment, students are asked to spend one to three minutes writing the main point of the class to that point as well as questions that remain. These papers can serve multiple purposes: they can be used by the instructor as a formative assessment technique; they serve as a tool to promote metacognition, asking students to consider what they do and don’t understand; they can be used as the basis for small or large group discussion. As with the think-pair-share technique, the minute paper gives students time to compose and articulate their thoughts, increasing their comfort with asking questions or entering discussion.

Muddiest point paper – This modified version of the minute paper asks students to articulate the point that is most unclear to them at a given point (Angelo and Cross, 1993). It serves the same functions as has the same potential uses described for the minute paper.

Clicker questions – Questions that can be presented as multiple choice questions are particularly amenable to use with “clickers,” or classroom response systems. All students in the class are asked to choose a response to the question, and the results can be displayed in real time. If the instructor wishes, student responses can be tracked, either to serve as an attendance measure or as a formative assessment tool. This approach has the benefit of broad student participation in the mental work of answering the question. In addition, clicker questions can be used to foster discussion very effectively (Crouch and Mazur, 2001); if a significant fraction of the class answers incorrectly, then student groups can be asked to discuss before re-voting.

When planning these questions or activities, keep in mind that large classes present advantages as well as special challenges. In these large classes, think of students as a diverse human resource to be drawn upon in pursuit of our learning goals. To help ensure that the students serve as this resource, it is vital that we *set the right tone from the beginning*. Make it clear during the first weeks of class that we expect students to question us and interact during class, and introduce questions or exercises that make that interaction both expected and safe.

These approaches are particularly effective when they take advantage of the opportunity for small-group work. Studies suggest that **small-group activities promote student mastery of material**, enhance critical thinking skills, provide rapid feedback for the instructor, and facilitate

the development of affective dimensions in students, such as students' sense of self-efficacy and learner empowerment (Cooper and Robinson, 2001).[1] Assigning group members roles (like facilitator, recorder, divergent thinker, etc.) or distributing a group assessment rubric can keep groups relatively balanced and fair and help ensure participation by all group members.

Instructor demeanor

Student perceptions of the instructor can be particularly challenging to deal with given that in large classes, it is more difficult to have meaningful exchanges with each and every student. However, there is much that we can do to project a demeanor that promotes student participation.

Make it a priority to learn and use student names. Some instructors use "equity cards", which are generated from students' pictures (from the class roll). Instructors call on people at random from the card pile. This ensures that the instructor uses students' names, helps ensure a broad base of participation, makes students less likely to disengage during class, and can be a helpful tool in learning students' names. Other instructors accomplish the same goals by gathering student ID cards at the beginning of class and choosing students at random to answer questions.

Establish a rapport. At the beginning of each semester, Andy Van Schaack of the HOD department at Vanderbilt asks students to fill out note cards describing some of their interests. By looking over these note cards and memorizing student names, Dr. Van Schaack gets to know his students and tries to greet them by name and speak with them as they enter the classroom. Such efforts often result in a better rapport between professor and student, and as a consequence, a more engaged classroom.

Be patient and affirmative with students in class and out. These behaviors can bolster student confidence, and more confident students are much more likely to participate in class. Many students will shut down in a class when they perceive an instructor as harsh. In such cases, the fear of instructor disapproval becomes more pronounced.

Develop strategies to encourage students to use office hours. Dr. Andy Van Schaack requires students to meet with him in groups of four during the first few weeks of the semester. He finds that the brief social interaction (generally, about 5 minutes per student) helps him remember students' names and makes the students more comfortable with him and a small group of their colleagues.

Peer judgment

Fear of peer judgment is a disincentive for many students, particularly in large classes where students fear being embarrassed in front of dozens or even hundreds of their peers. To best deal with student fears of peer judgment, it's critical that instructors *promote an environment of trust and mutual respect* from the very beginning of a course. In such an environment, students are more likely to feel safe to actively participate in class. Try to foster a sense of personal connection between students and instructors through group and partner activities that help students get better acquainted. The resulting feelings of cohesiveness are especially valuable because students who feel that connection are far less likely to go against their classroom

community's norms. Finally, be sure to *balance student voices* by not allowing any students to dominate discussions and by protecting students from interruption.

All of the approaches described above allow students the opportunity to engage with class questions and challenges anonymously or in small groups instead of or prior to large class discussion. These tools can therefore reduce student fears and thereby promote participation. In addition, online discussion boards can provide structured opportunities for students who are otherwise too shy to participate in class discussion.

For additional ideas on classroom activities, please consult our teaching guide entitled, "Teaching Activities."

Handling Student Grades

Grading in Large Courses: Common Problems

Large courses come with grading problems familiar to instructors across a range of disciplines. On the one hand, we don't want to have so many graded assignments that we bog ourselves down with incessant grading. On the other, we do want to have enough assessments that we have a fair grading system for our students and ourselves. Is there a way to strike a balance between these two things without relying entirely upon multiple choice exercises? Absolutely.

Rethinking Formative Assessments

There are several ways to incorporate more formative assessments into our class that do not add significantly to our workload, but give students and instructors the critical feedback that they need. Discussion-oriented activities in the classroom enable students to practice course-related skills and demonstrate comprehension of the material, while not requiring formal grading. For these kinds of activities, students can receive valuable verbal (and sometimes written) feedback from professors, TAs, and other students. The incorporation of technologies like "clickers" or websites like PollEverywhere.com can also serve to engage students while giving students a sense of how they're doing in the course, and giving instructors an opportunity to assess student-learning. These types of feedback-providing activities are especially valuable in classes in which the first graded assignments are not returned to students for several weeks.

The Value of Group Projects and Papers

What of summative assessments? We will need to grade some homework, papers, and exams, so how do we best grade 200 students? One option is to split students into groups. In a class of 200, organizing our class into 50 groups of four students to work on weekly homework assignments or papers reduces our grading load by 75% while still giving students a chance to practice their skills and receive feedback. This substantial difference in workload may make collecting homework assignments or additional paper assignments feasible in these large classes. Such group work also has value in promoting the kinds of communication skills that represent critical

learning goals in so many of our classrooms. However, group projects also raise different challenges in cultivating fair and equitable groups that we will need to address. To help promote active contribution by all group members, there are a number of tactics that we can try, such as

- Assigning each member of the group a role in the group.
- Building a peer review element into the group work so students feel accountable to one another.
- Offering small bonuses on exams for those groups whose members all maintained a certain average, in order to promote positive interdependence.

Light Grading on Short Assignments

Another way to build a steadier stream of graded feedback into our courses without making grading a full-time job is to maintain a simple grading system for short assignments. For example, we can grade papers on a three-to-five point scale, with specific pieces of information required for each point. A check/check-minus/check-plus system also makes our job as a grader quicker and easier while providing feedback to instructor and student alike. It's important to realize that we need not grade everything on a 100-point scale with copious comments.

The Value of Grading Rubrics

Finally, by utilizing a detailed grading rubric for papers and other assignments, we can streamline the grading process and reduce the need for extensive written comments. Rubrics can also obviate problems of inconsistency when we're dealing with more than one TA grader. Effective rubrics can thus facilitate a faster grading system that is also fairer for students.

Paper Comments

One of the most time-consuming aspects of grading in any classroom is providing comments on student papers. How do we provide worthwhile comments to students while protecting our time? There are a few ways to approach this problem. Many professors use shorthand comments on papers and hand back papers with a guide to that shorthand. Indeed, often we make the same comments over and over again on many papers. Rather than repeating those comments in full sentences, a shorthand comment of perhaps a word or acronym, keyed to a guide can save considerable time for professors. That's not to say either that all comments should be "cookie-cutter" in this way, but using this technique for half of one's written comments can shave hours off the grading process. For more information on such shorthand paper feedback, please see a recent Professor Pedagogy post, entitled, "[A Mountain of Grading](#)," which discusses a CFT workshop from August 21st, 2012, "Effective and Efficient Grading," led by Assistant Director Nancy Chick, and Graduate Teaching Fellow Beth Koontz.

Robo-graded homework

It can also be valuable to take advantage of automated online homework services. Some examples:

The publishing company Pearson offers MasteringBiology, an online, robo-graded homework and testing system that includes multiple choice questions that are coded to Bloom's taxonomy and normed to nationwide answers as well as ordering and sorting activities, several of which are associated with elaborate and informative animations. In addition, the system includes Socratic questions and hints to help students think through processes they are misunderstanding as well as opportunities for multiple trials at hard concepts. The company offers similar programs for a variety of disciplines, including

- MasteringA&P
- MasteringAstronomy
- MasteringChemistry
- MasteringEngineering
- MasteringGenetics
- MasteringGeography
- MasteringMicrobiology
- MasteringPhysics

A series of case studies on the utility of the system can be found [here](#).

Many science textbook publishers offer similar systems; instructors should consider these systems when choosing a textbook.

- Sapling Learning is a textbook-independent, interactive homework and assessment system that can be used in conjunction with classes in
 - General chemistry
 - Organic chemistry
 - Biochemistry
 - Analytical chemistry
 - Chemical engineering
 - Introductory physics
 - Economics

ALEKS is a textbook-independent assessment and learning system that relies upon artificial intelligence techniques to assess students' understanding of key course concepts and track them to learning activities that help move their understanding forward. Built on the principle of hierarchical concept organization in chemistry and math, the system asks students diagnostic questions to locate their areas of mastery and then tailors subsequent steps to build on existing knowledge.

This list, while far from exhaustive, is intended to suggest starting points for online tools that may improve learning in large classes.

Conclusion

Ultimately, we do not need to choose between superficial or minimal grading and a grading system that leaves us and our TAs overwhelmed. With the right strategies and techniques, we

can both give our students frequent feedback, graded and ungraded, while still maintaining some semblance of a social life. For more information on grading, please see our teaching guide entitled, "[Grading Student Work](#)."

Working with Teaching Assistants

Another common challenge for instructors teaching large classes is the management of graduate teaching assistants. These teaching assistants are often tasked with grading in large classes, but they come to that activity with vastly different conceptions of what effective grading looks like and how one can grade effectively in a reasonable amount of time. Likewise, teaching assistants come to our classes with different teaching skill sets and life experiences. Some of them are mature, effective teachers, while others are preparing to teach their first class. In our large classes, these issues are often amplified by the large number of TAs that we may require. How do we ensure that our TAs are all on the same page and doing their jobs well?

Grading

One common undergraduate complaint in large classes is with regard to inconsistency in grading. Most instructors will recognize the refrain, "My TA is an unfair grader! Can I change sections?" Indeed, it can be frustrating for undergraduates who believe that they are the victim of the "tough grader," and are receiving worse grades than their friends despite handing in comparable work. So how do we ensure consistency and mitigate undergraduate charges of unfairness?

Have regular grading meetings! The best way to promote grading consistency among our TAs is to meet as a group soon after collecting an exam or paper. If one is grading essays, identify and photocopy an exemplary essay, a few mediocre essays, and a poor essay and distribute these essays to each member of the group. Prior to the meeting, have each TA grade and comment upon these essays. At the meeting, go through each essay one-by-one. Ask each person what grade they gave to each essay and why. Ask them about the best and worst aspects of each piece of writing. Such a meeting provides a wonderful opportunity for our graders, especially our inexperienced graders, to think about how they're approaching their grading. It can serve to calibrate expectations for the exam or paper. The meeting can also serve as a forum for us to explain our expectations for the exams or papers. It is unfair to assume that our TAs will simply know what we're looking for on any given exam question or paper topic.

Use grading rubrics. A carefully designed grading rubric can both minimize the amount of time spent grading, an important consideration in large classes, and serve as a common standard for our TAs. We can even enlist TA support in constructing a grading rubric. Such an exercise can be valuable to TAs because it facilitates the grading process, but it also gives them an opportunity to play a major role in student assessment, a valuable experience for those TAs who hope to teach courses of their own at some future time. It also gives us a new and unique perspective on class exams, papers, and assignments that may ultimately enrich the course.

Divide up grading sections. We can better ensure consistency by assigning different grading sections to different TAs. This is more challenging with essays, but is a common approach for

exam-grading. What this technique entails specifically depends on the makeup of our exam, but for example, perhaps one TA grades the short-answer section, a second TA grades the first essay, and a third TA grades the second essay. While there still may be some inconsistency in the “harshness” of grading between sections, with this method, students can hardly argue that their particular grader is tougher: everyone’s exam is graded by the same graders!

Handling Grade Complaints

In most classes, large or small, grade complaints are inevitable. However, the issue can become more pronounced when a couple of upset students becomes a dozen or more. How can we best deal with grading complaints?

Have a formalized system in place. Instructors of large classes approach grade complaints in a variety of ways. Some insist that undergraduates come directly to them with their concerns. Others suggest that undergraduates speak to their TAs first before consulting the professor. Still others give full authority to their TAs to handle all grade complaints. The important thing is that we have a formalized system, preferably outlined in our syllabus. Students should know what is expected of them, and what their options are if they feel that they have been graded unfairly. Tell students upfront what the protocol will be.

Require complaints to be written out and submitted. One common technique to avoid frivolous grade complaints is requiring a written explanation of the complaint at an early stage in our protocol. Oftentimes, upon starting this piece of writing, undergraduates with a visceral reaction to a bad grade will see that the grade was deserved. By requiring this piece of writing, we’re also forcing students to confront the written comments on their exam or paper. Sometimes, students simply see the bad mark and seek out the instructor, rather than reading and mulling over grader comments.

Institute a 24-hour rule. Another way to ensure that students are carefully considering the grade and comments and aren’t simply going with a visceral reaction is to have a 24-hour rule. What that means is that students are required to take 24-hours before contacting the TA or professor with a grade complaint. This 24-hour period often serves as a “cooling off” period in which students can read and think about grader comments.

Managing TAs Who Lead Discussions, Lab Sessions, and Review Sessions

Know Your TAs. Just as with grading, TAs come to discussion-leading with different levels of expertise. Some will be at home in the classroom. Others will be terrified to speak in front of their students. It’s a good idea to get a gauge on this in the weeks preceding the semester so that we can give our TAs the appropriate level of support. Some may be independent-minded and will desire considerable control over what happens in their classrooms, and others may require strong guidance. Thus, before we get to know our undergraduates, we ought to get to know our TAs.

Hold regular meetings. Should we have TAs that require a strong support system or even if we don’t and we want to maintain some control over discussions, lab sessions, and review sessions,

regular weekly or bi-weekly meetings can be valuable. These meetings can serve many purposes. We can use this time to go over important concepts and course content with our TAs who likely don't have our expertise. We can also use this time as a "check-in" period to get a sense of how the course is going for our TAs and undergraduates alike. Professor/TA meetings can also be a forum in which we *provide TAs with handouts or discussion guides* to help facilitate their class time. Ultimately, how much control we want to exert over our discussion sections, lab sessions, or review sessions is up to us, but setting aside a time to meet with our TAs is valuable because it provides professor and TA alike with a support structure in which everyone can talk through issues relating to the class.

Some Recommended Readings

- Carbone, Elisa Lynn. *Teaching Large Classes: Tools and Strategies*. Thousand Oaks, CA: Sage Publications, c1998.
- Cooper, James L. and Pamela Robinson. "The Argument for Making Large Classes Seem Small." *New Directions for Teaching and Learning* 81 (2000): 5-16.
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