

Special Report

Strategies for Teaching Large Classes

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Strategies for Teaching Large Classes

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Strategies for Teaching Large Classes

Large classes are among the most important at any institution because many students who enroll in these classes are new to the college experience. Yet these courses often don't get the attention they deserve and are often taught by the least-experienced faculty members.

The big challenges of teaching large classes—and some of the reasons senior faculty often choose not to teach these classes—include finding ways to engage students, providing timely feedback, and managing logistics.

When faced with these challenges, many instructors are tempted to revert to lecture mode and multiple-choice tests. There are alternatives.

This special report describes some of these alternative teaching and course management techniques to get students actively involved without an inordinate amount of work on the instructor's part.

— Rob Kelly
Editor
The Teaching Professor

ACTIVE LEARNING IN LARGE CLASSES

Quick Reference

*Best Practices compiled from **The Teaching Professor** and **Online Classroom***

Case Studies

The Art of Questioning ⁽⁷⁾

Daniel J. Klionsky, University of California-Davis, teaches an introductory biology course with about 300 learners. In a class that size, learners feel a safe anonymity and there is a tendency toward reduced participation

In this type of environment, it is not only important to get the students to ask questions, how he phrases his questions to them is critical.

He used to ask, “Where does our water fall on the hardness scale?” He seldom got more than one or two very quiet responses. The problem was that he was asking an individual to come up with a specific numerical answer and to commit themselves to that answer in front of the entire class.

Now he asks for a show of hands and he rephrases his query into several questions, “Raise your hands if you think our water has a hardness of less than two. Raise your hands if you think it is between two and six,” etc. This generates a huge response.

This approach turns the large class into an advantage for the shy learner, because, if a learner raises a hand, they participate while maintaining their anonymity – they are just one of many who are raising their hands at the same time.

Why bother getting everyone to raise a hand? In Klionsky’s opinion, the very act of having to choose an answer and make a sign of the commitment to that answer draws students into the discussion.

Have you tried active learning strategies in your large class, only to find learners resisting your efforts? Have you put learners in groups to work on discussion questions, only to see most of them sitting silently while a few make feeble comments?⁽⁹⁾ Have you asked if there are questions—None.⁽⁷⁾ Have you asked for someone to explain a concept, only to face a sea of heads bent over notebooks or electronic devices?

Learners need to be active, engaged, and involved, but how many can participate when there are 150 in the class? How many learners constitute a large class? If the college is small, 50 may seem like the masses. If it’s a research university, 50 may seem small. The perception and reality of size depend on many factors. For example, if you have 40 students in a foreign language course, it’s large. Bottom line: If you believe you teach a large class, you do and you face one of the most challenging types of teaching assignments.⁽⁵⁾

How Do Instructors Successfully Incorporate Active Learning Techniques in Large Classes?

• Instructor Preparation is Crucial.

Large courses can’t be ad-libbed. Frank Heppner author of *Teaching the Large College Class: A Guidebook for Instructors with Multitudes* advises that, in a large class, saying one thing and then deciding to make a change can be a logistical nightmare. In large classes, instructor preparation matters a great deal.⁽¹⁾

Heppner says a bad policy is better than an inconsistent policy. The masses quickly become negative if an instructor starts fussing around with a course policy, especially if that policy pertains to evaluation or grading criteria. Things go much more smoothly if changes are implemented between semesters rather than mid-semester.⁽¹⁾

• Put it in writing.

Written requirements make learners accountable even if they weren’t in class when something was discussed, even though “a classmate said” that they only needed three references, even though a learner is “sure” the teacher said chapter five would not be on the exam. Besides giving the instructor a way to deal with the plethora of student learner excuses, this practice helps the instructor because it forces decisions about policies and procedures before problems emerge.⁽¹⁾

• Use detailed grading rubrics.

Rubrics speed up grading and still allow instructors to give learners a clear explanation of what their grades mean, without having to add commentary.⁽⁶⁾

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Online Classroom and *The Teaching Professor* Editor: Rob Kelly.

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Complex Content? You Betcha!⁽²⁾

Imagine 90 veterinary students singing “It’s Beginning to Look a Lot Like Rabies.”

Deb Wingert and Tom Molitor, University of Minnesota, report that in their large science classes (more than 50 students) student groups are assigned a virus family to research and then teach to the rest of the class. Frequently they use well-known songs and other memory devices.

Can students deeply learn complex content this way? Based on their experience, they say, “You betcha!”

Interactive strategies used in their large science classes:

- **Interactive Lecture** — Short lecture segments alternated with group work.
- **Cooperative Learning Groups** — Stable groups meet throughout the course to work on problems, case studies, and research projects.
- **Jigsaws** — Each learner teaches content to other group members.
- **Games** — Competitive games enthusiastically engage learners, i.e., Jeopardy and Monopoly-like games. Winners earn course points.
- **Constructive Controversies** — Groups prepare positions on polarized topics, and then debate the issue during class.
- **Group Tests** — Learners take the test individually, and then they take it again as a group. Students receive an average of their own individual and the group’s score as their grade for that test.

• **Set the tone early**

Learners need to be presented up front with the design of the course and its activities.⁽⁴⁾ Studies by Macheimer and Crawford⁽⁸⁾ and by Messineo, Gaither, Bott and Ritchey⁽⁹⁾ found that learners who take large classes are more likely to prefer and expect a teacher-centered environment where they can be passive observers and preserve their anonymity.

On the other hand, Heppner⁽¹⁾, Kliensky⁽⁷⁾, and Messineo et. al.⁽⁹⁾ found that learners will accept almost any rules for how the class is run, as long as expectations for the course; the teaching, learning, and assessment methods planned for the course; and how to be successful in the course are clear at the outset and are consistently applied.

• **Use interactive lectures**

Teaching in large classes should not be restricted to lecture only. Group activities can be interspersed with lecture material to enhance learning. Assign learners to groups during the first class meeting and make it clear that these groups will meet throughout the course to work on content analysis, problems, and case studies.⁽²⁾

Break lecture content into 10- to 12-minute modules. Then, have learner groups actively process content by talking about it, writing about it, or work on a sample test item or a short problem-based situation. Even though these interactions are brief, they help students grasp, apply, and analyze the content rather than just memorize it. These short, interactive “think tanks” also reset students’ attention span for the next 10- to 12-minute content chunk. End your interactive lectures with an assessment measure, like a one-minute paper on the muddiest point.⁽²⁾

• **Keep groups on task**

Group discussions must be guided with worksheets and study questions.⁽⁴⁾ For larger projects, assign roles like recorder, checker, gatekeeper, and divergent thinker.⁽²⁾ Always provide learners with a clear direction on what kinds of things they are hunting for and how they should be processing what they find.⁽⁴⁾

Hold groups accountable for how well they work together as well as for producing completed assignments.⁽²⁾ Tie group activities to the learner’s final grade. Create rubrics to grade the individual’s contribution, the whole project (if applicable), and peer assessment from the other group members.⁽⁶⁾

• **Online considerations**

The tasks outlined above also apply to managing large online courses.^(3 & 6)

- ✓ Prepare early and put course policies and expectations in writing.
- ✓ Use Interactive Online Lectures by interspersing reading components with active processing components.
- ✓ Support group assignments with written guidance materials.
- ✓ Tie group activities to the learner’s final grade.

Note: When there are more than 25 learners who are required to participate in an online course, the discussion boards and chat rooms can become overwhelming for students and difficult to manage for the instructor. Use the virtual groups you create to help manage interaction by assigning each group its own set of discussion boards. All learners respond to the same discussion topics but in a more meaningful and manageable fashion.⁽⁶⁾

• **Seek Feedback**

In addition to a general course evaluation, ask students for feedback on teamwork projects/exercises, particularly those that are newly implemented. Use the comments received to adjust, abandon, or confirm the use of specific teamwork projects. ^(Roby, p. 23) 🍓

A Guidebook for Instructors with Multitudes

By Maryellen Weimer

The headline of this article is the subtitle of a new book on teaching large classes, authored by a biology professor. In the preface, author Frank Heppner reports that he has been teaching large classes (and he considers 300 students a “small” class) for 38 years. He stopped counting the number of students taught once it reached 20,000. He confesses to having made “every horrendous teaching error you can make” and explains how these mistakes led to his book: “Once I passed my 50th semester of introductory biology, I began to regret that my profession doesn’t have a real apprenticeship for teaching—why should every young professor facing his or her first big class...have to make the same mistakes I did and, perhaps more important, why should they not know that everybody...has the same problems? I couldn’t think of a good reason, and that’s why I decided to write this book.” (p. x)

The book covers a host of topics related to large classes, including testing, grading, managing TAs and graders, using media effectively, and devising activities to use when the classroom is an auditorium. In the first chapter, he describes the large-class teacher as a course manager and then suggests how that should affect the teacher’s thinking about the large class. The following are samples of points illustrating how these courses should be approached from a section aptly titled “Why Your Class Could Belong to the Chamber of Commerce.” (p. 3)

Sooner or later, everything that can happen, will happen, and you need to think about it and be ready for it. The point here involves the law of averages

and, given the number of students in the class, the likelihood of something unusual happening. Heppner reports a student experiencing a grand mal seizure in class, a female student going into labor during a final exam, and a student emailing from prison to ask what he should do about the final, as he was being held without bail. Obviously, events like these don’t happen regularly but as Heppner points out, managers are the ones everyone turns to when the unusual occurs.

Large courses can’t be ad-libbed. Heppner thinks it’s a whole lot easier to “wing it” in a small class. In a large class, saying one thing and then deciding on a change can be a logistical nightmare. This advice is also based on the inability of most people to ad-lib in front of a large audience. In large classes, instructor preparation matters a great deal.

A bad policy is better than an inconsistent policy. All students, but especially beginning students, need consistency in courses. It helps them manage the anxiety that college-level learning experiences provoke. The masses quickly become negative if an instructor starts fussing around with a course policy, especially if that policy pertains to evaluation or grading criteria. Things go much more smoothly if changes are implemented between semesters rather than midsemester.

Put it in writing. This bit of advice relates to the previous suggestion. It makes students accountable even if they weren’t in class when something was discussed, even though “a classmate said” that they only needed three references, even though a student is “sure” the teacher said chapter five

would not be on the exam. Besides giving the instructor a way to deal with the plethora of student excuses, this practice helps the instructor because it forces decisions about policies and procedures before problems emerge.

Start like Attila the Hun; finish as Mr. Rogers. “Whatever your teaching personality, it will be easiest for both you and your class if you start out the semester at the most extreme form of your personality, and then if things seems to be working out okay, you can relax a bit. On the other hand, if you start out cozy and friendly...and the class gets the idea that you aren’t really serious about things like deadlines, if you get tough later on, they will feel like you have turned against them and aren’t really as nice as you seemed to be.” (p. 10)

Don’t try to teach them as you would have liked to be taught when you were their age. College professors aren’t like today’s typical college students, especially those beginning students who take the large classes. Generally, students in large courses aren’t as motivated as professors were when they were students. And generally, students in courses do not have the same learning style as their professors. It is far smarter for teachers to find out about the students they are teaching rather than make assumptions about them.

Heppner ends his book with this observation, “Teaching large classes well is the most difficult and challenging task in academia and offers the fewest tangible rewards. Knowing, however, that you have a real, positive, and inspiring effect on hundreds or thousands of young people will more than compensate for the liabilities. Do it right and you will have former students all over the world who will be grateful to you for the wisdom you gave them.” (p. 150)

Reference: Heppner, F. *Teaching the Large College Class: A Guidebook for Instructors with Multitudes*. San Francisco: Jossey-Bass, 2007. 🍀

Book Review: Large Classes Create Special Challenges

By Maryellen Weimer

***Engaging Large Classes: Strategies and Techniques for College Faculty* edited by Christine A. Stanley and M. Erin Porter**

The Book in a Nutshell: Perhaps the most challenging instructional assignment involves teaching large classes. How many students constitute a large class remains a matter of perception. If the college is small, 50 may seem like the masses. If it's a research university, 50 may seem small. Likewise, editors of this new volume believe that the perception and reality of size depend on many factors. They point out, for example, that if you have 40 students in a foreign language course, it's large. Bottom line: If you believe you teach a large class, you do, and you can benefit from reading this book.

Large classes are easily the most difficult of all classes to teach. Most faculty do whatever it takes to avoid teaching them, and they therefore frequently end up being assigned to the newest and least-experienced faculty in the department. What an introduction to college teaching! It's daunting enough to assume autonomous instructional responsibility for two, three, or four classes, to say nothing of attempting to develop a teaching style that works, but the problems compound when presenting new content before 100 students.

Large classes challenge all teachers because so much of what we know about effective instruction is just that much more difficult to do in large classes. Students need to be active, engaged, and involved, but how many can participate when there are 150 in the class? Students need lots of con-

structive feedback, but how can the teacher provide it when there are 100 essays to grade? Students learn better if their connection with the teacher is personal and individual, but how can the teacher even learn an individual student's name when there are 75 in this class and 275 total in the semester's teaching load.

And despite the growing prevalence of large classes, few resources exist devoted to supporting those assigned to teach large courses. And so the first beneficial characteristic of Stanley and Porter's book is the topic. And this is no trivial treatment of the subject. This is a 350-page collection containing 29 individually authored chapters covering virtually all aspects of large-course teaching.

The book is divided into two sections. Part one covers "key concepts," including designing, planning, and preparing for the large course, lots on classroom management issues (with the best chapter title prize going to Lynda G. Cleveland for "That's Not a Large Class; It's a Small Town: How Do I Manage?"), using active learning in large courses, and working with TA's.

Part one's final chapter summarizes both recent and vintage research on large courses. The effects of class size on learning have been studied variously over the years with findings that attest to their mixed results. But faculty who know firsthand the learning challenges these courses present to students will be comforted by the honesty in this chapter and the book: These editors and their authors do not sugarcoat what it takes to succeed in these courses.

Section two's chapters are all written

by faculty with firsthand experience teaching large classes. They represent more than 20 disciplines. However, if you only read about your own, you'll miss valuable cross-disciplinary advice. As with any anthology, some chapters are better written and more insightful than others, but all ring with the authority of first-person experiences.

This section also ends with a summary chapter prepared by the editors. It's a marvelous distillation of the whole book, and if your time is limited, start with this final chapter. It gives you the book in a nutshell and makes you want to read the rest of the book.

Who Should Read This Book? The answer to that question is simple: anyone who teaches large classes. We haven't had an if-you-could-only-take-one-book-to-the-moon resource on large classes. This book could well be it.

A Bit From The Book: From Lynda G. Cleveland's chapter about not being a class but a small town, based on her experiences teaching a 500-student undergraduate course in the management science and information systems department at the University of Texas-Austin:

"One approach to mega-classes is to approach learning as if you are teaching a small city, not a class. Get your creative thinking into that gear! I discovered my class has more residents than 400 cities in Texas! My introduction the first day of class begins with the proclamation that we are not a mega-class; rather, we are a small city. Our magical, imaginary city of Cleveland [note the author's last name], Texas has a "bank" (incentives for class participation), "insurance and credit card companies" (extra credit opportunities), and jail (penalty for bringing cell phones to class, falling asleep, etc.) to give you a few ideas." (p.19)

"By teaching 1,000 students, you develop a public image. My students

fondly dubbed me ‘The Mayor.’ You will rarely go anywhere in your community without running into current or former students. Your personal life is now on view. Be aware. You will teach far more by your actions out of the classroom than you realize. Many teachable moments occur outside of the classroom. Enjoy them. Cherish them. Remember them. You mold the future, you teach.” (p. 27)

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Actively Engaging Large Classes in the Sciences

By *Deb Wingert and Tom Molitor, University of Minnesota*

Imagine 90 veterinary virology students singing “It’s Beginning to Look a Lot Like Rabies.” In our large science classes (more than 50 students) each three- to four-member student group is assigned a virus family to research and then teach to the rest of the class. Frequently they use well-known songs and other devices. Can students deeply learn complex content this way? Based on our experience, we say, “You betcha!”

We contend that actively engaging students in the learning process is not only essential, it’s the key to deep and meaningful learning. Increasingly research supports this contention. However, teaching large classes, particularly in the sciences—introductory biology, physics, immunology, and professional curricula such as veterinary medicine, for example—offers many instructional challenges. Rather than responding to these challenges, most math and science faculty opt for the teacher-centered lecture format. One survey suggests that 89 percent of math and science college teachers continue to use lectures, even though research indicates that when students are engaged, more and better learning results. We think the difficulties of involving students in large classes can be overcome. We’d like to use the rest of this article to share just a few of the interactive strategies we’ve used in our large science classes.

Interactive Lecture—Our interactive lectures begin with an attention-getting introduction—maybe music, a cartoon, or even a provocative question—followed by 10- to 12-minute lectures. Then, in groups of two or three, stu-

dents actively process content by talking about it, writing about it, and working on a sample test item or even a short problem-based situation. Even though these interactions are brief, they help students grasp, apply, and analyze the content rather than just memorize it. These short, interactive “think tanks” also reset students’ attention span for the next 10- to 12-minute content chunk. We end our interactive lectures with an assessment measure, like a one-minute paper on the muddiest point.

Cooperative Learning Groups—We believe that teaching in large science classes should not be restricted to lecture only. Group activities can be used to enhance learning. We assign students to three- to five-member groups. These groups meet throughout the course to work on problems and case studies. In immunology (a class with 100-plus undergraduate and graduate students) we set up these groups during the first week of class. The problems and research projects the groups are assigned are sometimes presented orally, other times in writing. We keep the groups on task by assigning roles like recorder, checker (checks group member consensus and understanding), gatekeeper (ensures that all members participate), and divergent thinker (responsible for presenting the group with new ideas). Groups are accountable for how well they work together as well as for producing completed assignments.

Jigsaws—In these cooperative learning groups, students read and share research articles or other reading

assignments. Each student is responsible for teaching essential content to other group members, with understanding and mastery checked by the instructor.

Games—Competitive games enthusiastically engage students in large science classes. Within a “Jeopardy!”-like format, student groups can be randomly selected. They pick a category and answer each item with a question. Our teaching assistants ration Monopoly-like money to group winners, with the top-producing group earning points applicable to the final grade. A host of popular game templates can be found online at <http://www1.umn.edu/ohr/teachlearn/tutorials/powerpoint/games/index.html>.

Constructive Controversies—The large class can be divided into small groups and given polarized topics to debate, with one group for and another against. They prepare their defenses and then two randomly selected groups debate the issue during the class period. The remaining students contribute by asking questions.

Group Tests—In immunology class, students take exams two ways: individually and as a group. Students first take the exam by themselves. After submitting their individual tests, they meet in small groups to take the same test as a group. An average of the individual and group scores represents each student’s score for that test. Students report enhanced satisfaction with the test process, and they tell us they learn more. We have not established that empirically.

Active engagement in the learning process helps prepare students to function proactively and effectively in our global community and to address a host of challenges facing us in today’s world. Our advice? Start small; maybe try a think-pair-share strategy. But do start working to engage and involve students in large science courses. 🍀

Strategies for Large Classes

By *Maryellen Weimer*

Increasing class size continues to be a reality on many campuses. The two articles highlighted here both provide specific and detailed accounts of how instructors are managing to maintain robust active learner components in large courses.

Here are the specifications on each of these courses: Environmental Geography 201 at Ohio University functions as a “gateway course” into the popular environmental geography major track. It enrolls between 120 and 200 students.

Geology 206, Oceans and Nations, is a mid-level undergraduate oceanography course that focuses on human interaction with the marine environment and international relations involving oceanic issues. Taught at Ball State University, it satisfies a global/international studies distribution requirement. Between 100 and 120 students enroll in this course. Both courses have TAs assigned to them.

Recently redesigned (with support from an internal grant fund), Environmental Geography now includes three large lecture sessions per week and one weekly discussion section. Students are divided into five-member groups that meet throughout the quarter. In those groups, students exchange information, collaborate on short assignments, and evaluate each other’s work. Team photos are taken to facilitate name recognition and to develop group cohesion.

Groups are also used in the Oceans and Nations course, but they are convened during the course’s regular lecture sessions. Again these discussion groups are permanent. Students choose group members (four to six) in

the fifth class session, and a seating chart is used to ensure that group members are seated near each other.

In Environmental Geography, various themes are explored. Students complete a journal assignment (it may be completed individually or as a group, depending on the discussion instructor) in which they keep track of everything they discard during a seven-day period. The assignment description distributed to students is included in the article. To ensure that discussion sections remain connected to the course, a fishbowl strategy is used in which representatives from the various discussion groups gather around a table at the front of the large lecture hall and discuss the results of their most recent assignment.

In Oceans and Nations students discuss readings and video presentations in their groups. They begin with a reading that sets out detailed guidelines for having successful discussions. To ensure that students come to their groups having done the reading and prepared to discuss, they are given worksheets that must be completed prior to the discussion. The TA checks for completed sheets as students arrive in class. After a 30-minute discussion of the reading or video presentation, four to eight groups are randomly called on, and a spokesperson from those groups reports to the rest of the class on the discussion. Groups must have a new spokesperson for each report. The group reports are then graded.

In both courses, discussion-group activities count toward the students’

final grades. In Environmental Geography, students earn a discussion section grade and in Oceans and Nations, discussion-related activities count for 25 percent of each student's grade.

Both articles offer advice to other instructors interested in incorporating activities like these in their courses. The Environmental Geography course describes the evolution of the course design, including some iterations that were not as successful as the current structure. Both include more descriptions of activities completed by and in the discussion groups than we have time to highlight here.

Among the advice offered for others interested in using discussion activities are these suggestions: Those associated with the Environmental Geography course report that adding the discussion section "proved challenging to the faculty members and teaching assistants assigned to the course." (p. 236). They say that to ensure a smooth transition, those associated with the course must be prepared to jump bureaucratic hurdles and that financial support is needed to ensure continued TA support to guarantee that students have the opportunity to participate in a field-trip experience and to replace equipment as needed.

The Nations and Oceans team offers a long list of keys to success, which includes specific advice for using group discussions structured like theirs. Here is some of what they recommend: First, students need to learn up front about the design of the course and its activities. The course needs to be scheduled in a room without fixed seating so that discussion groups can circle together. Group discussions must be guided with worksheets and study questions. "Never in this class are students presented with a reading or video presentation, without having some clear direction on what kinds of things they are hunting for and evaluating within it." (p. 264). And they conclude with this recommendation:

"Fully honor the students' discussions work in testing. Test questions should address both the content material and students' developing understanding of the issues."

References: Buckley, G. L., Bain, N. R., Luginbuhl, A. M., and Dyer, M. L. (2004). Adding an 'active learning'

component to a large lecture course. *Journal of Geography*, 103, 231-237.

Rice-Snow, S., and Fluegeman, R. H. (2004). Maintaining a small-group discussion focus while bringing international issues into the large classroom. *Journal of Geosciences Education*, 52 (3), 260-265. 🍀

Tips for using Questioning in Large Classes

By Daniel J. Klionsky, University of California-Davis

I am frequently asked how I get students to loosen up, to feel comfortable asking questions, and to take an active role in the learning process, especially when teaching large classes. I teach an introductory biology course with an enrollment of about 300. The students feel a safe anonymity amid their classmates, and there is a tendency toward reduced participation. Through trial and error, I have learned some helpful techniques for engaging the class. Amazingly, much of what I do all happens on the first day of class.

Setting the tone seems to be critical. In a general sense, I find that students will accept almost any rules for how I run a class, as long as I make them clear at the outset and am consistent in their application. This includes how I want the class to interact with me as an instructor. I have become a strong proponent of cooperative learning. I want the students to be an active part of the class, to be thinking while they are sitting there and not simply writing down every word I say.

On the very first day I make it clear that I want them to ask questions and interact with me during lecture. I do this in five ways. First, I tell the students that I welcome questions.

I explain that if they have a question, in a class of this size, it is likely that a dozen other students have the same question. I proceed to relate an anecdote from when I took Japanese in college. The instructor said, "To ask a question is a shame of a lifetime. To not ask a question is a shame of generations." The instructor explained that while it might be embarrassing to ask a question, by not asking a question, you pass along your ignorance to your children and so on down the line.

Second, I make the entire class literally raise their hands. I ask them to humor me for a few seconds and to just raise their hands — first the right half of the room, then the left half, then the middle. They will actually do this if asked. I point out that they are clearly capable of raising their hands and that I want them to do so if they have any questions. Perhaps they are willing to raise their hands on the first day because they are doing it as a group and not individually.

When I was a teaching assistant, the instructor told the class to hiss if they did not understand. It worked. The students found it easy to hiss because

they did not have to specifically identify themselves. It is also hard to ignore a group of students who are hissing at you. I opt for a slightly different approach and ask students to yell “stop.” I tell students that with this many people, I might miss a raised hand, but I will hear a shouted “stop.” Amusingly, I have on numerous occasions heard a student yell “stop” only to look up and see him or her pointing at someone else whose raised hand I had missed.

Third, I get the students to interact that very first day. I give an example of science that comes from their everyday lives and then ask for feedback. I very briefly discuss water hardness — an appropriate topic for the area where we live — and ask them to guess where our water falls on the hardness scale. There is no obvious right or wrong answer, so there is no harm in guessing.

Fourth, I coax the questions. If I think there is some confusion but I am not sure exactly why, I might ask a series of questions: “Are there any questions?” None. “So you all understand the properties of carbohydrates?” Still nothing. “That means if I were to ask you on the midterm whether a carbohydrate would be more soluble in oil or water, you would know how to answer?” This usually elicits a response — several, in fact. Why go to this length to get a question? In my experience, the questions usually exist. Hearing them gives me a better sense of what the students might have misunderstood, or more likely, what I might have explained poorly.

I want to add a fifth point. To me, it is not only important to get the students to ask questions, but it is also critical how I phrase my own questions. I used to ask, “Where does our water fall on the hardness scale?” I would seldom get more than one or two very quiet responses. The problem was that I was asking an individual to come up with a specific numerical answer and to commit themselves to that answer in front of the entire class.

Now I ask for a show of hands and I rephrase my query into several questions, “Raise your hands if you think our water has a hardness of less than two. Raise your hands if you think it is between two and six,” etc. This generates a huge response. This approach turns the large class into an advantage, because, if you raise your hand, you

are just one of many who are raising their hands at the same time. In a small class, you cannot count on any other hands going up. Why bother getting everyone to raise a hand? In my opinion, the very act of having to decide and make a sign of the commitment draws students into the discussion. 🍀

Large Classes: Approaches Taken in One Discipline

By *Maryellen Weimer*

In this article we summarize a research project with some exploratory descriptive work that seeks to establish the state of practice with respect to large class in the field of criminal justice. We summarize some of the findings of interest below because we don’t think that the way in which large courses are taught in criminal justice is all that different from how they are taught in lots of closely, and even in some not so closely, related fields. But even more important, we highlight the work because the article models an approach that could be profitably replicated across all academic disciplines. How do faculty approach large classes in your discipline? How useful is it for large-course instructors to have these benchmarks? How useful is it for disciplines to have descriptions of current practices that might profitably be used to develop standards—not for the purpose of making all practice the same, but for the purpose of establishing the basic tenets of good and best practice within a discipline.

This research team started by surveying the literature for techniques advocated for use in large classes. Then they surveyed large-course instructors to ascertain the extent to

which these preferred approaches were being used. About 30 percent of the faculty in this sample employed traditional lecture formats exclusively. Another 50 percent enhanced lectures with multimedia presentations of material. The rest used different approaches such as Socratic dialogue. Only 25 percent of the sample reported using active learning techniques, although more than 40 percent reported using learning groups.

Even though literature on teaching large classes recommends “personalization,” that is, faculty getting to know their students, nearly 66 percent of this sample reported that they did nothing to get to know the students. Interestingly, class size was not a relevant variable here. Sixty-two percent of the faculty with class sizes below 80 reported that they did nothing; 58 percent of instructors with classes larger than 150 students reported that they did nothing.

Over 90 percent of these faculty reported that they did encourage participation, although 40 percent reported that the amount of participation in their large classes was lower

than it was in their smaller classes. In this faculty group, 89 percent reported that they had no discipline problems. One respondent shared a rather novel approach to managing disruptions. If a student is marginally disruptive, the instructor pulls out a yellow piece of paper and hands it to the student as a warning. If the disruption persists or becomes major, the student is handed a red piece of paper, which functions just like an ejection in soccer. If you get it, you're out of class.

Basically these researchers found that faculty who teach large classes in criminal justice did not use the techniques and practices recommended for large-class instruction. This is not surprising, given the response to the final survey question that asked if the respondent could "recommend any literature that had helped them instruct their large classes. The overwhelming majority (90%) of professors knew of no such literature." (p.118) Norms expecting that practice be informed by anything other than experience continue to be absent in higher education.

Reference: Morabito, M. S., and Bennett, R.R. (2006). Socrates in the modern classroom: How are large classes in criminal justice being taught? *Journal of Criminal Justice Education*, 17 (1), 103-120. 🍀

Virtual Teams with Fluid Membership

By Maryellen Weimer

Here's an interesting model for group work: form the groups in a large class; give members the option of working face-to-face, by phone or online; and change the membership across the life of the group. Brian Dineen opted for this model in his upper-division organizational behavior course because he felt it closely replicated conditions now common in professional contexts. Employees work with others in a virtual environment, and frequently, as tasks evolve, membership in working groups changes.

In the article (reference below), Dineen provides complete logistical details for the assignment, including the following important elements that were used: groups were made up of three to five members; for each of eight weeks they analyzed short cases relevant to course material and answered two questions related to the case; and group work, which counted for one-fourth of their grade, included a peer evaluation component. Even though students had the option of meeting face-to-face or by phone, 70 percent reported that they completed the entire exercise without ever meeting face-to-face. Instead, they used private bulletin boards that the instructor set up for them within WebCT.

For comparative purposes, Dineen kept membership in half of the 26 groups stable. Those students worked together from start to finish on the project. In the other groups, Dineen changed group membership weekly; in the second week, groups gained and lost one member, and in the third and fourth weeks they gained and lost two members. Students did not know how long they would be in the group. They

simply received an e-mail announcing that they had been reassigned to another group. They could no longer access their previous group's bulletin board and were given access to a new one.

Dineen looked at the impact of this group work design across a number of different variables. He collected data from students before the experience, on weekly surveys and on the anonymous end-of-course evaluation. From the data gathered, Dineen discovered that most of those who responded to the surveys did not have previous group experience in a virtual environment. The inexperienced group reported significantly higher degrees of learning outcomes and confidence than those who had worked in virtual groups before.

Among a number of interesting findings, Dineen learned that social loafing, where team members rely on other group members to do the work for them, was less of an issue on the teams with fluid membership. He explains this finding by citing other research documenting that when groups contain strangers, team members tend to be on their best behavior because they are somewhat inhibited by people they don't know. Quantitative data indicated that social loafing was isolated to less than 5 percent of possible cases. However, levels of cohesion reported by group members were higher in those groups with stable membership. Interestingly, students in groups with fluid membership did not report lower levels of internal communication or decreases in their perceived

abilities to influence group decision making.

Also of note were some findings related to extraverted and introverted team members. Results “show that introverts actually felt more influence than extroverts during this exercise and perceived a greater cohesiveness and better internal communication.” This finding held true regardless of whether group membership was stable or fluid. (p. 613) Dineen suspects that the virtual environment somehow “levels the playing field,” making it easier for introverts to contribute during group interactions. “This is important because it suggests that conducting online team exercises might bring more equivalent contributions from all team members.” (p. 613)

This article is exemplary not only for the creative design of the group work, but also for the comprehensive way in which the impact of the approach was analyzed and assessed. This is an impressive piece of practitioner pedagogical scholarship.

Reference: Dineen, B. R. (2005). TeamXchange: A team project experience involving virtual teams and fluid team membership. *Journal of Management Education*, 29(4), 593–616. 🍀

Tips From the Pros: Managing a Large Online Class

By Rob Kelly

The following tips from Susan Ko, director of the Center for Teaching and Learning at the University of Maryland University College, can help you maintain course quality and interaction in high-enrollment online courses:

- **Use study groups for some discussions.** Have students in groups of up to 10 members conduct threaded discussions. Let them know that you will be observing these discussions, and have them post a summary of their discussions to a classwide discussion area.
- **Use group assignments.** Turn an individual assignment into a group assignment, and grade both the individual contribution and the whole project.
- **Use peer review.** Create a rubric for students to assess one another’s work.
- **Use a detailed grading rubric to provide feedback.** This will allow you to give students a clear explanation of what their grades mean, without having to add commentary.
- **Don’t feel obligated to respond to every student.** You may be able to combine responses to more than one question or encourage students to respond to their classmates’ questions.
- **Divide topics into manageable units.** Keep the number of main topic threads to a minimum in a single discussion to avoid confusion. You can create a new topic or even a new discussion if needed. But be sure to explain how these discussions are organized, so students can follow them easily.
- **Explain the protocol for responding to a post.** Make sure that students know to accurately title each posting to correctly reflect the subject they wish to discuss. Also, have students quote the section of a previous posting to which they are responding.
- **Reconsider posting requirements.** In a small class, you may require students to respond to an initial prompt and then to the posts of two classmates. In a larger class, this amount of posts may not be appropriate.

Reference: Ko, Susan. “Tips for Managing Larger Online Classes.” *DE Oracle @ UMUC*. November/December 2007. Accessed March 19, 2008, at <http://deoracle.org/online-pedagogy/classroom-management/tips-for-managing-larger-online-classes.html>. 🍀

Virtual Sections: A Creative Strategy for Managing Large Online Classes

By Lisa Panagopoulos, MS CE

When there are more than 25 students who regularly participate in an online course, the discussion boards and chat rooms can become overwhelming for students and difficult to manage for the instructor. Weekly chat rooms become crowded, which makes it difficult for everyone in the chat room to keep up. Weekly discussion boards become populated with so many postings that students and faculty feel inundated with the amount of information to read through and/or reply to. While the discussion and chat tools are critical to successful online courses, creative strategies need to be identified to help manage large online classes.

In a recent semester I found myself with 40 students in my Introduction to Information Systems Course. As a way to avoid having my students possibly feel overwhelmed and inundated in my course, I came up with a simple solution to managing the challenge of such a large course—I created virtual sections. The “virtual section” is a way to achieve all the benefits of a smaller class within a large class.

To create my virtual sections I used a feature available in most course management tools that allows the instructor to split the class into multiple groups. Rather than splitting the class with the intent of having the students work in “teams,” which is often the rationale for grouping students, I split the class with the intent of grouping students into multiple sections for the purposes of chat and discussion only.

Here’s how I set up my virtual sec-

tion. With my class size of 40, I split the class into two separate groups. Students with last names ending in A–K were placed into Group 1, and those with last names ending in L–Z were placed in Group 2. For each week of the course, I set up a separate set of discussion boards for Group 1 and another set for Group 2. The groups also had their own set of weekly chat rooms as well. Approximately 20 students were placed into each group, which is what created the two “virtual sections” within my single course.

When splitting online classes into groups for the purpose of more manageable interaction, only the chat and discussion components are affected. This is good news for the instructor. E-mail, lecture notes, assignments, assessments, and all other course components are visible to the entire class. No additional modifications were made in order to keep track of the “groups” for any other component of my online course.

Incorporating virtual sections into my online course came with some minor added responsibilities that needed to be addressed. Once the course had started, it was important that I was aware of any students who were added late to the course. These students needed to be quickly placed into one of the groups, so that they would have access to a discussion board and chat room. Also, by splitting my class into two groups, I was responsible for conducting two chats per week, rather than just one.

With that said, I feel that the com-

mitment I have invested into creating the virtual sections has been well worth it. I have noticed that when students were a part of a smaller class, the overall quality of the interaction within the course improved immensely. The result has been more meaningful interaction that is more manageable for all involved.

Lisa Panagopoulos is an instructor at the University of Massachusetts Lowell in the IT department. She teaches computer-related courses both online and on campus. She also teaches the “Introduction to Online Teaching Strategies” course to instructors as part of the UMass Lowell Online Teaching Institute. 🍀

Large Courses and Student Expectations

By Maryellen Weimer

Have you tried implementing some active learning strategies in a large course only to find students resisting those efforts? You put students in groups and give them some challenging discussion questions, only to see most of them sitting silently while a few make feeble comments to which no one in the group responds. Faculty authors of the study referenced below had students in their large classes tell them that discussion was a waste of time. “I’m not going to be tested on what other people in class think!” (p. 125) This kind of resistance can quickly dampen faculty commitments to active learning strategies. These faculty honestly reported that they wondered if it might just be easier to return to straight lectures.

However, before making that retreat, they decided to try to understand why students were responding so negatively. They designed a 136-item survey that inquired about all kinds of attitudes and experiences in large classes. They administered the survey to students in 14 sections of courses offered by five departments: music, history, math, psychology, and sociology. The survey asked about large courses generally rather than about the courses in which it was administered.

A number of interesting results emerged from the data. For example, the researchers compared the answers given by students in their first semester of college with those of students who had already taken large courses at that institution. They found that those students who had already experienced large courses “were more likely to prefer and expect passive-learning approaches in large courses.” (p. 130)

More troubling, those experienced students were less committed to their large courses. Researchers support this conclusion by pointing to data indicating that these students more strongly preferred lectures, were more likely to skip large classes, wanted to be told what to do in large classes, didn’t want to work in groups, were less willing to do ungraded work, and had less interest in large classes that offered a mix of classroom activities.

Both new and experienced students expected that lower skill levels would be important to success in large courses. For example, more than 90 percent in both groups expected that they would be given multiple choice exams in large courses. Very few expected that they would have to write essay exams.

If large classes challenge students less and if students resist being involved in them, then the authors worry about those beginning students who take mostly large courses. Given all the research that establishes a connection between involvement and retention, they question the viability of making all introductory courses large courses, wondering if class size might not contribute to students’ decisions to drop out.

Their findings helped to explain the student responses they were seeing in large courses. The findings also rejuvenated their commitment to use strategies that involved students in these courses. However, the findings raise the question of how students’ expectations as a result of previous experiences in large classes can be changed. They decided that change happens one classroom at a time. If

students start experiencing active learning activities in large courses, they will at some point come to expect them. In addition to a number of other helpful strategies the researchers are now using successfully in their large classes, they conclude with an important reminder: “Not all students are prepared for active learning experiences. ... Therefore, we are very open at the beginning and throughout the semester in discussing our expectations for the course, the teaching, learning, and assessment methods planned for the course, and how to be successful in the course.” (p. 132)

Reference: Messineo, M., Gaither, G., Bott, J., and Ritchey, K. (2007). Inexperienced versus experienced students’ expectations for active learning in large classes. *College Teaching*, 55 (3), 125-133. 🍀

What do Students Think about Active Learning?

By Maryellen Weimer

Do students understand why faculty members work so hard to get them engaged with course material? Is it clear to students that involvement and learning (deep, lasting learning, that is) go hand in hand?

One good place to look for answers to these questions might be a required, general education course. And that is precisely the venue Patricia Machemer and Pat Crawford chose in order to study student perceptions of active learning. They replicated their study four times in classes that ranged in size from 125 to 180. Eight different activities were used in this integrated studies course in social and behavioral sciences; five cooperative learning activities (involving group work), two independent active learning activities (students used a Web-based program to prepare for exams, for example) and the traditional lecture (the usual 50 minutes, delivered from behind a podium, enhanced with PowerPoint slides). Students rated these various activities on a five-point scale.

Overall, across the four different classes from which data were collected, students rated traditional lectures significantly higher than cooperative learning activities, and they rated the active learning activities higher than the cooperative learning work. Researchers were surprised by these results. They explain how the course objectives and format were ideally suited for the use of cooperative and active-learning approaches. Despite that, students valued the traditional lectures and active learning activities virtually equally and did not value the cooperative learning activities as highly. When students had to

work with others, that diminished the value of the activity in their eyes.

Machemer and Crawford attribute these results to the anonymity that is characteristic of large courses. "Asking students in a large class to learn collaboratively forces them to lose their anonymity. Students may select a large class because they seek a teacher-centered environment, where they can be passive observers and preserve their anonymity." (p. 24) Moreover, students are reluctant to share responsibility for learning with a group. Researchers wonder if the desire not to be involved with others is part of the general perception that general education courses are something students have to get out of the way, that they are a "diversion from their actual plan of study." (p. 27) They are not the courses students take most seriously, not the ones in which they want to expend extra effort.

Supporting these suppositions about attitudes toward general education courses was the finding that students valued any activity (active, cooperative, or traditional) that improved their exam performance. The most highly valued activity of the eight was the exam preparation program, followed by a cooperative learning exam review session.

Do these findings mean that teachers should abandon the use of group work? The researchers point out that this study measured students' perceptions of the value of the activities. That may be quite different from the actual value of the activity as it relates learning outcomes. Students may not always want what is best for their learning. As has been pointed out many times in this publication, sometimes students

resist various forms of active learning because they require students to work harder. We think that is the very reason faculty ought to be using them.

Reference: Machemer, P. L., and Crawford, P. (2007). Student perceptions of active learning in a large cross-disciplinary classroom. *Active Learning in Higher Education*, 8 (1), 9-30. 🍀

Objections To Active Learning

By Maryellen Weimer

If you think everybody's pretty much on board with the idea of active learning, think again. An article in *Academe* describes active learning as "a philosophy and movement that portends trouble for the future of higher education and the American professoriate." (p. 23)

The author acknowledges that active learning is a movement and describes how faculty will experience it—through workshops that address how to incorporate writing and discussion in large classes. "You'll also be exposed to vast numbers of books and articles promoting active learning, including an international journal with the straightforward title of *Active Learning in Higher Education*. The movement has thus acquired academic and professional legitimacy." (p. 24)

Recognizing the origins of active learning in theories of education like that proposed by Dewey, the author notes, "There are some good ideas among the reams of articles and books about active learning." (p. 26). But he contends active learning is a smoke screen designed to cover deeper problems in higher education—like class size, where if active learning principles are used, they can make the large class seem smaller and therefore make large classes more likely.

The logic is convoluted, and the case supporting a connection between increasing class sizes and the interest in active learning rests more on correlation than causation. It is not substantiated with evidence. Even more distressing is the author's ignorance of the research that justifies approaches that engage students in learning. The author makes one reference (two

studies) and then objects to educational jargon. Would you presume to read a research journal in physics, sociology—name a discipline—and then decry the author's use of language?

Educational research, like that in countless other fields, is not written to be read by outsiders, and yes, that does relate to why so much research has so little impact on practice, but that's a different problem. The point here is that the research on active learning is immense, and its implications for practice have been ably translated (see Prince, M. (2004, July). Does active learning work? A review of the research. *Journal of Engineering Education*, 223–231).

We need to be reminded that much of what we believe and take for granted is still up for grabs in other sectors of the academy. Reading an article like this behooves and prepares us. You never know when you might be called upon to answer objections like these.

Reference: Mattson, K. (2005, January–February). Why "active learning" can be perilous to the profession. *Academe*, 23–26. 🍀

Quick Reference Sources:

1. *A Guidebook for Instructors with Multitudes* (pg.8)
2. *Actively Engaging Large Classes in the Sciences* (pg.10)
3. *Virtual Sections: A Creative Strategy for Managing Large Online Classes* (pg. 16)
4. *Strategies for Large Classes* (pg. 11)
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