

## **Teaching Guide for GSIs**

### **Teaching Discussion Sections**

Discussion sections provide opportunities for collaboration and active learning that do not always take place in a traditional lecture context. The role of section goes beyond clearing up any confusion remaining after the course material has been presented in lecture. Section also provides students with the opportunity to discuss, ask questions, and apply course content, resulting in deeper learning.

GSIs often express concerns about the challenge of balancing "discussion" against "covering the material." In finding the right balance, remember that applying the concepts to the facts and working through questions and problems together may be a more effective use of time than repeating the lecture or imparting new information. Take some time to think about classroom discussions in which you have participated. What made the discussions successful or unsuccessful?

This section contains a wide range of tips and resources for maximizing student learning in your discussion section. However, several pages in this portion of the Teaching Guide for GSIs provide useful information and strategies for managing discussions in any kind of class. You may also find relevant advice in other Teaching Guide chapters, such as **Pre-Semester Preparation, Grading, Student Writing, Five Ways to Improve Your Teaching, Academic Misconduct**, and the **Teaching Effectiveness Award Essays** written by GSIs.

#### **In This Section**

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## **Teaching Guide for GSIs**

### **Creating Discussion Guidelines**

Guidelines for discussion in sections can help promote and organize productive conversations among students by building a sense of community and setting clear expectations and boundaries. Working with your students to establish guidelines cooperatively encourages them to consider each guideline's purpose and gives them a greater investment in abiding by the guidelines, thus accepting part of the responsibility for the section's quality.

When establishing section guidelines, clearly distinguish between the course policies and the section guidelines. The purpose of course policies is to define course requirements, procedures, and penalties for absences or late work. While policies pertain to the class as a whole and are generally set by the instructor of record, discussion guidelines are focused on facilitating group discussion in section and GSIs. Try to clearly differentiate for students between the course policies and discussion guidelines when introducing section expectations to prevent confusion.

Discussion guidelines are established to facilitate discussion. They ensure that the class environment is respectful and that everyone has an opportunity to participate. More specifically, discussion guidelines have these functions:

- Encourage students to work collaboratively in developing a respectful environment.
- Give students a stake in abiding by the agreed-upon guidelines.
- Establish a process of group participation rather than instructor-led lecture.
- Create an atmosphere in which all students feel free to participate.
- Remind students of the need for respect, openness, and sensitivity.
- Establish the tone for section by encouraging group interaction and feedback.
- Establish the discussion section as a responsibility of both the student and the GSI.

Before you create discussion guidelines, explain their purpose and the reason you have chosen to create them as a group rather than simply stipulating them yourself. We describe below three different methods for creating discussion guidelines.

#### **Small Group Method**

#### **Brookfield and Preskill's Method**

#### **Acronym Method**

### **Small Group Method**

- Break students into groups of three or four. Give each group an index card and ask them to list two guidelines they think are important for a good discussion section. Allow them five to ten minutes to complete the activity.
- Go around the room and ask each group for their guidelines. Write the guidelines on the board. Ask the groups to explain their reasons for suggesting a particular guideline and to specify what they mean if the guideline they suggest is vague. There may be some overlap.
- After all of the groups have given their guidelines, ask the entire class if there are any other ones that they would like to add to the board. This is a good time to add or share any guidelines that you may have that weren't suggested by the groups.
- Open the list up for discussion. Let the students debate the value of specific guidelines or the expectations underlying them.
- At the end of the discussion, ask the students to vote on the list. This allows them to decide as a class which guidelines they would like to have for the semester.
- Record the guidelines. Copy the list and bring it to section the following week. This way all students have copies that they can refer to over the semester.
- Periodically, have the class take a moment to evaluate whether the discussion guidelines established at the beginning of the semester are being followed and if they work.

Developed by Heather McCarty, Sociology

## Brookfield and Preskill's Method

- Ask the students to think about the best group discussions they have been involved in. What happened that made these discussions so satisfying?
- Next ask the students to think about the worst group discussion in which they have been involved. What happened that made these discussions so unsatisfactory?
- For each of the characteristics, have the students suggest three things that the group could do to make discussions more productive.
- Use the students' suggestions to draft a set of ground rules on which you all agree.
- Record the guidelines. Copy the list and bring it to section the following week. This way all students have copies that they can refer to over the semester.
- Periodically, have the class take a moment to evaluate whether the guidelines established at the beginning of the semester are being followed and whether they work.

Adapted from Brookfield, S. and Preskill, S. (1999). *Discussion as a Way of Teaching: Tools and Techniques for Democratic Classrooms*. San Francisco: Jossey-Bass.

## Acronym Method

- Write the words "Discussion Guidelines" on the top of the board. Write the word "ROPES" along the left hand side of the board (or use a similar word).
- Explain that, like a safety net, the ROPES will serve as communally agreed-upon guidelines to which everyone will adhere during the discussion section.
- Elicit from the students words (related to discussion guidelines) that begin with those letters. Ask the students to explain why they have recommended a word and what it means to them. For example, R: respect, responsibility; O: openness, etc.
- Add your own suggestions.
- Ask for a general consensus about which guidelines are chosen.
- Record the guidelines. Copy the list and bring it to section the following week. This way all students have copies that they can refer to over the semester.
- Periodically, have the class take a moment to evaluate whether the discussion guidelines established at the beginning of the semester are being followed and whether they work.

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## **Teaching Guide for GSIs**

### **Active Learning Techniques**

**Research shows** that when students engage with each other in learning tasks, they remember material better and they figure out how to apply and extend their new knowledge more effectively. In addition, this approach promotes learning among students from diverse backgrounds and who have diverse learning styles. Active learning strategies are also simply more interesting, for the instructor and for the students. Some kinds can be done with relatively little preparation; others require more careful logistical preparation.

To use active learning techniques effectively, think through the learning objectives you want the students to reach, and pick a goal-appropriate activity. Be sure to plan the logistics of the activity in advance. You'll also need to estimate how much out-of-class preparation and in-class time the activity will take for the students. (GSIs often underestimate how much class time the activity requires.) Lastly, how will you wrap up the activity once the students have done their part?

Below is a selection of active learning techniques you can use in your section.

- Peer Instruction**
- Class Debate**
- Role-Playing**
- Case Studies**
- Creative Scenarios and Simulations**

### **Peer Instruction**

First developed in physics classes, peer instruction can be adapted for a number of other disciplines.

#### **Objectives**

- To move the site of teaching and learning from the instructor to the students.
- To have students connect or apply concepts by explaining to another student or trying to convince another student.
- To enable students to evaluate their understanding of the instructor's explanation.
- To move students to a higher learning level, beyond their concern over what to memorize.

#### **Description**

The instructor introduces a question that requires students to reason out a problem using immediate course content, and provides a few alternative answers, 1, 2, and 3. (This is a low-tech version. Many faculty members use an electronic classroom response system such as i>clickers or a phone app for this.) Students raise their hands to indicate which alternative they think best answers the question. Students are then asked to work in pairs, each student trying to convince the other of his or her explanation of the answer. After one minute, the instructor brings the class back together and polls the class again. Usually there is some shift toward the correct response, showing that the students who got it have effectively taught those who did not in the first poll. You can wrap this activity up by having someone explain the correct answer. Everyone will be curious and want to compare notes with those who have reasoned it out correctly. Of course, if there are still gaps in the students' explanations, you should fill those in.

#### **Example**

Alex Filippenko, professor of astronomy, asks, "Why does the Sun shine?"

1. Nuclear reactions in the center release energy.
2. Chemical reactions: the Sun is "burning."
3. Slow gravitational contraction releases energy.

Students raise their hands when prompted to indicate they believe the answer is 1, 2, or 3. Professor Filippenko knows by the

show of hands approximately how many students don't know the answer and could use more instruction. The next step is not to tell them the answer, but to have each student turn to a partner to explain why he or she chooses 1, 2, or 3. After one minute of mutual explanation and persuasion, Professor Filippenko repeats the question for another show of hands. In general, those who have answered the question correctly have been able to convince their partners of why their answer is correct. However, some misunderstanding may remain. Professor Filippenko then gives the correct answer with an explanation, or he has a couple of students give the explanation.

## Class Debate

### Objectives

- To encourage students to organize their thoughts in a critical or argumentative way that takes into account the complexity of issues and the existence of alternative and opposing views.
- To increase students' public speaking and presentation skills, including the ability to think quickly on one's feet.
- To develop students' research skills and give them a chance to gain expertise in a particular subject.

### Description

This technique can be used with either large or small groups. In either case, it is often best to begin with a brief class discussion of the issues involved in the debate topic. This provides a context for the debate, a sense of the sub-issues involved, and a gauge of class feelings on the issues. At this time the instructor should also make clear the rules of the debate, including time allotted to each side and rules for speaking. (Several websites offer formats and rules for various kinds of debates.) If a small group format is used, divide the class into groups and give them time to choose their topic and resolution. (Debates are often won or lost in the wording of the resolution, so it is important that the students have some leeway in deciding upon this wording.) After the sides and resolution are decided, the students will need time to prepare their arguments and strategies. If the class is to perform the debate as a large group, the instructor usually serves as moderator. In this case, the two sides should also be given some time to develop their positions and their strategies of argument before the debate begins. In either a small- or large-group format, students may be instructed to argue for their own beliefs or against them, depending on the instructor's objectives. Likewise, the instructor may choose to have students argue first an affirmative position and then a negative one. Some instructors prefer to summarize the debate at the end; this can clarify the information presented and direct students to focus on the key points derived from the exercise. Other instructors refrain from summarizing students' contributions, thereby preserving the variety of opinions and perspectives that were expressed over the course of the debate.

### Examples

In an American Political History course, the class was discussing the relative merits of the Articles of Confederation and the Constitution. As the discussion began to polarize and heat up, the instructor decided to formalize the process in a debate. She divided the class roughly in half according to their stances on the issue. The students on one side of the issue sat together on one side of the room, and students with the opposing view sat on the other side. The students were asked to argue the position opposed to their own beliefs because the instructor wanted them to become more familiar with the other side's arguments. They were given one and a half class periods to work together on their strategies and arguments, and the debate lasted one class period. The debate took place under a simplified version of Robert's Rules of Order with the teacher serving as the chair. (Click to view an example of a simplified version of **Robert's Rules of Order**.)

Similarly, in a statistics course, the instructor encouraged the class to debate competing methods of solving certain kinds of problems. The class was allowed to polarize and was then formally separated to give the students time to work together to prepare their arguments. Then they were brought together in a semi-formal debate to argue which method was better.

Finally, in a course on oral argumentation, students were routinely assigned two debates. In the first debate they debated one-on-one; in the second one they debated two-on-two. They were allowed to choose their own topics and resolutions, both of which had to be approved by the instructor, but they worked on their arguments outside of class. Students were given two weeks after choosing their resolutions before beginning debate in class. If a student debated the affirmative side of the issue in the first debate, he or she was required take the negative side the next time to get an understanding of the different arguments and strategies on the other side.

## Role-Playing

Role plays may be done as a whole class or in small groups to make learning more active.

## Objectives

- To increase student awareness of the interconnectedness of knowledge and the subtle complexities of a situation.
- To include affective learning as well as cognitive understanding.
- To expand personal experience by enacting a situation.

## Description

The instructor begins by describing a context and a situation within that context. Students are either given roles or allowed to choose them. Students are given some time to prepare, and then they enter their roles and act out the situation. Some instructors add student observers to the situations. These observers do not act out a role in the situation, but they observe and analyze the performances of the actors and provide feedback both to the actors and to the instructor and class. Role plays may be used even in fields which do not involve human beings directly: e.g., students may play the roles of cells, molecules, economic forces, and abstract philosophies in addition to historical figures or characters in a novel.

## Examples

In an introductory biology class, the instructor used role plays to help students more actively grasp the formation of protein chains. The class was divided into groups and each group was assigned to play the role of a particular type of atom. Each member of the group would be an atom of that type. They were to study the behavior of these atoms and then act them out in class. Once the role play began, some atoms would bond with others at particular angles to form simple molecules. Other atoms would repel each other and make certain formations difficult to achieve. Simple molecules would form into larger ones, and eventually protein chains would evolve.

In a physics course, a small ball became an electron. The electron was passed from one student to another to demonstrate electron transfer and oxidized/reduced states. Later in the course, the students were able to name the components of an electron transport chain that they built by passing the electron.

In a Shakespeare course, students studied Shakespeare's plays intensively for a few weeks. Then they chose scenes and roles from a set of scenes selected by the instructor. They analyzed their chosen characters, then acted out the scene for the class. Finally, they wrote a short essay explaining the motivations they ascribed to their characters.

## Case Studies

### Objectives

- To facilitate intuitive and integrated understanding of complex, interconnected issues.
- To encourage students to integrate theory with practice.
- To enliven the material by making it concrete and relating it to the lived world.

### Description

Students are given specific cases to study that illustrate general theories presented in the course. Students may be asked to write an analysis of the case, to report on it orally, or to be prepared for detailed questions from the instructor.

### Examples

In a physics methodology class, students were given unsigned research reports by famous physicists. They were divided into groups and asked to critique the research methods used in the cases they had been given. Each group presented its findings orally in class. Only at the end of the exercise did the students learn the names of the researchers.

In a political science class, after a unit of instruction on ruling styles, the class was given biographies of a number of rulers. The class was divided into groups and each group was assigned a biography. Each group was to determine what kind of ruling style the leader used and whether it was an effective style of leadership according to the criteria laid out in lecture.

## Creative Scenarios and Simulations

Creative scenarios and simulations can be used to make students more active in their learning and to increase their research skills.

## Objectives

- To encourage students to extrapolate beyond the information they receive in class.
- To stimulate creative and original thinking by having students look at their knowledge from a new perspective.
- To foster a greater awareness of the interdependence of theories and facts. Creative scenarios and simulations can also be used to make students more active in their learning and to increase their research skills.

## Description

Creative scenarios and simulations are connected by the fact that they both depend on counter-factual assumptions. In addition, both often combine several aspects of role-playing and case studies. In creative scenarios, students are familiarized with a particular configuration of knowledge and reality. The instructor then specifies a hypothetical change to this configuration and asks the students to discuss the effects of this change on a specific area of interest. In simulations, students are put in situations which are set up to be analogous to "real" situations of interest to the course. Students are then asked to act out the simulation as if it were the real thing.

## Examples of Scenarios

In a public health class on hospitals, the class studied the various factors influencing the economics of their operation. The class was then asked to work out what the effects would be on those economics if a cheap vaccination against AIDS were developed tomorrow.

Students in a geography class were studying the impact of nuclear radiation on ecosystems. They were asked to predict what the effects would have been had Chernobyl's reactor melted down into the ground water underneath the reactor core.

## Examples of Simulations

Students in a business class were studying entrepreneurship. As their final project for the semester, they were asked to simulate how they would go about starting their own company. Students were put into groups and told that they had a set amount of venture capital to work with. They then took whatever steps they thought wisest to establish their own company and turn it into a profit-making entity. They had to develop a comprehensive plan which included what product they would manufacture, who would manufacture it, how much it would cost, how they would finance production, how they would hire personnel, how they would market their product, and how they would manage their company. In one class, the professor arranged with a private venture capital company to actually provide funding in the specified amount to the group that came up with the best plan.

Students in an upper division engineering class were asked to write up their final projects as if they were being submitted to a journal for publication, in order to practice professional writing within the discipline. They were allowed to choose which journal they would like to submit their results to; then they had to study that journal to discover what kinds of articles it accepted and what the rules concerning format and submissions were. Finally, they wrote their article following the standards they themselves had discovered.

In a math course, the students often played Math Jeopardy in lieu of a quiz. The instructor provided a list of three math topics such as Wacky Integrals, Simple Proofs, and Limits, as well as one non-math topic such as Bay Area Trivia or Famous Dead Rock Stars. Math questions were assigned dollar values of \$10, \$25, \$50, or \$100, while the non-math questions were worth \$1, \$5, \$10, or \$15. Students would take turns picking questions, then everyone would be given a few minutes to write down an answer. The game would end after ten questions were picked and answered. The instructor found this game helpful not only as a fun learning tool for the students, but as an informational device for his teaching. If all of one topic disappeared quickly, then he was confident that the students understood that subject. If another topic remained virtually untouched, then he knew what he needed to discuss in the next section.

In an upper division biology class, students were assigned journal articles to read either individually or in small groups. They were then asked to design the next step of experiments that would further this research topic and present their work in the form of a mini-grant proposal.

## **Teaching Guide for GSIs**

### **Group Work**

Group work is one pedagogical strategy that promotes participation and interaction. It fosters a deeper and more active learning process, and it also provides instructors with valuable demonstrations of the degree to which students understand particular topics or concepts. In addition to exposing students to different approaches and ways of thinking, working with other students in groups can promote a sense of belonging that combats the anonymity and isolation that many students experience at a large campus. Some students may initially be reluctant to participate in group work, so sharing the reasons for group work with your students can help to convince the reluctant ones. It might help them to know that research has shown that groups frequently devise more and better solutions than the most advanced individual (Barkley et al., 2004; Cooper et al., 2003). Working together in groups also gives students the opportunity to learn from and teach each other. Classroom research has shown that students often learn better from each other than they do from a teacher (Barkley et al. 2005, 16-20).

From a practical standpoint, group work also fosters interpersonal skills highly valued by employers, not to mention friends, neighbors, and family.

For instructors, group work can save some preparation time. Although preparing for effective group work does take some planning, it is less time-consuming than preparing a lecture.

It is not difficult to incorporate group activities into your lesson plan, but there are some general rules of thumb about structuring group work so that it has useful outcomes for students. This section presents some basic guidelines to consider when designing a group activity, along with several kinds of group work learning techniques.

- **Group Work: Techniques**
- **Group Work: Design Guidelines**

## **Teaching Guide for GSIs**

### **Group Work: Techniques**

See also **Group Work: Design Guidelines**

**Think-Pair-Share**

**Structured Controversy**

**Paired Annotations**

**Roundtable**

**Three-Step Interview**

**Thinking-Aloud Paired Problem Solving**

**Think-Pair-Square**

**Peer Editing**

**Reciprocal Peer Questioning**

### **Think-Pair-Share**

The instructor poses a question. Students are given time (30 seconds or one minute) to think of a response. Each student then pairs with another and both discuss their responses to the question. The instructor invites pairs to share their responses with the class as a whole.

### **Structured Controversy**

Divide the class into groups of four. The instructor identifies a controversial topic in the field covered in the course and gathers material that gives information and background to support different views of the controversy. Students work with one partner, forming two pairs within the group of four. Each pair takes a different side of the issue. Pairs work outside of class or in class to prepare to advocate and defend their position. The groups of four meet, and each pair takes a turn stating and arguing its position while the other pair listens and takes notes without interrupting. Each pair must have a chance both to listen and take notes and to argue their position. Then all four talk together as a group to learn all sides of the issue. Next, each pair must reverse its position and argue the opposite position from the one it argued before. Lastly the group of four as a whole discusses and synthesizes all the positions to come up with a group report. There may be a class presentation in which each group presents its findings.

### **Paired Annotations**

Instructor or students identify a number of significant articles on a topic. Each student individually outside of class writes a reflective commentary on one article. In class, students are randomly paired with another student who has written a commentary on the same article. The two partners read each other's commentaries, comparing key points to their own commentary. Then the two students team-write a commentary based on a synthesis of both their papers.

### **Roundtable**

Students in small groups sit in a circle and respond in turn to a question or problem by stating their ideas aloud as they write them on paper. The conversation can go around the circle, each student in turn, more than once if desired. After the roundtable, students discuss and summarize the ideas generated and report back to the class.

### **Three-Step Interview**

This can be used as an icebreaker or as a tool to generate ideas and discussion. Ask each student to find one partner they don't

know well. Make sure everyone has a partner. You can use triads if there is an uneven number of students in the class. Students interview their partner for a limited amount of time using interview questions given by the instructor. Often questions are opinion- or experience-generated: How do you use writing in your daily life? Should premed students study holistic medicine? After a set time, students switch roles so that both get a chance to be interviewed. Then, join each pair with another pair to form a group of four. Each partner in a pair introduces the partner to the other pair and summarizes the partner's responses. Other variations on this activity are possible.

## Thinking-Aloud Paired Problem Solving

Students in pairs take turns thinking through the solution to a problem posed by the teacher. The student who is not the problem solver takes notes, and then the two students switch roles so that each student gets a chance to be both solver and note taker. Then they can go into larger teams or back to the class as a whole and report back about the solutions and the process.

## Think-Pair-Square

Same as think-pair-share except that instead of reporting back to the entire class students report back to a team or class group of four to six.

## Peer Editing

Ask students to hand in a first draft of a writing assignment. Photocopy each paper and identify it with a number instead of the student's name. Give each student in the class an anonymous paper to edit. It is helpful to give the students verbal and written guidelines for editing criteria. After the students edit a paper, each student receives the anonymous feedback from his or her unknown peer editor. It is often useful to have a class discussion about how this process worked for everyone.

## Reciprocal Peer Questioning

The instructor assigns outside class reading on a topic. The instructor asks students to generate a list of two or three thought-provoking questions of their own on the reading. (Note that asking productive questions can be a new skill for students to learn; you may want to give some attention to this.) Students bring the questions they have generated to class. Students do not need to be able to answer the questions they generate. Students then break into teams of three to four. Each student poses her questions to the team and the team discusses the reading using the student-generated questions as a guide. The questions of each student are discussed within the team. The team may then report back to the class on some key questions and the answers they came up with.

At the GSI Teaching & Resource Center we have other material to help you plan and design group work activities. Come and visit us in 301 Sproul Hall, or send an email with your comments or questions to [gsi@berkeley.edu](mailto:gsi@berkeley.edu).

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## **Teaching Guide for GSIs**

### **Group Work: Design Guidelines**

by Shannon McCurdy, PhD, Physics

See also **Group Work: Techniques**

**Learning Objectives**

**How to Form Groups**

**Group Size and Duration**

**The Structure of Group Work**

**Fostering Group Interaction**

**Tips for Formulating Productive Group-Work Assignments**

### **Learning Objectives**

There are many learning objectives that can be achieved by having students collaborate either in pairs or in small groups. (**Bloom's Taxonomy** is a useful resource for formulating your learning objectives.) In groups, students can

- summarize main points
- review problems for exams
- compare and contrast knowledge, ideas, or theories
- solve problems
- evaluate class progress or levels of skill and understanding

Think about your goals for the activity: what do you want your students to get out of their participation?

### **How to Form Groups**

Small groups or learning teams can be formed in four ways: randomly, teacher-selected, by seat proximity, or student-selected. Random and teacher-selected group assignments avoid cliques and ensure that students interact with different classmates throughout the semester.

Once you know your students fairly well, teacher selection can be useful for grouping students. Consider selecting groups or pairs with varying strengths and skill levels, since research has shown that groups of problem solvers with diverse skills consistently out-perform groups of problem solvers who are highly skilled in the same way (Page, 2007, cited in Davis, 2009, p. 194).

You may also want to consider using your students' attitudes toward group work as a mechanism to help you create groups. Take a one-question survey, or add this question to the initial survey you use at the beginning of the semester:

Which of the following best describes your experience of group work?

- A. I like group work because my group helps me learn.
- B. I question the value of group work because in the past I've ended up doing all the work.
- C. I have little or no experience working in groups.
- D. I have different experience of group work than the choices above. (Please explain.)

Those who check "B" can be put into a group of their own. They might find this to be the first time they are really challenged and satisfied by group work (adapted from Byrnes and Byrnes, 2009).

### **Group Size and Duration**

Group size can vary, as can the length of time that students work together. Pairing is great for thirty-second or one-minute problem solving. Groups that work together for ten to 45 minutes might be four or five people. (If there are more than four or five, some members will stop participating). Groups can be formal or informal. Informal groups may be ad-hoc dyads (where each student turns to a neighbor) or ten-minute "buzz groups" (in which three to four students discuss their reactions to a reading

assignment). Formal group assignments can serve semester-long group projects.

In large groups it is useful to assign roles within each group (examples: recorder, reporter to the class, timekeeper, monitor, or facilitator). If students are not used to working in groups, **establishing some discussion guidelines** with the class about respectful interaction before the first activity can foster positive and constructive communication.

It is useful to arrange the students in groups before giving them instructions for the group activity, since the physical movement in group formation tends to be distracting.

## The Structure of Group Work

Successful group work activities require a highly structured task. Make this task clear to students by writing specific instructions on the board or on a worksheet. Include in your instructions:

- The learning objective. Why are the students doing this? What will they gain from it? How does it tie into the rest of the course?
- The specific task: "Decide," "List," "Prioritize," "Solve," "Choose." ("Discuss" is too vague.)
- Structure the task to promote interdependence for creating a group product. Create an activity for which it is truly advantageous for students to work together.
- The expected product: for example, reporting back to the class; handing in a sheet of paper; distributing a list of questions to the class.
- The time allotment. Set a time limit. Err on the side of too little rather than too much. You can decide to give more time if necessary.
- The method of reporting out; that is, of sharing group results with the class. Reporting out is useful for accomplishing closure
- Closure, which is critical to the learning process. Students need to feel that the group-work activity added to their knowledge, skills, abilities, etc. Summary remarks from you can weave in the comments, products, and ideas of the students in their small groups is also an effective way to close a group-work activity.

If your group work consists of a set of short problems for students to work through, as often happens in science and mathematics courses, there are many ways to structure the activity. Here are a few ideas, with some advantages and disadvantages.

You can **give the whole class a single problem**. Break into groups to solve it, then come back as a class and discuss the problem -- either by having groups report out or by leading the discussion yourself. Then repeat.

- **Advantages:** You know everyone is exposed to the correct way of thinking about things, so there is good closure for each problem.
- **Disadvantages:** Potentially too much idle time for faster groups. This method can be very slow, so less material can be covered.

You can **give each group a different problem**, and have the groups report back to the class to walk through the solutions.

- **Advantages:** Students get some practice teaching as well as good exposure to problems and solutions.
- **Disadvantages:** Students don't get to practice as much problem solving.

You can **give each group a different problem**, have them solve it, and then have these groups split up and re-form in such a way that each new group has someone experienced with each of the problems. Then they can explain the solutions to each other.

- **Advantages:** Students get a lot of practice explaining, as well as good exposure to problems.
- **Disadvantages:** Students don't get to practice on many different problems.

You can **give the whole class a set of problems** and discuss the set of problems with each group.

- **Advantages:** Students work through more problems without significant idle time. You can address difficulties specific to each group.
- **Disadvantages:** You may end up repeating yourself a lot. You also may be spread too thin, especially if several groups are stuck at the same time. If this happens, call the class back together when you find that all the groups are having difficulties at the same place.

## Fostering Group Interaction

During group work, as tempting as it may be, do not disengage from your class and sit at the front of the room! Circulate and listen to your students. Are they on task, or are they talking about their weekend plans? Are students understanding the concepts and the assignment, or are they all stuck and confused? Do they have questions for you? Pull up a chair and join each group for a while.

On implementing group work for the first time in their section, some GSIs find that the students fall awkwardly silent when the GSI walks by or listens to their discussion. This is only temporary, and it should stop once your students are familiar with you and the group-work format. Because unfamiliarity drives this reaction, it is good to implement group work very early in the semester and to use it often in your section.

When a student in a group asks you a question, the natural reflex is to answer it. That's your job, isn't it? Well, not exactly -- it's lower on the list than empowering students to find answers to the questions they ask. Frequently a student asking a question hasn't discussed it with the group yet and is not aware that members of the group either know the answer or have enough information to figure it out together. So, especially early on when your class is forming group-work habits, it is important **not** to answer questions -- at least not at first. Instead, ask the other group members how they would approach the question. If no one in the group has an idea, you can either give the group a start on how to answer it, consult with a different group on the question, or answer the question yourself. (The latter is best considered a last resort.) Following this pattern will foster group interactions, and soon students will only ask you questions after they have discussed them with their group.

## Tips for Formulating Productive Group-Work Assignments

- Make sure you have specific and descriptive assignments. For example, instead of "Discuss projectile motion," try "Solve for the final velocity of the projectile." Instead of "Discuss the use of clickers in the classroom," say "Analyze two use cases and list criteria to evaluate the use of clickers in each one." Giving specific group work helps students engage more deeply with content and helps them stay on task.
- Ask questions that have more than one answer. (This may not work for all disciplines.) Students can then generate a variety of possible answers, explore what is involved with each, and evaluate them in comparison with the other answers.
- Make the material that groups will analyze short -- maybe just a short paragraph or a few sentences. Present it via handout, document camera, chalkboard, or another medium that all can easily see. Frequently, if groups have longer passages to analyze, their work goes well beyond the time frame the GSI intends.
- If the material is longer, give concrete lines of questioning, which you display prominently or hand out. This helps keep group work within the scale and time frame the GSI anticipates and reduces frustration.
- Vary the format of the tasks. For example, on one day students might generate the questions they want to analyze; on another students may give arguments or provide evidence for or against a position or theory.

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## **Teaching Guide for GSIs**

### **Encouraging Participation**

One of the biggest fears new instructors have is that no one is going to speak up in class. And, in fact, many teachers are frustrated by the fact that students often do not respond to their questions or seem unprepared for section. Here are several tips on how to get students involved in discussion under the following headings:

- Set the Stage**
- Help Students Prepare**
- Promote Student Thinking**
- Demonstrate Your Interest**
- Work with Everyone**

#### **Set the Stage**

##### **Explain How You Evaluate Participation**

Having section participation count in the course grade acknowledges the value of student engagement during section. In many sections the participation grade constitutes a substantial portion of the overall course grade (10 to 20%), but students may be unclear or concerned about how their participation grade is calculated. To help ease students' concerns (and to keep your own criteria clear), you need to explain explicitly what counts as effective participation. Remember that effective participation does not need to be limited to talking in section meetings. You can expand the definition of participation to include speaking with you during office hours, responding on line to other's posts in bCourses, or taking part in virtual chat rooms.

Your faculty member may have criteria, or you can generate your own, or you can define participation in dialogue with the students. Consider not only quantity of talk but quality of engagement. Once you have established criteria, you need to keep detailed records of students' participation in each section meeting.

If time permits, you may want to send each student brief feedback about their participation grade in the middle of the term. This serves two purposes: it encourages those who are doing a good job, and it alerts those who are not that they need to modify their participation if they want to improve their grade by semester's end.

##### **Encourage Early Discussion**

Try to get everyone talking in the first couple of section meetings. Once students "break the ice," they'll be more likely to share. Introduce activities in which students get to know each other, so they feel more comfortable voicing ideas in front of one another.

**Suggestions for icebreakers** appear in the Pre-semester Preparation chapter of this Teaching Guide.

##### **Make Your Section Goals Clear**

While remaining flexible to the unpredictable turns that classroom conversations can take, you should come to section with a lesson plan that articulates your main goals and the activities or questions you have planned to meet those goals. Some GSIs like to provide their students with the goals, or the "take-home message," at the beginning of class, in a handout or on the board. This will make section feel more focused and productive. Students participate more when they have a sense of what to expect. Also, prioritize the goals you set for a class session and be realistic. Planning only two or three goals and creating activities that promote discussion, debate, and deep learning is more effective than tackling many goals in a superficial way.

##### **Create an Inclusive Space**

It is important to establish an inclusive space in the classroom so that students feel comfortable expressing their viewpoints and ideas. Critique ideas, not people. Let students know that stereotyping, homophobia, racism, sexism, etc. are offensive, and respond immediately if possible to offensive comments. Students should know that they can contact you outside of class if

something in section makes them uncomfortable or is upsetting. Don't ever dismiss students' concerns or feelings. You can find more on this topic in Module 1 of the [GSI Professional Standards and Ethics Online Course](#).

## Help Students Prepare

### Ask for Written Responses or Free-Writes

Consider asking students to write a response to a question you pose. Then you can choose to call on a couple of students to read their response. This will give everyone time to prepare something. This is a great opportunity to get those students not participating involved. Call on someone who does not speak up much or who may seem disengaged.

### Set Pre-discussion Assignments

Students will be more willing to actively discuss the material in section if they have had the opportunity to think about it before class starts. To this end, GSIs can make assignments that hold students individually responsible for doing something with the material before coming to class.

For example, have your students write responses to questions you give them in advance. Asking students to post their responses and read those of their colleagues in bCourses before coming to class is a great way to get them to come prepared to section. Online discussions can facilitate in-class discussion. (See [Teaching with Technology](#).) You can also have students keep a reading "journal" (one page of free-form response) that they need to hand in or post electronically. Alternatively, select specific passages in a text that are central to the text's argument, and ask students to come prepared to work with those passages. You can also ask students to identify the paragraph or section of the reading that confused them the most or the one they found most useful in understanding the overall message of the reading. Or you can have students fill out a worksheet before coming to class.

All of these small assignments will encourage broader participation in class. Giving assignments ahead of time requires that you keep at least a week ahead on the readings, and that you develop a system of grading pre-discussion assignments (usually by a check/check-plus/check-minus system).

### Create Group Assignments

Instructors can devise assignments to facilitate more group involvement. Organizing students into small groups and giving them explicit instructions will get more students involved. You can have the groups report their findings back to the rest of the class. Once students have formulated and discussed their ideas in a small group, they may feel more comfortable sharing with the rest of the class. (For more group work suggestions, see [Group Work](#) and [Classroom Activities](#).)

### Create Roles for Students

Instructors can ask two or three students to lead or facilitate part of a discussion one week. Be certain to give students guidelines and a format, as well as some moral support. (If you have a large section you may need to make the discussion leader groups larger in order to ensure that all students have the opportunity to present a question or issue for discussion.)

You can also create other roles for students such as a summarizer or a recorder to recap the key points made in the day's section. You might also establish an observer whose role is to comment on the discussion. Be sure that students who facilitate discussions understand that they must involve the other students and avoid giving a presentation.

## Promote Student Thinking

### Avoid Programmed and Yes-or-No Questions

To encourage discussion, ask broad questions -- "how" or "why" questions that require the students to think through a process, evaluate information, predict outcomes, form opinions, etc. Avoid "programmed" questions, in which you answer the question yourself before students have a chance to respond (e.g., "Why doesn't the moon have an atmosphere? It's because it has weak gravity, right?"). Questions with a simple "Yes" or "No" answer can also cut off discussion. For more on asking good questions, see "Asking Questions" (Davis 2009, 118-26).

### Give Time to Think

It often happens that a GSI asks a complex question that students need time to consider before responding to, especially if it

embeds multiple questions or pulls in a new perspective. If no one answers your question right away, resist the urge to answer it yourself or move on after just a few seconds. Eight seconds is considered a fair amount of time to wait for students to formulate a response.

## **Rephrase the Question**

If no one responds to your question after eight seconds, try rephrasing it. If you still get no response, don't be afraid to ask the students why they didn't respond. Was the question vague or unclear? Do they see connections with the reading? (And yes, it is okay to ask your students if they did the reading.)

## **Invite Student Questions**

Remind your students that there are no "stupid" questions -- if they have a question, chances are that someone else in the class has that question, too. Never assume that something that seems easy to you will be easy to your students. "What questions do you have?" usually gets a better response than "Do you have any questions?"

## **Ask Them to Respond to Another Student's Comment**

Involve more students by asking questions that agree or disagree with a comment: "How do the rest of you feel about that?" "Does anyone who hasn't spoken care to comment?" "Is there anyone else who agrees or disagrees?" Discussions run best when the students are responding to each other. Try to keep your talking to a minimum and encourage students to respond to each other's comments and to look at each other. Think of yourself as a discussion guide, not leader.

## **Don't be Afraid to Say You Don't Know Something**

You are not responsible for knowing everything! Far from undermining your authority, admission of ignorance about something shows that you are not defensive about your knowledge. It also imparts the important lesson that part of wisdom is knowing what you don't know. Use the knowledge gap as a learning opportunity. If the problem is one that can be speculated about, ask students to consider how one might arrive at an answer. Tell the students you will look up the information (and be sure to do so). Alternatively, for accessible facts, ask a student to look up the information after class and report back on line or in the next session.

If a question leads too far off topic, you can suggest that the student speak with you in office hours or via email about it.

## **Demonstrate Your Interest**

### **Give Nonverbal Support**

Keep eye contact with students while they are talking. Nod along so that they know you are listening. If they feel as though you're interested in what they have to say, they may volunteer more often. If a student who is rarely involved contributes to the discussion, give the person a smile or a nod to let them know that what they have to say is important.

### **Move Around the Classroom or Lab**

Sitting behind a table for the whole class can lower energy -- both yours and the students'. It also gives the students sitting next to you more of your attention. You will find students regularly sitting far away from you either to avoid participation or to divert attention from their lack of preparation. Try varying where you stand from class to class, or move around the room during class -- get up to write on the board, to work with students in smaller groups, or to show interest in a quieter student's contribution.

### **Tactfully Correct Wrong Answers**

While it is crucial that students distinguish between correct and incorrect answers, instructor disapproval or a put-down will discourage people from sharing again. If a response is off track, try to coach the student toward the right answer or approach. Provide hints or suggestions. And say something positive about the aspects of the response that are insightful, original, or creative. Try things like "Good -- now let's take it a step further"; "Let's go back a step -- tell me more about xyz"; "Keep thinking about it."

## **Bring Students' Outside Comments into Class**

If a student makes a good comment in office hours or on a paper, check with the person to see if you can bring it up in class. Then in your next meeting say, "Anna, you were saying something about that in office hours yesterday; would you mind repeating it for the class?" You might consider using this technique with students who otherwise do not speak up much. Be sure not to single out the same person repeatedly.

## Work with Everyone

### Be Aware of Who You are Calling On

Research studies show that many teachers, without realizing it, respond more favorably to male students than to female students. Be sensitive to this and be certain that you're communicating equally with male and female students and with students from all backgrounds. Call on them equally, make eye contact with them all, and support them all. If you are concerned that you may not be calling on people equally, you might find it helpful to keep track of whom you call on in class, either on your attendance sheet or a class roster. You can also ask a colleague or **GSI Center consultant** to observe your class and take notes.

### Participation is Not All Oral

Students who remain silent during class discussion are not necessarily shy or reserved. Silence is a behavior, not a character trait, and there may be many reasons a student chooses not to participate orally in a particular class or social environment. Get to know your students through other venues such as office hours, email, and their homework for the course. Learn about the ways they do go about participating in the class -- perhaps through reflection, or writing emerging thoughts and questions in their notes, or formulating careful contributions to an online discussion forum. Learn to acknowledge the ways they participate, and -- especially if the course requires or highly values individuals' oral participation -- also let them know that the entire class would benefit from hearing their thoughts in discussions.

### Engage Your Students

One way to get students engaged is to activate their daily lives or interests. This fosters intrinsic motivation, as does giving them an intriguing problem to solve using course material.

Not every student becomes intrinsically motivated in every class; having participation in section count in their course grade creates an extrinsic incentive to show engagement.

### Limit the Contributions of Students who Dominate

Make sure to **wait** after you ask a question to give all students an opportunity to think about your question. Don't just call on the first hand that goes up. Provide six to ten seconds of "wait time" before calling on someone. Though this may seem long and drawn out to you, keep in mind that students and teachers have different timing needs, and most students need time to think before they can respond.

You can also have students write down a response to your question before you ask for oral contributions. This gives everyone time to think. You can then choose a couple of people to respond who don't speak up much.

Consider calling on students who don't raise their hand. Let students know at the beginning of the semester that you will be doing this. Some students may have something they want to contribute but are waiting for a good opening or an invitation.

Working in small groups is also a good way to distribute turns at talk, but you may need to take steps to prevent one or two students from dominating the group discussion. One way to do this (as discussed above) is to assign roles to students in the groups, e.g., recorder, summarizer, time keeper, etc. Assign a dominant student a specific role that limits participation, such as summarizer.

If the problem continues, you should speak to the student outside of class. Be certain to let the student know how much you value his or her participation. If the student's comments are good, let the student know, but point out that not all students are getting the opportunity to participate. Normally you will see a remarkable difference in the very next section meeting if you do this. If not, speak to the student again.

Setting guidelines for discussion early in the semester that stipulate that no one person should dominate the discussion and that all should have the opportunity to participate is an excellent way to nip this type of behavior in the bud.

## **Teaching Guide for GSIs**

### **Discussing Traumatic Events**

When a tragic, violent, or other powerfully emotional public event occurs, the impact on individuals and communities may reach your classroom whether you invite it or not. You may want to address the current event in class, or students may want to discuss it, or the subject may come up spontaneously because of your course content and its implications.

If you feel unprepared for a class discussion of an event, you may want to acknowledge the value of having that discussion but, in fact, defer discussion until you have a plan to manage it. In lieu of discussion, you could ask students to write briefly on the topic in class. You could then ask if students want to address the issue in the next class session, but if you find you are still not ready to manage the discussion, do not feel obliged to do so. Even observing a moment of silence as a class can be helpful.

If you decide to initiate discussion of the event in the context of your course, there are several matters to take into consideration.

- Be sure to allow enough time so that you will not have to abbreviate a helpful discussion.
- Prepare for the discussion in advance. Consult Vanderbilt University's **Teaching in Times of Crisis** for thoughts to consider.
- Create a direction and purpose for the discussion -- that is, a clear framework, or a connection to your class content and goals, or an acknowledgement of this significant event. It could be helpful to set some guidelines for the specific discussion before it begins.
- Expect the topic to stir powerful emotions, and be attentive to the human and emotional toll the tragedy is taking and the impact of information disseminated by you and others. Although your objective may be to discuss the situation analytically, you can't expect students to check their emotional responses at the door.
- Give students an opportunity to respond privately to the emotional impact of images and information (for example through writing) before moving on to process that information analytically.
- Urge students to speak for themselves and listen to each other, taking care to respect each other and the value of constructive discussion. (You might want to refer to your section's **guidelines for discussion**, or set up specific guidelines for this particular discussion before it begins.) Understand that students will have varying reactions to the discussion, and some will prefer to remain silent.
- Explicitly acknowledge the difference in types of comments made during discussion, distinguishing between emotional comments and informational or analytical ones. You can help students understand one another better if you assist them in seeing the different orientations of each other's statements.
- Be sure to have a strategy for bringing the discussion to a close. Again, a short writing exercise might be helpful. You could also remind students of ways they might be of assistance or take action.
- If you want help in planning a class session or debriefing a session in which the topic came up, email the **email the GSI Center** and a staff member will contact you, or call 642-4456.
- If you have students who are troubled and need assistance, or if you need assistance for yourself, contact Counseling & Psychological Services (CPS), 3300 Tang Center, 642-9494. You might want to refer students to CPS's web page dedicated to **resources on coping with stress**. CPS also offers drop-in hours for students. Please see the **CPS website** for details. More options are described in the University Health Services' **Gold Folder**.

Adapted with permission from University of Michigan, Center for Research on Teaching and Learning, **Guidance For Instructors Leading Class Discussion on Hurricane Katrina**.

## Teaching Guide for GSIs

### Teaching Discussion Sections: Additional Resources

#### UC Berkeley Resources

**Teaching Effectiveness Award Essays**, GSI Teaching & Resource Center. Read about creative solutions to classroom problems developed by your fellow GSIs. The essays are organized under the topic headings such as Discussion/Participation; Laboratories; Collaborative Learning; Learning Styles.

Multicultural Education Program, UC Berkeley. **Creating Inclusive Classrooms: Resources for Leveraging Diversity in the Classroom**. Gateway to many useful resources for creating an inclusive atmosphere.

#### Articles and Chapters

Brookfield, Stephen (1996). "Through the Lens of Learning: How Experiencing Difficult Learning Challenges and Changes Assumptions about Teaching." *To Improve the Academy* 15: 3-15. This entertaining article describes how the author's experience of learning how to swim gave him insight into the challenges his students face in the classroom.

Byrnes, Joseph F. and Mary Ann Byrnes (2009). "Dealing with Students Who Hate Working in Groups." *Effective Group Work Strategies for the College Classroom*. Madison: Magna Publications, 6-7.

Davis, Barbara Gross (2009). *Tools for Teaching* (San Francisco: Jossey-Bass). The print edition is also available at the **GSI Teaching & Resource Center**.

- Diversity and Inclusion in the Classroom (chap. 5)
- Teaching Academically Diverse Students (chap. 8)
- Encouraging Student Participation in Discussion (chap. 10)
- Asking Questions (chap. 12)
- Informal Group Learning Activities (chap. 22)

Frederick, Peter (1981). "The Dreaded Discussion: Ten Ways to Start." *Improving College and University Teaching* 29.3: 109-114. Practical strategies for getting your students talking to one another from the very first week of section.

#### Books

The following can be checked out at the GSI Teaching & Resource Center (301 Sproul):

Barkley, E., et al. (2005). *Collaborative Learning Techniques*. San Francisco: Jossey-Bass.

Cross, K. Patricia (2000). *Collaborative Learning 101. The Cross Papers* 4. League for Innovation in the Community College.

Johnson, D., R. Johnson, and K. Smith (1991). *Cooperative Learning: Increasing College Faculty Instructional Productivity*. ASHE-ERIC Higher Education Report, No. 4.

Meyers, C. & T. Jones (1993). *Promoting Active Learning: Strategies for the College Classroom*. San Francisco: Jossey-Bass.

Millis, B. and P. Cottell (1998). *Cooperative Learning for Higher Education Faculty*. Oryx Press.

Schultz, Katherine (2009). *Rethinking Classroom Participation: Listening to Silent Voices*. Teachers College Press.