

Ten Strategies for Making Your Course More Interactive

1. Begin your course with a question.

It is more difficult to engage students as your course progresses if they are accustomed to being silent. So set the standard for interaction and participation in the very first class, when norms and expectations are being established. You might begin with questions which help you understand what students are thinking and the levels of knowledge and information they bring to your course. For example, in a Biostatistics course: "How do we interpret medical research findings? In one study, the response rate for a given regimen was 23% and another treatment showed a 40% response rate. How can we interpret these numbers? What other information would we want to know?"

2. Ask questions throughout your class.

In this way your class can become more of a conversation. Questions with surprising answers can engage students' interest (for example, "What is the probability that two people in this room have the same birthday?"). Generally, questions are more evocative if you are not looking for one right answer. The most fruitful questions are thought-provoking and, often, counterintuitive. For example, in a health sciences course the instructor might ask students to guess where the U.S. or their country of origin ranks in the spectrum of overall health indicators. You can also ask students for their opinions and predictions. For example, "Do you think health has gotten better or worse in your country over the last twenty years? Will it get better over the next twenty years?"

Sometimes it's better to ask invitational rather than inquisitorial questions. If students feel like the questions presented to them have single right or wrong answers, they will be very hesitant to speak. The embarrassment of being wrong outweighs the approbation of being right. Insofar as it is possible, try to ask questions without right or wrong answers, favoring instead those which have a wide latitude for interpretation. "What do you think?" is better than "What is?" "What are some of the relevant qualities of the figure we are discussing?" is better than "Is the figure we are discussing specifically this or that?" Sometimes, of course, it will be necessary to ask questions with right or wrong answers. You may want to get certain facts or arguments straight for the whole class. Even then, phrasing can help make students less anxious about providing a wrong answer. You could, for instance, encourage students who have given wrong answers by praising them for taking the risk of speaking out. Or if your students work in teams, pose different questions to the teams and ask for a team response rather than putting individuals on the spot.

When using maps, tables, graphs and handouts, ask students what they see before you tell them what you see. Use these devices to help students think about a problem as you introduce it. For example, show a map of where cases occurred during an epidemic. Ask the students, "As an investigator of the outbreak, what questions might you want to ask?" When using data tables or graphs, ask, "What do these data tell us? What is the meaning of this graph?"

3. *When students ask questions, ask other members of the class to answer them.*

You don't have to answer every question or be omniscient in every class. It can greatly enhance student participation to not only ask them to respond to other students, but to say that you don't know the answer to a given question and ask the class what they think.

4. *Pose problems and thought experiments for you students.*

Elicit several answers or solutions from the students. The class can then go on to explore and build on the suggestions that emerge from the discussion. For example, in a Biostatistics class: "If I sampled the weight of male students at RPI by sitting next to the scale in the men's locker room and recording whoever happened to step onto the scale, would I get a statistically valid, unbiased sample of the RPI male population?" An interesting variation on this theme is to ask students to jot down answers to some questions on their own and then combine answers in a small group. Examples from a pre-course survey: "-List up to 10 major environmental disasters. You will often find out a lot about your students' assumptions and general knowledge levels.

5. *Challenge your students to critique your ideas, course readings, web-based material etc.*

This strategy can lead to lively debates and helps students engage, think about and learn the material. You may have to help students new to a field know how to challenge or question. One way to do this is to present different points of view on any given topic, and then have your students discuss why they believe a certain view best accounts for the evidence.

6. *Be careful with your tone of voice, comments, and body language.*

Create an atmosphere that encourages interaction and student participation by using a conversational tone and not criticizing student questions or comments in front of the class. Students take a risk when they talk; you need to deal tactfully with their contributions. A generous restatement of what a student has said ("let me see if I get what you're saying...") can be very helpful, particularly if the student's comments have been confused, leaving the speaker feeling insecure and the class feeling in the dark. Putting a new spin on their comments, or even reinventing them slightly, while always attributing the ideas to them or their original inspiration, can do much to improve a group dynamic. A simple comment on your part such as "That's a very interesting question!" or "I'm glad you asked that question," can be very helpful in stimulating interaction.

Your body language - whether you hold yourself in a stiff or relaxed manner - also influences student participation. Used in moderation, active, affirmational body language can be instrumental in establishing a comfortable atmosphere. Raising your eyebrows, nodding your head or tilting it to the side, and maintaining eye contact with the speakers are all ways of showing curiosity and interest. If you want students to talk, look at them. Avoid negative gestures, like turning your back partially or leaning predominately to one side of the classroom, crossing your arms across your chest, or checking your watch. Consider moving closer to the students rather than speaking from behind the podium. One should also be attentive to the body language of one's students. Fidgeting, furrowed brows, and earnest eye contact are often signs from students that they wish to speak but need a little bit of encouragement. Do not hesitate to call on such students, but do not force them if they freeze up.

7. *Encourage team problem solving sessions and presentations.*

Think carefully about what kinds of problems, data taking or case studies might work well in a team-based environment. When used correctly, teams are often extraordinarily effective in promoting peer teaching and improved learning. Try to schedule time for formal team presentations of group-based projects or home work. One technique that works well in class is to assign each team a different problem or issue and give them 15 minutes to find information on the web. Then ask each team to summarize the information they found and make a brief presentation to the class. For example, in an ecology class each team is assigned a different invading species and asked to research where it came from, what damage it is causing and how it might be controlled.

8. *Hold team debates.*

If your course is team-based, assign different roles or positions to each group. Have the groups present and debate the evidence for or against the various positions, theories or hypotheses. If available, cases are particularly useful for stimulating discussion and promoting debate of key issues.

9. *Leave time for any final questions, comments and conclusions.*

Allow time for questions and summing up and reaching conclusions at the end of your class. Ask if there are any questions or if students would like to have a point clarified. One technique that promotes student input is to ask your students to write down what they consider (a) the main point of the class and (b) the main question they still have at the end of the class, or (c) the "muddiest" point of the class session. The responses are often very valuable and surprising. You can use some of these questions to begin the next class.

10. *Memorize names and ask your students for input about themselves.*

Asking students to speak in class is easier to do if you have learned their names or use name cards. This will encourage them to use each others' names as well; people are more likely to talk when they know each other. One useful technique for getting to know your students better is to ask them all to send you e-mail in response to some basic questions about themselves: what is your favorite movie? where is the most interesting place you've traveled? can you provide a piece of information about yourself which is entirely unique and which you would be willing to share in public? If your class isn't too large, you can ask everyone to briefly introduce and say a little bit about themselves in the first session.

ABOVE ALL REMEMBER THIS:

Students need guidance and practice in explanation and discussion. Using these skills they confront naïve or incorrect understandings and adjust their cognitive frameworks to assimilate more robust knowledge. Without these elements, the benefits of the most advanced equipment and environments are greatly diminished.

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