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Tips for Using Questions in Large Classes

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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 give me a better sense of what might the students have misunderstood, or more likely, what might I 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 when to do so has drawn students into the discussion.

Writing Across the Curriculum (WAC) refers sometimes to the whole movement (as I use it in this book) and sometimes to an emphasis on using writing to help students learn and explore ideas. Writing in the Disciplines (WID) emphasizes learning disciplinary forms of writing. You do not have to distinguish. The best writing programs help students employ the full power of writing for many purposes.

Why Work on Writing?

Here are some of the reasons for an institution to work on student writing:

- * Writing can enhance students' higher-order learning, as suggested in more than one hundred studies summarized by Russell (2001).
- * Writing is part of several high-impact practices that research has linked to student learning. These practices include writing-intensive courses, frequent higher-order exams and assignments, prompt feedback on student work, tutoring, and supplemental instruction (Selected elements from Kuh, 2008; Center of Inquiry in the Liberal Arts at Wabash College, 2013; and, for community colleges, the Center for Community College Engagement, 2012).
- * Writing is an important skill for students' academic success in college, which in turn affects retention (Habley, Bloom, and Robbins, 2012, p. 33).
- * Writing is one of the skills most emphasized by employers (Association of American Colleges and Universities, 2010; Summary in Association of American Colleges and Universities, 2011, p.26; National Commission on Writing, 2004, 2005).
- * Working with student writing affects student engagement, which affects both learning and retention (Light, 2001, p. 55).
- * You can work on writing in a number of ways throughout the institution, and you can involve large numbers of faculty and classes. The composition program, writing lab, and writing-across-the-curriculum efforts can be tightly integrated or not, depending on your circumstances.
- * Faculty workshops can help faculty develop ways to use writing effectively in their classes and to incorporate other strategies that research has linked to learning (Walvoord, Hunt, Dowling, and McMahon, 1997).
- * Writing improvement is an outcome you can assess; methods are suggested in the following chapters.

More broadly, as Brandt notes in her study of literacy and society, "Literacy has always been intimately connected to [equality] and to the well-functioning of a democracy.... How can you have an effective voice in this society if your literacy is not protected and developed equally to others?" (2009, pp. 14-15).

What Is "Good" Writing?

"Good" writing in biology may look somewhat different from "good" writing in philosophy or business. Thus broad definitions of "good" writing tend to focus on the writer's ability to meet the needs of audience and purpose, whatever they are. Resources 1.1. lists statements that may be helpful.

[Text Box]Resources 1.1

Definitions and Rubrics for "Good" Writing

- * The VALUE rubric for writing, developed under the LEAP program of the Association of American Colleges and Universities (www.aacu.org/leap).
- * The statement of outcomes for an introductory composition course, with suggestions for further development of student writing in other disciplines, by the Council of Writing Program Administrators (www.wpacouncil.org/positions/outcomes.html).
- * The "Framework for Success in Postsecondary Writing," endorsed by the Council of Writing Program Administrators, the National Council of Teachers of English, and the National Writing Project (<http://wpacouncil.org/framework>).
- * The CLAQWA rubrics, which are part of a system for peer review, grading, instructor feedback, and program assessment. They describe the cognitive levels as well as the full range of writing