

Random Thoughts . . .

SERMONS FOR GRUMPY CAMPERS

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In workshops, I push teaching methods such as active and cooperative learning that make students more responsible for their own learning than they are when instructors simply lecture.^[1, 2] I believe in truth in advertising, though, and make it clear that the students will not all be thrilled with the added responsibility and some may be overtly hostile to it.^[3] If you use those methods, you can expect some of your students to complain that you're violating their civil rights by not just telling them everything they need to know for the test and not a word more or less.

When you use a proven teaching method that makes students uncomfortable, it's important to let them know why you're doing it. If you can convince them that it's not for your own selfish or lazy purposes but to try to improve their learning and grades, they tend to ramp down their resistance long enough to see the benefits for themselves. I've developed several mini-sermons to help with this process. If any look useful, feel free to appropriate them.

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Student: "Those group activities in class are a waste of time. I'm paying tuition for you to teach me, not to trade ideas with students who don't know any more than I do!"

Professor: "I agree that my job is to teach you, but to me teaching means making learning happen and not just putting out information. I've got lots of research that says people learn through practice and feedback, not by someone telling

them what they're supposed to know. What you're doing in those short class activities are the same things you'll have to do in the homework and exams, except now when you get to the homework you will have already practiced them and gotten feedback. You'll find that the homework will go a lot more smoothly and you'll probably do better on the exams. (Let me know if you'd like to see that research.)"

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S: "I don't like working on homework in groups—why can't I work by myself?"

P: "I get that you're unhappy and I'm sorry about it, but I've got to be honest with you: My job here is not to make you happy—it's to prepare you to be a chemical engineer. Here's what's not going to happen in your first day on the job. They're

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not going to say ‘Welcome to the company, Mr. Jones. Tell me how you like to work—by yourself or with other people?’ No. The first thing they’ll do is put you on a team, and your performance evaluation is likely to depend more on how well you can work with that team than on how well you solve differential equations and design piping systems. Since that’s a big part of what you’ll be doing there, my job is to teach you how to do it here, and that’s what I’ll be doing.”

S: “Okay, but I don’t want to be in a group with those morons you assigned me to. Why can’t I work with my friends?”

P: “Sorry—also not an option. Another thing that won’t happen on that first day on the job is someone saying ‘Here’s a list of everyone in the plant. Tell me who you’d like to work with.’ What *will* happen is they’ll tell you who you’re working with and you won’t have a vote on it. Look, I can show you a survey in which engineering alumni who had been through extensive group work in college were asked what in their education best prepared them for their careers.⁴¹ The most common response was ‘the groups.’ One of them said ‘When I came to work here, the first thing they did was put me on a team, and you know those annoying teammates back in college who never pulled their weight—well, they’re here too. The difference between me and people who came here from other colleges is that I have some idea what to do about those guys.’ In this class you’re going learn what to do about those guys.”

* * *

S: “I hate these writing assignments and oral reports you keep making us do. One reason I went into engineering was to get away from that stuff.”

P: “I’m afraid there’s no getting away from it—quite the contrary. Let me give you an example. A few years ago an engineer who was on campus interviewing students for jobs and summer internships came in to talk to an engineering class that was getting frequent communication assignments and complaining bitterly about it. He started by writing on the board a list of everything he did on his job, from designing and pricing process equipment to writing reports and memos and talking to people. Then he had the students get in groups and speculate on what percentage of his time he spent on each of those activities. They all thought 90% of his time went to the technical stuff but it was actually more like 10%. He said that in fact about 75% of his time was spent on writing and speaking—to coworkers, his boss, people reporting to him, people in other divisions, and customers and potential customers—and that his advancement on the job depended heavily on how effectively he communicated with those people. He also said—and this was what really got the students’ attention—that the main thing he was looking for when he

interviewed students for jobs was the ability to communicate effectively. Most industrial recruiters we bring in here will tell you the same thing. Since communication skill is something you’ll need to get a job and succeed in it, you’d better acquire it while you’re here, and you will in this class.”

* * *

And that’s that. My suggestion is to put your own spin on those sermonettes and trot them out when the right occasion presents itself. While I don’t guarantee that they will immediately convert all students into believers—in fact, I guarantee they won’t—my experience is that at least they’ll keep student resistance down enough to enable the teaching methods we’ve been talking about to achieve their objectives.

Let me give you one more encouraging word about student resistance to learner-centered teaching methods. My colleague Lisa Bullard uses cooperative learning in both an introductory sophomore engineering course and the capstone senior design course. She once told me that she has always had problems with group work in the sophomore class but never with the seniors until one semester, when she got the Design Class from Hell. The students complained constantly about having to work in groups, many teams were dysfunctional, and things generally went the way they always had in the sophomore class only worse.

Lisa wracked her brains trying to figure out what was different about the design class that semester and couldn’t think of a thing—and then she got it. Up until that year the seniors had previously been in her sophomore class and so were accustomed to group work. She had not taught this group of seniors before, however, and so she was experiencing the headaches that normally come when students first encounter active and cooperative learning. So if you find yourself experiencing those headaches, remember two things. First, you’re equipping students with skills that will serve them well throughout their careers, whatever those careers may be. Second, you’re making life much easier for yourself or colleagues who teach those students in subsequent courses using the same methods. It’s worth a few headaches.

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