Random Thoughts . . .

THE TEN WORST TEACHING MISTAKES
I. MISTAKES 5–10

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L ike most faculty members, we began our academic careers with zero prior instruction on college teaching and quickly made almost every possible blunder. We've also been peer reviewers and mentors to colleagues, and that experience on top of our own early stumbling has given us a good sense of the most common mistakes college teachers make. In this column and one to follow we present our top ten list, in roughly increasing order of badness. Doing some of the things on the list may occasionally be justified, so we're not telling you to avoid all of them at all costs. We *are* suggesting that you avoid making a habit of any of them.

Mistake #10. When you ask a question in class, immediately call for volunteers.

You know what happens when you do that. Most of the students avoid eye contact, and either you get a response from one of the two or three who always volunteer or you answer your own question. Few students even bother to think about the question, since they know that eventually someone else will provide the answer.

We have a suggestion for a better way to handle questioning, but it's the same one we'll have for Mistake #9 so let's hold off on it for a moment.

Mistake #9. Call on students cold.

You stop in mid-lecture and point your finger abruptly: "Joe, what's the next step?" Some students are comfortable under that kind of pressure, but many could have trouble thinking of their own name. If you frequently call on students without giving them time to think ("cold-calling"), the ones who are intimidated by it won't be following your lecture as much as praying that you don't land on them. Even worse, as soon as you call on someone, the others breathe a sigh of relief and stop thinking.

A better approach to questioning in class is *active learning*.[1] Ask the question and give the students a short time to come up with an answer, working either individually or in small groups. Stop them when the time is up and call on a few to report what they came up with. *Then*, if you haven't gotten the complete response you're looking for, call for volunteers. The students will have time to think about the question, and—unlike what happens when you always jump directly to volunteers (Mistake #10)—most will try to come up with a response because they don't want to look bad if you call on them. With active learning you'll also avoid the intimidation of cold-calling (Mistake #9) and you'll get more and better answers to your questions. Most importantly, real learning

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will take place in class, something that doesn't happen much in traditional lectures.[2]

Mistake #8. Turn classes into PowerPoint shows.

It has become common for instructors to put their lecture notes into PowerPoint and to spend their class time mainly droning through the slides. Classes like that are generally a waste of time for everyone.[3] If the students don't have paper copies of the slides, there's no way they can keep up. If they have the copies, they can read the slides faster than the instructor can lecture through them, the classes are exercises in boredom, the students have little incentive to show up, and many don't.

Turning classes into extended slide shows is a specific example of:

Mistake #7. Fail to provide variety in instruction.

Nonstop lecturing produces very little learning,[2] but if good instructors never lectured they could not motivate students by occasionally sharing their experience and wisdom. Pure PowerPoint shows are ineffective, but so are lectures with no visual content—schematics, diagrams, animations, photos, video clips, etc.—for which PowerPoint is ideal. Individual student assignments alone would not teach students the critical skills of teamwork, leadership, and conflict management they will need to succeed as professionals, but team assignments alone would not promote the equally important trait of independent learning. Effective instruction mixes things up: boardwork, multimedia, storytelling, discussion, activities, individual assignments, and group work (being careful to avoid Mistake #6). The more variety you build in, the more effective the class is likely to be.

Mistake #6. Have students work in groups with no individual accountability.

All students and instructors who have ever been involved with group work know the potential downside. One or two students do the work, the others coast along understanding little of what their more responsible teammates did, everyone gets the same grade, resentments and conflicts build, and the students learn nothing about high-performance teamwork and how to achieve it.

The way to make group work work is *cooperative learning*, an exhaustively researched instructional method that effectively promotes development of both cognitive and interpersonal skills. One of the defining features of this method is *individual accountability*—holding each team member accountable for the entire project and not just the part that he or she may have focused on. References on cooperative learning offer suggestions for achieving individual account-

ability, including giving individual exams covering the full range of knowledge and skills required to complete the project and assigning individual grades based in part on how well the students met their responsibilities to their team.[4, 5]

Mistake #5. Fail to establish relevance.

Students learn best when they clearly perceive the relevance of course content to their interests and career goals. The "trust me" approach to education (*"You may have no idea now why you need to know this stuff but trust me, in a few years you'll see how important it is!"*) doesn't inspire students with a burning desire to learn, and those who do learn tend to be motivated only by grades.

To provide better motivation, begin the course by describing how the content relates to important technological and social problems and to whatever you know of the students' experience, interests, and career goals, and do the same thing when you introduce each new topic. (If there are no such connections, why is the course being taught?) Consider applying inductive methods such as guided inquiry and problem-based learning, which use real-world problems to provide context for all course material.[6] You can anticipate some student resistance to those methods, since they force students to take unaccustomed responsibility for their own learning, but there are effective ways to defuse resistance[7] and the methods lead to enough additional learning to justify whatever additional effort it may take to implement them.

Stay tuned for the final four exciting mistakes!

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