

## **WE NEVER SAID IT WOULD BE EASY\***

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OK, here's the scenario. You go to a teaching workshop presented by Woods or Wales or Stice or Smith or that joker from North Carolina who's always ranting about this stuff. The presenter instructs you to immerse your students in real-world problems without routinely providing all the requisite facts and formulas. He also tells you—repeatedly—to stop doing so much lecturing and instead get the students to work in teams and teach each other. Once they realize they can no longer count on you to tell them all they need to know, they'll start to rely on themselves to figure it out—which is to say, they will learn to learn.

You may be in for a rude shock. It's not that the methods don't work—they do. I've had great success with some of them, particularly cooperative learning, and I do my fair share of missionary work on their behalf. The success is neither immediate nor automatic, however, and the awkwardness and frustration and student resistance and hostility you may experience before you get to the payoff can be formidable. It's tempting to give up in the face of all that, and many instructors unfortunately do.

The problem is that doing anything new and nontrivial always involves a learning curve, and the curve may be particularly steep for both you and your students when you try an active learning approach for the first time. The students, whose teachers have been telling them everything they needed to know from the first grade on, don't appreciate having this support suddenly withdrawn, and complaints like "Meachley never teaches us anything—we have to do it all ourselves" start echoing through the corridors. It's even worse if you use cooperative (team-based) learning: students then gripe loudly and bitterly about other team members not pulling their weight or about being slowed down by having to explain everything to that lemon they've been forced to team with. Sometimes instructors who are effective lecturers get lower student ratings when they start using active and cooperative learning methods.

My goal here is to assure you that these initial glitches are both common and natural, and that they may be a cause for concern but not for panic or discouragement. The trick is knowing how the process works, taking a few precautionary steps to smooth out the bumps, and waiting out the inevitable setbacks until the payoffs start emerging.

Consider the students. Woods<sup>1</sup> observes that students forced to take major responsibility for their own learning go through some or all of the steps psychologists associate with trauma and grief:

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\* *Chemical Engineering Education*, 29(1), 32–33 (1995).

1. **Shock:** “*I don't believe it—we have to do homework in groups and she isn't going to lecture on the chapter before the problems are due?*”
2. **Denial:** “*She can't be serious about this—if I ignore it, it will go away.*”
3. **Strong emotion:** “*I can't do it—I'd better drop the course and take it next semester*” or “*She can't do this to me—I'm going to complain to the department head!*”
4. **Resistance and withdrawal:** “*I'm not going to play her dumb games—I don't care if she fails me.*”
5. **Surrender and acceptance:** “*OK, I think it's stupid but I'm stuck with it and I might as well give it a shot.*”
6. **Struggle and exploration:** “*These other guys seem to be getting this stuff—maybe I need to try harder or do things differently to get it to work for me.*”
7. **Return of confidence:** “*Hey, I may be able to pull this off after all—I think it's starting to work.*”
8. **Integration and success.** “*YES! This stuff is all right—I don't understand why I had so much trouble with it before.*”

Just as some people have an easier time than others in getting through the grieving process, some students may enthusiastically dive right into active learning and short-circuit many of the eight steps, while others may have difficulty getting past the negativity of Step 3. The point is to remember that the resistance you encounter from some students is a natural part of their journey from dependence to intellectual autonomy, and if you provide some help along the way, sooner or later most of them will make it.

So what can you do to help them and yourself get through the process? Out of painful necessity<sup>\*</sup> I've developed an arsenal of strategies. For whatever they may be worth, here they are.

**Set the stage.** When I plan to use active or cooperative learning in a course, I explain on Day 1 exactly what I'm going to do and why. I assure the class, for example, that I'll be making them work in class not to make my life easier (quite the contrary), but because research shows that students learn by doing, not by just watching and listening. I reinforce the point by citing some of the research; as always, McKeachie<sup>2</sup> and Wankat and Oreovicz<sup>3</sup> provide good general summaries and Johnson *et al.*<sup>4</sup> cite results specifically for cooperative learning.

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<sup>\*</sup> Believe me, my observations about student resistance are neither theoretical nor speculative.

**Provide coaching on the skills you want the students to develop.** When students complain (or make evident in other ways) that they don't know how to set up problem solutions or prepare for tests or work effectively in teams, I try to offer some guidance during my office hours and occasionally hold a miniclinic in class. Woods<sup>1</sup>, Wankat and Oreovicz, and Johnson *et al.* are rich sources of methods for facilitating development of learning and teamwork skills.

**Get feedback** and try to be responsive to it. Especially when many students in a class seem to be spending a great deal of their time hovering around Stages 3 and 4 of the trauma scale (loss of confidence, anger, and withdrawal), I grit my teeth and conduct a midsemester evaluation, asking them to list things they like about the class, things they dislike, and things that would improve the class for them. The first list often surprises me: the complaints I've been hearing tend to monopolize my attention, clouding my awareness that what I'm doing is working well for many or most of the students. The things they dislike are not exactly fun to read, but I learn from them and the students seem to appreciate the opportunity to vent. The suggested improvements may include some that are unacceptable to me ("Stop assigning problems that you haven't lectured on." "Cut out this group garbage.") but I may be able to act on others without seriously disrupting my plans or compromising my principles. When I respond positively to some of their suggestions (like easing off on the length of the homework assignments, or giving them the option of doing a few assignments individually), it usually goes a long way toward getting them to meet me halfway.

**Be patient.** I expect many of my students (especially those I haven't previously taught) to be frustrated and upset in the first few weeks of my courses. I deal with it now better than I used to, knowing from experience that most of them will turn around by the final exam.

**Go back to the references periodically.** When some of my cooperative learning groups seem to be disintegrating halfway through the semester, I look back at one of Karl Smith's monographs (or, for that matter, at my own workshop notes). I'm usually reminded that I've been neglecting one or another of the recommended CL practices, like having the groups regularly assess their functioning and work out what they need to do differently in the future.

**Don't expect to win them all.** In the end, despite my best efforts, some students fail and some who pass continue to resent my putting so much of the burden of their learning on their shoulders. A student once wrote in a course-end evaluation, "*Felder really makes us think!*" It was on the list of things he disliked. On the other hand, for all their complaints about how hard I am on them, my students on the average earn higher grades than they ever did when I just lectured, and many more of them now tell me that after getting through one of my courses they feel confident that they can do anything. So I lose some, but I win a lot more. I can cheerfully live with the tradeoff.

## References

1. D.R. Woods, *Problem-based Learning: How to Gain the Most from PBL*. Donald R. Woods, McMaster University, 1994.
2. W. McKeachie, *Teaching Tips*, 9th Edn. Lexington, MA, Heath \& Co, 1994.
2. P. Wankat and F.S. Oreovicz, *Teaching Engineering*, New York, McGraw-Hill, 1993.
3. D.W. Johnson, R.T. Johnson, and K.A. Smith, *Cooperative Learning: Increasing College Faculty Instructional Productivity*, ASHE-ERIC Higher Education Report No. 4, George Washington University, 1991.