



Biomedical Engineering Division

Winter 2013

Eight Ways to Fail at Teaching

Contributed by **Conrad M. Zapanta**

BED 2012-2013 Division Chair



Author's note: For this edition's newsletter, your friendly editor (Joe Tranquillo) proposed that I talk about how teaching relates to falling out of an airplane. After discussing this very interesting idea with my colleagues, wife of 20 years, and life insurance agent, I decided on a different and safer topic: Failing at Teaching.

Several wonderful articles have been written that detail how to be a successful teacher. However, very few (if any) articles describe how to fail at teaching. In order to address this critical academic void, I have put together eight of the best ways to fail at teaching. I have had significant experience at each of the following ways to fail:

Don't prepare: If good teaching takes a great deal of preparation, bad teaching involves no preparation at all. No one really needs to spend time reviewing course material before class, preparing lecture notes, writing class objectives, and solving those exam problems before you give an exam to see if they are actually doable in the allocated time.

Don't try to understand the background of the students: Professors don't need to find out what the students do (or don't) know before they begin a class. It is much easier to assume that all of the students have mastered and retained all of the course material from their previous classes and courses. If the students don't

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Preparing Graduate Students to Teach

Contributed by **Robert A. Linsenmeier**

2007 Theo C. Pilkington Outstanding Educator

For many of us who are now faculty members, our introduction to teaching was as teaching assistants in graduate school, a largely hit or miss activity, where we graded papers and exams, and sometimes had the opportunity to lead discussion sections or lab sections, often with mixed results. We did not have much chance to think deeply about the material that should be (or could be) covered in a course, what pedagogical methods to use, how professional skills could be integrated with domain content, where students were in their development, or how to get students over their difficulties with the material. Then, after we got a faculty position, there was a trial by fire as we were thrown into teaching a full course.

Some of us were lucky enough to have mentors who discussed some of these issues. In my case it was John Bjerke, a senior lecturer in the Biology department who ran the labs for the Animal Physiology course I was assigned to teach in my very first quarter at Northwestern. But times are changing. Northwestern has recently joined the Center for the Integration of Research, Teaching, and Learning (CIRTL.net), formerly a group of 6 universities, and now a group of 23, ably led by Bob Mathieu, the Chair of Astronomy at the University of Wisconsin. The mission of CIRTL is to improve the preparation of STEM graduate students and postdocs for their role as faculty, particularly in teaching. CIRTL allows universities a great deal of flexibility in implementing this preparation, but we are unified by three core ideas that are described more completely on the website: Learning Communities (of faculty, graduate students, and postdocs, both locally and across the network), Learning through Diversity (of all kinds), and Teaching as Research (this is where the integration part of the name really comes in). Remarkably, I believe that all the members of the

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ASEE Workshop:

Enhancing K-12 Outreach with Hands-on Biomedical Engineering Activities

Contributed by Michael J. Rust

BED 2013 Member-at-Large

Description

The BED is sponsoring a workshop at the upcoming annual conference (June 23-26, Atlanta, Ga). This workshop is intended for faculty members who are interested in developing biomedical engineering-based outreach activities for pre-college students. Attendees will participate in several hands-on activities that are centered on biomedical topics, including robotic surgery, biomaterials, and lab-on-a-chip. Additionally, the participants will receive instructional materials for implementing specific experiments as well as learn about strategies for developing their own outreach activities. The workshop is scheduled for Sunday, June 23, from 1:00-4:00 PM. The cost for attendance is \$35, and space is limited so register today!

Workshop Facilitators

Michael Rust, Western New England University
Robert Gettens, Western New England University

Questions about the workshop should be directed to Michael Rust (mrust@wne.edu).

BED Georgia Tech Tour/Reception

Monday June 24, 2013

4:15-6

Transportation will be Provided

RSVP to Aura Gimm (aura.gimm@gmail.com).

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Bring-a-Student Program

Give a student at your university the chance to experience the 2013 ASEE Annual Conference and Exposition. Each full conference registrant has the opportunity to bring one student to the conference at no additional charge. This complimentary student registration includes admission to the technical sessions and the exposition, allows students to register for all events, provides students the conference bag/program/proceedings, and allows entry to the annual reception on Wednesday evening. To be eligible, the student must:

- Be currently enrolled in a college or university
- Be registered on a full conference registrant's form
- Accompany the full conference registrant to ASEE registration desk with a valid student ID.

Note: Only one student may be registered as "bring-a-student" per full conference registration.

understand what's going on in class because they don't have the pre-requisite knowledge, it's not the professor's problem.

Ignore what the students are saying: The professor is in charge and knows best how the course should be run. It doesn't matter what the course evaluations from the students say. Answering questions from students is just a waste of precious class time.

Make all of changes that the students want: The students are in charge of the class and know best how the course should be run. It doesn't matter what the professor thinks about the class.

Don't ask for help: Professors are highly trained professionals who can easily figure out how to teach a class without external assistance. It doesn't matter that other professors may have taught the course before, or that they may have had the same problems. Any campus resources that are dedicated to help professors learn how to teach are for wimps.

Don't care about teaching: The students should feel honored that the professor has taken time out of his/her busy schedule to teach this class. Professors are only teaching classes because their department head said that they had to. Teaching only gets in the way of doing research (and lunch, if the class is in the late morning).

Don't have a clear syllabus: Students do not need to know when assignments are due, how final grades are calculated, when exams are scheduled, or what they should know at the completion of the course. They should be able to figure this out along the way.

Don't give timely and useful feedback: Graded homework assignments, reports, exams, and lab reports can be returned within a few hours of the final exam. Any earlier would be a luxury, and not necessarily more helpful to the students. The graded work should only contain giant red marks that indicate only what was missed, but not state why it was missed.

Newsletter

Please submit suggestions or submissions for the ASEE Biomedical Engineering Division newsletter via e-mail to Joe Tranquillo at <mailto:jvt002@bucknell.edu>

Thanks to everyone who contributed to this issue.

network, which are listed on the CIRTL home page, have engineering schools, and at quite a few, one of the leaders is in the engineering school.

So, finally we come to the messages in this column. First, see if your university is a member. If so, find out who the leaders are, from CIRTL.net, and see how you can help. We know that you are the ones in your engineering school who care about teaching. Second, if your university is not part of the CIRTL network, there may be ways to join in the future, but for now, if you are at a school with graduate programs, you can impact the preparation of future faculty yourself. If you have a teaching center, it would probably welcome your participation. But informally, over the last few years, I've started to talk to my teaching assistants more about some of the things I mentioned at the beginning of this column, so that they can get a broader view of the whole teaching and learning enterprise. I help them plan discussion sections and visit them to provide feedback. That is, you can create your own little Learning Community.

Going beyond that, you can help them to see teaching as an important intellectual activity, where they have the opportunity to try things in the classroom and measure their impact, at least informally. Maybe you can let them try something in your class. They can do this without needing to jump into the deep end of education research. The point is to see the how teaching can be a research activity, or at least not a completely separate activity from their other research.

I will close by recommending an interesting paper by David Feldon et al. called "Graduate Students' Teaching Experiences Improve Their Methodological Research Skills" (Science 333:1037-1039, 2011). The point is captured well by the title. This is just the beginning of work on this topic, and it leaves questions, but you might use it to convince your more skeptical colleagues about the value that graduate students, and their labs, can derive from teaching.