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Teaching Philosophy

It's all about students. My approach to teaching is rooted in what serves my students best. Effective teaching requires not only mastery of the material but understanding the students and the way they learn. In addition, clearly communicating objectives and expectations and encouraging interactions with the students in and outside of the classroom are also critical in teaching.

The courses I teach are infamous among science students. In particular, organic chemistry is considered one of the major hurdles a science major must overcome in order to advance forward. It's an extremely difficult course for the average student. It's heavy with course material and although exciting and fun for me, it is typically considered very "dry" and viewed as "foreign and abstract" for students. Therefore, a majority of the students usually dread taking the course. With this as the background I would like to describe my teaching philosophy.

When I started teaching, I reflected on the positive experiences I had as a student and worked towards integrating these experiences into my teaching. I enjoyed courses that: 1) were organized with a clear sense of direction; 2) were taught by faculty with enthusiasm, energy and passion; 3) had a friendly classroom environment; and 4) demonstrated real-world applications. These elements are at the core of my teaching.

1) I strive to clearly present the lecture material at each class session. This requires that I have mastered the material and can see the big picture. Each lecture is well organized. I start each class by writing a lecture outline for the day. This helps me to keep track of what I've covered and where I am headed. Each lecture begins with a brief overview of the major points from the previous class to help students recognize that content in chemistry is by nature cumulative. Since there is always less lecture time than I would like, I make certain that every class period is used effectively. I provide extra handouts with content outlines, extra problems, and additional information to help students with the course material.

2) My love for chemistry makes it easy for me to teach with enthusiasm. Early in my teaching career I assumed that if I taught with lots of enthusiasm and energy this would "rub off" on the students. I naively thought that students would run to the textbook and solve all the problems and learn the material. The reality is that no amount of enthusiasm for the subject by the instructor will ensure "learning" by students. Students may enjoy the lecture more and stay alert longer but the learning of the subject is a different issue. I admit that I fooled myself into thinking that my passion for science and my competence in the subject was enough to make me an effective teacher. I now realize that to achieve excellence in teaching, like excellence in research, requires continual reflection, learning, and openness to new ideas and methods. I think my passion and energy make the course more enjoyable for students but it's important to motivate students to claim ownership in their own learning process. So, I am continually seeking and implementing new techniques for effective teaching to promote better student learning of chemistry.

I have tried many different teaching techniques. Some of these methods failed miserably, but some I found (and students reported) to be very effective. These techniques range from a simple question posed every 10 minutes to reestablish contact with students who are starting to lose focus, to a group problem-solving session, to a complex capstone group activity. Do I have data to prove that incorporating various teaching techniques has translated into better understanding of chemistry? No. However, I have found that students are visibly engaged during lectures (fewer sleepers) and very interactive. From my experience, as students become more actively involved during lectures, they begin attending more office hours. My office hours are always packed with students. Office hours are great fun for me and I think the students enjoy them as well. The time is spent not only by answering questions, reviewing concepts, and solving problems but also discussing topics I normally don't have time to talk about in class. I have spent hours discussing issues ranging from global impact of drug availability and environmental impact of advancements in science to a very simple unraveling of ingredients in the common Tootsie Roll. It is also a great opportunity to get to know the students and for the students to get to know me on a more personal basis. By the end of the semester, those students who attend office hours regularly are comfortable with me as a person. When I am more open with students and share with them a bit of my personal life and history, students become less intimidated by my position as a faculty member. Thus, students are less intimidated in class and more likely to participate.

3) I work hard at creating an encouraging and friendly environment for learning in my classes. On the first day of class, while taking attendance, I may ask each student to say something about themselves that will help me to learn their names. It's great fun to hear their responses. I also think the students really appreciate the opportunity to be recognized. It doesn't matter whether I have a class of 100 or a class of 10; I learn all my students' names by the end of the second week of class. Attendance in my classes is excellent every semester. I always know who is missing and will call out the name of the student by asking where is so and so today.

My lectures are very interactive. I pose many questions to students to encourage them to participate and be fully engaged during lectures. It's great to see the hands go up every time I ask a question. It's rare when I don't have more than half the class participating in a given lecture. In order to establish a friendly environment, I come to class at least a few minutes early so that I can "chitchat" with students. I find that students enjoy these pre-lecture conversations and many arrive early for lectures as a result. These small efforts, I think, create a classroom environment that helps decrease the level of anxiety that often accompanies science courses. Again, although these efforts do not necessarily translate into better learning, they do make each class session an enjoyable experience for the students and myself.

4) Recognizing the application of chemistry to the real world increases students' interest and performance. The challenge for an instructor teaching chemistry is to make this obvious to students. At first glance, chemistry texts are filled with very "dry" facts, equations, and structures, but, with better understanding of the material, students recognize the power in understanding the concepts and their applications. I make every effort to introduce examples in class that reflect application of the material.

Two years ago I started "Friday treats." I spent the last 10 minutes of class on most Fridays discussing topics that tie together concepts learned during the week with topics that have real-life applications. I carefully chose topics in order to take the opportunity to connect information and concepts covered during the week and make them relevant to the student's everyday life. I think these Friday discussions helped transform lessons in organic chemistry to educating the whole person. The topics included: steroids, PAHS (polycyclic aromatic hydrocarbons and health effects of smoking), alcohol

(drugs that are used to treat alcoholics), antibiotics (drug resistance), aromatherapy (fact or fiction), wonder drugs/products (seeking the fountain of youth), bioflavonoids (green tea effects, benefits of antioxidants), MRI (magnetic resonance imaging), turkey dinners (role of tryptophan, especially relevant around Thanksgiving), and many more. Students absolutely loved these talks. On Fridays when I didn't have these topic discussions, students were usually very disappointed.

Even on homework assignments, I try to relate problems to real issues/events. I choose highly publicized organic compounds (e.g., Prozac, thalidomide, Ibuprofen, AZT, RU-486, tamoxifen, aspartame, quinine) to serve as examples to illustrate important organic concepts. To place a person behind a discovery, I present a short biography of the scientists.

Recently I developed a new lab course for majors. I was amazed at the level of interest in the course. I even had non-majors signing up for the class. In addition to the new experiments, I introduced students to research in organic chemistry. Not all of our students have the opportunity to do undergraduate research so I really wanted to give the students a "taste" of research. The students did a lot of work for a 1-unit lab course but I heard no complaints and the students were extremely grateful for the experience.

Uniting teaching and scholarship is natural with chemistry. I incorporate my research results to my lectures and provide experiential learning to students by working with them in my research lab. I feel that I make the greatest impact and contribution to a student's career through involvement in research. Much laboratory training is necessary for a student to work on an organic chemistry research project. Students working in my lab start from learning about basic glassware to setting up complicated experiments. Students experience first-hand the dynamic nature of scientific research and learn to struggle through their projects. I have involved over 30 students in research at LMU. Many of these students have graduated and are now in graduate schools or health professional schools, working in industry, or teaching. I am extremely proud that I have been part of their training process. I still keep in close contact with many of these students and hearing their success stories makes my job extremely rewarding.

It's all about students and encouraging them to enjoy learning. I am not afraid to try new teaching methods. Students really appreciate my willingness to step outside of my comfort zone to teach them the material. Excellence in teaching is more than an impressive teaching philosophy. It is the compilation of small and caring efforts that reaches the individual student. As I mentioned earlier, students start my class already having a negative view of the class and it's most fun to see them finish the year with enthusiasm and appreciation for organic chemistry. I have received excellent teaching evaluations every semester from students, and they have been very grateful for my work. There is no question, I love teaching and feel privileged that I have the opportunity to share my knowledge, energy, and enthusiasm with my students. I consider this a real blessing.