Teaching Philosophy

I believe that teaching is both a great honor and a great responsibility. Those who are privileged to teach have a disproportionately large influence on the next generation and thereby have an opportunity magnify their long-term impact and influence lives. I have been positively influenced by great teachers, and therefore I have great desire to pay it forward in like manner.

Teaching is not merely expressing knowledge in front of a body of students. It is inspiring them to absorb and retain knowledge, and to form lifelong habits of cultivating their own intellects. I do not believe that there is just one right way to influence a diverse group of students, but I do believe that example is an essential aspect of most effective methods. Students can discern when a teacher has a genuine passion for a subject. They can tell when my advice comes from fresh experiences rather than a canned lecture, and they respond accordingly. Therefore, I feel it is essential to actually be the person that I want them to become.

Although research is sometimes considered to be a separate function from teaching, I believe these two activities are most effective when they are conducted in a deliberate manner to build on each other. One who possesses the enthusiasm for a subject that is necessary for effective teaching must inevitably be active in working with it. This keeps the teacher's knowledge fresh, and empowers him to show students how it is actually useful. A teacher cannot compensate for a lack of knowledge by excelling at any other principle of teaching. His or her knowledge must be genuine, accurate, and recent. That kind of knowledge comes from staying active in research. Conversely, teaching causes one to simplify and organize ideas to such an extent that they can be articulated, which in turn benefits research. Moreover, the biggest impact in research is typically made when a teacher helps students to develop enthusiasm for research. Thus, at the university level, effective teaching is not really possible without effective research, and the best researchers are then anxious to teach what they have discovered.

Another principle that is critical for effective teaching is motivation. A student who is not anxious to learn will learn little, no matter how clearly the content is delivered. In my experience, students will learn many times more material on a day in which the teacher first takes the time to properly motivate. I motivate every topic before I begin to cover it, and I try to renew that motivation every day that I teach. As students gain nuggets of knowledge, a good teacher will carefully maintain the enthusiasm by helping the students to understand the value of each nugget. This is done best through the use of projects that give them hands-on experience and prove to them that they can utilize the knowledge.

Teaching students to rise to meet a higher level of expectations is generally more work for the teacher. It would certainly be easy to merely pile extra work on the students or grade them more harshly, but that would benefit only a small portion of the students. Rather, I believe it is necessary to begin each course at a level the students can already handle, and finish by bringing them to a level more advanced than they ever expected. In general, I believe the most satisfied students in a course are those who have learned more than they expected.

I have taught thirteen courses at University of Arkansas:

- 5× CSCE 3193, Programming Paradigms
- 3× CSCE 4613, Artificial Intelligence
- 3× CSCE 5063, Machine Learning
- 1× CSCE 5013, Data Mining
- 1× CSCE 5043, Advanced Artificial Intelligence

In all 13 cases, my student ratings have been above average for both the department and college. Numerous factors can affect these ratings, but I attribute a large part of my success to my tendency to push students to achieve much more than they generally claim to prefer. In all 3 cases where I taught a course for the second time, my ratings improved since the first iteration. I believe this demonstrates that I take feedback seriously, and I work hard to improve my own teaching curriculum. Ironically, in the same 3 cases, the average grade that I gave decreased slightly in the second iteration. I am not completely certain how to interpret this, but it is clear that I am not buying any affection by giving out easy grades.

In my Programming Paradigms course, in particular, I have worked hard to raise the bar of expectations in order to prepare students for the more advanced classes that follow. I have added additional projects on topics that were not previously covered. I have also made many refinements to my project requirements in order to keep up with the rapid changes in computer programming. Although it is only a junior-level class, I have begun giving students an earlier introduction to some of the reasons they may want to consider attending graduate school. All of these changes are designed to give students much more than just an overview of programming languages. As a teacher, I feel that it is my responsibility to train them in all the areas of proficiency that they will need to be effective as students, software development engineers, and increasingly as scholars.

The ability to influence students, rather than to merely express knowledge, is not as much of an intrinsic talent as it is a reflection of the teacher's preparation. I believe the teachers who have the most influence are those that have:

- Recently worked with the knowledge they teach,
- Determined how to convince the students that it is worth learning,
- Identified how it relates to other subjects that are fresh on the students' minds,
- Prepared to express it in a manner that the students will understand, and
- Prepared meaningful exercises to give the students practice using it.

Grading can be a useful motivating force when students do not respond to other approaches, but a teacher must be careful not to allow grades to replace learning as the focus of the course. The best way to ensure that grading does not dominate the spot-light is to be clear up front, and consistent about how it is done. If grading is kept simple, then learning is left as the only lever that students have to manipulate in order to seek the grade that they want.