

## Teaching Philosophy

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*I cannot teach anybody anything, I can only make them think.* – Socrates (470–399 B.C.)

Hundreds of years ago, the Greek philosopher Socrates introduced the *obstetric method* of teaching. For Socrates, teaching is a process of drawing forth, rather than a process of telling. The teacher does not tell the student the proper answer; instead, she draws from the student the probable answer. This Socratic view has been a major inspiration in the development of my own teaching philosophy.

I view the role of the teacher as the bridge between two worlds, the body of scientific knowledge and the eager student learner; the teacher is not the source, nor is the student the drain. In my view, the teacher must make sure that the student learns not only *what* is out there, but more importantly *how* to reach to it. These two worlds are constantly changing and the teacher is called to establish a healthy relationship between them that will eventually continue on its own. I also believe that in standing between these two worlds there is a fine line that every responsible teacher needs to maintain. On one hand, she needs to demonstrate sufficient proficiency on the subject matter allowing the students to build confidence in their teacher, but she also needs to abstain from demonstrating arrogance. I consider this stance to be an important factor in the development of the student's own stance between respect and criticism.

My main concern in teaching is to understand my audience and to communicate in a “common language”. I am trying to use technology (slide presentations, mathematical packages, computer-generated graphs, videos) as needed and always as means to an end. I promote both individual and group work inside and outside the classroom; the first makes the student independent, whereas the latter sparks collaboration. A unilateral approach harbors the danger of making the student selfish and unable to cooperate or heavily dependent on others and barely self-motivated. In developing and teaching a course, I consider the following ingredients necessary and valuable: 1) an up-to-date textbook, serving as the back-bone of the subject being taught, 2) supplemental readings, for discussing the current trends in the field, 3) lectures, as the vehicle for accessing the material effectively, 4) discussion, as a way of developing critical thinking, 5) regular homework and exams, as evaluative feedback and as a safeguard for having all students on the same page, and finally 6) a course project, as an exercise in creativity.

In my journey as a graduate student I had several opportunities to learn from different teachers and develop my own teaching skills beyond the typical teaching assistant duties (grading, office hours, recitations). At the University of Louisiana, Lafayette I was responsible for teaching the undergraduate introductory programming lab to a quite diverse class. Given the huge size of the class (2 faculty members, 4 lab instructors, over 150 students) I played a key role in devising mechanisms for ensuring fairness and indiscriminate treatment across all sessions and over all students. I also served on the advanced class on user interfaces. At Duke University, I was involved in advanced graduate classes on the design and analysis of algorithms, numerical analysis, planning under uncertainty, and numeric artificial intelligence. The first two classes draw significant numbers of non-majors and my main challenge was to fill the gaps of students with no or minimum computer science background. For the last two classes, I contributed significantly to the development of the syllabus, designed assignments and programming projects, and organized and carried out software agent competitions. My commitment was rewarded twice with the outstanding teaching assistant award. In addition to the above university-level teaching experience, I have been successful in teaching Sunday School to all ages of K-12 education and Byzantine music to individuals of various ages.

I feel confident in teaching computer science or mathematics courses and, in general, courses where reasoning is more important than memorizing. Given my background and expertise, I am mostly inclined toward courses on artificial intelligence, machine learning, decision making under uncertainty, robotics, multi-agent systems, and complex systems, as well as, design and analysis of algorithms, systems theory, control theory, combinatorial mathematics, numerical analysis, and theory of computation. I am particularly interested in developing modern courses that cross the lines between disciplines, such as bioinformatics, artificial intelligence methods in medical or industrial applications, and machine learning methods in operations research.

It has been said that a teacher plants seeds in the student's soul. She may not live long enough to see the fruits of that effort, but the student's life is inevitably touched for ever. As I am constantly trying to become a better teacher, I also realize deeper the great responsibility that comes with it.

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