

Teaching Statement

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Teaching Philosophy In my experience, teaching effectiveness depends a lot upon student-teacher relationship. As a teacher, my first responsibility is to make students comfortable and infect them with the excitement I carry for the subject matter. My first goal in any class is to connect with the students. I should be able to address them by name and rope them in for in-class participation. My standard strategy in the classroom is to encourage the students to propose their own solutions to the problem we are considering. Sometimes such discussions lead to a different solution from what I had in mind! It is not only very encouraging for the students but also for me. Even for problems where I don't really expect the students to solve it on their own, spending a few minutes to let them try is very useful as it gets them actively involved in the class and appreciate the beauty of the result much better.

Experience and Interests Over the course of my graduate studies, I had the opportunity to serve as a teaching assistant for courses in algorithms, bioinformatics and mathematical foundations of computer science (discrete mathematics). My responsibilities included holding weekly one hour recitation sessions for the discrete mathematics course and occasionally substituting for the regular lecturer for all the three courses. As a teacher I look forward to offering undergraduate level courses on Discrete Mathematics, Design and Analysis of Algorithms, Theory of Computation and Data Structures. I will also be interested in advanced undergraduate or graduate level courses on the topics of Randomized Algorithms, Approximation Algorithms, Bioinformatics (from an algorithmic perspective) and Computational Geometry.

Constructive Learning Besides traditional classroom type courses, involving students in research projects is a very effective means of learning. I had the opportunity to take a course in constructionist learning at the Learning Sciences Department at Northwestern University which exposed me to an exciting alternative to conventional instruction-oriented teaching. Learning can potentially be much more effective when students encounter the subject matter in context of a bigger project that they value for its practical real-world applications. For example one such application could be development of a web-based motif finding tool for biologists. Though a lot of motif-discovery algorithms have been proposed by researchers only a few are available as tools that biologists can readily use. Students could pick up the

aspect of the project that interests them the most and collaborate with the other groups to implement parts of the entire system. The project provides learning opportunities in the areas of computational biology, database management, user interface design and systems besides valuable experience in research and teamwork.

A Working Example Such project oriented non-traditional courses as I describe in the previous paragraph face many organizational issues which renders their practical implementation dubious. However, interestingly a series of courses under the title of “Research Teams: Fundamentals and Management” are being floated at Northwestern University along similar lines with great success. One common observation shared by many students after the course is that they get so involved that they end up spending a lot more time on these projects than what they need for a good grade. When the student’s motivation transcends scoring grades, I believe we have scope for some powerful learning.
