Teaching Statement

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Overview

Teaching is an important part of a professor’s contribution to their department. There are several ingredients that a teacher must use to facilitate learning. As a doctoral student, I taught a course at Brigham Young University (BYU) and I am excited to teach again. Since that time, I have taken teaching courses as a postdoctoral researcher at the National Institutes of Health (NIH).

Teaching Philosophy

A department’s greatest asset is its students. These students come from a variety of backgrounds and have a wide range of abilities and motivation. Both the teacher and the student have a responsibility in the learning process. The teacher guides the attitudes and achievements of a student. While learning cannot be forced, a teacher controls how material is presented and provides a vision of its importance. Material that is presented well facilitates learning and encourages students to be engaged and to immerse themselves in the subject. How well students are prepared to innovate and create is an important measure of success for a department.

There are several important ingredients to facilitate learning. First, a teacher needs to demonstrate their concern and high expectations for the students. Second, the course and the lessons need to be structured and organized. Structured lessons can include loose discussions and small-group work. Third, the friend of structure is flexibility. A teacher needs to be flexible to different learning styles, backgrounds and emergent needs. Finally, a teacher needs to be conversant and knowledgeable of the subject matter. Drawing upon that knowledge will aid the students in catching a vision of how to apply what they are learning to the “big picture.”

Teaching Experiences

As a doctoral student, I mentored several students from both the Computer Science and Biology departments at BYU. Some of these students were new lab members whereas others were collaborating on a single project. For each one, I understood their research challenges and helped them to overcome those problems. These students presented a large range of initial abilities and interest. I endeavored to help them advance their knowledge and skills from where they were to where they needed to be. In part, I did this by sharing my own “best practices” with them to help them avoid the pitfalls that I had fallen into. Overall, it was a great experience to help others learn and be more than what they initially were.

Teaching the Introduction to Computer Programming course for the Computer Science Department at BYU during the 2007 Summer Term (see http://students.cs.byu.edu/~cs142ta/) gave me the opportunity to experience the joys and the struggles of teaching. It also allowed me to practice some of my teaching goals. For example, I wanted to communicate to the students that I cared about them. To do so, I called each of them by their names. I noticed that this also encouraged participation. Another goal included completing all of the labs and exams that the students were asked to do. This helped me to be a better teacher because I could more clearly understand their questions and provide answers that were more specific. Finally, I used a technique that I have seldom witnessed in a classroom, random reward. I “randomly” gave incentives (candy bars) to the students that accepted invitations to work out examples on the board. While some students had a higher individual threshold for participation, some students required additional incentives to become active in the classroom. In my experience, it helped some students to engage more fully in the classroom learning process. Overall, my experience reaffirmed my desire to teach and I enjoyed it.

In addition to teaching, I have also been a teacher’s assistant for three semesters for the Introduction to Computer Organization course in the Electrical and Computer Engineering Department at BYU. As a
teacher’s assistant I answered students’ questions about programming and complex concepts, graded homework and taught recital sections. While helping the students one on one, I was able to see the variety of different ways that students learn. From this experience I learned that teaching is only effective when the student understands.

Courses On How To Teach

One of the great benefits of being a postdoctoral researcher at NIH is access to many high quality workshops and courses. I have completed the eight-week “Scientists Teaching Science” course along with other workshops. Theses courses have provided the background behind effective teaching and empowered me with techniques and skills to help others learn. For example, while taking the course, I learned that I am a visual learner, and that I defaulted to teaching exclusively for that leaning style. However, many students learn best with auditory or tactile/kinesthetic styles of teaching. Techniques such as small-group discussions and inviting students to the whiteboard will appeal to those students. Additionally, I learned about course development, alternatives to traditional lecturing, writing syllabi, goals, objectives, and tests. I am excited to improve my teaching by incorporating these techniques. Finally, I recognize that I can improve my teaching in many different ways so I read teaching articles from Tomorrow’s Professor and the Chronicle of Higher of Education to continually improve.

Courses I Can Teach

The following is a list of some types of the classes that I can teach:

- Bioinformatics / Computational Biology
- Parallel Processing / High Performance Computing
- Introduction to Programming
- Computer Architecture
- Data Structures and Algorithms
- Machine Learning
- Networks

Summary

In conclusion, I am excited to teach; to participate in the molding of future scholars. My experiences have only amplified my enthusiasm for teaching. I also believe that diligent research magnifies a teacher’s ability to effectively and accurately convey knowledge and experiences.