

Throughout the fourteen years I've been involved in higher education, the classes that I've been in have formed me and my ideas about teaching. I've sat in discussions with only three other students as well as lecture halls with over 100 classmates. This, combined with my experience in front of the classroom, has formed many of my thoughts and opinions about teaching and learning. Below I've focused on some of the elements that I believe are most crucial in a computer science classroom: individualized attention, good communication, coverage of computer science essentials, and diversity. I've also included student evaluations to show how I've applied these in my past teaching. As I continue through my career, I expect that these will shift and change as I gain experience, informed by my time in, and out, of the classroom.

I believe in treating students as the individuals they are. By getting to know my students, I can ensure that there are points in labs or homework that everyone can reach, but that there are also additional ideas and questions following so that motivated students can be challenged. In the classroom, I find that if I know my students well I can also recognize when concepts aren't being understood (even before the first hand pops up). Once I start seeing looks of confusion, I can change tactics and try explaining something in a different way that may be more easily understood. For example, if theoretical explanations of how an algorithm works do not resonate with students, walking through the algorithm may improve students' understanding.

She gives examples that are easy to follow as well as connect to other things that are easier to understand. - Student in CSCI 1001

She was always willing to go out of her way to help me when I did not understand something. She also made a point to get to know us well. She was also very understanding when problems arose. - Student in CSCI 1001

While I prefer teaching interactively, when I do lecture, I try to break the material into small segments, inviting discussion and small group breakouts throughout to keep students engaged in the material. Small class size definitely helps students become more comfortable in discussions and form bonds within the classroom which often helps the students form a cohort, a support group for their degree program. By working with students closely, I can also provide them with input early and often, helping ensure that students aren't heading down the wrong path and helping to build their confidence. While this additional guidance isn't always necessary, I find that often students can benefit from this advice.

That said, some students don't always follow the right path. Multiple times during my time at UMN as a TA or instructor, I discovered students cheating. I also had students skip classes, fail exams, and sit in my lectures wearing headphones. Everything got resolved. Sometimes I could save the student from failing the class or dropping out, but other times I could not. All of it involved talking with the student and better trying to understand them as individuals, not just as a face in the crowd.

I feel that as an educator communication skills can always be improved, therefore there is no point at which I can rest easy. I strive to provide all my students with timely, actionable feedback. This attention to communication means that I invest a significant portion of my time in reading, reviewing, and responding to assignments, projects, and emails. While it is often frustrating to realize that students aren't comprehending something or that they're starting the two week long assignment the day before the deadline, I try to also use that as a reminder that I need to be paying more attention or striving harder to drive points home.

Katie put a lot of effort and thought into reviewing our work and providing feedback. Was very quick to respond and willing to help with any questions. - Student in SENG 5115

She communicated very well and was very willing to explain things clearly and made sure that I understood the concepts. - Student in CSCI 1902

I have also learned that sometimes the tried and true methods don't work. The textbook examples fall flat on their face in the classroom and blank stares follow me around the room. This is something that I try to look at as an opportunity. Sometimes I have to come up with better examples, ideas that resonate with *my* students, not just any student.

Much of what I've written about above is applicable regardless of the subject matter. However I do have strong opinions on what people graduating with degrees in computer science should learn based on my understanding of the discipline and my experience in industry. Obviously programming, algorithms, data structures, and other typical courses should be taught, but I also believe that students should have a basic understanding of statistics and web design as well as the fundamentals of usability, the history of computing, and computing ethics. While it wouldn't be practical to add five courses to the degree program, many of these skills can, and should, be taught in context. Introductory courses are a great time to hook students with the history of computing and start discussions around ethics in the field. I've incorporated web design, usability, history of computing, and computing ethics into my introductory classes in the past and look forward to continuing that in the future.

In addition to these computer science skills, I believe that students should also have communication skills, the ability to work well in a team, and the skill to work with whatever materials and resources are provided to them. I believe that my work in the private sector has helped me understand what skills will help students succeed in the industry.

As I teach, I will try to improve based on student evaluations, both updating the classes and changing my teaching methods to try and meet the students' needs. I will also continue my participation in the Special Interest Group for Computer Science Education (SIGCSE) and will keep myself abreast of new technologies and ideas by remaining active in my research fields and organizations. I believe that collaboration is an important part of learning and seeing it in action is useful for students. I would welcome the opportunity to assist with undergraduate research projects.

Teaching is important to me because, while I believe many things can be learned independently, they are often able to be mastered in a much shorter time frame and to a greater level of mastery with a good teacher. I believe that a liberal arts community is conducive to student success and I would be honored to be a part of that.

Teaching Interests

I am interested in teaching a broad range of computer science courses from courses for non-majors through advanced topics courses. I enjoy teaching introductory students and building their excitement for the topic or encouraging the computer scientist in them to come out of hiding. Working with advanced students would allow me to build closer relationships and help guide them to their place in the world. My industry experience with both products and colleagues will help me understand how to lead students to positions where they will be successful.

While I'm interested in teaching courses at a variety of levels, my teaching, research, and coursework have prepared me to teach core computer science classes such as introductory classes (for majors and nonmajors), programming, web design, usability, and ethics courses. I am interested in teaching courses outside the computer science curriculum as part of a general education core as well as courses in collaboration with faculty from other departments. I also look forward to helping increase diversity in the computer science program.

Teaching Experiences

In Spring 2010, I served as co-Instructor for the Introduction to Computing for non-majors course at the University of Minnesota. I prepared half the lectures, assignments, exam questions, and labs as well as holding office hours and supervising three teaching assistants. (My student evaluations are available for this course as well as my graduate teaching assistantships.) In addition I served as a teaching assistant for five semesters in undergrad and five semesters in grad school. I have extensive experience with 1:1 tutoring in everything from Pre-Algebra through advanced topics in Human Computer Interaction. In addition to my lectures as a co-Instructor, I have also guest lectured in several classes and research groups at multiple institutions.