

Teaching statement

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Two important skills that students should learn from classrooms are learning-by-doing and inter-disciplinary skills. Learning theory emphasizes that students learn better by experiencing what they learn. Students gain a deeper understanding if they are exposed to problems that are relevant to the real world. Learning is enhanced if students actually apply their knowledge. In addition, the pervasiveness of information and communication technology, and increasing complexity of global infrastructure has made it necessary for students to learn inter-disciplinary skills that they can apply in solving real world problems. In today's world, providing sustainable solutions in information technology space demands knowledge not only of fundamentals of computer science, but also of fields such as economics, sociology, and psychology. Inter-disciplinary skills also enable students to appreciate work in other disciplines and be able to work in teams with members from different fields.

My strong belief in inter-disciplinary thinking and active learning led me to become a teaching assistant for two courses that provided hands-on experience. These courses covered topics from different disciplines including computer security, privacy, human computer interaction, and business administration. To get students to apply their knowledge from different fields to a real world problem, among other homework assignments, the course instructor and I developed an assignment to evaluate the functionalities of the first edition of iPhones. Students were asked to perform multiple tasks using iPhones (e.g. finding pizza places in Oakland, Pittsburgh, PA 15213; finding driving directions to Pittsburgh international airport). While performing these tasks, students evaluated iPhones against technology for hardware and software, usability, effectiveness, efficiency, and the overall business model of the product. This assignment generated interesting questions and discussions both in and out of class.

To initiate discussion in class, the course instructor posed stimulating questions. Answering, listening and being part of the discussion for these questions gave the students an opportunity to share their expertise with rest of the class, which also fosters inter-disciplinary teaching. I plan to use similar strategies in the courses that I will teach. Students also applied skills that they learnt from the class when doing the final project. In the project, students were expected to build a prototype based on technologies discussed in class, to conduct a preliminary user testing, and to discuss a business plan for implementing the solution in the real world. We evaluated the effectiveness of students learning based on the reading assignments, tests, and the quality of their projects. In the course evaluation, students mentioned that they did in fact enjoy learning concepts from different disciplines and got an opportunity to work with students from different fields addressing real world problems.

These experiences have convinced me to use real world issues to develop content and homework questions for the classes that I plan to teach. The courses that I teach will involve technology, human computer interaction, policy, management, and some cultural or social aspects. Creating and delivering content on these topics to students from diverse backgrounds can be challenging,

but the payoffs for communicating the interdisciplinary perspective to information technology are much larger than the costs. In the courses that I will teach, I plan to strategize and spend equal time on each of the disciplines.

My research and teaching experience gives me the ability to teach a variety of technology related courses. Some courses include information security, privacy, human computer interaction, and learning science. More specifically, I will be interested in teaching foundations of cyber crime and trust, usable privacy and security, and information security. I am also interested in developing or helping in developing curriculum for masters programs in the areas of my work (e.g. Masters in Information Security).

I intend to have my research work complement my teaching. I plan to bring my research experiences into the classroom while teaching my courses. In this respect, in the past, all guest lectures that I have delivered in classes were primarily oriented towards my research work. In these lectures, I discussed open-ended questions in my area of research and provided resources to analyze the problems in my area of research and offered help if students were interested.

I have recognized that communicating ideas clearly, particularly in writing, is an important skill to possess. Unfortunately, my under-graduate curriculum did not sufficiently expose me to high quality technical writing. Several facilities at Carnegie Mellon University helped me improve my writing. I will integrate topics on writing research papers or technical reports in both under-graduate and graduate level courses that I plan to teach.

To equip myself with adequate skills to become an effective teacher, I successfully completed the Eberly Center for Teaching Excellence program, Documentation of Teaching Development. This program is designed to develop future faculty who will use teaching and learning principles in their classroom teaching. The documentation program structured to be spread across 2-3 years helped me to develop many skills related to teaching. I worked with the Associate Director of the center to create a syllabus on "Introduction to Cyber Crime and Privacy," one of the many courses that I am keen on teaching. The objective of this course is to introduce students to cyber crime and privacy in the context of technologies, policy, law and philosophy. I structured the course not only to include basic building blocks of the topics, but also to include critical thinking and problem solving skills. I have appropriately developed an evaluation metric to analyze students learning outcomes.

I have mentored three under-graduate and two graduate (Masters) students on various design and development projects at Carnegie Mellon University. I successfully motivated three people to enroll for Ph.D. in India who are currently working in industry, academia and government. One of them has already submitted her thesis document for partial fulfillment of her Ph.D.

In summary, my goal is to provide a high-quality environment for students to learn, grow and become creative contributors to society. The teaching methods that I have outlined above will equip students with the skills, inquisitiveness, and creativity to solve many of the social and technological problems we face every day.