Statement of Teaching Philosophy

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A teacher who is attempting to teach without inspiring the pupil with a desire to learn is hammering on cold iron.

–Horace Mann–

Passion for learning drives students' capacity for knowledge to new limits. My teaching philosophy centers on instilling passion for learning in a multitude of ways beginning by how I enter a classroom, continuing through every lecture, activity, and assessment. Providing great expectations for my students and myself while engaging in active learning activities can fully provide the opportunity for passion and inspiration to be instilled. I developed my passion for teaching from years of experiencing education, mentoring students in research, and teaching martial arts to children and adults of all ages. Through this passion for teaching, I enter every classroom or meeting with excitement for the subject and encourage a learning environment thereof. Through this passion I do my best to develop meaningful learning activities for and mentoring relationships with students. Through this devotion, I continue to assess myself and my teaching techniques to ensure my students receive the best education possible.

Experience

In my career thus far, I have continually advanced and changed my teaching philosophy to center around passion and strong mentoring relationships based on my prior teaching experiences. My most influential experiences include teaching martial arts, mentoring students in research activities, and being an instructor of record at Texas A&M University as a graduate student. I received the Departmental Mentoring Excellence Award in 2013 and Teaching Assistant Excellence Award in 2014.

During my teenage and early college years, I involved myself with training and teaching a disciplined martial art to people of all ages. Through this time in my life I developed a true passion for teaching. In this experience, I grasped a true appreciation for active styles of learning focused on activity, assessment, and striving to perfect an art. I learned firsthand about various personality types, intelligence levels, disabilities, and how each of these can influence the ways and methods in which I teach someone. I often think back and reflect on this time to draw new methods and interactions when teaching the computing discipline.

In my time as a graduate student, I engaged over 40 high school, undergraduate, and international students in robotics research in motion planning, many of whom co-authored technical papers and moved on to great careers in industry. One such student developed his passion and won a $100K scholarship from the Siemens Research competition. I mentored him on two major research projects, aiding him in algorithmic design, programming, and experimental analysis resulting in two co-authored papers, one of which he was first author. Through these many interactions, I could see the importance of mentoring and passion in mentoring undergraduate researchers. This expanded my philosophy to focus more strongly on maximizing the number of personal interactions to develop a strong community, respect and interest in the classroom. Additionally, I spent some of this time developing a short training course on robotic motion planning for any incoming students into my advisor's research lab. This course has trained well over 60 students. The course content includes active discussions, current literature on the subject, and programming activities to prepare them for research in our lab. The students learn the basics of designing and conducting experiments, reading and critiquing research, and developing a strong programming style, which are all important activities for a young researcher in computing and robotics.

Near the end of my graduate education, I have had the honor and opportunity of teaching as instructor of record a Freshman/Sophomore level course on Data Structures and Algorithms. This let me affirm, and adjust, some of my philosophies as I broadened the number of students I have worked with. I planned the course to be challenging and mentally stimulating to show how interesting and fun computing problems can be. Additionally, I had a chance to test how my passion and interactive experiences can help students learn through interactive classroom and laboratory activities, office hours, and online forums. This has been a very valuable experience further shaping my philosophies. Beyond this, I have been a Teaching Assistant for an Honors course on Data Structures and Algorithms in my department.

Course Organization and Strategies

I strongly believe that learning comes from a variety of activities and assessment strategies to engage and challenge students of different learning styles. For developing students in computer science, I combine a mixture of reading assignments, lectures, programming/homework assignments, small group activities during lecture, and online discussion with the focus of developing technical understanding and broader knowledge of our discipline. Through each of these activities, a strong classroom environment and community is developed which further drives the passion for learning and interactions between students and with me. Reading assignments and lectures allows the development of base knowledge for the individual with the help of the instructor. Small group activities and online discussion allows development of community and building of collaboration skills, both extremely important to computing fields. Programming/homework assignments build the students problem solving, critical thinking, and technical skills necessary for a career in computer science. Each of these combines to help mold the student into a great candidate for both industrial jobs and graduate research opportunities.

Assessments

Student assessments come in a variety of forms, and I strongly believe in both written assessments and larger projects. The first tests information retention and theoretical understanding of a topic, while the second assesses ability to apply a concept in practice.

Written assessments are composed of both understanding and problem solving to help steer the student to further intellectual development. Having both will allow challenges to the student without making them feel like they fail if they miss some of the problem solving components.

Projects and practical assignments allow for developing necessary technical skills, like programming, technical writing skills, and possibly teamwork and collaboration. Depending on the course difficulty, the projects could be open ended format to allow students to be creative and be more vested in an assignment. Projects might contain oral presentations for more open ended formats, but will typically consist of a technical writing component. All in all, projects are focused in applying the knowledge learned and gaining experience in presenting material in both written and oral form.

Depending on the subject matter and student level, examinations play an important role in assessing a students knowledge. Specifically, I aim to combine a mixture of theoretical/conceptual questions on understanding with problem solving and creation questions. Proper use of Bloom's Taxonomy is vital in designing appropriate assessment strategies.

Reflection and Refinement

A core tenant of my teaching philosophy is self-reflection and refinement of my teaching philosophy. I never try to blame students for not learning some material. Instead, I reflect on how my lecture went, how the activity broke down, or how communication of expectations failed for example. Based on this, I adjust and dynamically change course presentation to adapt to the students, class size, and material difficulty. Upon reflection, I can improve my practices for future courses as well. Each assignment has a purpose and learning outcome, and if it fails or succeeds it is my duty to the students to understand why.

Summary

My teaching philosophy centers on instilling passion for learning by engaging in active learning and providing great expectations for students and myself in the process. I truly cannot describe my total passion for education, it strives me daily to live life to its fullest and share my experiences and knowledge with others. Seeing students learn and grasp subjects is a mere reward compared to seeing a passion develop for a subject like computer science. Seeing the creative mind at work is a true miracle that I get the opportunity to experience as an instructor.