Teaching Philosophy

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As a teacher, I like to focus on addressing the personal interests and challenges of each student. I find it very interesting to see which parts of a concept different students take to naturally and which they find difficult. These differences present opportunities to push a student to move past what comes naturally and challenge themselves with something new, to use a different teaching technique to convey a difficult concept, or to tie in external ideas from a student’s background that can make the material at hand more approachable. This is particularly useful in computer science, since students from a wide variety of disciplines take at least a few computer science classes.

A varying approach in techniques and topics is also important when considering different levels of students as well. For example, to teach graph algorithms, I might use different methods depending on the level of the class or as an introduction and follow up. To introduce an algorithm, I might use (and create if necessary) interactive simulations that allow students to visually explore the behavior of the algorithm on various graphs. If they can step forward and backward through the algorithm, seeing the correspondence between the pseudocode and the state of the graph, they can build a strong intuition for how the algorithms work. In a more advanced context, I might flip the classroom and ask different groups of students to prove different properties of an algorithm and present their proofs to each other. This allows them to learn by the experience of digging into the full technical details of the algorithms, as well as forcing them to articulate their knowledge.

In my experience, both when teaching an algorithms class and when running a lab for introductory programming and data structure classes, I have greatly appreciated the flexibility of the teaching environment. In the lab environment, there was a mix of pre-designed lab assignments, time to work on homework projects, and time for me to give mini-assignments to teach a particular concept. I enjoyed the free-form nature of that environment and would like to replicate several aspects of it in a classroom. In a lecture environment, I was able to move between topics whenever necessary. By maintaining communication with the students, so that they were comfortable asking for clarification and further or different explanation, I could tell when they were following, and what was confusing different people. The ability, and necessity, to adapt both content and presentation style on the fly kept teaching exciting. As I gain experience, I would like to continue to increase my flexibility, to be able to more seamlessly transition to alternate explanations of difficult topics, to practice questions when I can tell that students need to work on a concept to cement their understanding, and to increasing active student involvement in learning.

In essence, I believe a good teacher is a flexible teacher, able to adapt to each student’s needs and to coalesce material on diverse topics. As a teacher, I focus on trying to find and pique the interest of each student in each topic, by finding the best way to communicate to that student and by showing the connected nature of diverse fields of study. I hope to be able to take material and present it in multiple ways to connect with any student of any background and interest area. I hope to help students not only understand the material at hand, but to give them a desire to continue to pursue further knowledge and understanding in their chosen field.