Teaching Statement

I have been involved in teaching in many roles. I began as a teaching assistant for an upper-division digital design course at UC Santa Barbara. My responsibilities were to supervise a lab section and grade student projects. The course project for the lab section was to build a 4-bit processor by combining both hardware components and programmable logic. Although I did not put much thought into my methods, I was passionate about the subject matter and found myself excited to pass on my knowledge to my fellow engineers.

Since that first experience, I have expanded my range of teaching experiences. I have mentored both high school and university students through summer research projects, tutored middle school students in a hands-on after-school STEM program, and served as a university teaching assistant for countless quarters at multiple institutions. I am currently an instructor for an upper division computer science course at UC Irvine, and in my spare time I tutor local high school and college students. I consider my ability to teach others not only an opportunity but a responsibility.

There are a few teaching methods I have intentionally incorporated in my courses, made observations, and formed opinions about: namely flipped classrooms and group work.

I have previously been the teaching assistant for the digital design course I am currently instructing. In the initial offerings I participated in, we presented the material first in lecture form, and subsequently required completion of interactive assignments on the topics presented. However, in the last two offerings, we flipped this model, requiring the interactive assignments completed prior to the lecture on the same topic. Solicited feedback from students on this specific aspect of the course has been positive. Comprehension has also appeared to improve based on grades, but we have not compared both models to classes taught in the same session. Anecdotally, classroom interaction during lecture has been more involved, with students asking more advanced questions the first time they are exposed to topics in lecture. Based on my experiences, I think overall for both students and instructors this method is worth considering.

Incorporating group work in computer science curriculum whenever sensible is part of my teaching philosophy I am more passionate about. Being an effective part of a successful team is an essential skill for any computer scientist. Considering many will go on to work on software development teams, as instructors we should make group work a core part of any curriculum. To incorporate this into my course, I added a programming project component that required students to work in teams with a randomly assigned partner. Teams had to complete a single software project, and submit a single report together. I emphasized to my students the importance of working and communicating effectively with strangers, potentially individuals that they may not like.

I could go on to beat the active learning horse to death here, but you can probably find plenty of extensive boilerplate opinions and applications without the addition of mine. My thoughts are that active learning is definitely not a one-size-fits-all solution, and should be applied with great
care and consideration on a case-by-case basis. I have had experience introducing some of the milder applications in my course, and student feedback was not positive.

Formal assessment of teaching methods is crucial for judging effectiveness. Pedagogy is an increasingly active research area, and there is a wealth of new and exciting teaching methods in the literature. However, as instructors it is crucial that we all formally assess the effectiveness of any of the methods we choose to incorporate into our teaching. The evaluation of methods is one aspect of my teaching I would like to be more rigorous and methodical about. I think using all of the evaluation methods available to us as instructors is important to determine the effectiveness of an applied method. Considering grades, student comprehension, and direct student feedback in combination is important.

A final thought specific to teaching university students and other adults: transparency is important. I think that as adults, students react positively when they can empathize with your decisions. If, as an instructor, you are transparent about the reasoning behind course-related decisions, it communicates your thought process to students, which generates empathy, and also displays that you have made thoughtful decisions regarding course design. Communicating your intentions also opens a dialogue for constructive comments and feedback from students.

The previously discussed philosophy and methods are ones I have applied and observed primarily at the university level. I also have experience with younger students from underrepresented demographics. I specifically enjoyed my experience teaching low-income, mostly hispanic, middle school girls in a STEM after-school program. The main takeaway was that they were no different than any young students interested in STEM. Although I considered “accessibility” in the presentation of materials, there was no need to treat them uniquely. The girls were perfectly capable of consuming the material designed for students at their level of experience. I was impressed with their ability to grasp basic kinetics concepts at such an early age without prior exposure to physics.

I have had enough experience teaching different subjects to different types of students to know that no combination is exactly the same. University teaching often affords one person to teach different topics, even outside of their field of expertise. I look forward to expanding the topics I teach at the university level, in order to better determine which methods are appropriate and effective for what subject matter.