Allison K. Sullivan – Teaching Statement

"Any increase in knowledge anywhere helps pave the way for an increase in knowledge everywhere." – Isaac Asimov

I understand the value of higher education. Having worked closely with the Boys and Girls club of America and being a professor at North Carolina A&T State University (NC A&T), the nation's largest historically black college, I have seen first-hand the difference education can make in a person's life. While a bachelor's degree undeniably opens doors, the quality of the education behind it ensures those doors stay open. In my first week at NC A&T, a coworker told me "truthfully, for most of us, our teaching not our research is what will touch more lives." This statement reiterated to me the importance of all aspects of my job as a professor. As an undergraduate, I sought out classes taught by professors who were passionate, engaging, and invested in their students. I strive to be the type of educator whose class I would have been excited to take.

Lecture

Whether I am lecturing to 10 students or 40 students, my goal is to foster a fun, interactive learning environment that students look forward to. To achieve this, I incorporate the following concepts into my lectures:

- **Engagement.** There is nothing more awkward than standing in front of a room full of people as you give a lecture and realizing that you've lost everyone's interest. While studies show the average adult attention span is 20 minutes, I do not think this means a good lecture should be divided into 20 minute "death by powerpoint" segments. Rather, I engage students throughout my lectures by asking and taking questions. I have an upfront policy that I will not move on until a student answers my question and I find this encourages widespread participation. I place great emphasis on in-class learning and most of my lectures end with students working in small groups on a exercise, which also helps build collaboration in the classroom.
- **Style.** I believe it is important to remain flexible. Only presenting material in my own learning style is not beneficial, after all, I already know the material. I maintain an anonymous Google survey for students to leave feedback. Where applicable, I incorporate their feedback, showing the students that I am invested in their learning. In general, when lecturing, I convey my own passion for the material as a roadmap of interesting points for the listener. Regardless of style applied, I avoid simply stating material and instead focus on presenting the blueprint and letting the class discussion build from the intuition to the conclusion.
- **Differentiated instruction.** When students come to office hours, or express in class that they are having a difficult time absorbing the material, those students do not benefit from me simply restating the content on the slides. Instead, I focus on framing the problem from another perspectives, thinking of multiple methods for finding a solution, and trying to present the concept in a new way. A method I recently started taking advantage of is to have students explain concepts back to me and to each other. This leads to a deeper understanding for both the student giving the explanation and the class at large.
- **Leveraging diversity.** Computer science classrooms are a hodge-podge of people with different experiences: working professionals who are returning to school to obtain a bachelor's degree, students who have been coding for years and students who have no experience at all. I believe in leveraging the diversity of a classroom to benefit students, rather than viewing the challenge as a burden. While students may have varying levels of understanding, they bring with it a diverse set of perspectives on the material. These perspectives can organically enable broad conversations about the applications of the material. As a lecturer, my responsibility is to help start and guide those conversations.

Professional Development

As an educator, one is ironically constantly learning how to be a better instructor. I strive to continuously improve the quality and content in any course I teach. I recognize that I am not a domain expert on education, and I actively seek opportunities to learn how to be a more effective instructor.

PBL in Algorithms. I received a $5,000 Scholarship of Teaching and Learning Fellowship from a NSF ACE Implementation Project (No. HRD-1719498) to investigate if a project-based learning (PBL) approach

is able to help develop important soft skills in my current algorithms course. Employers admit they want to hire graduates who can think critically, communicate and work with others, and who can manage themselves effectively. These are all skill-sets a project-based approach was meant to address. My study investigates the potential benefits and drawbacks from incorporating more PBL activities into algorithms.

Google Faculty in Residence. During the 2019 summer, I went to Google's Mountain View headquarters to participate in their Faculty in Residence (FIR) program. The program brings a group of faculty together with Google engineers to learn about, design, and implement project-based and applied learning curriculum. During my time at Google, I improved on my "Comp 285: Design and Analysis of Algorithm" course material and structure. I made two major changes: (1) I incorporated white-boarding sessions into my lecture and (2) I incorporated test suite, design document and reflection document milestones into my programming assignments. In addition, I received training to conduct resume workshops and give mock technical interviews.

Teaching Experience

Since the fall of 2018, I have been an assistant professor of computer science at NC A&T. During this time, I have designed three courses from scratch: Comp 285: Design and Analysis of Algorithms (undergraduate), Comp 611: System Testing and Evaluation (graduate), and Comp 681: Formal Methods (graduate). Additionally, I have extended the course material for Comp 496: Senior Design (undergraduate).

NC A&T's ABET accreditation audit was due in the Fall 2019 semester. In support of this review, I have: (1) prepared course exhibit folders for Algorithms and Senior Design, (2) put together data about student performances over the program educational objectives, and (3) put together a continuing improvement plan based on observed data trends. I have also built assessment data for SACS. As a direct result of the quality of my work in this regard, I currently serve on the assessment committee.

Conclusion

I teach with my passion for the subject on my sleeve and I strive to build that passion in my students through engagement, real world examples, and sometimes I even resort to memes. I enjoy teaching because of the challenges and rewards in crafting, organizing, and delivering the material. I look forward to contributing to a department's educational programmes and the chance to pay forward the enrichment education has brought my life.