

My teaching is focused on providing students with multiple avenues to acquire knowledge. I wholeheartedly believe that a flexible teaching style that caters to multiple learning styles can help students learn better than traditional lecturing approaches. Moreover, I actively encourage students to engage with each other and to pursue different learning methods, helping them expand their learning skills while acquiring knowledge. As an educator in Computer Science, I believe expanding learning skills is essential because students must be able to develop problem-solving and critical-thinking abilities in addition to mastering concepts.

I have been passionate about teaching since I was a teenager, volunteering to teach economically disadvantaged middle school children, helping them work with problem-solving tasks on material they learn at school. Even my earliest teaching approaches involved novice active learning techniques in collaborative learning environments, though I was not really conscious about it. As I transferred from an Indian education system to an American one halfway through my undergraduate degree, I realized that my skills were inadequate to perform well in classes. While I understood the concepts that were taught in lectures, I struggled with problem-solving while working on assignments. With the help of study groups, I was able to engage in active learning and work on my problem solving skills, which were crucial to succeeding in class. This influenced my teaching philosophy to look at collaborative learning.

My undergraduate experience provided me with relevant training as a future instructor and simultaneously solidified teaching as a primary interest. As an undergraduate student at Rutgers University, I was exposed to teaching and mentoring early on through conducting study groups as a Learning Assistant (LA). I led study groups alongside courses, where I designed activities for helping students further engage with the course content. As an LA, I also attended training sessions on collaborative learning and took pedagogy courses. These experiences helped me form my philosophy around collaborative learning techniques. Furthermore, realizing how much I enjoyed teaching, I broadened my scope and became a Peer Instructor for the *First-year Interest Group Seminar* (FIGS) program offered by my school. I developed my own ten-week credit-bearing course titled *Exploring Computer Science*. I got the opportunity to design my own course, construct a syllabus, plan lectures, and teach the course to twenty-five freshmen students. Working through this comprehensive process helped me experiment with determining learning outcomes and then designing how to best achieve them with appropriate material and teaching methods.

My graduate experience has helped me work on course logistics and mentoring in addition to teaching. I served as a teaching assistant (TA) to a variety of graduate and undergraduate courses; providing me insight into the value of working with students outside the classroom. In courses that I teach at the University of Utah, I have striven to improve TA-run lab sessions and support students working on assignments. I value the mentoring process and have explored opportunities for my TAs to work on being peer leaders to students and facilitate a positive learning environment in their office hours and lab sessions. I often sit in on labs to help TAs work on their skills. My staff meetings often involve discussions around enhancing interactions with students to facilitate higher-level learning. With my TAs, I stress on using effective questioning strategies to help students arrive at answers themselves¹. Students come away from my courses stating that I provide "... numerous opportunities to get help with the course."

In my experiences teaching multiple semesters of COMP1010 (Programming for All), I redesigned the course to not only accommodate teaching logistics but also reflect my teaching

¹ Sousa, D. (2006). *How the brain learns* (3rd ed.). Thousand Oaks, Calif.: Corwin Press.

philosophy. My first time teaching it remotely to a smaller group of students in the University of Utah Asia Campus involved taking an existing in-person traditional lecture-based course and converting it to a semi-synchronous remote class with a significant active learning component. My second time teaching this class at the University of Utah Main Campus once again had to be adapted, this time, to scale the active learning activities for an in-person 150-student classroom setting. Moreover, feedback from my first experience showed that some students appreciated the textbook due to a language barrier with solely lecture videos². This feedback led me to redesign the course by providing more learning avenues and adding supplementary readings to give students more than one way to learn the content. As I prepare to teach this class again for Spring 2023, I am working on adding even more flexibility to the course. This class is taken by students pursuing majors ranging from Chemical Engineering to English, and I would like to have the course activities reflect the varied skills of the students. The learning outcomes will remain focused on learning programming, yet these additions will improve accessibility to students with varied interests, based on feedback from previous offerings of the class.

When designing each class session, I use a four step learning cycle framework with emphasis on collaborative learning. I begin with a quick recap of essential concepts required for the class. Helping students learn prerequisites before the main topics shows that an instructor cares about the students, and makes them more receptive towards the teacher, helping them learn better³. Next, I introduce new material and provide learners more content to digest along with examples and applications. I couple learning with helping students build connections and solve problems collectively. Third, I use in-class activities to provide students opportunities to test their understanding of new concepts in a positive learning environment⁴. These activities help spur discussion and activate higher learning goals over simply remembering concepts⁵. I conclude with a quick overview on the concepts learnt, allowing for some group processing.

I believe teaching always has more room for growth and seeing students engage with the course motivates me to continue improving on my skills. Course curriculum can also be improved and I have found that even small changes like updating a lecture-plan to bring it in line with currently relevant topics makes a difference. I have received feedback from students retaking the class that the new approach helped them learn better than a previous offering: such feedback gives me a sense of achievement. When students feel more engaged, I feel that they are enjoying learning—their active role in the process fuels them to be more curious and explore knowledge further. My goal is to help them explore these curiosities. My hope is that they may discover something they want to pursue further in life in a way my professors inspired me to pursue teaching and research. I look forward to continue working on my teaching skills while facilitating lifelong learning.

² Guzman, C. N., Xu, A., & Gerald Soosai Raj, A. (2021). Experiences of Non-Native English Speakers Learning Computer Science in a US University. In *Proceedings of the 52nd ACM Technical Symposium on Computer Science Education* (pp. 633-639).

³ Stronge, J. (2007). *Qualities of effective teachers* (2nd ed.). Alexandria, Va.: Association for Supervision and Curriculum Development.

⁴ Johnson, D. W., Johnson, R. T., & Smith, K.. (2007). The State of Cooperative Learning in Postsecondary and Professional Settings. In *Educational Psychology Review Educ Psychol Rev* (pp.15-29).

⁵ Masapanta-Carrión, S., & Velázquez-Iturbide, J. Á. (2018, February). A systematic review of the use of bloom's taxonomy in computer science education. In *Proceedings of the 49th acm technical symposium on computer science education* (pp. 441-446).