

Teaching Statement

Manoj Ramanathan

Every student is unique and providing a valuable education that is fruitful for each one is very challenging. My teaching philosophy has always revolved around how well I gauge my students. For this reason, my teaching involves two aspects, creating a learning conducive environment for all students and getting the student's perspective and feedback (iterative approach) . To keep an open mind towards learning and research, I have always tried to promote my students to learn from their mistakes and from outside the classroom environment.

Creating a learning conducive environment

I am a firm believer that every student is capable of learning if a teacher can create a learning conducive environment suited for him/her. But it is also essential to understand that every student has a different approach to learning and a teacher cannot employ a single set of methods for teaching all concepts. That is why, to make any topic interesting for the student, my teaching sessions employ several teaching aids including visual, audio, and interesting trivia if necessary. During a preparatory teaching assistant course, I understood the value of these aids and have always incorporated them in my sessions. Most students (graduate or undergraduate) do not understand concepts because they are not able to visualize them or they just cannot see how it translates to a different application. By including computer simulations, graphical illustrations, or providing more examples, I was able to witness better results with even weaker students.

Another important aspect of creating a learning environment involves making each session an interactive one. Using various teaching aids helps to get the attention of students for a longer time but with interaction the learning becomes more fruitful. These interactive sessions include various activities to make students understand the basic concepts and would not be confined to a simple classroom session or notes. These activities can be designed as either individual or group activities as well. With group activities or assignments, it is possible to create a positive learning environment for all students. Some possible approaches could involve grouping weak students with strong students and with requirement for everyone to pitch in to complete the activity. This allows the weaker students to complete their own task within the group but also clarify their queries from strong students. The activity can help both weak and strong students to apply the same concepts to different applications. These interactive activities allow me to pose intriguing questions and start a discussion among the students on their understanding. The students can be promoted to think out of the box and come up with any solutions. Such activities promote discussion among the students and interaction with me during sessions to make a very healthy learning environment for any student.

Getting the Student Perspective towards Learning

An important aspect of teaching is to understand and get to know the student's perspective towards learning. For this purpose, I make it a point to have discussions with my students and always promote them to question the concepts that are being taught to them. It is quite possible that the student did not understand the concept or had made mistakes. As a teacher, I have always encouraged my students to make mistakes as it allows for a better understanding. Whenever a student answers incorrectly, I clarify his/her understanding of the concept without stigmatizing.

It is quite natural that each student behaves differently in a classroom setup. Several students do not openly participate in sessions as they are nervous, uncomfortable, or lack confidence and many other reasons. Due to this, it would not be possible to know if some students understood the subject or not. When I was a teaching assistant (TA) for a basic engineering math course for undergraduates, I was able to use online portals to promote the understanding of these students. The online portal could be used by any student for watching the recorded lectures again, taking online quizzes and assignments. The platform also provided a forum where students could ask questions to teachers and clarify their doubts. In this way, weaker students were able to get more help and could put across their thoughts to the teachers. The online quizzes and assignments also allowed us to test students privately without ever announcing the grades in the class.

Another important aspect was the student feedback about the course content and the teacher. This provided a way of knowing if the course content prepared by me was adequate. The feedback always acts as an evaluation of my teaching and provides clarity on which concepts were better understood. This allowed me to change and improve course materials and activities for the next batch of students. I have always believed in proactively getting feedback from the students during the course so that I can improve and change my teaching methods if necessary.

Research Mentor

I have been fortunate to work with more than 50 undergraduate, graduate students, and interns on research projects. As a research mentor, I have asked students to work on my projects and also have helped them with their own projects which have resulted in multiple co-authored publications. Most undergraduate and master's students have worked with me for their final year projects or thesis. I have also had the opportunity to discuss with PhD students on their projects when I was a research fellow. During this time, I was also involved in organizing and gave research seminars to students so that they could know about the various research approaches being used by several researchers. By employing my teaching philosophies, I was able to motivate my students in research as well. For good research, it is necessary to learn outside a classroom environment and be able to apply concepts to different applications and analyze the results in an unbiased manner. During my mentoring, I have spent a lot of time with these students to understand each one's mindset. One-on-one conversations always helped me to reach out to my students. In these conversations, the students had full freedom to discuss their opinions and ideas of their defined research project. I was able to correct their errors and help with analyzing the observed results. Over the course of time, I have also witnessed how the student's mindset has changed and what they want from their careers. Based on this, I have also been able to provide suggestions and guidance on their technical goals and careers.

In summary, I have always believed every student is capable of learning and it is the teacher's responsibility to create that conducive space where their learning can flourish. With changing technology, it is imperative every student adapts to them and can learn from outside the class environment to become successful researchers or professionals. As a teacher or mentor, I always promoted my students to continuously learn from everyday experiences, to question and learn from their mistakes and develop an open mindset towards a better career.