

I hope to become a faculty member in the future and am interested in improving my teaching abilities. Being a good lecturer not only helps my teaching but also helps my research, as teaching essentially is similar to giving talks in front of researchers from different background. Having been a graduate student for several years, I have taken a great deal of teaching assistant work and taught a class myself. I will describe my teaching strengths and philosophy in detail below.

First of all, I never underestimate the importance of lectures I give. I taught a first year calculus class, which is regarded as the easiest conceptual course in undergraduate mathematics. However, this does not mean the course preparation could be treated sloppily. According to my experience, most first year students have never learned any level of calculus during high school. As a result, the first course in calculus is of great significance to them to achieve their higher academic goals and hence we need to take it seriously. I prepared my class very carefully including preparing lecture notes, designing written assignments, holding office hours and so on. I also used online tools such as Piazza and Canvas to communicate with students and organize class files more conveniently.

Secondly, I have a few points to make about methodology as well. According to my experience, it is crucial to get the students involved in teaching activities. In fact, giving a calculus lecture is somewhat like giving a seminar talk: many of the audience are not very familiar with your research topic. The difference is that researchers are able to ask key questions and discuss efficiently so that they can figure things out in a short period. This suggests that a more interactive lecture may help students learn new knowledge in an efficient way. To be more practical, I encourage students to “interrupt” me every time they get confused. This actually also helps instructors to reflect on the common mistakes or misunderstanding students have and hence adjust the lecture arrangement. Moreover, group discussion is quite useful as well, especially when the class is conducted online during the Covid-19. Group discussion can be about not only solving an example problem, but also reviewing a theorem or a concept. As the great physicist *Richard Feynman* once mentioned, explaining studies in simple terms helps people to understand better. Similarly, if students could just explain the theorems in simple terms, at least they have a better understanding than just memorizing. So during lectures, sometimes we can lead students to conduct a 2-minute group discussion on explaining how they understand the new knowledge and summarizing the lecture. For example, in one of the lectures I was going to teach optimization problems. As is well known to us, optimization problems are applications of finding critical points of given functions. To solve such problems, basically we just follow the recipes given in the textbook and solve them step by step. However instead of presenting the recipe myself, I asked students to discuss and try to conclude a recipe on their own. After they finished discussing, I chose some students’ recipe and combined with the lecture notes. These teaching activities can raise students’ interest and sense of accomplishment, which helps them learn new knowledge much more effectively and efficiently. Group discussion is even more useful when the class is streamed on Zoom, because instructors are busy with presenting and often neglect questions in the chat while some students are too shy to ask voice questions. Using break-out group sessions can help instructors check the students’ understanding and give the students opportunities to ask questions. Moreover, at the end of each class, I suggest doing a simple reflection. Reflection can be in the form of multiple choices, blanks filling and others about what concept or techniques they have learned in this class. It does not need to be very time-consuming, only few minutes is enough; but the reflection’s influence is quite big: students tend to summarize the whole lecture and emphasize key points by themselves. This will improve their abilities of self-study and critical thinking.

Last but not least, feedback is also worth treating seriously. Feedback includes homework assignments, quizzes, workshops, office hours and all other off-curriculum study activities. Feedback is not only about the grade, but also about tracking students’ study progress and giving appropriate suggestions. For example, although most of instructors are required to perform office hours for around 2 hours, some students may prefer to ask questions right after the lecture or sending emails to schedule a meeting instead. In those cases, we should still be very approachable so that students can feel being more inspired and encouraged. During the Covid-19 period, we even built a Discord channel for the whole class, so that students can form study groups and ask help from instructors and TAs easily; they can even get peer feedback, which is also essential to them.

Basically, these are my teaching philosophy statement so far and hopefully I can apply these in teaching and update the statement as more teaching experience are gained. After all, practice makes perfect.