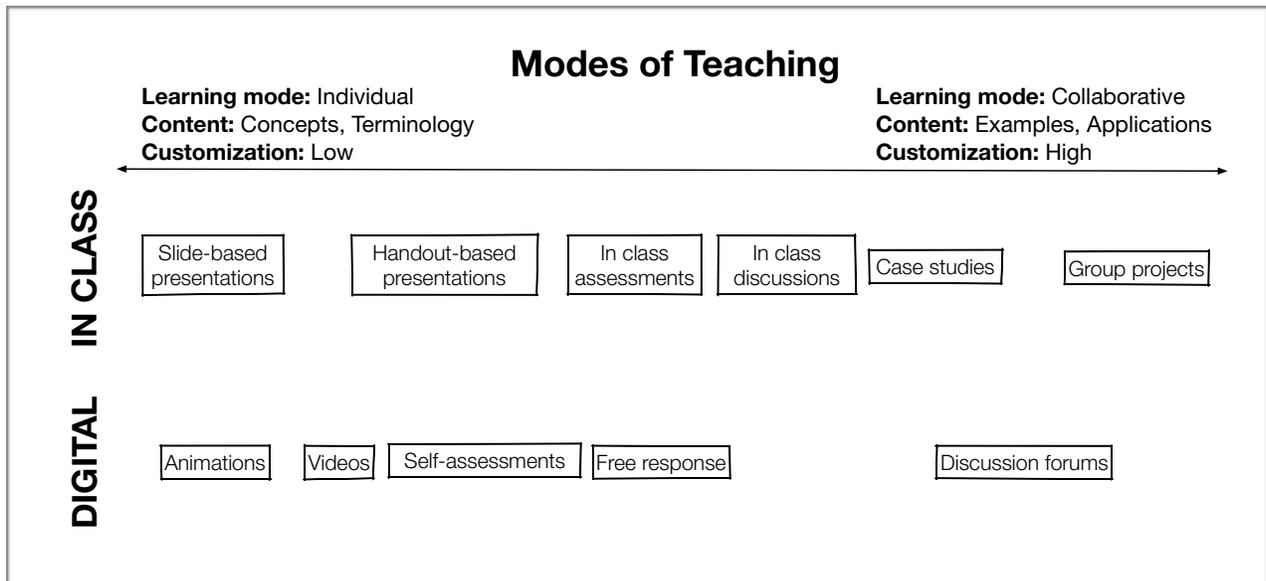


Teaching Philosophy

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In the past four years as a graduate student, I have come to believe that learning is an activity that an instructor cannot directly control; all I can do as a teacher is attempt to identify and create an optimal learning environment for a given set of students to learn a given set of materials. While this statement may seem disheartening at first, I have come to realize just how much flexibility my role allows. There is a wide array of pedagogical methods that I can use to construct a learning environment best suited to student needs, both in and out of the classroom.

These techniques fall along a spectrum bounded by two extremes, illustrated in the figure below:



On one end of the spectrum, there is learning related to theoretical constructs. Examples of this in my teaching include the Central Limit Theorem, sampling distributions, or the construction of statistical tests. These topics lend themselves to step-by-step explanations, clear visuals, and assessments to check student understanding. For example, as a teaching fellow in a policy-oriented statistics course, I produced [a series of animations](#) conveying the intuition underlying statistical power, and working through the implications of changes in the underlying data.

At the other extreme, there is learning related to concrete applications of these ideas. This type of learning relates to “real-world” concerns such as determining the eligibility threshold for an anti-poverty program, separating signal from noise in a political poll, or determining the most effective use of resources to improve health outcomes. I have found that highly customized activities such as group projects and discussion forums allow students to immerse themselves in the nuts and bolts of using statistics in practice. For example, as the instructor of a classroom of Indian civil servants, I asked participants to apply concepts of statistical inference to an annually released report on education in India.

I have found this framework to be a useful tool in planning my teaching materials. Embedded in this framework, however, are a number of additional values that I consider to be core to my teaching philosophy.

Experiment with appropriate technology

Much of my growth as a teacher has stemmed from a willingness to embrace promising technologies and integrate them into my teaching. As long as I believed the potential benefits of a new tool outweighed the costs, I have experimented with it in and out of the classroom. This includes technologies to enhance my teaching (writing on a projected iPad instead of a chalkboard, integrating supplementary TV screens to

convey main ideas during lectures); to enhance student learning (creating narrated videos of statistical concepts; developing [interactive online modules](#) for students to learn from using the edX and Articulate platforms); and to encourage student participation (using polling software to solicit student feedback and impressions in a more structured way).

Embracing the potential of these technologies has provided greater flexibility in my efforts to create the most suitable environment for students learning. In the aforementioned statistical power example, I opted to produce the animations in a digital environment instead of presenting the animations in class. This allowed students to learn at their own pace and revisit the key points of each animation as needed. I then presented [extensions of those animations](#) in class, where they were integrated into an assessment to push students to think through the implications of elements not explicitly addressed in the digital module. Balancing the impersonal yet private learning experience of the videos with the collaborative benefits of class discussion was a rewarding endeavor that would not have been possible without this willingness to experiment.

Embrace visual learning

Much of my teaching experience has involved conveying mathematical concepts to an audience without traditional quantitative backgrounds. While the use of practical examples has played an important role in this process, I have also found visualizations to be an especially useful tool to convey the intuition underlying more complex ideas. For example, I have been told by previous students that an especially memorable classroom experience involved illustrating linear regression as a three dimensional graph, an exercise that eased the conceptual transition from bivariate to multiple regression. [Another animation](#) involved contrasting between-group and within-group variation using colorful balls, which builds to a formal expression of an ANOVA test.

The fact that students regularly refer to these examples has taught me that conveying dry concepts using visuals and animations does more than make them more digestible; it makes them more memorable. The more I teach quantitative methods, the more I feel that this latter benefit is truly invaluable.

Encourage expression of unease

The final core value underlying my teaching philosophy relates to the right half of the above framework: creating an environment wherein students feel comfortable expressing confusion, misunderstanding, or outright disagreement. While this endeavor is a challenge in every new class, I have found some success through a combination of earnestness, humor, and a willingness to adopt whatever preconceptions a student has in order to locate sources of misunderstanding. Additionally, engaging with students outside of the classroom has an important role to play. My success in fostering the free exchange of ideas and concerns in an online discussion forum has led other instructors to ask for advice on facilitating the same atmosphere in their courses.

The values and techniques that I have adopted in my teaching have helped me to create positive environments where meaningful learning can take place. However, I have taken pains not to lose sight of the fact that an instructor is just one of many factors that lead students to succeed or fail in their efforts. Ultimately, my role is that of a facilitator, one whose primary responsibility is meeting students where they are, and working to understand how I can help them move forward.