

The desire to teach was an integral reason why I pursued academics in my career. From a young age, I believe myself to be a passionate and engaging educator-mentor and I would like to spend my career continuing to do so. I also believe teaching is my professional obligation to the next generation. I personally owe my achievements to my teachers from grade school to grad school. When the elevator reaches the top floor, I believe strongly in sending it down to pick up others. This is a personally-felt obligation that makes me go above and beyond to ensure the students that come my way reach their potential.

## History

I first realized my love for teaching at the college level as a teaching assistant for many semesters in graduate school at the Wharton School of the University of Pennsylvania. But the most formative experience was being the lecturer for Stat 101 in the Summer of 2011. Designing the curriculum, giving lectures, coming up with homework assignments and examinations was the most rewarding six weeks of my graduate career. That six weeks turned into my job for the next 10 years. But it has not felt like “a job” at all.

In my teaching career as a professor, I’ve designed eight courses from scratch: **Introductory Probability**, **Bayesian Modeling**, **Advanced Probability**, **Statistical Inference**, **Probability Theory for Data Science**, **Statistical Theory for Data Science**, **Foundations of Data Science and Machine Learning**, **Computational Statistics**. These courses cover from second-year undergraduate material all the way through masters-level material in probability, statistics and machine learning. All the materials are open-sourced on [github](#). And I will also be releasing open courseware videos on [youtube](#) for the **Foundations of Data Science and Machine Learning** capstone course this summer (after I am finished editing).

Besides creating courses, I create educational programs. In 2018, we rolled out the new undergraduate program in data science and statistics (DSS) which I proposed, developed curriculum for and continuously administer. This program is a joint effort of Mathematics (my home department), Sociology, Economics and Computer Science. My colleagues outside of Mathematics respect me as a team-player and partner.

The core DSS courses teach the fundamental concepts in my research agenda. Thus, my teaching blends well with my research and I regularly mentor many students who want to go deeper after the semester is over. If a student has a deep interest in the topics, is self-motivated and wants to work hard, they know to come to me. These one-on-ones are a great joy of mine as I love to unlock students’ potential for research. During my time mentoring undergraduate theses and independent studies, I have published joint papers with students and I am currently mentoring three students this summer. Further, I’m active in placing students in graduate school (including Statistics PhD at Columbia, Biostatistics PhD at NYU, Mathematics PhD at Drexel). I have also coached many students to their first data jobs. My alumni have gone on to data science, data engineering, data analyst

and actuary careers at Wells Fargo, JP Morgan, Webster Bank, Amazon, NASA, Grant Thornton, various tech startups. As the DSS program grows, my plan is to make career mentoring and professional internships a formal component of my teaching career.

Besides the development of the DSS program and research mentoring, I do a fair amount of service that supports other instructors. I invented a web application used in many universities that provides students with full transparency of where they stand in the class as well as forecasts of their final grade based on the instructor's curve (see the intro video at [gradesly.com](http://gradesly.com)). This system is important in my teaching as it demonstrates to the students that their grades are objective and my role in administering grades is to be a fair referee in their sport of learning.

## Philosophy

I have regularly received stellar teaching reviews by both students (see appendix) and my colleagues (see attached observation reports). I am considered an inspirational, compelling, viscerally engaging lecturer where few others can articulate difficult concepts like me. In March of 2023, I won the *President's Award in Excellence in Teaching*. I think this achievement is due to more than just hard work and passion for the material.

I've spent substantial time during my career deep-diving into the psychology and philosophy of education. There are two works that notably influenced my lecturing, my design of assignments and my goals for examinations: "Mind in Society" by Lev Vygotsky and "Experiential Learning" by David Kolb. Vygotsky introduces the Zone of Proximal Development (ZPD) theory which defines the role of the educator as one who "assists" the student *gradually* into a zone of ability beyond what they could achieve on their own (the small arrows leading into region "A" in Fig. 1).

Thus I spend a great deal of time creating lesson plan "maps" which gradually, step-by-step impart the concepts. My strategy is to begin with the most straightforward example of the concept with simple math and no frills. Then I add a bell, then a whistle. I make sure to use chalk on the blackboard (not electronically projected slides) so the students witness the creation process unfold before them (additionally, it forces them to take notes).

The most important implication of the ZPD theory is that lectures are only a springboard into the substantive part of the learning. It is most critical for the student to get their own hands dirty with the concepts, but it has to be the most *effective* direct experience. Thus, I developed creative problem sets with *easy*,

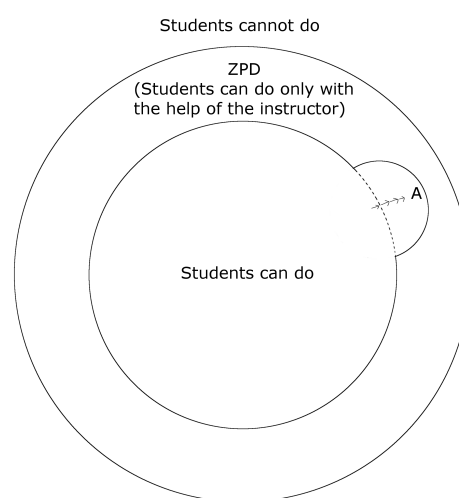


Figure 1: Vygotsky's Concept of the teacher's role in assisting the student *slowly* through their ZPD.

intermediate, difficult and extra credit exercises color-coded which my students affectionately nicknamed “traffic-light homework” (canonical examples can be found [here](#) and [here](#)). This allows the students to gradually expand their conceptual sophistication without the initial melancholy of being overwhelmed.

David Kolb draws upon Carl Jung’s theory of psychology types and proposes different strategies for educating students with different types of intelligence. I made sure to have pure logic, explosive excitement, historical narratives, and philosophy in the lecture delivery. The problems on the homework and exams mirror this diversification: there is theory, applications and coding further culled from a variety of disciplines — physics, finance, sports, technology, psychology and medicine (good examples of exams can be found [here](#) and [here](#)). Thus, there is “something for everyone”; no brain type is unfairly favored in my classes.

Moving gradually through the concepts and appealing to a wide range of intelligence types allowed me to cover more material than most undergraduate courses. My alumni in industry routinely tell me that those interviewing them are shocked at how much they know. My alumni in PhD programs are impressed with how much they know when compared to students in their cohort which are usually ivy-league+ educated.

Aside from the formal aspects of teaching, I believe I give what it takes to be a first-rate educator and role model. I am seldom unavailable. I run a discord server for each course (the latest craze in gen-z group chat) where I can be found assisting students at odd hours. I spend time getting to know the students. They know I am there for them, rooting on the sidelines as their biggest fan.

## Concluding Words

Teaching provides me happiness and fulfillment as I experience great joy and internal resonance when I feel I have passed on a concept to another. I do not feel burdened to give back, inspire, mentor, and educate the next generation. I would like to continue this passion and further grow into new territory: I hope to design new advanced courses in DSS and mentor masters and doctoral students. I plan on further developing professionally by continuing to read the educational literature and implement their ideas into my classroom. Teaching is an essential part of who I am and I want to continue it for the rest of my productive life.

## Appendix: Selection of Students' Reviews

From my rate my professor page:

- By far one of the best professors at QC. He thoroughly knows what he teaches and it shows in how he makes it easy to understand. Good balance between theory and practice with plenty of real-world applications. Take him if you want to learn, avoid him if you're trying to do as little work as possible.
- Absolute dawg. Took him for all DS sections. The topics we cover in class are in its self challenging, and the questions he asks are no exception. If you actually try and do the hw (not just gpt) no reason to not understand the material. Really funny guy, fun to [be around]. Caring & personable. My favorite professor at QC no doubt.
- He is a phenomenal professor. He gives a lot of hw, but you get to make and use cheat sheets on the exams. This course wasn't easy but it was very rewarding. You'll leave the class with a very deep understanding of probability. Kapelner is also a very funny guy and there is hardly ever a dull moment in the class. I recommend him 100%.
- This 4-credit class is not for the faint-hearted. You'll get swamped if you leave your A-game at home. However, what you'll be rewarded at the end is a thorough, non-dumbed-down, best-bang-for-your-bucks education that guarantees mathematical acceleration. Prof. Kap is "unimpeachably" funny and respected by the whole class.
- After one class with this guy, he opens up so many doors for self-development. This professor is not afraid to help outside the classroom in terms of career, dropping good life quotes, and is available when you need a friend. He has amazing stories to tell in class, and he is a true "bro". Study hard, get creative, and have fun!
- 343 marks the season finale of his popular, self-designed 34x series, a course in which modern computational methods critical for statistical inference, survival analysis, and data science are rigorously taught. With 341 (prereq) & 342 (coreq) under your belt, you do not want to miss 343 to make yourself even more useful.

From Queens College's internal course evaluation system:

- I highly recommend Professor Kapelner and this course! Great syllabus and road map which was followed closely. Well-prepared proofs and use of GitHub and Discord for a teaching platform are great!
- I really enjoyed the modeling paper- even though it was difficult, it really helped (perhaps even forced) me to thoroughly understand the concepts in this class. I hope theoretical math classes would implement this sort of approach in instruction.
- The use of markdown computational notebook in RStudio to have many examples! The mix of highlevel procedural steps and then diving into details, for example to demonstrate the efficiencies of C++ or python. The explanation of the motivation behind the models.
- What I liked most about the Data Science via Machine Learning course was its practical, hands-on approach to applying machine learning algorithms to real-world datasets. The use of Python and relevant libraries like Scikit-learn and Pandas helped bridge theory and practice, making complex concepts more understandable. Additionally, the course structure encouraged problem-solving and critical thinking, which kept it engaging and intellectually rewarding.
- The class was split into two distinct parts, first 2/3 for frequentist and last 1/3 for bayesian. It was very nicely done. It was already very well weaved with MATH 340/640, and our eyes sometimes split open when we noticed why one thing mentioned in the previous class was relevant to the lecture of the day. I was fascinated by how the Professor distributed the second midterm the day when Inverse Gamma was introduced, as the second midterm had a question about Inverse Gamma.
- ...this was one of the coolest most interactive classes I've taken. To sit in a 2 hour lecture and not be bored after another 2 hour lecture right before — that's talent.