During my PhD journey, I enjoyed teaching so much that I decided to make a career change from policy research to academia. It was very rewarding to receive immediate feedback from students, and I have made it my goal to continue sharing knowledge with a large audience. I have taught undergraduate and graduate students, in both the economics department and data science programs at the University of Washington. In 2020, I won our department's Langton Award for Distinguished Undergraduate Teaching. I took it as a recognition of my teaching strategy and encouragement for my future career as a professor. In this statement, I will discuss my teaching philosophy in more detail, relating them to my previous experiences and future teaching plans.

I believe real-world examples with economic tradeoffs are the best tool to foster economic reasoning, so I always start each class with a real-world example. For instance, when teaching the concepts of specialization and trade, I used Brexit as an introduction, and asked my students to think about why people or nations choose to be economically interdependent. This approach can engage the students more, provide an overview of the topic of the class, and help them develop the ability to isolate the economic forces at play in tackling real-world questions. In my principal level class, student assignments usually include an article response to recent news from the Economist or the Wall Street Journal, which they need to apply the economics concepts learned from the class. Students enjoyed doing this assignment and were excited to discuss their articles during the office hours, because it made them more likely to accept economics as being relevant to their life.

Besides economic reasoning, I view empirical analysis as one of the more important pieces in an economics student's toolkit. I find patience and hands-on experience are the key to ensure your audience learns effectively. As a consultant at the Center for Social Science Computation and Research(CSSCR) at UW, I help students or faculties with their statistical questions. Some undergraduates who need to do simple summary statistics for their coursework but with no experience in data analysis or using software like R or Stata will come to us with great frustration. I usually first ask about their deadline and give them an estimated timeline to calm them down. Then I will start from the basics like downloading data and installing software packages, and ask them to do it step by step together with me. During the meetings, I will also use my own struggle learning R as an example to keep encouraging them. I developed a longer relationship with some students, and helped them beyond the coursework and through their thesis projects. I also shared stories from my time at the IMF when I worked with large, messy datasets to encourage my students to develop good habits working with data, and make their work more reproducible and shareable. I believe these skills will help the students with successful careers as researchers or policy makers in the future.

Complicated math or abstract concepts intimidate many undergraduates away from majoring in Economics. I think adaptive teaching to your target students is the key to make the subject more approachable. As a teaching assistant for Data Science Capstone, I guided 50 students from the interdisciplinary Data Science Master program through their capstone projects with technology firms and local non-profit organizations. When I explained the basics of time-series analysis to them, I found that examples common in economics like GDP or stock prices do not connect well with this audience, so I switched to using sales or online

prices that are in the context of these students' fields and had an immediate impact on their understanding. To make math more approachable at the introduction level course, I always use graphs or tables instead of equations when possible. For higher level courses, I make sure the mathematical analysis is presented both precisely and concisely. For students with stronger mathematical backgrounds, I always point them to a few additional references, and encourage them to discuss more details with me during office hours.

College education should help transform passive learners into active problem solvers, and I believe emphasizing the process of thinking is the most crucial element. As one of my student in Introduction to Microeconomics wrote:

The section instructor always challenged her students to think about how these economic concepts come to play in different situations, and she encouraged participation in order to see if students fully understood the concepts rather than just listening to the answers. I felt that I was actually thinking and learning a lot from my mistakes in this class.

I always ask students how they arrive at their answers, whether it's in-class questions or exams. I would use practice questions right after introducing a new concept, encourage students to discuss with others, and share their answers and reasoning with the class. These in-class discussions not only promoted critical thinking, but also helped students form study groups after the class. In every exam, I would ask explicitly for the students to show their problem solving process step by step, and give most of the credit to the right steps even if the final answer is wrong. I find students respond favorably to this policy by putting more effort into understanding than memorizing the concepts.

Education is a life-long career, and I think being able to embrace new technologies is important. During the pandemic, I had to move my classes online. Even though Zoom lectures can be distracting sometimes, I took advantage of some convenient features to make the best out of it. For example, I always play a prisoner's dilemma game with the class when teaching game theory. I would ask the students to vote either "cooperate" or "compete" anonymously, and they will get extra credit for the finals depending on group results. Using the poll function on zoom has made it much faster for everyone to see the results. I was also able to play multiple rounds with the students and observe how they adapt and learn in the process. I enjoyed using the breakout room function to assign students randomly each class for in-class discussions. I recently discovered a lot of useful teaching materials on EconTwitter, which I plan to continue to incorporate into my future teaching.

I am excited to teach a wide range of courses at both the undergraduate and graduate level. I am highly interested in teaching topics in my area of research: applied microeconomics, development, and labor economics. I also see teaching as one of the main ways that I can learn, so I would love to teach courses related to statistics, econometrics, and data science techniques used in social science.

In sum, whether in small classes or large, I am dedicated to teaching Economics in ways that will remain with the students long after they leave my classroom.

Summary of Teaching Evaluations

Zhe Liu
University of Washington

Department	Quarter	Role	Course	Level	Type	Average rating	Responses/ Enrollment
Information	Autumn 18	TA	Data Science Capstone I- Project Preparation	Master	In-person	5/5	n.a.[1]
Information	Winter 19	TA	Data Science Capstone II- Project Implementation	Master	In-person	5/5	n.a.[1]
Economics	Spring 19	TA	Introduction to Microeconomics	Undergraduate	In-person	4.7/5	12/32
Economics	Autumn 19	TA	Introduction to Microeconomics	Undergraduate	In-person	4.2/5	27/49
Economics	Winter 19	Instructor	Introduction to Microeconomics	Undergraduate	In-person	4.7/5	12/32
Economics	Spring 19	Instructor	Introduction to Microeconomics	Undergraduate	Online	4.1/5	13/43
				Average rating		4.6/5	
				Langton Teaching Award in 2020			

Notes: Evaluations provided by the course instructor only, and student evaluations were not required.