As a teaching assistant and a guest lecturer in methodological classes, I have had rewarding experiences in preparing class materials and interacting with students. When I was a teaching assistant for the ‘Advanced Epidemiologic Methods’ class as a graduate student, the class was adding new material, and I innovated to find the best way to help students prepare for the midterm exam. In addition to a GitHub repository I set up for the class to organize the scripts created by the professors for the class, I also created a review study sheet based on the course content and customized it for the exam. I was unsure if these efforts were worthwhile, but the positive feedback that I received from students following these two efforts, including one comment from a student that she would be using the review summary in her future research, became a rewarding experience for me in a teaching role.

As a postdoctoral fellow at the National Institute of Environmental Health Sciences (NIEHS), I have had opportunities to bolster my teaching experience. In January 2020, I was a guest instructor for the short course titled, ‘Introduction to Statistics and Experimental Design’, offered by the Biostatistics and Computational Biology Branch. In this short course, I was able to interact with a small group of scientists interested in learning more about statistics and share how it can be applied in their own work. I also had the opportunity to learn how to enhance my teaching abilities and the learning experience of students through the ‘Scientists Teaching Science’ online class offered at NIEHS in 2019. In this 9 week class, I learned about topics including different teaching styles, how to increase inclusivity, and syllabus design.

As a professor at George Mason University, my overarching goal for students is to develop skills necessary to independently conduct substantive research using advanced analytic methods in public health research. One approach to develop these skills could be to present CDC case studies in the context of pressing public health problems including the most common disease outcomes such as chronic disease, cancer and infectious disease.

One example of a teaching strategy to lead students towards a class goal -- such as establishing a research question in public health in the context of quantitative analysis -- would be to use a combination of lecture and active learning techniques such as small group discussions because these techniques can promote student retention and performance (1,2). For example, to plan a class focusing on racial and ethnic disparities that influence public health outcomes, I could lead the class with a short video focusing on racial and ethnic disparities that result in adverse health outcomes, such as mortality due to COVID-19. Next, I would plan a short lecture outlining two different analytic approaches to measuring the associations between disparities and the outcome. Following this lecture, I would ask small groups to plan an analysis using one of the approaches outlined in the lecture. Near the end of the class, we would reconvene and discuss as a class the merits of different approaches selected by the groups. I would have this teaching approach follow a well-defined set of course objectives as defined through Bloom’s taxonomy (3). My overall teaching goals for the class would progress from the foundational levels of knowledge and comprehension to a final expectation of demonstrated analytic and synthesis abilities.

Given my extensive experience with GitHub, I plan on using GitHub Classroom (https://classroom.github.com/), a source code management resource that I use on a regular basis in my research. This resource would enable me to distribute, evaluate, and collect homework for classes on statistical methods and advanced epidemiological concepts. I would also use this resource to enable collaboration and promote scientific reproducibility, an interest of mine and another possible seminar I could teach. Furthermore, this technology would be an asset when teaching online classes.

In sum, my goal for students in my classes is to strengthen their role as ethical and productive population health scientists as they apply advanced analytical methods in their professional lives outside of the classroom.

**References**

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