

## Jonathan Perry-Houts Statement of Teaching Philosophy

Students come to college for a variety of reasons. Some come to develop specific professional skills, some come to explore potential career paths, some come to grow as individuals. There is an equally wide range of motivations for which students enroll in any particular class. As a teacher I am sympathetic to the myriad reasons students for which students end up in my courses, and I strive to cater to the diverse needs and interests of any group of students.

Ultimately though, my priority in teaching is for students to develop critical thinking skills, problem solving skills, and a deeper connection to the world around them. Broader goals like these transcend individual course objectives while enhancing day-to-day learning outcomes, long-term retention, and mastery of course content. In short, my teaching philosophy is a willingness to adapt my teaching, using up-to-date pedagogical practices, with the goal of fostering critical thinking and problem solving.

In practical terms, pursuing these goals can be a challenge, and my preferred approach changes as I learn more about how learning works. However, some of my more fundamental beliefs about how best to approach teaching have been reinforced throughout my own education, and more recently through my interest in evidence-based pedagogy. First, it's clear that students learn best through direct engagement, rather than rote consumption of facts. Second, pedagogy is most effective when chosen carefully, and intentionally.

Tested strategies exist for engaging students inside the classroom, and course design choices can and should draw on the most up-to-date research. Active learning is not a new concept, but methodologies for its effective implementation are constantly being developed and refined, to better serve the diverse range of students enrolling in college. As an instructor, I owe it to students to update my course designs to stay inline with tested and effective teaching methods.

On the other hand, I recognize that it is important to make changes to courses only when evidence for doing so is sufficiently compelling. Quick tips and tricks for lesson plans are easy to find, but changes should be intentional, made from an informed perspective, and should be consistent across the design of each course. From the choice of texts to the types of assignments and assessments, design choices should complement one another and serve distinct, identifiable purposes.

The most effective specific methods vary by topic, individual, context, course objective, mastery level, and so on. Generalities are difficult, but there are a few I've found to be helpful. One that I'll highlight here is the importance of variability in type and form of modules within an individual course. Assignments which are sufficiently different from one another provide multiple entry points for students to engage with the content. Importantly, this technique is a key component of so-called universal course design, where assignments and assessments are diverse enough that no group of students is systematically disadvantaged. It also helps minimize the necessity for individual accommodations and exceptions, by making courses intrinsically flexible.

Another method I'm interested in is developing and maintaining an undergraduate presence in research. Identifiable opportunities for students to take ownership of their learning are some of the most effective ways to motivate interest, and transition students from classroom exercises to applications which they can apply more readily after college. Actively recruiting undergraduates to research projects is an effective way to increase participation of underrepresented minorities in STEM. Depending on available resources, this may take the form of either building and maintaining an active lab group, with opportunities for students, or maintaining connections with researchers who have such positions available.

Lastly, verifying efficacy of pedagogical choices is important, and can be difficult to assess in many cases. Engagement can take many forms, and its expression varies by individual, making assessment on these terms difficult or impossible. But engagement does manifest indirectly in assessable ways. Combinations of tests and quizzes, self-assessments, peer reviews, paper writing, and just about any other ordinary or novel assessment technique can be informative, if designed with specific outcomes in mind. Meaningful student assessments can serve as a powerful tool, and can help adaptively guide the direction of a course if used judiciously.

My teaching philosophy changes as I learn more about cognitive development, but it is built out of my under-

standing of the state of educational science, and my anecdotal observations of various teaching methodologies throughout my academic life. It is also inspired by a metacognitive understanding of my own educational experience. I want to teach physics and earth sciences because both subjects inspired me to see the world from a completely new perspective, and have shaped my understanding of the place and space I live in. I want other people to have a similar experience, and learning how to meet students where they are to help them through the process is my approach to that overarching goal. My teaching philosophy is just an expression of that approach.