

## Teaching Philosophy Statement

I believe the most important job of a teacher is to encourage aptitude for critical thought, both in the classroom and in the wider world. When I taught a senior-level class in Environmental Economics, I looked for opportunities to enable students to think about the application of the theory, rather than just memorizing equations or concepts that I presented to them.

For example, when we covered cap and trade programs, such as the EPA's Acid Rain Program, I pulled from my knowledge of behavioral economics and ran an experiment where the students simulated acting as power plant operators who needed to buy, sell and trade emissions permits in order to maximize profits. Showing students slides about company participation and the rules for a specific program can be hit or miss, but nearly every student in the lab took an active interest in figuring out the rules, and came to intuitively understand the tradeoff between abatement and emission permit purchase much more than talking about the underlying theory would allow them to.

I think the application of such experiments to economics can be transformative to students. It can be very easy for students to see a presentation about some bad decision they may make, but an experiment in which falling for this same fallacy costs them real money or points toward their final grade seems to enforce a desire to truly understand such things. Running an experiment that demonstrates that the students free-ride on a voluntary provision of a public good or make inefficiently high bids when confronted with uncertainty as to the true value of an item makes the resulting discussion much more involved, as the students actually have some sort of experience with the topic. Students can evaluate their own decision algorithm and see how it differed from the ideal. They thus think more deeply about such a lesson, having experienced the situation themselves.

When I won the Outstanding Teaching Assistant of the Year for my college in 2006, part of my work involved running a game on a Saturday morning in which the students took on the roles of multinational companies and countries eager for investment as part of a class in International Trade. Concepts that students had learned about in theory – profit margins, net present values, tariffs, and value added taxes suddenly seemed much more important when they were debating with other students as to simulated terms of investment and trade.

As well, I like to include current information, whether encountered in my own research or the popular press where I can. Learning about the cost and benefits of environmental policy engages students much more when I place it in the context of controversy over offshore wind farms at Cape Cod or data about power savings from solar panels atop the public library in cloudy Ithaca, New York.

In these parts of class, I am less the traditional lecturer, instead leaning more towards a role of access provider, finding and providing access to information that may help to enhance students' understanding and appreciation of topics discussed in class. Rather than replacing the lecture role, though, I think that these additions to class enhance the

role: the theory seems much more pertinent, as the students have a real-world frame of reference to which they can apply the theoretical framework they learn in lecture.

Ensuring that this learning is actually going on is as important as presenting interesting, engaging lectures in the first place. To this end, I have come to appreciate small group work to gauge the progress of students. Given a small numerical problem relating to recently discussed theory, small groups of students can work for a few minutes, often using other members of their group to fill in gaps in their own knowledge. Taking the responses from all the groups, I can then gauge how effective my own teaching has been. Or, I can give them a small article or paper to discuss in groups and then discuss in class.

One of my favorite short papers to discuss has been the Summers Memo, associated with Lawrence Summers while he was Chief Economist at the World Bank. Students are usually shocked, but it provides a ready link to topics important to environmental economics such as the value of a statistical life and the “race to the bottom” in international trade.

More traditional forms of evaluation, such as problem sets and exams, are still a useful tool. They trade off immediacy of assessment for a more detailed look at student understanding and performance. In-class problems are an effective gauge as to whether one idea was presented effectively; problem sets and exams help me measure the retention of a range of ideas and methods. A very useful form of assessment is the first day questionnaire, where I can find out what previous experience students have in terms of mathematics, economics, and environmental science, and discover what topics they most want to see covered. Using this, I can tailor class time more effectively. If most of the students in class already understand how to set up and solve a Lagrangian, introducing that topic may take less time. If students are very interested in, say trade and the environment and less so in global warming, I can change the relative length of my lectures.

If my teaching is done correctly, students will have a theoretical and practical grasp of the idea I am trying to communicate, and can use their new theoretical framework to analyze future information and theories they may encounter.