Bryn Mawr Economics Assessment Loop

Econ 200, Intermediate Microeconomics, is a core course in the major curriculum. It acts as a transition between the 200-level field courses (which apply basic economic concepts to explain market outcomes and evaluate alternative responses to those outcomes deemed unsatisfactory) and 300-level courses that expose students to primary research. The course seeks to turn students into informed consumers of microeconomic theory and to start them on the road to producing enhancements to that theory. It seeks to support their transition to thinking like economists as they observe their surroundings.

We do this primarily by expanding the number and depth of analytical tools beyond those encountered in Econ 105 (Introduction to Economics) and the following 200-level electives. Mastery of tools necessarily goes beyond definition and mechanics, to knowing which tool to apply when. The vast majority of Econ 200 students can solve a problem like the following on the final exam:

Suppose the price elasticity of demand for automobiles were -1.5 and the elasticity of supply were 1. If 20 million automobiles are sold each year at an average price of $16 thousand, what would be the effect on the market of the imposition of a $4 thousand excise tax.

However, unless properly cued, those students are likely to be tripped up by the following question.

If the government were to raise the sales tax on a consumer goods product, the tax would be

A. . . . put on the top of the price due to the market power of the sellers (sellers dictate price to protect profits)
B. . . . put on the top of the price due to inelastic demand (the buyers need the things they want to buy so much that the sellers can just add the tax to the prices)
C. . . . shared due to elastic demand (if the burden is not shared the buyers would be less willing to buy)
D. . . . shared due to elastic supply (the sellers can cut back on the supply)
E. . . . shared due to elastic demand and supply (the distribution depends on the relative bargaining power of sellers and buyers).

1 David Ross has taught Intermediate Microeconomics exclusively for the Department since 2006. Vlad Kontorovich teaches the corresponding course (Econ 300) with similar objectives at Haverford. Several years ago, the Swarthmore Economics Department stopped incorporating multivariable calculus in its Intermediate Microeconomics course; so that course no longer fulfills a core requirement for the Bryn Maw major or minor.
Those students haven’t really crossed the threshold to thinking like economists and aren’t adequately prepared to meet the goals of the remainder of our major.

This sort of learning outcome – students who master the skills taught in class, but nevertheless struggle with core concepts of the field when encountered outside of the framework of a course – has caught the attention of instructors in many fields (most notably physics). The argument goes that much of what distinguishes an economist or physicist from a novice is the integration of certain threshold concepts – like elasticity, interaction of forces, opportunity cost, or light diffraction – into one’s way of thinking. Students who fail to cross the threshold often fall back on memorization or imitation, strategies that can prove successful on examinations but don’t provide the understanding they seek and require.

At Bryn Mawr, we encounter this phenomenon in our senior Economics research seminars, where students who earn 3.0 or above in our intermediate theory courses nonetheless, struggle to

- Apply economic theories to topic at hand
- Identify and formulate an appropriate research question or hypothesis
- Draw implications or conclusions of analysis for key question or hypothesis

among other goals from our assessment rubric of student ability to engage in economic research. It also seems plausible (although we haven’t tested it), that our very good students (whether majors, minors or just students who take one or two economics courses) leave Bryn Mawr with a limited capacity to articulate the economic processes behind the headlines or challenges of daily life.

The purpose of this project is to enhance the effectiveness of Econ 200 in helping our students cross this threshold.

Goals and Objectives

As of October 2009, the Department set the following expectations for students completing an AB in economics:

A. The ability to understand and apply fundamental economic reasoning, concepts, theories, and models
B. The ability to use economics to make reasoned assessments of public policy issues
C. The ability to formulate and test questions/hypotheses in economics
D. The ability to identify, access, and use appropriate information including data and published economic research
E. Analytic and quantitative skills
F. Written and oral communication skills
The Fall 2011 syllabus for Econ 200 set the following objectives: Microeconomic theory focuses on interactions among firms, households and government as buyers and sellers and (in the last case) regulator. By the end of this course you will master the construction of those theories using (primarily) three analytical tools:

- Constrained optimization – pursuing goals subject to limited resources
- Equilibrium analysis – characterizing outcomes in which no agent has an incentive to seek change
- Comparative statics – how equilibrium outcomes respond to changes in one or more starting conditions

This maps tightly with expectation (E) above, but has not been, but ought to be, linked effectively with (A) and (C)

Learning Strategies

David Ross proposes to follow an increasing number of our physics colleagues in experimenting with the flipped classroom/peer instruction as a method for enhancing mastery of threshold concepts in Intermediate Microeconomics (Econ 200). The essence of the approach is to shift much of the derivation of theoretical results and exposition of analytical tools (through reading, on-line lecture, and interactive modules) to preparation time before class; and to use time in the classroom to help students articulate solutions to concept questions like the elasticity question above.

On-line blended learning techniques allow one to assess student comprehension of the readings and videos to plan classroom activities “just in time” to meet the needs of the students. The majority of class time is spent in think-pair-share engagement among different groupings of the students, with the instructor acting as coach rather than expositor. For the purpose at hand, the key is to shift the focus from mastery of tools to developing a level of comfort with the concepts underlying the use of the tools.

The success of this flipped classroom approach in raising student mastery of threshold concepts has been documented in physics instruction by Eric Mazur and others. David will apply this approach starting with Econ 200 this spring. He is supported in this effort by his participation in several threshold concept seminars and other activities sponsored by the Teaching Learning Initiative.

Completing the Loop
David’s leave pattern offers something of a quasi-experiment for evaluating this approach, since he expects a visitor (or Vlad Kontorovich at Haverford) to teach a more conventional version of the course during his next sabbatical leave.

The first step in the project will be to create the first draft of a concepts inventory to use as pre- and post-tests of the mastery of underlying concepts covered in Econ 200 (important to the goals of the major and integral to what it means to think like an economist). This will be administered at the start and end of the spring semester and (with minor modifications) in subsequent terms to assess the effectiveness of changes made to the course. Such inventories are widely accepted in physics and some other fields, but are lacking in economics. David will draw on questions from the *Test of Understanding of College Economics*, AP exam and GRE.

Administering the concepts inventory at beginning and end of the next few semesters of Intermediate Microeconomics will be the primary assessment vehicle. It would also be worth considering administering the inventory to senior majors and to recent graduates. The new approach should also improve performance on a standard course final exam. Ideally, the approach should also lead to noticeable improvement on the senior seminar assessment rubric.