

Efficiency in the Use of Technology in Economic Education

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The purpose of this project is to assess the cost-effectiveness of integrating technology into introductory economics courses. The project is timely for the economics discipline. While instructors are increasingly incorporating new technologies into their courses, reliable data on the cost-effectiveness of the new technologies have yet to be collected and analyzed. The project team was created as a part of the American Economics Association's Committee for Economic Education Research Projects Conference.

Data for the project will be obtained from a sample of approximately forty introductory economics courses from a variety of educational institutions. The treatment group will consist of twenty instructors who are highly experienced users of technology. The control group will consist of twenty instructors who use little or no technology. By using introductory courses from a variety of institutions, we will be able to determine whether the "best technologies" differ across institutional environments (for example, residential vs. commuter campuses, or research vs. teaching institutions). A pilot study will be conducted during the Fall of 2001 to test our procedures and instruments. The full study will be conducted in the Spring and Fall of 2002.

Activity-Based Costing will be used to compare the relative cost-effectiveness of a wide range of technologically enhanced teaching methods, including, but not limited to, presentation software, email, websites, online bulletin boards, online chat rooms, market simulations, and electronic markets. A key feature of our analysis will be the inclusion of instructor time inputs devoted to each of these various teaching methods into the Activity-Based Costing methodology. Instructor time inputs will also be related to student performance, which will be evaluated using the Test of Understanding of College Economics (TUCE) and team-developed evaluation measures. Student time inputs will also be related to student performance in a separate analysis.

Selecting instructors for the intervention group who are experienced technology users will allow the study to focus on the productive efficiency of incorporating teaching technologies without confounding the time-cost estimates of using the technologies with those of learning to use the technologies. The instructors of both intervention and control classes will complete extensive weekly time sheets showing the amount of time allocated to various teaching and learning activities (for example, lecturing, grading, discussion, or experiments), and the particular technologies used for each activity (for example, blackboard, overhead projector, computer, email, or web discussion). Students will be given pre- and post- performance tests, and questionnaires to determine their learning styles, attitudes towards economics, and self-confidence. Students will complete time diaries of how they study for the course. Demographic characteristics of students will be obtained from university records to isolate the impact of these characteristics on performance and cost and make the necessary self-selection corrections for the returned time diaries.

Salemi, Michael K., John J. Siegfried, Kim Sosin, William Walstad, and Michael Watts. (2001). "Research in Economic Education: Five New Initiatives," *American Economic Review* 91 (2): 440-445.