Upgrading and Maintaining a Computer Laboratory to Enhance Economics Education through Active Learning
Submitting Organization: School of Policy Studies
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1. Executive Summary

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2. Project Description

The department of economics currently maintains a 10-station computer lab (housed in the Robinson College of Business building) that allows student access to the Iowa Electronic Market and other computer programs designed to enhance economic education. This proposal seeks funding to maintain and upgrade this lab and expand it to an additional site in the Urban Life building. The Urban Life building currently houses many of our faculty and graduate students, as well as the Office of Academic Assistance for the Andrew Young School of Policy Studies. Moreover, it is more conveniently located to the classroom buildings, thereby allowing for greater student access. In this project description we first outline how the computer programs are integrated into the undergraduate curriculum and then how the requested funds will be used to upgrade and maintain this laboratory.

The Iowa Electronic Market (hereafter, IEM) is a real-time and real-money electronic futures market designed specifically as a teaching and research tool. Students use real money accounts to trade contracts with payoffs based upon real-world events such as political outcomes, companies' per-share earnings, stock price returns, movie box office receipts, and Federal reserve policy decisions. For example, in the upcoming presidential election participants can trade shares of stocks that earn a return based upon which candidate wins the election or upon the share of the popular vote each candidate receives. The IEM markets predicted the last two presidential elections within 2/10ths of a percentage point, out-predicted all national polls. The markets run continuously (24-hours per day) and new markets are opened monthly. There are several thousand people (both students and non-students) across the nation who have active accounts in the IEM, and all participate together in these markets.

The IEM provides students with a unique opportunity to participate in a common market experience. They can log on in the lab, outside of class, place buy or sell orders and check back at a later time to observe the progress of the market. The lab allows instructors with small and large classes alike to use the market as a valuable teaching tool. By encouraging such active participation, instead of simply reading and talking about markets, the students can start applying class concepts to real decisions. Thus, the markets reinforce ideas from class and enhance student understanding. In addition, the IEM gets students involved with the information superhighway and gives incentives for students to follow business, economic and political news.

A number of other interactive exercises are available through the NovaNET computer system (which is accessed in the lab through PeachNet). These exercises include a monopoly price-searching exercise, several interactive market exercises, and a public goods exercise (in which students learn the potential value of cooperative behavior). All of these exercises are designed so that students can access them over a period of days or weeks, thereby allowing them to be used by large sections. Instructors may access information on students' decisions from their office and discuss the outcome of the exercises in class. These exercises cover a variety of topics that are
used in introductory and upper-level economics courses. Moreover, they include examples where economic predictions accurately describe human behavior and applications where additional explanations are required. In this way, students may be encouraged to think critically about what they are being taught in class.

Finally, the lab will be used to access software that accompanies the textbook used in all of the introductory economics courses. The software contains useful summaries and exercises for the students.

In January 1998, Sally Wallace, Associate Professor of Economics, received a Quality Improvement Fund Award from the University of $27,500 to build the laboratory, which currently contains 10 computers that students may use to trade in the IEM and access the other economics exercises. The lab is currently staffed by graduate teaching assistants, working 40 hours per semester (approximately 30 hours per week during the summer). The student assistants maintain the computers and assist students in navigating the IEM and participating in other exercises.

In its second year of use, 100% of professors and graduate teaching assistants reported using the IEM in their principles of microeconomics courses. In 1999/2000 AY, over 100 students per month come through the lab, and hundreds more accessed the IEM through remote locations. Susan Laury, assistant professor of Economics, will conduct seminars in the fall semester to enable more faculty and graduate assistants to take advantage of the NovaNET exercises in their courses.

We expect the expansion and upgrade of these lab facilities to have a large impact on the Georgia State University student body. During the 1999 calendar year, the introductory economics sequence had a total enrollment of 4,276 students (2,353 in macroeconomics and 1,923 in microeconomics). These courses are required of all students completing a bachelor's degree in business administration, and many students pursuing other majors take one or both courses.

We also believe that by adding a satellite lab in the Urban Life building, which is more conveniently located near the classroom buildings, more students will make use of these educational opportunities.

3. Relevance to Regents Guidelines

The typical lecture-approach used to teach economics can best be described as “chalk and talk.” However, the Economics Education Laboratory will allow us to put a large number of students into the economic environment being studied, so that they can see how the market or organization works from the inside. When the theories being taught are confirmed, they become more credible (especially since many of the strict assumptions are not maintained in practice). When the results are unexpected, students can become involved in figuring out why things turned out as they did.

This will quite naturally provide added value to the educational experiences of our students, as encouraged by the Chancellor’s stated goal. The enhancement to the lab will assist students in meeting the educational objectives of their academic program (paragraph 1) by making them active participants in the economic environments being studied. This will also increase the interaction between students (and between students and their instructors) by giving them a common experience from which to base discussion both in class and outside of class. The technology fee revenues will be used for hardware … for special purpose laboratories used by students (paragraph 3) as described above. Moreover, the revenues will be used to provide staffing that … clearly will provide added value to students (paragraph 6) by allowing us to staff the labs with graduate student assistants that will help the students to complete the exercises. We believe that the graduate student staffing will also encourage those students who are reluctant to try new technology to use the lab.

4. Justification of One-time Funding Requirements

Three networked printers (two for the business building lab and one for the Urban Life lab) will allow students to print out exercises and relevant information from the IEM web site. The total cost of these printers will be $4,176 ($1,392 each). In addition, funding is requested for five new
computers for the proposed satellite lab in the Urban Life building, at a total cost of $10,605 ($2,121 for each of the five computers). Finally, $279 is requested to purchase Fortres, a security and desktop management software. This software is a valuable tool for managing open-access computer labs. It protects the computers against viruses, protects software from being modified or deleted, and assists in limiting the amount of hard-disk space used to store temporary work files. These one-time costs total $15,060.

5. Continuing Funding Requirements

We propose replacing 5 computers each year. This will allow for the 15 computers (the existing 10 computers and the five new computers that have been requested) to be replaced over a three year cycle. We expect this to cost $10,605 per year (starting after the first year). Continued funding would also be used to replace and upgrade the existing and new printers, by purchasing one new printer every year, at a cost of $1,392 per year (after the first year).

In addition, we seek funding for 1.5 graduate students to supervise the lab in the urban life building. We would request that this funding begin during the first year, at a total cost of $18,000 per year ($12,000 per graduate student, working 20 hours per week). The total continuing funding cost will be $29,997.

6. Accountability of Funds

All of the requested funds are for hardware and staffing for the labs, which may be easily verified. The financial office of AYSPS will ensure appropriate use of the funds.

7. Additional Funding Required, Non-Technology Fee

Desks and chairs will be required, as will network connections for the computers and printers. The Dean's office, Andrew Young School of Policy Studies, will pay for these expenses (see attached letter).

8. Impact on Computing/Network Infrastructure

Some of the exercises will reside on the computers' hard drives and therefore will have no impact on the University's computing infrastructure. The network and internet applications will require students to access the University's networking system. However, the small size of the lab (15 computers in total) should prevent this from having more than a minimal impact on the total network traffic at the university.