

Promoting Active-Student Learning Using the World Wide Web in Economics Courses

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In recent years, as the number of economics majors and students taking economics courses has declined, the issue of pedagogy in economic education has taken on increased importance. Economists have begun to think seriously about *how* economics is taught to college students, especially in introductory courses where students often experience economics for the first time. An important element in the current focus on teaching within the economics discipline is the recognition that current teaching practices, which rely heavily on the lecture format, are not doing enough to develop students' cognitive learning skills, attract good students to economics, and motivate them to continue coursework in the discipline.

Some economists have argued that to increase the effectiveness of economic education, and at the same time increase undergraduate enrollment in economics courses, economics instructors need to reexamine and change their current mix of teaching methods. In particular, advocates of pedagogical change emphasize the need for greater use of active- and collaborative-learning exercises that encourage students to take greater responsibility for their learning. Learning theory and educational research suggest that teaching strategies that actively engage students in the learning process increase the academic performance of students and generate more positive attitudes about learning.¹

At the same time, changes in instructional technology, in particular the development of the Internet and the World Wide Web, are providing new opportunities for improving teaching and learning. The challenge for instructors of economics is how to use effectively these new technologies to develop an active-student-learning environment in economics courses.² In the following sections, I discuss how this technology can be used to encourage and motivate students to become active participants in the learning process and describe two Web-based active-learning exercises that can be used in introductory economics courses. The examples illustrate how Web technology can be integrated with traditional teaching methods to enhance learning for students with a variety of learning styles, at the same time making economics more relevant, more interesting, and more fun for teachers and students alike.

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THE WEB AND ACTIVE LEARNING IN ECONOMICS

Research on cognitive learning suggests that although individual students learn in different ways, all meaningful learning—learning that emphasizes understanding and the acquisition of knowledge—requires active participation on the part of the learner (Shuell 1986). From that perspective, current teaching practices in economics, which rely heavily on “chalk and talk” (Becker and Watts 1996), appear less than optimal. Siegfried and Fels (1979) and Becker (1997) emphasize that to be most effective teachers need to employ a *variety* of teaching strategies that promote active student learning. Just as a golfer uses more than one of the clubs in his or her golf bag to achieve the best results, so too must instructors use the full range of teaching tools available to them.³ To the extent that the Web provides an additional teaching tool to engage students actively in the learning process, its use in economic education is likely to improve cognitive learning and generate broader student interest in economics.

How can use of the Web in economics instruction accomplish these goals? First, the Web is a rich source of economic news, data, and information that can make economics relevant and understandable for students in ways that lectures and textbooks alone cannot. Instructors can use up-to-the-minute data and examples to illustrate economic concepts and provide additional sources of information from across the world. Students can view news clips, listen to speeches, and access on-line economic resources from a variety of Web sources. These resources provide the basis for a wide variety of active-learning exercises. For example, students can use information from the Web to analyze and compare the economic and political characteristics of various countries, to develop a Web-based magazine (e-zine) analyzing current economic policy issues, or to make economic predictions based on economic theory and current economic conditions. These types of activities directly involve students in the learning process and make economics come alive, promoting broader interest in economics and providing a richer learning experience than traditional teaching methods can.

The Web also makes possible new learning environments that give students with different learning styles additional entry points into economics and multiple ways to practice economic concepts. For example, students who learn best by actively experimenting with economic concepts can practice those concepts via an on-line stock-trading game, macroeconomic simulations, or Web-based tutorials. Other students may benefit from participating in course-based Web discussion boards, while still others may prefer to research independently economic issues introduced in class. On the Web, students can take advantage of the resources that best fit their preferred learning style, unlike a traditional classroom setting, where instruction is often delivered in a one-size-fits-all format. Increasingly, individual instructors as well as publishers are providing comprehensive sites that include many of these features at one location, forming the basis for complete on-line course delivery.

Finally, the Web provides new opportunities for collaborative learning. Becker (1997, 1359) lists “the need for active student involvement with classmates in

the learning process” as one of the key elements in increasing students’ performance and interest in further study of a subject. The Web is a natural tool for increasing student–student as well as student–instructor interaction through the use of on-line chat, discussion boards, or listservs. Manning (1996) and Agarwal and Day (1998) describe the educational benefits of using these tools in economics courses and their positive effect on student performance and attitudes toward economics. Although Web-based communication tools are typically employed to promote collaborative learning within a class, publishers have also begun to develop virtual “learning communities” centered around specific textbooks that allow students from across the world to communicate with each other about economic issues, participate in real-time chats with the author, and collaborate on economic projects.

DOES WEB-BASED TEACHING IMPROVE LEARNING?

Given the recent development of Web-based instructional technology, empirical evidence on the effectiveness of Web-enhanced instruction for student learning in college courses is slim. Moreover, Sosin (1997) notes that most of the available evidence is anecdotal and focuses on the K–12 level rather than on the college level. Research on the use of technology in teaching suggests that there is “no significant difference” in the learning outcomes of students who use technology and those taught in a traditional classroom setting. Russell (1997) summarizes the results of nearly 250 research reports, studies, and papers that support this conclusion.

Agarwal and Day (1998) provide one of the first empirical analyses testing the instructional effectiveness of Web-assisted teaching in undergraduate economics courses. Overall, they find that inclusion of Web-based materials and activities provides statistically significant benefits to economic learning and students’ perceptions of instructor effectiveness. However, the overall effect on cognitive learning outcomes (as measured by TUCE scores) is small in size. Conrad (1997) provides a survey of research evaluating the use of Web-assisted teaching in disciplines outside economics, where the inclusion of new teaching strategies is more prevalent. Summarizing a dozen studies in eight academic disciplines, she finds that Web-assisted instruction (e-mail, discussion boards, simulations, and tutorials) generally increases students’ *enjoyment* of classes but finds no solid evidence of improvement in student performance when compared with students taught using traditional methods. Becker (1997, 1360) reaches a similar conclusion, noting that “research shows no great breakthrough in the use of technology in the educational process. Physical capital may be a poor substitute for human capital in education.”

Will the Web change this view? It is too early to tell, but past experience with instructional technology indicates that what matters most is not the medium by which information is delivered but *how* that medium is used to deliver the information. Simply making new instructional technologies such as the Web available to students will not generate increased learning in economics. Learning will be enhanced only when instructors incorporate and blend these technologies into

their teaching pedagogy in ways that help students practice economic concepts and get them actively involved in the learning process.

USING THE WEB TO PROMOTE ACTIVE-STUDENT LEARNING IN ECONOMICS: TWO EXAMPLES

The Web provides a useful tool for learning economics when used as part of an overall active-learning teaching strategy. In this section, I illustrate two Web-based exercises suitable for principles-level economics courses that place students at the center of the learning process.⁴ The examples include topics from both macroeconomics and microeconomics and, in general, require only minimal technical expertise; in particular, access to a computer equipped with a Web browser and an Internet connection. The first example is designed as a collaborative exercise; the second is best suited for independent learning. For each example, I include a set of starting points—annotated Web links—that provide relevant Web resources for the exercise. Additional sites can be found using popular Web search engines.

Exercise 1: Simulating a Federal Open Market Committee (FOMC) Meeting

This exercise is based on the Federal Reserve's successful Fed Challenge program, a national economics competition requiring teams of high school students to develop monetary policy recommendations and present them at simulated FOMC meetings.⁵ I use a similar exercise in my principles of macroeconomics course to illustrate the role of the Federal Reserve and monetary policy in the U.S. economy. The activity takes advantage of the Web's powerful information-gathering capabilities and encourages students to work together to increase their understanding of this important topic.

Background information. The best time to introduce this activity is immediately following a discussion of the Federal Reserve and monetary policy. The exercise gives students hands-on experience with the economic issues underlying Federal Reserve policy and provides a real-world understanding of the linkages between monetary policy and U.S. economic activity. In addition, the exercise illustrates that the macroeconomy is made up of several distinct geographical regions that may differ in terms of their economic situations and their responses to changes in monetary policy, a topic that is not usually emphasized in economics textbooks.

Step 1: Gathering data via the Web. Students are required to work in groups of 2–4 students, with each group representing one of the 12 Federal Reserve districts or the Board of Governors.⁶ The instructor can play the role of the Federal Reserve chairman or assign this role to a student. Each of the groups representing a Federal Reserve district begins by using the Web to obtain information about economic conditions in its district. At the same time, the Board of Governors group obtains information about national economic conditions. District-specific information is available from the Federal Reserve's *Beige Book*, available at the Board of Governor's Web site as well as at district bank Web sites.⁷ Information on the national economy can be found at a variety of Web sites (see Table 1).

TABLE 1
Web Site Information on the National Economy

<i>Starting points</i>	<i>What will I find there?</i>
Board of Governors of the Federal Reserve (http://www.bog.frb.fed.us/)	The current <i>Beige Book</i> , past FOMC minutes; congressional testimony and speeches by Federal Reserve officials; and background information on the Federal Reserve and monetary policy
ECONlinks (http://www.ncat.edu/~simkinss/econlinks.html)	An annotated directory of links to a wide variety of economic information, including national and regional data, economic forecasts and commentaries, and regional Federal Reserve banks (maintained by the author)
Economic Statistics Briefing Room (http://www.whitehouse.gov/fsbr/esbr.html)	Links to national economic data collected by federal agencies

In addition to summarizing overall regional economic conditions, each district group should identify the dominant industries in its region, describe their economic impact on the region's economy, and determine how sensitive these industries might be to changes in interest rates. After obtaining and analyzing its data, each group is required to draft a brief (one page) written report on the health of the region's (or the nation's) economy, which is then used to develop a monetary policy recommendation.

Step 2: Developing a policy recommendation. Each group uses the information it obtained from the Web, along with relevant economic theory, to develop a consensus about what type of monetary policy change, if any, to recommend. The recommendations should take the form of raising or lowering interest rates, or leaving interest rates unchanged. Students must be able to support their recommendations with the economic data that they have obtained. The policy recommendations, along with the economic justification for their decision, may be written either formally or simply as notes for presentation at the mock FOMC meeting.

Once the basic data analysis and policy recommendations are complete, each group must select a representative (the district bank president or a Fed governor) for the simulated FOMC meeting to be held in class. The representative presents the group's economic summary and policy recommendation and casts the group's monetary policy vote at the meeting. The instructor can choose to have each district representative vote at the FOMC meeting or use the current set of FOMC members (available at the Board of Governors' Web site).

Step 3: Holding the FOMC meeting. To start the meeting, each representative presents a short summary (2–3 minutes) of economic conditions in his or her district. At this point, the Federal Reserve chairman and Board of Governors are encouraged to ask questions about economic conditions in each district and their relation to the overall economy. After the district presentations are complete, the Board of Governors representative presents a summary of national economic conditions. The chairman then asks each group for its policy vote (maintaining

the board's majority vote) as well as a brief rationale for the recommendation. At the conclusion of the voting, the chairman briefly summarizes the vote total, the resulting monetary policy recommendation, and the justification for that recommendation. In addition, FOMC members decide whether to issue a press release summarizing the policy decision and how that press release will be worded.

Step 4: Summarizing the activity. To complete the project, it is best to conduct a class debriefing or summary during the class following the FOMC meeting to go over the activity and obtain feedback on student learning. Instructors might ask questions related to recent actual FOMC meetings or more generally about the economic effects of monetary policy. These questions can be addressed in the form of a small group discussion or a quiz. In either case, this immediate student feedback provides valuable information about student understanding, the need for further review, and ways to improve the exercise in the future.

Additional Considerations. How much time will this activity take? That depends on how the activity is structured. The activity can be lab based, with students obtaining, discussing, and analyzing information during one class and continuing that analysis out of class, or given as an out-of-class assignment, with a Web discussion board or e-mail being used to facilitate discussion among group members prior to an in-class FOMC vote. Overall, instructors should plan to use two one-hour class periods, with some time in-between class meetings for students to obtain and summarize their data.⁸

Is the Web necessary for such an exercise? Clearly not, but the Web provides greater flexibility in implementing the activity, greatly increases the ease of obtaining information, and allows new opportunities for out-of-class student collaboration. In the process, students have an opportunity to gain a better understanding of the Federal Reserve, its conduct of monetary policy, and its effect on the economy that goes beyond a simple textbook or lecture treatment.

Exercise 2: Trading on the Iowa Electronic Markets

In addition to being a powerful information-gathering tool, the Web makes possible new types of learning environments that give students direct, hands-on experience with economic concepts. This is illustrated by use of the Iowa Electronic Markets (IEM), a set of Web-based financial markets where students use real money accounts to buy and sell futures contracts. What makes these markets unique is that contract payoffs are linked to political events, such as presidential and congressional elections. Students buy and sell contracts based on their expectation of election outcomes, in the process learning valuable lessons about market behavior and the forces determining that behavior. Because students are putting their own money on the line, they also have an incentive to keep up to date with current political events, increasing both their economic and political literacy.⁹

Background information. The IEM encourages students to connect economic concepts to the real world and their own life experiences. By participating in actual markets, with a financial stake in their outcomes, students are led to discover the role that demand and supply play in determining market prices, the dynamic nature of markets, and the effect of information on market behavior. Lit-

tle formal knowledge of economics or finance is needed for students to begin trading in the IEM. The basic operation of the IEM can be introduced in a hands-on class session in a computer lab or through the IEM's on-line practice market. With an hour or so of on-line experience, students can be proficient traders.

To trade in the IEM, students are required to have real-money accounts, which they can obtain through the IEM Web site for a small set-up fee.¹⁰ Once students register and pay their registration fee, they are issued a user name and password that allow them to immediately access the markets and begin trading. Students can log into the IEM through the IEM Web site 24 hours a day, making it easy to participate at their convenience (see Table 2).

*Using the IEM as a teaching tool.*¹¹ Unlike the FOMC example, which was collaborative in nature and required in-class participation, the IEM is designed primarily for out-of-class, independent learning. To maximize its learning potential, however, instructors should integrate the IEM into classroom discussion and course assignments throughout the course. For example, instructors with an Internet connection in the classroom might project the IEM live during class and ask questions about recent changes in contract prices and the causes of those changes. Students can be asked to analyze these price changes using demand/supply analysis.

Instructors can also make the IEM trading competitive, with a portion of a student's grade being determined by his or her (or the group's) returns in the market. To ensure continued participation in the market, instructors can impose a requirement that students make a minimum number of trades over a given time period. Data available from the IEM can verify students' trading behavior, as well as their returns. Another teaching option is to ask students to keep a journal throughout the course describing the trades they have made, the profit or loss obtained, and the reasons for those trades. This latter exercise encourages students to analyze the factors affecting individual market behavior and their effect on market outcomes, as well as increasing their writing skills.

Use of the IEM provides benefits beyond improvement in individual student learning. For example, in schools with large African-American enrollment, the

TABLE 2
Web Site Information on the Iowa Electronic Markets (IEM)

<i>Starting points</i>	<i>What will I find there?</i>
Iowa Electronic Markets Web Site (http://www.biz.uiowa.edu/iem/fag.html)	Information about current markets, related Web links, IEM documents and manuals, and a direct link to the IEM including practice markets (available free of charge).
Classroom use of IEM (http://www.biz.uiowa.edu/iem/assignments/index.html)	Information on how instructors in a variety of courses use the IEM as a teaching tool, includes sample assignments.
Web exchange user's guide (http://iemweb.biz.uiowa.edu/)	Directions for connecting to the IEM Web-Exchange, making trades, and obtaining market information.

IEM can be used to discuss broader social issues, such as the growing black-white disparity in U.S. wealth distribution. Growing wealth inequality among whites and blacks over the last decade is in part due to differences in asset allocation; blacks are more likely to invest their savings in assets such as bank accounts or real estate, whereas whites are more likely to invest in financial securities. Differences in wealth have increased over the last decade as stock returns have soared relative to other assets. Using the IEM to increase minority student familiarity with financial markets may induce greater overall participation in the stock market, helping to increase long-term wealth among blacks.¹²

Additional considerations. Implementing the IEM in a principles of economics course can take as much or as little in-class time as the instructor desires. Student trading is most likely to occur out of class, but instructors should periodically reference the IEM, whether through Internet presentations, class discussions, homework assignments, or in-class examples. Linking formal economic concepts to students' hands-on trading experience is likely to increase their interest in the subject and at the same time, increase student learning. Making the IEM an integral part of economics instruction provides instructors with another tool to engage actively students with varied learning styles in the learning process and provides students with a fun learning experience that reinforces classroom teaching.

CONCLUSION

The Web and the Internet provide new opportunities for improving teaching and learning in economics. Not only does the Web give students unparalleled access to current news and economic reports, analyses, forecasts, and data, but it also provides new opportunities to communicate and learn without regard to time or geography constraints. How will this new technology change the way we teach economics, and more importantly, how can this technology be used to increase student learning?

Goffe and Parks (1997) see the Internet and the Web affecting teaching strategies in economics only modestly: using the Web to provide articles, course information, and data, as well as supplementing traditional communication with e-mail, on-line chat, and listservs. However, the possibilities for this new technology are much broader. For example, publishers are beginning to develop comprehensive Web sites with on-line quizzes, simulations, and study guides aimed at improving student learning in economics courses. Textbooks increasingly make reference to Web sites and include Web-related exercises. Some professors have begun to develop on-line textbooks and deliver entire courses via the Web. Still others are experimenting with on-line discussion groups and course Web sites.

Despite the wide variety of Web resources available to instructors, no consensus currently exists on the best way to incorporate those resources into economics teaching pedagogy; instructors must rely on the experiences of others to guide them in their use of Web technology for teaching. The examples described in the

previous section are based on classroom experience and provide a starting point for those looking for ways to effectively integrate Web-based active-learning activities into their own principles of economics courses. It is likely that the use of the Web in teaching economics will continue to grow, in the process changing both the medium and the method of economics instruction. The continuing challenge will be learning how to combine the use of this technology with active-learning-teaching strategies to make economics more accessible and more relevant to more students, in the process yielding improved learning.

NOTES

1. Cameron (1998, 245) argues that "by not including active and cooperative learning techniques in economics courses, we limit learning opportunities for our students." Bartlett (1996) makes a similar point, noting that many students learn best through concrete experience and active experimentation with economic concepts, in contrast to the chalk and talk format of most economics courses, as documented by Becker and Watts (1996). Claxton and Murrell (1987) show that employing a variety of teaching techniques, including active-learning activities, improves student performance; Meyers and Jones (1993) and Bonwell (1992) also provide arguments in favor of active learning. Johnson, Johnson, and Smith (1991) summarize the arguments for promoting active cooperation among students in the learning process; Becker (1997) also argues in favor of teaching techniques that foster active learning.
2. The issue of implementing new technology in economics is not new. Grimes and Ray (1993) summarize the use of computers in college economics courses over the past 25 years, focusing on the use of tutorials and simulations to reinforce economic concepts and principles. More recently, Cardell et al. (1996) describe their experience integrating computers, economic data, and in-class economic experiments with traditional lectures in economics courses.
3. As golfers know, how you use the clubs is more important than how many clubs are in your bag.
4. Additional examples are provided in Simkins and Barbour (1998), as well as in the other articles in this issue of the *Journal of Economic Education*. Leuthold (1998) explains how to incorporate Web pages in economic instruction, and Manning (1996) describes her teaching experience using e-mail and listservs.
5. Details about the Fed Challenge program can be found at the Web sites of the New York Federal Reserve Bank (<http://www.ny.frb.org/pihome/educator/fedchal.html>) and Richmond Federal Reserve Bank (<http://www.rich.frb.org/econed/challenge.html>).
6. Small classes may not have enough students to include each of the Federal Reserve districts in the exercise. In this case, instructors can simply use as many districts as class size permits.
7. The *Beige Book* is updated before each FOMC meeting and is publicly available at the Board of Governors' Web site within a day or two of its release. It also includes recent congressional testimony and speeches by Federal Reserve officials.
8. Many other variations of this exercise are possible. For example, the activity can be continued throughout the remainder of the course, with student groups keeping track of economic conditions in their district and communicating via e-mail with other districts and the Board of Governors about possible changes in monetary policy.
9. Since the IEM began operating during the 1988 presidential election, it has been used in conjunction with accounting, finance, economics, and political science courses at more than 50 universities and colleges.
10. Students can register on-line for the IEM at <http://IEMWEB.BIZ.uiowa.edu/signup/online/> by filling out a Web form and paying a \$5 service charge plus an initial investment. Traders can add additional funds to their account, up to a maximum of \$500.
11. Cameron (1998) describes the active and cooperative learning benefits of simulated stock investment games, where students are given an imaginary amount of money to invest in financial markets. The IEM provides a more realistic experience because students are using their own money.
12. This assumes that over the long run stock market returns continue to outperform those of assets that African-Americans have traditionally invested in. In 1997, the IEM received a three-year Fund for the Improvement of Postsecondary Education (FIPSE) grant from the U.S. Department of Education to expand the use of the IEM as a teaching and research tool in historically black and Hispanic colleges and universities across the country. The objective of this project is to increase the economic and political literacy of students in these institutions.

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Comment

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Scott Simkins has merged two critical areas for effective teaching using on-line resources: (1) recent pedagogical research supporting the effectiveness of active and collaborative learning and (2) the advantages offered by the Web, such

as up-to-date information, expanded communications, and application of economics concepts. Although his summaries of research on active and collaborative learning contain very useful information, teachers may find that the primary contribution of his article is the section describing two on-line teaching exercises.

On-line projects should fulfill two basic requirements: They should capture students' interests and they should teach economics. The first project is essentially collaborative and will satisfy these two requirements; the second, which is designed to be done individually, will require more care by the instructor to keep the economics content high. Both will actively engage students in their own learning. The following discussion focuses on these two Web projects.

Before launching these exercises, economics teachers might want students to do a Web project designed to teach them how to evaluate information on the Web. Students also should learn how to include proper references to Web sites used in their papers and reports. Ideas and projects on how to combine learning economics with Web-site evaluations can be found in McGoldrick (1999) and Shackelford (1999). Setting up a class project and discussion on the basics of differences of opinion on economic issues (deficits, minimum wages, and so forth) is a good way to create a Web evaluation exercise. In addition, several Web sites are devoted to teaching Web evaluation techniques. For example, an excellent checklist is found at the Purdue University Library's "Evaluating World Wide Web Information" (Scholz 1996). Beginning students will need help evaluating the content of economics Web sites, but they can be taught to recognize when a Web site is espousing a particular point of view.

Simkin's first exercise, Simulating an FOMC Meeting, is a good collaborative project for intermediate macroeconomics or monetary economics classes as well as for principles classes. In these more advanced classes, students should be expected to use more sophisticated economic theory in their explanations. This is an active-learning project with some clear economic lessons that can be as focused or as broad as the teacher desires. Simkins provides careful steps a teacher could use to make this exercise a success. As the students write reports on their regions at the end of step one, they should also be guided to provide complete information and references for their information sources on the Web. Used as Simkin's recommends, this will be an outstanding teaching tool.

The second exercise, Trading on the Iowa Electronic Markets, uses a well-developed on-line financial market simulation of buying and selling futures contracts. In the Iowa Electronic Markets (IEM), traders use real money to buy and sell futures contracts whose values depend on political and economic events. The IEM appears to be best suited for finance courses with students who already have some appreciation of different financial markets. However, used carefully and with appropriate caveats and limitations, it could be an effective tool to teach supply and demand to beginning economics students. A long period of simulation is not needed for this purpose. A relatively short period of trading by students followed by debriefing and reports on the effects of supply and demand on prices would be adequate.

Simkins suggests that trading can also help students learn alternative investment strategies. Perhaps, but there are some significant pitfalls here. IEM does

not explore or compare alternative approaches to increasing long-term wealth. The exercise is the antithesis of one well-accepted strategy that might be called the Warren Buffett approach: buy great companies and hold them. By emphasizing (or even requiring as Simkins suggests) frequent trading based on current events, IEM could mislead students to regard as normal a form of trading that is unlikely to be their best way to accumulate assets and build wealth.

Simkins, suggestions are useful, both for teachers who are ready for a first step into Web use and those who are veterans. The number of projects that combine Web-based and active learning of economics are limited only by our imaginations. We can develop many projects that connect with students' lives while teaching them economics. Incorporating the Web into economics teaching can be done in small experimental steps, an advantage for a profession whose teachers are accustomed to lecturing. Student Web projects can coexist quite comfortably with a lecturing style of teaching, allowing the instructor to move at a comfortable pace toward Web-based versions of active and cooperative learning techniques.

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Comment

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Declining enrollments in economics are a concern for all of us. In his article, Simkins suggests that we must improve how we teach, particularly at the principles level, to raise cognitive skills, attract good students, and motivate them to continue in economics as majors. He proposes that one way to achieve these goals is by using a variety of teaching methods, including active-learning techniques, facilitated by the use of the Web. His main theme is that the technology can be used as one of many capital inputs in the production of good teaching but that it should never be used as a substitute for other inputs. His article provides a valuable service for faculty development in Web-enhanced economic education, describing two activities that foster learning and retention of economic concepts with the Web.

Research shows that active-learning techniques can improve learning and retention. There are barriers to their use, however, and the lecture format contin-

ues to dominate in economics. There is little incentive to change because sufficient material must be covered, class sizes are increasing, and active learning assignments may require more preparation and grading. Even those who are interested may not know how to devise an active-learning activity, how to identify appropriate cognitive outcomes, or how to target different learning styles. In fact, the teaching style instructors use tends to match their own learning style (Kolb 1981), so most economics instructors will be “assimilators” (Bartlett 1996).

As a result, “chalk and talk” (Becker and Watts 1996) is the dominant method of delivering economic education, and it is probably still the most effective teaching method under the following conditions:

- students receive one-on-one instruction from competent (and perhaps caring) instructors whenever necessary
- students are homogeneous and operate on their intellectual and motivational production possibility curves
- amount of course material is constant and manageable in scheduled class periods
- labor market demand for economics graduates is strong and wages are high
- graduates will work in old buildings with poor lighting and uncomfortable seating
- workplace tasks rely on use of old books written by dead people that are found within reach on office shelves, and workers produce handwritten documents in isolation

Under these conditions, there is little reason to facilitate active learning, and no reason at all to do it with technology. But these conditions do not exist. It is not possible to provide students with the individual attention they sometimes need. When they graduate, they will work in technologically advanced environments in an ever-changing world. If we want them to retain the knowledge they learn in our classes and if we want to attract good students to our classes, we must work to diversify our teaching methods to prepare them for that world.

We know that our students will be exposed to the Web for many years to come, but is that enough reason to integrate it into our classrooms? Capital start-up costs can be high. Human capital costs can be high—particularly for faculty development. The barriers to integrating the Web into classroom activities may be even more difficult to overcome than those for active learning. But what about the benefits? Active-learning activities have significant benefits to learning outcomes, but they do not require technology. Simkins does not make the mistake of claiming that technology will enhance learning. But he understands the benefits of active learning and provides examples of interesting and stimulating active-learning activities that are made easier and more stimulating because of the use of Web technology.

He gives two examples of active learning using the Web that target different learning styles (collaboration v independent learning) and different areas of economics (macro v micro). The activities are selected for their minimal technical expertise and equipment requirements, and in each case, good start-up instructions are provided with insights for further development.

I particularly like the FOMC meeting activity because it can be conducted easily without the Web at both the high school and college level. Novices and experts alike can integrate this activity into a macroeconomics course. The novice can try it one semester without the Web and then with the Web the next semester. This is a good example of an activity that will facilitate the transition for the novice. Useful suggestions for when to introduce the activity and clear instructions for the ways it can be integrated into the course are laid out nicely. Also, I like that the learning goals are clearly stated. A suggested addition to the instructions and goals is that policy implications for women and minorities also be integrated into the exercise. When students discuss regional differences in their analysis, this might be a good time to raise these questions.

We tend to assume that the Web has increased the *amount* of information available, but it is *access* that has increased. It is the instructor's role to guide students as they navigate, help them to filter out unreliable sources, and cite sources used in written and oral presentations. Web technology can make it easier to implement active learning, while at the same time bringing the material to life and making it more relevant for students. Simkins has given us a good starting point for integrating technology into our economic pedagogy to strengthen learning outcomes and to make economics fun and exciting.

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