



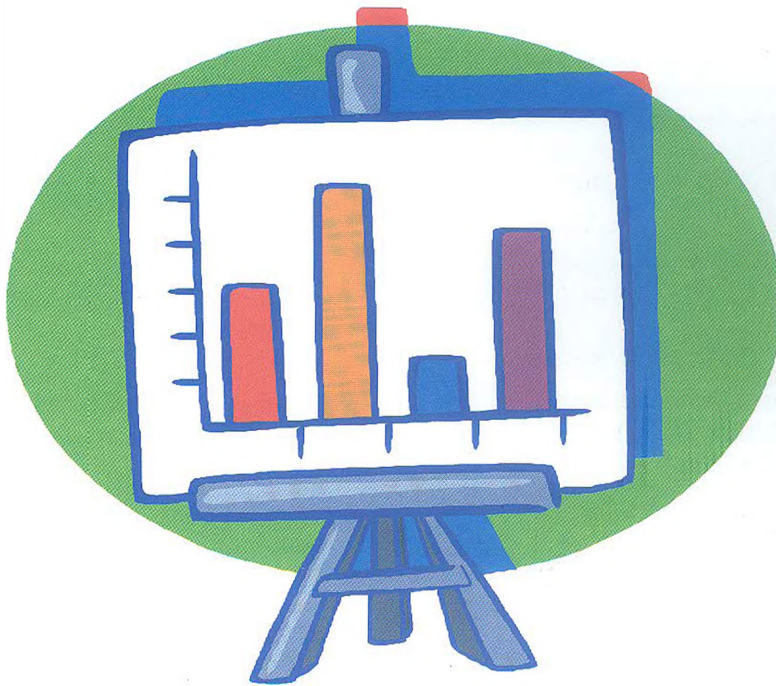
How America Teaches

Principles of Economics!



ABSTRACT

With the decline of students enrolling in economics major the need for additional reforms was felt intensively. The article is a nationwide survey of economists teaching principles of micro economics and macro economics on change and the avenues of possible future change. Apart from curriculum reforms alternative teaching methodologies are suggested



Differences across institutions and instructors

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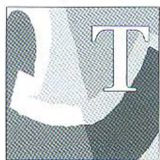
INTRODUCTION

The Fall 1996 issue of *The Journal of Economic Education* contained a section with an introductory article entitled "Where Have All the Majors Gone?" The four articles and two comments that followed offered several perspectives on that question. Salemi and Siegfried (1999) proposed a major restructuring of the principles sequence to enhance enrollments in economics courses and additional reforms to improve the economics major. Becker and Watts (1996, 2001) suggested that the problem of a decline in majors will not be resolved by curriculum reform; instead, they contend the problem will be resolved when teachers of economics adopt innovative techniques extensively used by other disciplines. In particular, they comment that economists rely too heavily on "chalk and talk" by which they mean lecture, writing on the board, and using a standard textbook. In 2002 Benedict and Hoag also suggested consideration of alternative teaching methodologies in introductory courses, which they stated may help reduce the level of student apprehension and improve student performance.

In their 2001 paper Becker and Watts noted that they perceived a growing importance of teaching in the reward structures of institutions and believed that we should be observing a shift in teaching techniques. They then contrasted these expectations to their finding from a survey, writing that they expected:

"To find changes in teaching methods used, and in particular, greater use of innovative, active-learning, and technology-based approaches, rather than the chalk and talk methods that were so dominant in the 1995 survey. But that is not the case... The median respondent is usually or always lecturing, with the amount of time spent lecturing in all of the courses estimated to be 83 percent. Universally, the median amount of time devoted to the use of the chalkboard for writing text and graphs during class is also 83 percent. These median values are exactly what we found in 1995." (pp. 275, 277)

In the current paper we present the results of a 2003 nationwide survey of economists teaching principles of microeconomics and macroeconomics. This survey extends the 2001 Becker and Watts survey in three ways: by including several techniques and activities not included in the first survey; by collecting detailed instructor, course and institution characteristics; and by using ordered logistic and logistic regressions to examine how instructor and institution characteristics affect the type of techniques and activities used. From our analysis we gain some insight into the constraints on change and the avenues of possible future change.



THE SURVEY AND RESPONSE RATE

A web-based survey instrument was designed to elicit information from economists working in economics departments in colleges and universities throughout the United States. The survey consisted of seven sections. In the first six sections respondents were asked to provide information about the techniques and activities that they use in each of the following courses they may have taught during the previous twelve months: principles of microeconomics; principles of macroeconomics; undergraduate intermediate theory (micro or macro); econometrics or math economics; upper level field courses; and capstone courses or senior seminars. In each of these six sections respondents answered how often (never, sometimes, or often) they used each of fifteen teaching techniques "on a typical lecture day in this course." "Often" was defined in the survey to be "at least two-thirds of the lectures." Respondents were also asked whether or not they used each of 21 learning activities anytime during the term. The seventh section of the survey then elicited information about the respondents' socio-demographic and career characteristics; their work habits; and their department, college, and university characteristics. In this paper we are interested in examining the responses concerning the two principles courses only.

Barron's Profiles of American Colleges (2003) indicates that 815 colleges and universities in the United States have

economics programs. From the web pages of these 815 colleges and universities, two graduate assistants were able to find the e-mails for 7748 economists. This economist e-mail list collection process was completed during March and April of 2003. On July 29, 2003 an e-mail was sent to each economist on the list explaining the purpose of the research and the layout of the survey. From the e-mail each economist could open the survey on-line. Respondents were requested to submit the responses on-line or by regular mail. In an effort to increase response rate, every respondent who provided contact information was placed in a drawing in which there were two winners, each receiving one \$100 Amazon.com gift certificate.

Responses were received between July 29 and November 5. Of the 7748 e-mails sent out, 364 were immediately failed-deliveries and 110 were out-of-office replies. There were 834 returned surveys. Of these, there were 14 duplicate returns, which were most likely caused by people accidentally sending the survey twice by e-mail. So there were 820 unique returned surveys. Five of these 820 unique surveys were returned by regular mail, not e-mail. After deleting responses that did not include socio-demographic information there were 664 completed unique returned surveys. Of these, 453 respondents had taught principles of microeconomics, principles of macroeconomics, or both during the last 12 months. The results presented in this paper are derived from these 453 respondents. They come from 335 different institutions across all states and the District of Columbia.



THE RESULTS

Data obtained from the surveys was combined with other information available about each school. Institutional characteristics for each of these schools were collected from Barron's Profiles of American Colleges (2003). Accreditation status was found at the website for the Association to Advance Collegiate Schools of Business (AACSB). Each school's Carnegie Classification was found at the Carnegie Foundation's website.



CHARACTERISTICS OF RESPONDENTS AND THEIR INSTITUTIONS

Table 1a lists the characteristics of the respondents. Respondents range from lecturers and adjuncts to full professors.

Ninety-five percent of the respondents hold a Ph.D. There is wide variation in age and teaching experience. The average respondent is 45.9 years old and has 15.9 years teaching experience. This respondent is male (73.4%), Caucasian (88.3%), and American born (83.2%). He spends 43.5% of his work time teaching and 28.4% of his time doing research. He teaches a little less than three (2.7) courses each term. During the last five years, this respondent has published around three (3.1) articles listed in ECONLIT, and written, edited, or contributed to around one (0.9) book of scholarship and nearly one-half (0.4) textbook or workbook.

Of all respondents, 14.9% had authored an article in economic education during the last five years and 36.1% had won a university, college, or school level teaching award at least once in their careers. Respondents attend on average 1.6 national and regional economic conferences each year, and a little over a third (34.2%) typically attends conference sessions on economic education.

Table 1b lists characteristics of the institutions and departments of the respondents. Of the respondents, 43.9% come from schools that are defined as baccalaureate institutions by the Carnegie Foundation, and 44.1% are from private schools. In 43.3% of the responses, the economists list their departments as being located administratively with business faculty, and in 50.8% of the responses they list their departments as being with the liberal arts faculty. Of all respondents 27.8% work primarily with a business faculty that is accredited by the Association to Advance Collegiate Schools of Business (AACSB). Most programs use a semester term structure. The average institution has 7735 full time students and 13.1 full time economists who teach coursework. It has a freshman acceptance rate of 70.1% and an average annual tuition of \$10,193. As reported by respondents, teaching and research are typically weighted about evenly by the institutions for promotion and tenure purposes. The average department has 145.2 majors and 38.9% of the departments offer the economics faculty graduate assistants to help with teaching.

Of the 453 respondents who had taught one of the two principles courses in the last twelve months, 162 had taught just microeconomics, 88 had taught just macroeconomics and 203 had taught both. Regarding the sample of 365 (162+203) respondents who had taught principles of microeconomics, less than one-third had taught the course more than twice in the last twelve months. Table 2 lists the characteristics of the principles of microeconomics and macroeconomics courses, as reported by respondents teaching each. The average microeconomics class size is 61.9 students, but this average is skewed upward by the fact that a small number of schools in the sample use large lecture hall style teaching. A full 75% of the respondents come from institutions with 50 or less students in their microeconomics courses. In microeconomics courses, most students (63.3%) are sophomores or (33.2%) freshman. Very few schools require calculus (5.2%) or statistics (3.5%) as prerequisites. In the classroom, almost all of the instructors (96.2%) use a textbook, 35.4% use copies of instructor's notes or overheads, and 19.8% use workbooks or CD's. As is shown in Table 2, the characteristics of the macroeconomics courses are very similar to those just described for microeconomics.



THE USE OF TEACHING TECHNIQUES AND LEARNING ACTIVITIES

In the survey respondents were asked to consider the teaching techniques that they use on a typical lecture day in their principles courses. Each respondent was provided with a list of 15 different teaching techniques and asked to respond whether they used these techniques often, sometimes, or never. Respondents were instructed that "often" would refer to a technique that they used in two-thirds or more of the classes in a particular course. The 15 teaching techniques can be arranged into eight groups. Table 3a lists the responses to these questions. The most often used technique is the chalkboard. Whereas 72% of the respondents write on the chalkboard often during class, only 14% write on the chalkboard before class. The next two most commonly often-used techniques are discussion and textbooks in class (36% of the respondents use these techniques often). So, the traditional lecture techniques of chalkboard, discussion, and textbook are the techniques most commonly used by the respondents to the survey.

Following these three traditional lecture techniques, computer, overhead acetates, and supplemental readings are the next most commonly often-used techniques. Most respondents using computers tend to prepare their computer presentations themselves. Most of the respondents using overhead acetates tend to use prepared acetates instead of using the acetates for freehand during class. Very few instructors (1%) use guest speakers often. Similarly, few use other media such as tapes and films of

documentaries and instructional material, tapes of television programs, audio media, or 35mm slide projectors.

In the survey respondents were asked to consider the learning activities that they have students engage in during a typical term in a principles course. Each respondent was provided with a list of 21 different learning activities and asked to respond whether or not they used each activity. The 21 learning activities can be arranged into thirteen groups. Table 3b lists the responses to these questions. Over half of the respondents use homework (84%), outside reading material (75%), information searches (58%), and cooperative learning (54%) during a term. With regard to homework, problem sets are more common than written assignments. The respondents requiring outside reading material most often require the reading of current events in magazines and newspapers. Less than one-fifth of the respondents require students to read books, current journal articles, or biographies of economists. More instructors require information searches on the internet than require searches in popular publications (56% vs. 35%). More cooperative learning exercises occur in-class (47%) than occur out-of-class (28%). More than one-fifth of the respondents require short papers (42%), classroom experiments (31%), games and simulations (29%) and literature searches (22%). More games and simulations are conducted without the use of a computer than are conducted with one (21% vs. 13%). One-fifth of the respondents require presentations, with 15% requiring group presentations and 10% requiring individual presentations. Only 15% of the respondents require a semester project/term paper, and only 8% require an annotated bibliography be written. Very few respondents (2%) require interviews or field trips.



THE EFFECTS OF INSTITUTION, INSTRUCTOR AND COURSE ON TECHNIQUES AND ACTIVITIES

Table 4 lists fifteen characteristics which were used as independent variables in regressions on the use of each teaching technique and learning activity. The definitions for each variable are presented in the table. Two of these variables require special mention. The variable Administrator is a dummy variable equal to one if the respondent spends more than 10% of work time on administrative duties. The 10% threshold was chosen because the average respondent spends 9.9% of work time in administrative duties. Administrator is equal to one in 13.9% of the observations. The variable Researcher is a dummy variable equal to one if the respondent spends more than 30% of work time on research. The 30% threshold was chosen because the average respondent spends 28.4% of work time in research. The variable Research is equal to one in 39.5% of the observations.

To estimate how the variables listed in Table 4 explain variations in teaching techniques and learning activities, two different types of regressions are run. In the first type of

regression, all of the variables listed in Table 4 are regressed as an ordered logistic on the teaching techniques listed in Table 3a. In each observation the dependent variable takes on one of the values 1, 2, or 3 representing "never", "sometimes", and "often." In the second type of regression, all of the variables listed in Table 4 are regressed as a logistic regression on the thirteen learning activity categories listed in Table 3b. In each observation the dependent variable is valued either 1 for "yes, this activity is used during the term" or 0 for "no, it is not used during the term."

In each of the regressions, ordered logistic and logistic, the total number of observations is 656 (162 observations from respondents who just teach microeconomics, 88 observations from respondents who just teach macroeconomics, and 406 observations from the 203 respondents who teach both microeconomics and macroeconomics). For each of the 203 respondents that taught both microeconomics and macroeconomics, there are two observations in the regressions. In one observation all the variables listed in Table 4 are regressed on the dependent variables using the values elicited for microeconomics. In the other observation all the Table 4 variables are regressed on the dependent variables using the values elicited for macroeconomics. In each of these observation pairs from the same respondent, all of the instructor and institution characteristic variables will be the same. However, the course characteristic variables Micro and Class Size will be different for each of the two observations even for the same respondent. For example, the same instructor may use games and simulations in her microeconomics course but not her macroeconomics course, giving different dependent variable values for the two observations in the logistic regression. The instructor and institution independent variables for the two observations will be the same. However, the fact that one course is microeconomics and the other is macroeconomics, and the fact that the two courses may have different enrollments, will be accounted for by the variables Micro and Class Size, respectively.

In conducting each of the regressions the observations are clustered by respondent, allowing effects to be independent across different respondents, but not for the same respondent. This seems appropriate given the fact that any given instructor is likely to have a similar style when teaching either microeconomics or macroeconomics. The odds ratios for the ordered logistic and logistic regressions are not affected by this clustering. However, the standard errors are affected in such a way that it makes it more difficult to find any particular odds ratio significant.

Table 5a lists the results of the ordered logistic regressions on teaching technique. Table 5b lists the results of the logistic regressions on learning activities. By reading down each column of Table 5a and Table 5b it is possible to see how each course, instructor and institution characteristic affects the use of each teaching technique and learning activity. The

values in both tables are odds ratios. The bolded and asterisked values are those that are significant at the 0.05 level

In the first column of the tables, for the variable Micro, we see that an instructor teaching microeconomics is less likely than an instructor teaching macroeconomics to use computer displays of internet web pages and 35mm slide projectors on a typical day. Over the course of an entire term, a microeconomic instructor is more likely than an instructor teaching macroeconomics to use classroom experiments and games and simulations. The microeconomics instructor is less likely to require an information search or an annotated bibliography during the term.

By examining the Class Size column we see that as class size increases, instructors on a typical class day are more likely to use freehand overhead acetates, but are less likely to use the chalkboard during class or to have discussion. Class size has a negative affect on the use of many learning activities. Over the course of the term in larger classes the instructor is less likely to require homework, cooperative learning and small group assignments, short papers, presentations, semester projects and term papers, and annotated bibliographies.

In column three we find the effects of the variable Experience, the first of the seven instructor characteristic variables. There seems to be no significant effect on teaching techniques from increased experience of the instructor. But over the course of a term, an instructor with more experience is more likely to require literature searches and interviews, and less likely to use classroom experiments.

The statistically significant differences between female and male instructors can be found in column four of the tables. On a typical class day, female instructors are more likely to use freehand overhead acetates, and less likely to use computer displays of the internet or presentations prepared by a publisher. Over the course of the term, female instructors are more likely than male instructors to require reading outside material, to use cooperative learning and small group assignments, to engage in classroom experiments, and to require presentations.

Foreign born instructors do not appear to be very different from American born instructors. Column five of the tables shows that the only significant difference is that foreign born instructors are more likely to require their students conduct an interview sometime during the term.

Respondents who spend more than the average amount of time in administration are not very different from other faculty. As seen in column six, the only significant difference is that administrators are less likely to use guest speakers on a typical day.

Column seven of the tables shows us the effects of the variable Researcher. Respondents who spend more than the average amount of time in research are more likely to have

the chalkboard notes written before class and to use 35mm slide projectors on a typical day. They are less likely to use the textbook in class. During the term, researchers are more likely to require presentations.

The statistically significant differences between faculty who typically attend economic education conferences and those who do not can be found in column eight of the tables. On a typical class day, instructors who attend these conferences are more likely to use computer displays of internet web pages, to use prepared overhead acetates, to bring in guest speakers, and to use audio cassettes, CD's, or MP3's. They are less likely to have the chalkboard written before class. Over the course of the term, the education conference-goers are more likely than other instructors to require information searches, to engage in cooperative learning and small group assignments, to conduct classroom experiments, and to use games and simulations.

By examining the Award column we see that those instructors who have won a teaching award are more likely on a typical class day to have the chalkboard written before class. Over the course of the term, these award-winning instructors are more likely to require literature searches.

In column ten we find the effects of the variable Private, the first of the six institution characteristic variables. Instructors at private schools are more likely than those at public schools to use guest speakers on a typical lecture day. They are less likely to require supplemental readings. Over the course of a term, an instructor at a private school is more likely to take students on a field trip.

Column eleven of the tables shows us the affects of the variable Graduate. Respondents who work at schools offering Masters and Ph.D. degrees are more likely to require supplemental reading and less likely to have the chalkboard notes written before class on a typical day than are instructors at baccalaureate-only institutions. During the term instructors at schools with graduate programs are less likely to require semester projects and term papers, annotated bibliographies, or interviews. They are also less likely to have students take a field trip.

In column twelve we find the effects of the variable Tuition. On a typical day, instructors from schools that charge a higher tuition are more likely to assign supplemental readings, and less likely to write on the chalkboard before class or to use guest speakers. Over the course of a term these instructors are more likely to assign homework, require reading outside material, and require literature searches. They are less likely to have field trips.

The statistically significant differences between respondents from business schools and those who are not can be found in column thirteen of the tables. On a typical class day, business college instructors are more likely use the textbook, supplemental readings, and tapes of television programs. They are less likely to use the chalkboard during class. Over

the course of the term, business college instructors are more likely than other instructors to require reading outside material.

By examining the AACSB column we see that respondents from AACSB accredited business colleges are less likely on a typical class day to engage in discussion. Over the course of the term, these instructors are also less likely to require annotated bibliographies or go on field trips.

By examining the last column in the tables, the column for GA, we see that having graduate assistant help for teaching has no significant effects on how a course is taught over the term. The only significance this variable has on a typical class day is that instructors with graduate assistants are more likely to use prepared overhead acetates.



DISCUSSION

We find that instructors teaching principles courses are typically using the traditional methods of chalkboard, textbook, outside reading material, discussion, and homework. The chalkboard is much more common than the computer or overhead, but requiring information searches using the internet is somewhat common. Cooperative learning and small group assignments are also somewhat common, but many other non-traditional techniques and activities are not. For example, classroom experiments and games and simulations are used by less than one-third of instructors.

From the use of the ordered logistic and logistic regressions we are able to consider how the characteristics of the instructors, the institutions, and the courses affect the choice of techniques and activities. From this analysis we gain some insight into the constraints on change and the avenues of possible future change. Five findings stand out.

First, size matters. While many advocates of the approach suggest active learning can be used in large classes, it appears that most instructors are reluctant to go beyond traditional techniques when facing a larger group of students. We might speculate that higher time costs in preparation and execution, limits on the ability to coordinate large groups of people, and fear of failure are inhibiting attempts at using non-traditional techniques in larger principles courses.

Second, female instructors teach differently than do males. Although female instructors are less likely to use computer technology they are more likely than male instructors to use many of the other non-traditional techniques such as cooperative learning and classroom experiments. This study cannot offer any insight as to the relative effectiveness of the two styles on student learning. That is an interesting area for future research.

A third insight is that the teaching techniques and learning activities used by winners of teaching awards are not terribly different than those used by other faculty. If we assume winners of teaching awards are better teachers, then it must not be the choice of technique and activity that is making them better. Perhaps the fact that award winners use the chalkboard prior to class might suggest better organization and preparation. But there is probably something more general at work here. Maybe, like in the case of carpenters, all instructors have access to the same tools but all instructors do not use the tools with the same effectiveness.

Fourth, it can be seen that instructors working at schools that teach undergraduate students only are less likely to require supplemental reading and more likely to have the chalkboard notes written before class on a typical day than are instructors at institutions with Masters and Ph.D. programs. During the term instructors at undergraduate-only schools are more likely to require semester projects and term papers, annotated bibliographies, or interviews. They are also more likely to have students take a field trip.

The fifth and maybe most intriguing finding is the impact economic education conference attendance on teaching behavior. We cannot determine the extent to which conference attendees use "innovative" techniques before going to education sessions at conferences and how they change their methods afterwards. But, it seems reasonable that greater exposure to a wider range of teaching techniques may lead to an increase in the usage of alternative techniques. If Becker and Watts and others are correct in their assertion that students will learn more when economics instructors move beyond chalk and talk, then departments should encourage faculty to attend conferences and other formats where non-traditional techniques are presented.

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Appendix

Table1: (a) Characteristics of Respondents

Academic Rank (%):	
Full Professor	37.1
Associate Professor	29.0
Assistant Professor	29.6
Lecturer or Adjunct	2.7
Other	1.5
Age in Years (Average)	45.9
Minimum	25
Maximum	79
Teaching Experience in Years (Average):	15.9
Minimum	0
Maximum	57
Sex (% Male)	73.4
Race (%):	
Caucasian	88.3
Asian	3.6
Indian Sub-continental	1.2
African American	1.0
Other	5.9
Country of Birth (%):	
United States	83.2
Other	16.8
Allocation of Work Time (%):	
Teaching	43.5
Research	28.4
Service	11.2
Administration	9.9
Consulting	4.3
Other	2.7

Courses Taught per Term (Average)	2.7
Minimum	0.5
Maximum	6.0
ECONLIT Articles Authored in Last 5 Years (Average)	3.1
Minimum	0
Maximum	25
Economic Education Articles Authored in the Last 5 Years (% Yes)	14.9
Books Written, Edited or Contributed to in Last 5 Years (Average):	
Economic Scholarship	0.9
Textbooks and Workbooks	0.4
National and Regional Economic Conferences Attended each Year (Average)	1.6
Minimum	0
Maximum	8
Typically Attend Conference Session on Economic Education (% Yes)	34.2
Received Teaching Awards During Career (% Yes):	
At the National or State Level	7.4
At the University, College, or School Level	36.1
At the Divisional or Departmental	26.5

Table 1: (b) Characteristics of Respondents' Institutions and Departments

Carnegie Classification (%):	
Doctoral	7.7
Masters	48.5
Baccalaureate	43.9
Funding Type (%):	
Public	55.9
Private	44.1
Location of Department Administration (%):	
Business Faculty	43.3
Liberal Arts Faculty	50.8
Other	5.9
Working in an AACSB Accredited Business College (% Yes)	27.8
Term Structure (%):	
Semester	80.2
Quarter	7.5
Special	12.3
Institution Size (Average Full Time Students)	7735
Minimum	383
Maximum	33,338

Full Time Economists Teaching at Institution (Average)	13.1
Minimum	0
Maximum	100
Economic Majors (Average)	145.2
Minimum	0
Maximum	1500
Average Acceptance Rate (% of Applicants)	70.1
Minimum	13.6
Maximum	100.0
Average Tuition (Dollars per Year)	10,193
Minimum	1425
Maximum	31,790
Graduate Assistants to Help (% of Departments Having):	
For Teaching	38.9
For Research	34.1
Importance for Promotion and Tenure (%):	
Teaching	40.1
Research	40.7
Service	13.6
Other	5.6

Table 2: Characteristics of Micro and Macroeconomics Principles Courses

	Micro Principles	Macro Principles
Respondents Teaching At Least Once in Last 12 Months ¹	365	291
Times Taught in Last 12 Months (% of Respondents):		
1	34.3	32.7
2	31.8	37.7
3	13.5	15.1
4	12.5	10.6
5 or more	8.0	4.0
Number of Students Per Course (Average)	61.9	57.5
Number of Students Per Course (Percentiles):		
25 th Percentile	30	27
50 th Percentile	35	35
75 th Percentile	50	50
100 th Percentile	600	400

Majority Student Rank (% of Courses Having):		
A Majority of Freshman	33.2	33.1
A Majority of Sophomores	63.3	64.4
A Majority of Juniors	3.4	2.5
Prerequisites (% Having):		
Calculus	5.2	3.5
Statistics	3.5	1.0
Materials Used in Classroom (% Using):		
Textbook	96.2	96.4
Workbook or CD	19.8	17.8
Copies of Instructors Notes or Overheads	35.4	38.6

1. There are 162 observations of individuals that just taught Micro, 88 observations of individuals that just taught Macro, and 203 observations of individuals that taught both.

Table 3: (a) Teaching Techniques Used in Principles Courses

Technique Use on a Typical Lecture Day	% of Respondents ¹		
	Often	Sometimes	Never
Chalkboard			
Chalkboard Written During Class	72	19	9
Chalkboard Written Before Class	14	22	64
Discussion	36	60	5
Textbook in Class	36	44	20
Computer			
Computer Presentation Prepared by Yourself	15	23	63
Computer Display of Internet Web Pages	5	44	52
Computer Presentation Prepared by Publisher	5	11	84
Overhead Acetates			
Prepared Overhead Acetates	12	34	53
Freehand Overhead Acetates	7	25	68
Supplemental Readings	9	65	26
Guest Speaker	1	15	85
Other Media			
Tapes/Films of Documentaries/Instructional Material	1	29	70
Tapes of Television Programs	0	24	76
Audio Cassettes/CD's/MP3's	0	3	97
35mm Slide Projector	0	2	98

1. Percentages are rounded to the nearest whole digit in the table and may not add exactly to 100.
2. In the survey "Often" is defined as "at least two thirds of the lectures."

Table 3: (b) Student Learning Activities In Principles Courses

Activities Required During the Course	% Responding Yes ¹	
Homework	84	
Problem Sets		78
Written Assignments		61
Reading Outside Material	75	
Reading Current Events in Magazines and Newspapers		70
Reading a Book		19
Reading Current Journal Articles		13
Reading a Biography of an Economist		6
Information Searches	58	
Information Search via the Internet		56
Information Search in Popular Publications		35
Cooperative Learning/Small Group Assignments	54	
In-Class		47
Out-of-Class		28
Short Papers	42	
Classroom Experiments	31	
Games and Simulations	29	
Without Computer		21
With Computer		13
Literature Search via EconLit, Library, etc	22	
Presentations	20	
In-Class Group Presentation		15
In-Class Individual Presentations		10
Semester Projects/Term Paper	14	
Annotated Bibliography	8	
Interviews	2	
Field Trips	2	

1. Percentages are rounded to the nearest whole digit in the table.

Table 4: Description of Variables Used in the Regressions to Explain Variations in Teaching Techniques and Learning Activities in Principles Courses

Variable Name	Description
<u>Course Characteristics</u>	
Micro	=1 if the Observation is for a Microeconomic Principles Course; =0 if for a Macroeconomic Principles Course.
Class Size	Number of Students Taught on Average in a Single Course in 10's of Students
<u>Instructor Characteristics</u>	
Experience	Number of Years of Full Time College Teaching Experience in 10's of years
Female	=1 if Female Instructor, =0 if Male Instructor
Foreign	=1 if Foreign-born Instructor, =0 if US-born Instructor
Administrator	=1 if Respondent Listed More Than 10% Administrative Duties, =0 Otherwise
Researcher	=1 if Respondent Listed More Than 30% Research Duties, =0 Otherwise
Conference	=1 if Respondent States He or She "typically attend conference sessions dealing with economic education; =0 otherwise
Award	=1 if the Respondent Won National, State, University, College of School Teaching Award in Career, =0 Otherwise
<u>Institution Characteristics</u>	
Private	=1 if the Respondent's University is Privately Funded; =0 if the Publicly Funded
Graduate	=1 if the Respondent's University has a Carnegie Classification other than Baccalaureate (ex: Masters, Doctoral); =0 Otherwise
Tuition	Annual Tuition in \$1000's
Business	=1 if the Respondent's Department is Administratively Located in a College of Business; =0 if Located in Liberal Arts or Elsewhere
AACSB	=1 if Business =1 and the School is AACSB accredited; =0 Otherwise
GA	=1 if the Respondent has Graduate Assistant help for Teaching; =0 Otherwise

Table 5: (a) Variables Significant in Explaining Variations in Teaching Techniques Used in Principles Courses: Results of an Ordered Logistic Analysis¹

Dependent Variables: Teaching Techniques on a Typical Day (Values: Never, Sometimes, Often)	Micro	Class Size	Experience	Female	Foreign	Administrator	Researcher	Conference	Award	Private	Graduate	Tuition	Business	AACSB	GA
Chalkboard Written During Class	1.14	0.87*	1.00	1.10	1.15	1.28	0.98	0.49*	0.65	3.36	0.74	0.92*	0.44*	1.33	0.83
Chalkboard Written Before Class	1.23	0.97	1.08	0.77	1.02	1.09	1.78*	1.37	1.86*	1.03	0.53*	1.02	0.74	0.87	0.68
Discussion	1.34	0.92*	1.15	1.40	1.05	0.57	1.05	1.27	1.31	1.21	1.10	0.99	1.85	0.40*	1.24
Textbook in Class	0.83	1.00	1.18	0.97	0.94	0.84	0.57*	1.12	0.86	1.77	1.14	0.97	1.90*	0.62	1.19
Computer Presentation Prepared by Yourself	0.74	1.01	0.87	0.70	1.36	1.79	1.09	1.48	1.00	0.95	1.16	0.99	1.20	1.00	.66
Computer Display of Internet Web Pages	0.71*	1.02	0.89	0.50*	0.98	0.98	1.13	2.46*	1.21	0.62	0.98	1.05	1.27	1.23	0.75
Computer Presentation Prepared by Publisher	0.96	1.02	1.01	0.43*	1.13	1.52	0.69	1.20	1.06	2.08	0.94	0.94	1.30	0.86	0.75
Prepared Overhead Acetates	0.89	1.02	0.99	1.18	0.82	0.63	1.03	1.70*	0.97	0.58	1.03	1.00	1.53	0.62	1.74*
Freehand Overhead Acetates	0.98	1.07*	1.09	1.65*	0.66	0.56	1.09	1.56	1.05	1.49	1.23	0.96	1.61	0.64	1.24
Supplemental Readings	1.17	1.00	0.98	1.36	0.74	1.19	0.88	1.13	1.03	0.33*	1.57*	1.09*	2.65*	0.50	0.82
Guest Speaker	1.35	1.01	1.04	0.85	0.76	0.08*	0.87	2.80*	1.25	8.72*	0.72	0.87*	1.15	1.14	.74
Tapes/Films of Doc./Instr. Material	0.71	1.00	1.09	0.92	0.74	0.94	0.72	1.38	0.92	1.70	0.78	0.97	1.06	0.72	0.55
Tapes of Television Programs	0.82	0.96	1.01	0.61	1.54	1.09	0.81	1.64	0.92	1.97	0.76	0.97	2.34*	0.65	0.65
Audio Cassettes/CD's/MP3's	0.91	0.84	1.03	0.28	2.29	0.56	6.13	13.90*	1.33	0.21	3.33	1.09	1.82	1.14	0.45
35mm Slide Projector	0.36*	0.72	1.48	0.30	1.39	1.24	9.33*	1.76	0.31	0.63	0.64	0.95	2.30	0.23	0.38

1. Results of this ordered logistic (dependent variables: Never, Sometimes, Often; when asked if each technique is used on a typical class day) are listed as odds ratios. Significance is designated by the "*" and is determined at the 0.5 level.

Table 5: (b) Variables Significant in Explaining Variations in Student Learning Activities Used in Principles Courses: Results of a Logistic Analysis¹

Dependent Variables: Learning Activities Used in Course (Values: Yes/No)	Micro	Class Size	Experience	Female	Foreign	Administrator	Researcher	Conference	Award	Private	Graduate	Tuition	Business	AACSB	GA
Homework	0.98	0.95*	1.09	1.35	0.51	2.05	1.15	1.55	1.08	0.24	1.77	1.13*	0.78	0.74	1.98
Reading Outside Material	0.84	1.00	1.07	2.07*	0.80	1.27	0.77	1.07	1.27	0.48	1.51	1.11*	2.35*	0.52	0.70
Information Searches	0.52*	0.98	1.15	1.54	1.09	0.93	0.84	1.60*	1.50	1.38	0.89	1.01	0.87	0.97	0.59
Cooperative Learning/ Small Group Assign.	1.03	0.95*	0.81	2.01*	0.86	0.81	0.85	2.41*	1.13	1.01	0.71	1.01	1.28	0.57	0.97
Short Papers	1.01	0.92*	1.07	1.49	0.97	1.28	0.70	1.51	1.23	0.58	1.18	1.04	1.21	0.78	0.77
Classroom Experiments	2.41*	0.97	0.75*	1.75*	0.70	1.00	1.25	2.24*	1.18	0.46	0.92	1.06	0.77	1.59	0.69
Games and Simulations	1.55*	0.98	1.02	1.40	0.74	1.86	1.55	2.65*	1.10	1.58	1.25	0.99	1.08	1.07	0.97
Literature Search via EconLit, Library, etc	0.80	0.93	1.31*	1.36	0.89	0.96	1.39	1.44	1.93*	0.66	0.79	1.08*	0.95	1.16	0.43
Presentations	0.72	0.77*	1.03	3.08*	0.59	1.82	1.87*	1.73	0.71	1.03	0.57	1.03	2.03	0.46	1.11
Semester Projects/ Term Paper	0.67	0.80*	1.05	1.00	0.27	0.92	1.74	1.35	1.05	0.80	0.48*	1.05	1.65	0.66	0.52
Annotated Bibliography	0.53*	0.59*	0.92	0.90	0.96	1.37	0.46	1.27	1.34	1.45	0.36*	0.97	2.15	0.11*	2.22
Interviews	0.67	1.04	2.31*	0.87	5.52*	1.28	0.85	1.01	0.46	1.77	0.29*	0.98	0.60	0.75	0.14
Field Trips	0.37	1.01	1.28	0.98	1.13	1.00	6.72	9.70	1.10	29.06	0.15*	0.71*	1.40	0.12*	0.18

1. Results of this logistic regression (dependent variable: "yes", "no"; when asked whether or not each activity occurs during a course) are listed as odds ratios. Significance is designated by the "*" and is determined at the 0.5 level.