Audiences and Outcomes in Online and Traditional American Government Classes: A Comparative Two-Year Case Study

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The objective of this article is to report differences we have found in teaching "American National Government" via the web and in a traditional lecture/discussion format. Since beginning this quasi-experimental field study in late 1997, we have gathered a variety of comparative data concerning students' characteristics and their changes in political knowledge and attitudes—things that are important to all of us who labor teaching American government in hopes of nurturing healthy citizens.

A wide variety of literature suggests that mode of teaching will make little difference. In his annotated bibliography of hundreds of studies, Russell concluded that outcomes are not significantly different in online distance classes than in conventional classes. However, other studies have criticized the quality of comparative research (Merisotis 1999; Neal 1998; Phipps and Merisotis 1999). A major criticism is that most studies do not randomly assign students to the experimental and

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control groups (Phipps and Merisotis 1999). Indeed, lack of random assignment is a major problem in statistical analysis of nearly all field research with a quasi-experimental design (Achen 1986, 2, 7-11). Defenders of quasi-experiments comparing web teaching with traditional teaching argue that those who want perfect research designs are asking for the impossible. "Clear evidence is rarely attainable in the complex messy world of teaching and learning" and demands for a perfect research paradigm are "impossible in a clinical study, and beyond the absurd in educational research" (Brown and Wack 1999). Nonrandom assignment was not a major statistical problem for our study because regressions showed that the variables affecting selection of the class format had little to do with the major outcome variable of improvement in factual knowledge (Achen 1986, 160).

Nevertheless, methodological considerations create potential problems in extending our findings to other settings. Differences in student populations, teacher pedagogy (Brown and Wack 1999), and the course subject matter may have as much to do with differences in outcomes as did a specific delivery format. The student population at our school is almost certainly quite different than that of other schools. Because of these differences, we must emphasize that our findings are tentative and may not generalize to other institutions and situations that significantly differ from our own.

For example, Garson (1998) studied two American government classes at North Carolina State University one summer and concluded that students did not learn more in either format and that based on re-

sponses to a post-test question, web students preferred the traditional format. However, had the web students been aware of the course's "radically different structure" (the class was self-paced) and had they self-selected themselves based on a more informed choice (only one of Garson's students was aware of the format before taking the web course), the findings might have been different. We have studied many classes over the last several years, and our students sorted themselves out by consciously choosing the course format that best met their own needs. And we did have some different findings. But part of the difference could be attributable to the fact that we were working with a different student population. Ours is a mostly commuter public university with many older students, while NC State is a mostly residential campus with recent high school graduates.

Despite these caveats and limits, we feel that field research such as is presented here is valuable. If taken with appropriate grains of salt, it can be applied to similar settings using a similar pedagogy in similar subject areas. It also helps specify variables that can make a difference in outcomes in other settings.

The Two Teaching Formats

We first taught web classes following the summer of 1997, when our undergraduate university provided one of us with release time to develop a prototype for a completely web-based American government course. The following fall, we conducted a pilot project with this prototype using four student volunteers from traditional face-to-face classes.

Every semester since, we have offered a full section of American government over the web, which we rotate in teaching, in addition to our lecture classes. (The home page for the class with a sample lesson may be seen at www.usca.sc.edu/201/index.htm.)

Students in all sections use the same text and cover the same topics over the course of the semester. However, students in the web class are allowed to do their work at any time they wish, so long as they email their assignments to the professor by the posted deadlines. For each chapter, students must complete several assignments. First, they must answer 15 or 20 short objective questions and two or three essay questions based on the chapter and an introductory lecture that is posted on the web. Second, they must complete a written assignment based on visiting a web page that is related to the chapter. For example, for the political parties chapter, students might visit the homepages of several political parties and write a description of which party's platform best fits with their own ideology. Third, they must participate in an email discussion group. The instructor poses a question and students are given 48 hours to reply. Their replies go to the entire class, and then all are invited to respond to the original comments. All written assignments are graded on a satisfactory/marginal/unsatisfactory basis. At the end of the semester, the student's grade for that part of the class is computed as the percentage of "satisfactories" of the total possible, with each "marginal" counting as half a "satisfactory." All testing is in the form of take-home essays, with each test having about five questions from which students must answer three. Web students can do all their work away from campus, which was a major objective for designing the class. Students are invited to come by and see the pro-

fessor, which many of them do. The maximum enrollment is 20.

We have each been teaching the traditional class for about 20 years and collaborate extensively on how we teach. For each chapter, students are given a written assignment to be turned in and graded on a satisfactory/marginal/unsatisfactory basis. This usually consists of the same short-answer objective questions that web students use as part of their written assignment for that chapter. Each of us usually gives an introductory lecture to the material in each chapter, spends some time tying it to current events, and then answers student questions or asks questions of our own. The web also serves as a kind of supplementary reader for students in the traditional class. Students are given written assignments to find and analyze material on the web, though not for every chapter. Other than this, the class is very traditional. Testing involves using a mixed format: objective and one or two essay questions. Tests cover about five chapters each, the same as the web class. Class size runs between 25 and 30 students.

Comparative Measurements

Through the fall of 1999, data have been compiled on 321 students: 105 who took the class via the web and 215 who took the traditional class. The data include demographic information (GPA, major, age, gender, and race) and changes in factual knowledge, media consumption, political trust, political efficacy, and political interest. Improving these attitudes is a critical goal for a course that purports to nurture healthier citizens in this age of political cynicism. Finally, data were also

collected on course grades and perceived difficulty. The general knowledge part of the pre- and post-tests consists of 59 standard questions about American government. Possible scores on the knowledge part of the test range from 0 to 63 (the question on rights in the first amendment allows students to list up to five correct answers, each of which is counted separately). Students in the face-to-face classes took the pretest on the first day and the post-test on the last day of the semester. We asked students in the web classes to complete the pretest before beginning the first assignment and the post-test after completing the final assignment and before starting on the final exam. In both formats, students were informed that the tests were coming, but were assured that neither test would have any bearing on their course grades. (Copies of the pre- and post-tests are available via email from either author.)

Audiences

Even though web teaching is only a few years old, analysts have identified a number of different "markets" for web courses. Those teaching on-line courses expected (or hoped) they would draw in a new and different group of students. Our experience revealed both similarities and differences in the audiences for on-line and traditional classes. We found students who enrolled in web classes differed significantly from those who enrolled in lecture classes in terms of age, major, and initial level of information about government and politics.

Students who enrolled in the web classes were, on average, six years older than the students who enrolled in the face-to-face classes (see Table 1). Differing life situations explain this. When asked why they chose to enroll in a web class (a question we ask all web students in our initial email to them), typical responses included family responsibilities, full-time work or irregular hours, and/or a long commute to campus. Not having to be in class at a set time appeals to nontraditional students who have returned to school later in

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TABLE 1
Summary Comparisons of Students Enrolled in Traditional and Web-Based American National Government Courses

	Traditional Course	Web-Based Course	Significance of Difference (p)
Age	21	27	.00
Female Enrollment	71%	57%	.02*
Education Majors	62%	42%	.00
GPA	2.84	2.95	.16
Nonwhite Enrollment	20%	13%	.10
Avg. Score on Basic Knowledge Pretest[a]	14.0	20.7	.00
Avg. Score Improvement on Basic Knowledge Post-test	13.3	12.7	.80
Avg. Students' Rating of Political Interest on Pretest[b]	2.29	2.48	.09
Avg. Increase of Students' Rating of Political Interest on Post-test	.34	.44	.38
Avg. Students' Rating of Political Trust on Pretest[c]	2.31	2.31	.97
Avg. Increase of Students' Rating of Political Trust on Post-test	.25	.31	.48
Avg. Students' Rating of Political Efficacy on Pretest[d]	2.61	2.48	.28
Avg. Increase of Students' Rating of Political Efficacy on Post-test	.20	.43	.08
Avg. Students' Report of Daily Newspaper Reading	2.12	2.56	.07
Avg. Increase of Students' Report of Daily Newspaper Reading	.42	.29	.54
Avg. Course Grade	79	81	.13
Students' Rating of Course Difficulty[f]	2.2	2.4	.00
Dropout Rate	8%	8%	—

*The significance of this difference disappeared when we controlled for academic major.

[a]Email carolb@aiken.sc.edu for a copy of the 59-item test.

[b]"Would you say that you follow what's going on in government and public affairs (4) most of the time, (3) some of the time, (2) only now and then, or (1) hardly at all?"

[c]"How much of the time do you think you can trust the government to do what is right? (1) none of the time, (2) only some of the time, (3) most of the time, or (4) just about always."

[d]"Sometimes politics and government seem so complicated that a person like me can't really understand what's going on. Do you (1) strongly agree, (2) agree, (3) have mixed feelings, (4) disagree, or (5) strongly disagree?"

[e]"How many days in the past week did you read a daily newspaper?"

[f]"How would you compare the difficulty and workload of this course with others you have taken? (1) Easier (2) About the same or (3) harder?"

life and are juggling a variety of responsibilities. This reinforces others' finding that convenience is a major attraction of online courses (see, e.g. Garson 1998).

Initially, there seemed to be a significant difference between the percentage of women enrolled in the web classes (57%) and the face-to-face classes (71%). Moreover, the ratio of women to men in web classes has been declining steadily. Women account for 65% of the overall enrollment at the school (Herrin 1999). At first glance, it would seem that our online classes are running counter to a well-documented national trend with respect to gender. The Internet was once a male domain, but women now account for about half of all people using the web in the U.S. ("The Internet" 1997; Krantz 2000; Stoughton and Walker 1999). We found, however, that the gender difference between our classes disappeared when we controlled for major (education versus noneducation). At USC-Aiken, the only major outside of political science that requires "American National Government" is education. Education is sometimes seen as a "pink collar" ghetto, dominated by women, and this characterization is apt at our school. One reason we originally developed the web course was to expand our market after the School of Business dropped "American National Government" as a required course. Thus, our growing success in "marketing" the web class to majors outside education has been gradually reducing the relative number of females.

Web classes draw a wider variety of majors than the traditional classes, which draw heavily from education (62%), business (14%), and the social sciences (13%). The web classes drew relatively fewer education majors (42%) and social science majors (11%), and a few more business majors (19%). Interestingly, the web classes are drawing significant numbers of science, math, nursing, and interdisciplinary majors. Students from these majors made up 28% of the students in the web classes versus 12% in the traditional classes. At least in the short run, until other disciplines begin to offer them, offering web classes appears to be a way of expanding the market niche for a discipline in competition with others for students needing general education and elective courses.

All students entered the classes with low levels of general knowledge about American government. This is

not at all surprising if they are in any sense representative of the nation's population. A much-cited study conducted in the fall of 1997 by the National Constitution Center found that Americans know little about the Constitution they claim to revere ("We the People" 1997). More broadly, Americans tend to have fairly low levels of political knowledge (Delli Carpini and Keeter 1996, chaps. 2, 3). A 1997 survey of USC-Aiken students found that students' knowledge of American government was about the same or below that of the general public (Botsch 1998–99). Our web students, however, proved to be relatively less ignorant than students in our traditional classes. Out of a possible score of 63 on the general knowledge test given at the beginning of the semester, the average score was 14.0 for students in the face-to-face classes and 20.7 for students in the web classes. While these figures show that we have our work cut out for us in educating the citizens who will be the leaders in the twenty-first century, they also show that web students began the course with significantly more general knowledge. This probably reflects the greater maturity and more extensive life experiences of the older students in the web classes. This explanation was supported by a separate study of USC-Aiken students, which showed age to be a stronger indicator of possession of factual knowledge about American government than was year in school (Botsch 1998–99).

While some real differences existed between the students in the web classes and those in the traditional classes, we also found many similarities. The two groups were similar in terms of initial political interest, political trust, political efficacy, the number of days they report reading a newspaper each week, grade point average, and ethnicity (see Table 1).

In light of all the attention paid to what is called the "digital divide," the ethnic composition of the two different types of courses merits further discussion. While the difference did not quite meet the standard accepted level of statistical significance

(see Table 1), relatively fewer minority students enrolled in the web classes (13%) than in the traditional classes (20%). With a 23% nonwhite enrollment in the university (Herrin 1999), we had hoped to attract a more ethnically diverse group of students to our web classes. We have not succeeded so far.

Studies conducted over the last few years confirm that, despite some recent gains, minorities simply do not have the same access and exposure to computers as do whites, whether at home or at work (e.g., Gladieux and Swail 1999). The gap was most pronounced in ownership of home computers. Income differences accounted for much of the gap: An NPR/Kaiser/Kennedy School poll found that at the upper end of the income ladder, there is almost no difference between minorities and whites in PC ownership ("Survey Shows" 2000).

USC-Aiken is a public university serving primarily a commuter population, and most of our students are not at the upper end of the income ladder. Lack of access to computers prior to entry in college may be a barrier for the current generation of students. An earlier national study found that elementary and secondary schools with high percentages of poor and minority students are also likely to have fewer computers available (Gladieux and Swail 1999). We hoped that the availability of computers in open labs would mitigate the access problem. This solution has proved inadequate, but it may be the best we can do at the university level until the K-12 inequities are resolved.

Fortunately, that process may already be underway. The NPR/Kaiser/Kennedy School poll found that race and income no longer make a difference in children's access to a computer at school. While minorities and the poor are still much less likely to have a home computer, minorities are beginning to account for much of the new growth in the home PC market ("Digital Divide" 2000). We hope that this will translate into higher minority enrollment in online classes in the future.

Outcomes

We found that mode of instruction made little difference in students' relative gains in factual knowledge, political interest, trust, efficacy, and daily newspaper reading. The web classes did not produce significantly higher grades or suffer from any higher dropout rates than the traditional classes. The greatest difference was in how students perceived the difficulty of the courses they had completed. We will look at each of these in turn.

Factual Knowledge

With the advent of online teaching, educators raised two questions. Would it be "as good as" traditional face-to-face lecture/discussion? And, would web teaching be superior to the traditional method? Our responses, based on the data we have collected on gains in factual knowledge, are "yes" to the first question and a qualified "no" to the second. We found that web classes improved factual knowledge just as much as traditional classes. Students in both groups improved their scores from the pretest to the post-test to a virtually identical degree. Traditionally-taught students improved their scores by 13 questions; web-taught students improved their scores by 12.7 questions (see Table 1). We are doing an equally good (or poor) job of imparting knowledge in person and via the web. We should note that neither instructor teaches specifically to the general knowledge test. We should also note that statistical comparisons in who was teaching yielded no significant difference.

One might expect that students with higher grade point averages, who are likely to have better study and test-taking skills, would gain more factual knowledge in a class than weaker students, regardless of how it is taught. In order to test this proposition, we ran regressions for each instruction format using knowledge improvement as the dependent variable and GPA as the independent variable. We also included several background and attitudinal variables that might also explain knowledge improvement: age, eth-

TABLE 2
Learning Improvement Regressions

Independent Variable	Face-to-Face Course		Web Course	
	Beta	Correlation	Beta	Correlation
GPA	.50**	.47**	.11	.21*
Age	.11	.11	.22	.25*
Ethnicity	−.06	−.12	.16	.16
Gender	−.01	−.03	.10	.10
Political Interest	−.13	−.03	.10	.10
Paper Reading	−.07	−.06	−.13	−.02

*$p = .05$
**$p = .01$

nicity, gender, initial political interest, and initial daily newspaper reading. For students in the traditional face-to-face classes, GPA was a strong predictor of knowledge gain ($r = .47$; Beta = .50; both highly significant). No other factor had any significant impact (see Table 2). In the web classes, GPA played only a minor role ($r = .21$; $p < .05$; Beta=.11, not significant) along with age ($r = .25$; $p < .05$; Beta = .22, not significant). In the web classes, lower-GPA students gained a little more factual knowledge, and higher-GPA students gained a little less than their peers in the traditional classes.

One possible explanation for this seeming anomaly is that low-GPA students in the web classes cheated on the general knowledge test. If so, they did not do a very effective job in cheating, because their gains were no greater than students' in the traditional classes. We suspect that what is happening is that lower-GPA students learn a little more in the web classes because they are forced to go through the material in the text on their own. They can't depend on lectures alone, as do so many students in traditional classes. On the other hand, higher-GPA students, who have high grades partially because they can determine what is required to make good grades, figure out that they must learn more facts in the traditional classes because grades are based relatively more on factual testing. In the web classes, these students focus more on analytical skills because, again understanding the reward

structure, they know what they need to do to obtain higher grades. Were we to change the way performance in the web classes was graded to include more fact-based testing, we strongly suspect that GPA would have a relationship to factual knowledge gained similar to that in the traditional classes.

Of course, gains in factual knowledge are relatively easy to measure. We would argue that developing a more complete picture of student achievement would require comparing how students improved their ability to integrate the facts they do learn into analyses. Comparing gains in analytical thinking is much more difficult. We know that our web students get more practice in this, so we would suspect that they have more improvement here.

A study of students enrolled in online and traditional introductory psychology classes at Texas Tech University over five semesters provides an interesting parallel. The two researchers, who are also spouses, administered pre- and post-tests to their students and found that web students improved more over the course of the semester than traditional students (Carr 2000). The pedagogical difference between their web course and ours is that their students took weekly quizzes on factual material while ours produced analytic writing. Moreover, the traditional psychology class had no weekly quizzes. Pedagogy and reward structure are at least as important as delivery format.

Interest, Trust, and Efficacy

Many studies have found a decline in Americans' interest in politics (Bennet 1997, 48-49). We asked students in all our classes a standard question concerning interest in politics on both the pretest and posttest. As noted earlier, no significant difference was identified between the groups by the pretest. Both types of courses increased political interest scores, and the relative increases were not significantly different (see Table 1). Stimulating interest is a necessary first step in nurturing active and knowledgeable citizens. Of course, we cannot know if the increases will be long-term.

Many studies have also shown a decline in public trust of government over the past 25 years, with confidence in the federal government remaining about 10 percentage points lower than in the years before Watergate (Moore 1999). Although trust in state and local government is higher than it was 25 years ago, nearly a third of the public (31%) surveyed for Project Vote Smart in 1998 indicated that they did not trust any level of government to make good decisions for them ("Cynicism, Mistrust" 1999). Students in all our classes began with relatively low levels of trust. At the end of the semester, both groups had improved levels of political trust. Again, the mode of instruction made little difference (see Table 1). Overcoming citizen suspicion of government is a difficult and long-term task.

Longitudinal data have been collected on political efficacy since the early 1950s. Over the last half-century, between 59% and 71% of U.S. citizens have agreed that politics is "too complicated to understand" ("Politics is Too Complicated" 1999). This disenchantment with politics may be reflected in the continuing low voter turnout, recorded in 1998 as the lowest in over 50 years (Lester 1999). Students in both our web and traditional classes began with low efficacy and finished the semester with higher efficacy. The improvement for web students was twice as much as for traditional students, but this difference did not

quite meet conventional standards of statistical significance (see Table 1). We will have to see if this difference remains as more students take the classes.

Newspaper Reading

Reading newspapers is related to both political knowledge and interest. Keeping up with current events is also a mark of healthy citizenship. Sadly, Americans do not pay much attention to the events occurring in the world around them. The PEW Research Center recently listed the most closely followed stories of the last 15 years. Of the more than 600 stories listed, only for 36 stories did more than 50% of the respondents report they had followed that story "very closely" ("Public Attentiveness" 2000).

Students were asked on both the pre- and post-test to indicate how many days during the past week they had read a newspaper. On average, students in both types of classes read the paper less than three days a week when they entered the course. The difference between the students in the different formats was about half a day, not quite large enough to be statistically significant. Both groups increased their daily newspaper reading throughout the course by a little under a half-day (see Table 1). Again, the critical question is whether these gains will persist over time.

Grades and Perceived Difficulty of Course

The average final grades for students in the web class was two points higher (B-) than for students in the traditional class (C+) on our 10-point-interval grading scale. This difference was not statistically significant. It should be remembered that students in each format began the course with no statistical difference in their overall GPA, though web students' were slightly higher (see Table 1). The minor differences in final grades may reflect this minor difference in GPAs. Alternatively, any grade differences may be a result of different grading criteria in the two kinds of classes. Performance in the web class is measured primarily with open-book, all-essay exams. In addition, completion of written assignments counts more toward web students' grades than traditional students' grades. Consequently, students who perform poorly on tests but are willing to work harder may do better in the web classes.

The web class is not easier, as our students have discovered. One of our goals in developing the web-based version of "American National Government" was to create a rigorous and academically demanding class. To measure this, we included a question on the post-test asking students to rate the difficulty of the course compared to others they had taken. Students in the web class indicated they found the class to be significantly more difficult than their other courses. They also rated it as significantly harder than did those students taking the traditional class (see Table 1). Yet, despite the fact that students perceive the web class to be relatively difficult, demand for it has remained high and is growing. Following our success, web versions of courses in public personnel management and public policy have been developed. Both new courses reached full enrollment quickly, indicating that students may value scheduling convenience more than they fear demanding courses.

Dropout Rates

Our first web classes had a dropout rate of around 25%, about average for this kind of class according to the literature (Merisotis 1999). But over time, the rate has leveled out rather quickly, and the dropout rates for both class formats are 8%. We believe there are two related explanations for this important shift. First, the course has been highly publicized and students who are self-selecting into the web classes

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know what to expect. We made a conscious effort to educate the university and larger community about the nature of the course, writing editorials in local papers, giving seminars, and providing sample lessons on the web site. Second, students are quickly becoming more computer literate. Many students entering college today have some experience using email and the web at home or in K-12 classes. Although few professors are teaching entirely on the web, many, if not most professors at our school have some activities for students on the web. Even if students lack these skills when they enter college, they acquire them quickly. When we began teaching the web course, we spent many hours working with students over the telephone helping them with email and browser problems. Some never overcame these problems. In recent classes, we have had very few technical questions from students.

Professor Workload

We should briefly mention one final kind of "outcome." A great deal of research has shown that professors teaching on the web can expect to spend much more time teaching than colleagues offering traditional courses (Berdichevsky 1999; Bradshaw and Weston 1999). We found this to be true, even after we became familiar with building and maintaining web pages and running discussion lists. Having thoughtful email exchanges with 20 students over 15 chapters, and reading and commenting on two essays per student per chapter, is very time-consuming. One can find a few labor-saving shortcuts, but the only

way to save a lot of time is to reduce interpersonal interaction. Though both of us enjoy this mode of teaching, we would not recommend it as a steady diet to any professor. Unless one has extraordinary keyboarding skills, teaching two web classes, as one of us did during a single semester, may be approaching the limits of human performance.

Conclusions

Three broad conclusions seem justified from our experience with web teaching. First, professors with limited technological skills can create a high-quality web class, if they have some release time to get started and their administrators are willing to set low enrollment limits. One does not need an expensive package that takes time for students and faculty to learn. Email, discussion lists, and a server that can host web pages are all one really needs.

Second, web classes in American government are at least as effective as traditional lecture/discussion classes in nurturing a healthier, more active, and knowledgeable citizenry. Web classes may even be more effective in improving the general factual knowledge of lower-GPA students because such classes inevitably place more responsibility on students who are likely to be passive in more traditional classes.

Finally, much of the research on what method works best with carefully controlled conditions misses the point. Web classes will not attract the same students as traditional classes. They attract students who otherwise might not take an American government class and older students who already have community ties and some level of community involvement. As computer use increases among the general population, an increasing proportion of nontraditional students can be reached through web classes ("The Expanding Universe" 1999; Jensen 1998). If civic education is an important professional value for political scientists, we have an obligation to reach out.

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