Teaching Students to Engage With Evidence: An Evaluation of Structured Writing and Classroom Discussion Strategies

Steffen Blings and Sarah R. Maxey
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ABSTRACT:
In their transition to college, students often struggle to identify and make connections between the main arguments, evidence, and empirical findings of articles from academic journals commonly assigned on political science syllabi. Which active learning techniques are most effective for teaching students to recognize and evaluate social science evidence?

To address this question, we conducted an experiment with students from two first-year writing seminars in political science. Students were randomly assigned to either an in-class writing activity or a group discussion, both of which required them to summarize the article’s use of evidence. We found limited evidence that group discussions are more effective for teaching students to engage with evidence. The effects of discussions may be linked to the classroom environment, as students who participated in the group discussion with a familiar instructor were more likely to correctly identify the article’s evidence.

INTRODUCTION
A central challenge in students’ transition to college is their ability to critically evaluate and construct arguments. Our experience in the classroom suggests that students struggle to identify and make connections between the main arguments, evidence, and empirical findings of articles from academic journals commonly assigned on political

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science syllabi. Teaching students to critically evaluate information forms the core of liberal arts education and is critical not only for the scientific study of politics, but also for students as citizens, and for those hoping to enter careers that require analyzing data and arguments. Active learning strategies provide tools to increase students’ comprehension and critical thinking, but little is known about which active learning strategies work best for teaching different skill sets. We ask: Which active learning techniques are most effective for teaching students to recognize and evaluate social science evidence?

In this article, we present results from an experiment conducted with students from two first-year writing seminars in political science to investigate two of the most common and easily implemented active learning strategies: in-class group discussion and structured writing exercises. In particular, the paper analyzes the relative influence of discussion and writing on students’ abilities to identify and evaluate the evidence presented in Heaney and Rojas’ (2011) “Partisan Dynamics of Contention,” which is typical of the scholarship students are likely to encounter in social science journals. We also consider factors such as previous exposure to the material and comfort in the classroom that may condition the effectiveness of different strategies.

We begin by embedding our study in existing scholarship on teaching evidence and active learning exercises. The following section describes the experimental setup and indicators for student comprehension. The next outlines the results of the experiment and the final two sections consider the effect of classroom context and the implications of our findings.

EXISTING RESEARCH

Teaching students how to evaluate information and become critical thinkers is central to higher education in general and to the study of political science in particular. As Atwater (1991) explains, critical thinking requires students to identify and evaluate the strength of arguments and to construct arguments of their own. Students’ abilities to critically engage with causal claims and evaluate authors’ evidence are especially important as technology increases the number of sources and density of information available. Despite the relevance of critical thinking to the goals of higher education and the creation of informed citizens, studies consistently show that students struggle to understand how evidence contributes to the broader argument (Fitzgerald and Baird 2011). As a result, students have difficultly integrating evidence into their own arguments (Çavdar and Doe 2012), both in the classroom and as a part of writing assignments.

Active learning techniques offer one promising way to improve students’ critical thinking skills (Barr and Tagg 1995; Bean 2011; Bonwell and Sutherland 1996; Burch 2000; Lantis, Kuzma, and Boehrner 2000; Meyers and Jones 1993; Powner and Allendoerfer 2008). Higher education’s shift towards active learning focuses on the classroom as an environment that encourages students to construct knowledge themselves (Barr and Tagg 1995, 15). By focusing on the student as a participant in the learning process rather than as a passive recipient of information, active learning has been shown to improve students’ understanding of content, critical thinking, and writing (Bromley 2013). Integrating active learning strategies into political science classrooms and requiring students to engage with evidence first-hand thus has the potential to improve students’ understanding of the data common in academic journals.

To date, much of the scholarship on active learning in political science has focused on designing in-class simulations.1 As Archer and Miller (2011, 430) explain, active learning is a “natural fit for political science” because “[t]he subject matter lends itself to discussion

1 See, for example Crossley-Frolick (2010); Dougherty (2003); Frederking (2005); Hensley (1993); Hoffman (2009); Kelle (2008); Loggins (2009); Mariani (2007); Shellman and Turan (2006); Sherman and Waismel-Manor (2004); Wedig (2010).
and debate, theories and decision-making can be evaluated in light of current events, and institutions such as Congress and the United Nations lend themselves easily to simulations. “Through simulations, students can put theories of international relations into practice and better appreciate the complexity of negotiating between multiple actors at different levels of analysis. This approach both helps students understand how conflicts develop and appeals to multiple learning styles (Wedig 2010, 548). However, simulations require significant investments of time and resources (Crossley-Frolick 2010, 185), as well as instructor oversight that may not be feasible in all courses. Relying on simulations as the predominant form of active learning in political science classrooms thus limits the reach of active learning strategies. Alternatively, group discussions and structured writing activities are accessible and easily implemented across a variety of classroom contexts. By focusing on the effectiveness of these strategies, we demonstrate that active learning techniques can be integrated into political science instruction even when preparation time is limited or courses cannot commit entire class periods to activities.

While in-class discussions and structured writing activities can be integrated into a wide range of courses, evidence on the effectiveness of these strategies is mixed. Small group discussions increase students’ critical thinking skills and learning outcomes (Hamann et al. 2012; Pollock et al. 2011). Opportunities for peer discussion within introductory lecture courses are shown to enhance students’ understanding of the concept (Smith et al. 2009) and combining discussion with instructor explanation further increases these positive benefits (Smith et al. 2011). Discussions enhance understanding by encouraging students to actively participate in the class and to verbalize ideas, which leads to a better grasp of the logic underlying essential concepts (Huang 2005, 496). However, the benefits of group discussions may be limited to students who prefer social and verbal learning (Bromley 2013, 820) and are comfortable participating in the conversations (Dallimore et al. 2004).

Where the classroom environment makes group discussion less feasible, writing-to-learn offers an alternative approach. A branch of active learning, writing-to-learn is based on the logic that forcing students to think about a topic in their own words increases their understanding of the underlying concept (Fry and Villagomez 2012, 170). Writing is widely recognized as a beneficial tool for making thinking visible (Reynolds et al. 2012, 19) and developing critical thinking skills (Çavdar and Doe 2012). When writing activities were implemented in an introductory science course, Linton et al. (2014, 474) found that “students who write about a concept perform better on subsequent writing-based assessments” and the authors advocate for the use of individual writing exercises whenever possible. However, other studies find that writing does not improve student achievement (Armstrong et al. 2008; Fry and Villagomez 2012) and suggest that not only are writing exercises ineffective, they are also one of students’ least favored activities (Bromley 2013, 821).

Whether and under what conditions active learning strategies are effective thus remains an open question. In particular, while existing scholarship has focused on the effect of writing activities and discussions on students’ overall performance, little is known about whether these strategies are well-suited for teaching students to critically engage with evidence. Additionally, with notable exceptions including Bromley (2013) and Powner and Allendoerfer (2008), existing scholarship rarely compares the effectiveness of different active learning strategies in the political science context. Studies also center predominantly on the use of active learning techniques in large introductory lectures and do not consider the effectiveness of these strategies in seminar environments where they are more easily implemented. Focusing on lectures and introductory courses may underestimate the effectiveness of active learning techniques and students’ ability to engage with the evidence in social science
journals. Instead, we aim to illustrate the full potential of active learning by testing strategies in the context where they are expected to have a particularly high impact—writing-intensive first-year seminars (Kilgo, Ezell Sheets, and Pascarella 2014). To more closely examine how instructors can improve students’ comprehension of arguments and evidence in political science seminars, the following section outlines an experiment that tests the relative effectiveness of in-class writing exercises and group discussion.

**USING AN EXPERIMENT TO EVALUATE ACTIVE LEARNING STRATEGIES**

**Experimental Design**
To test the relative effectiveness of writing activities and group discussion, we conducted an experiment with students in our two first-year writing seminars (FWS) taught at a large research university in the northeast United States. The seminars focused on humanitarian interventions and the interactions between political parties and social movements, respectively. For the experiment, the courses were combined and students were assigned the same reading: Heaney and Rojas’ (2011) account of how the 2008 presidential election demobilized the anti-war movement in the United States. In this article the authors argue that the anti-war movement demobilized after Obama was elected in 2008 because Democrats—initially a large percentage of protest participants—perceived the election as a policy success and stopped participating. As a result, the movement both shrunk and radicalized. The argument is supported by evidence collected from surveys of movement participants, interviews, and ethnographic observations from protests. The experiment focused on the Heaney and Rojas article for two reasons. First, its thematic content combined the FWS’s topics, addressing both how protests affect military interventions and how party politics influence movements. Second, it represents scholarly work with a complex but clearly presented argument that incorporates multiple sources and types of evidence. The article is thus ideally suited for the purpose of this study because it requires students to engage carefully with the evidence and the argument, but its clear organization makes that task as easy as possible.

We conducted the experiment during a regular class session. On that day, 29 students from the two FWS met together in one room. Students were told in advance that the class would take place in a different room, but were not informed that there would be a survey until the beginning of class on the day of the experiment. While participation in the experiment was optional, this timing ensured that students did not prepare for the class meeting more or less than their normal routine. Thus, while limiting the number of participants, embedding the experiment in two existing seminars minimized changes to students’ normal learning environments and helped ensure external validity. Student comments confirmed the importance of withholding this information, as one participant explained that, “I think beforehand you should tell the class about the activities so they would make sure that they read the piece more vigilantly and paid great attention to detail.”

The experiment took place in two phases. The first phase measured whether writing or discussion activities created a significant difference in students’ understanding of the argument and how it was supported by the authors’ evidence. The second phase tested whether students could incorporate and evaluate evidence in their own summaries of the article. It also allowed us to investigate whether the potential effects of the different teaching strategies endured beyond the immediate active learning activity.

For the first phase we randomly assigned the students to one of two groups. The first group moved to another room and were handed prompts that asked students to write short responses to the following two questions: “What kind of evidence do the authors use to support their claims?” and “Do you find Heaney and Rojas’ evidence compelling? Why
or why not?” This writing exercise enabled students to think through the argument while consulting the article and to reformulate their understanding of the argument and evidence in their own words. In answering these questions, a few students relied on figures and phrases directly from the article. For example, in a phrase taken from the article’s abstract, one student wrote that, “Heaney and Rojas use survey results from 5,398 demonstrators at anti-war protests, interviews with movement leaders, and ethnographic observation.” However, the majority of students provided original and comprehensive accounts of the article. One student lauded the authors’ use of “oodles of evidence,” while another wrote that, “Heaney and Rojas used, among other things, statistical analysis to support their claims. In their analysis, they polled members of the Democratic Party, and other third party movements to reveal how partisanship and the antiwar culture are related [...] I found this evidence compelling, but not conclusive.”

Because the writing activity required students to examine the text and address the questions in their own words, rather than relying on interactions with their peers, we expected it to help students retain insights about the connection between argument and evidence. While the first group completed the structured writing activity, the second group remained in the original classroom and participated in an instructor-led discussion that addressed the same two questions as the prompts for the structured writing activity. The instructor both asked the prompt questions verbally and posted them on a slide that remained visible throughout the discussion. We were careful to keep the discussion focused on these two questions and students were encouraged to respond to each other, rather than to the instructor. While the discussion was student-driven, the instructor prompted students to continue searching for additional types of evidence until they had captured all of the approaches used in the article. This set-up is akin to a standard classroom discussion in which students gain knowledge by engaging with the material on their own terms, but are guided and kept on topic by prompts provided by the instructor. In particular, we designed the prompts to direct attention to the evidence without foreshadowing the questions used to measure students’ comprehension in the evaluation surveys (see below). For example, in the class discussion the instructor asked, “You’ve mentioned surveys and statistical analysis, anything else?” but did not provide an overview or explanation of Heaney and Rojas’ evidence. Students in this second group were therefore exposed to the exact same prompts and information as those in the writing group. Thus, any difference in learning outcomes between the two treatment groups was purely the product of the different methods of instruction: one group had the chance to structure their thinking through a writing activity, while the other group built knowledge and exchanged views through the discussion format.

After 15 minutes, both the discussion and writing group were given a questionnaire that used multiple choice and open-ended questions to measure students’ preparation prior to class, comprehension of Heaney and Rojas’ (2011) argument, and ability to identify the article’s evidence (see the appendix for the full text of the questionnaire). To guarantee anonymity, the only background information we collected was the FWS in which students were enrolled. The questionnaires also asked for students’ consent to use their responses in this study. One student chose to opt out and our two groups had 15 (group discussion treatment) and 13 (writing exercise treatment) participants, respectively. Thus, the number of students in the discussion group was large enough to create a productive exchange of knowledge, but small enough to allow for the participation of each student. This class size is representative of seminar-style courses and the typical teaching situation for group discussions.

Beyond creating two different treatment groups, random assignment also created a further source of variation. About half of the students in the discussion group had to engage...
with an unfamiliar instructor, while the other half were led by their usual instructor. Since the experiment took place in the latter half of the semester, students and their instructors had the opportunity to get to know each other and build a productive working relationship over several weeks. If this direct, personal interaction matters for learning outcomes, we should observe differences not only between the treatment groups, but also within the discussion group. Accordingly, we exploit the variation in familiarity with the instructor by analyzing differences between these two sub-groups.

For the second phase of the experiment, we brought the two groups back together and conducted a 20-minute classroom discussion guided by a series of broader questions. These questions were relevant to our seminars but did not directly address the article’s evidence or argument. Students could take notes during this discussion period, but few made use of this opportunity and they were not allowed to refer to notes or any other materials while completing the final evaluation. For this final evaluation, we asked students to write a short summary of Heaney and Rojas (2011) and to evaluate the strengths and weaknesses of the article’s argument without referring back to the text. The follow-up evaluation served two purposes. The first was to investigate students’ abilities to incorporate evidence into their evaluations of the article. Second, the follow-up examined whether the potential treatment effects endured beyond the immediate

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2 The questions were: “What motivated people to join the protests?” “What role did politics play in individuals’ decisions to participate in the protests?” “What effect did the protests have on American foreign policy and the Iraq War?”

Table 1: Key Concepts and their Measurements

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>Concept</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td>“To what extent do you agree with the following statement: I read the Heaney and Rojas article very closely.” “To what extent do you agree with the following statement: Before class I had a solid understanding of Heaney and Rojas’ argument.”</td>
<td></td>
</tr>
<tr>
<td>Evidence</td>
<td>“Which of the following describes the data that Heaney and Rojas use to support their claims.”</td>
<td></td>
</tr>
<tr>
<td>Argument</td>
<td>“Which of the following best summarizes Heaney and Rojas’ main argument?” “Which of the following best describes the structure of Heaney and Rojas’ article?”</td>
<td></td>
</tr>
<tr>
<td>Phase 2</td>
<td>Evidence</td>
<td>Does the student’s written summary mention a specific type of evidence (i.e., surveys, interviews, etc.)? Does the student’s written summary mention the purpose for which the evidence is used?</td>
</tr>
<tr>
<td>Argument</td>
<td>Number of correct components mentioned in student’s written summary (0-5).</td>
<td></td>
</tr>
<tr>
<td>Critical Engagement</td>
<td>Does the student mention evidence in his/her answer? Does the student mention a strength of the article? Does the student mention why the evidence is strong? Does the student mention a weakness of the article?</td>
<td></td>
</tr>
</tbody>
</table>
aftermath of the active learning activities and whether participation in the full group discussion led to the diffusion of knowledge across the two groups. We coded students’ responses based on their ability to reference the argument’s five key components and created indicators of students’ comprehension, outlined in Table 1 and discussed in greater detail below.

**Indicators of Student Learning**

Following the first phase of the experiment, the initial evaluation was designed to measure students’ level of preparation prior to class, comprehension of the article’s evidence, and understanding of the main argument. First, we relied on straightforward measures of preparation by asking students to self-report how thoroughly they read and understood the article. We did not collect any identifying data and students thus had no incentive to exaggerate their efforts. The low level of reported preparation, discussed in more detail in the following section, further indicates that students answered these questions honestly. Second, we measured students’ comprehension of Heaney and Rojas’ (2011) empirical evidence with a multiple-choice question. This question asked students to select “which of the following describes the data that Heaney and Rojas use to support their claims” from four possible options, three of which were correct. This item is well suited to measure students’ comprehension of the evidence because it captures multiple levels of learning. Students with full comprehension identified the three correct answers only, students with a basic understanding missed one option—either by selecting the incorrect component or by failing to select a correct component—and students who struggled with the evidence missed multiple options. From this question, we created an overall score of students’ comprehension by subtracting their total number of incorrect answers from the total number of correct answers. The resulting indicator makes students’ levels of comprehension both distinct and easily comparable.

A final pair of items measured participants’ understanding of the main argument. They asked students to select the accurate summary of the article’s argument and to identify the correct structure of the article. These items were designed to be difficult enough to capture variation in student comprehension while providing clearly comparable answers.

Following the combined group discussion, we conducted a second evaluation to determine whether students could independently incorporate evidence into their summaries of the argument and evaluate its strength and weaknesses. This evaluation consisted of two prompts: 1) Write a short summary of the authors’ main argument, and 2) Evaluate the strength of Heaney and Rojas’ argument. What’s something the authors do well? What’s a weakness of the article? From the first question, we coded students’ summaries to create three variables. The first to related to students’ understanding of evidence and measured whether the response included any discussion of evidence. The second indicated whether students who mentioned evidence could explain how it contributed to the main argument. For the third measure, which gauged students’ comprehension of the argument, we coded the number of core components (see footnote 3) from Heaney and Rojas’ argument that students mentioned in their responses.

From the second question, we coded students’ responses to create binary measures of whether they addressed each part of the question—i.e., did they mention evidence, a strength, and a weakness—and whether they explained...
why the evidence was strong or weak. Taken together, these measures capture students’ levels of critical engagement with the evidence and the article’s argument.

When combined, the survey items and open-ended responses provide a comprehensive picture of students’ abilities to understand Heaney and Rojas’ (2011) argument and evidence. Triangulating between closed survey questions and open-ended essay prompts limits measurement error by ensuring that our results are not the artifact of a specific way of measuring students’ performance. This combination of indicators also enables us to explore whether writing exercises or discussion groups are better suited to helping students identify and evaluate evidence. The next section presents the results of the experiment and compares the effectiveness of these two strategies.

RESULTS

Group Discussion Is More Effective

The results show that in key categories, students assigned to the group discussion performed better than students in the writing group. Most notably, as seen in Figure 1, participants in the group discussion were more likely to mention specific types of evidence in their written summaries of the article. Additionally, Figure 1 also shows that students in the discussion group were more likely to mention why the authors’ evidence was strong in their open-ended evaluations of the article. In fact, all students in the discussion group explicitly outlined why they thought the authors’ evidence was strong. These findings suggest that exposure to other students’ ideas and the instructor’s prompting to identify all sources of evidence may help students internalize the relationship between evidence and argument more effectively than having students search for and write about evidence on their own.

Although group discussion positively encouraged students to engage with evidence, previous findings show that the benefits of discussion can vary by classroom environment (Dallimore et al. 2004; Bromley 2013). In the context of this experiment, the two relevant factors that could potentially condition the effect of group discussion were students’ familiarity with the instructor and students’ previous experience with the content of the material. As a result of random assignment, half of the students participating in the group discussion were led by their normal course instructor, while the other half were led by a

6 All figures report differences in the writing and discussion groups based on the differences in proportions of students. While the figures report the mathematically accurate confidence intervals, theoretically values above one are not feasible for measuring proportions.

7 The difference in the control and treatment group does not meet conventional standards of significance for this variable (p=0.1236); however, given the small sample size (N=28), the result is of substantive interest.
new instructor. Students working with a new instructor were not familiar with her teaching style and may have been less comfortable or willing to actively participate, curtailing the positive benefits of discussion. Comparison of means tests (see Table 2) support this explanation: students in the discussion group with their own instructor (i.e., those in the course on humanitarian intervention) were significantly more likely to identify the correct components of the argument in their essays than the other discussion participants.

However, as Table 2 also shows, when it came to mentioning specific types of evidence in their own summaries, students in the discussion group who were unfamiliar with the instructor (i.e., those in the social movements class) were more likely to correctly list the article’s sources of evidence. While not directly tested here, this difference may stem from these students’ increased exposure to the article’s measures of individual-level political behavior, which the discussion successfully activated. In their previous coursework, students in the course on humanitarian interventions focused on cases of intervention, elite rhetoric, and implications for foreign policy. By contrast, students in the course on political parties’ interactions with social movements had received detailed instruction on individual-level political behavior and read articles with data similar to that presented by Heaney and Rojas.

Therefore, while group discussion appears to have significant benefits for student comprehension, the magnitude of its effect may depend on a combination of students’ level of comfort in the classroom and familiarity with the material. Group discussion may thus

<table>
<thead>
<tr>
<th>Components of Argument</th>
<th>Humanitarian Intervention</th>
<th>Movement Parties</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Writing</td>
<td>Discussion</td>
</tr>
<tr>
<td>Difference</td>
<td>1.14*** (0.37)</td>
<td></td>
</tr>
<tr>
<td>Types of Evidence</td>
<td>0 (0)</td>
<td>0.14 (0.14)</td>
</tr>
<tr>
<td>Difference</td>
<td>0.14 (0.16)</td>
<td>0.43** (0.2)</td>
</tr>
</tbody>
</table>

Table 2: Effects of Treatment by Class

Figure 2: Effects of Treatment: Evidence and Argument Structure

Point estimates are means; standard errors reported in parentheses; ***p<0.01; **p<0.05; *p<0.10 (two-tailed tests)
be particularly effective for teaching critical engagement with evidence in small seminars where students have the opportunity to interact with each other and with the instructor on a regular basis. Additionally, the positive benefits of discussion may be amplified when the course focuses on a single topic in detail and reading assignments consistently draw on and present evidence in similar ways.

**Overall Student Competency**

Despite the positive effect of group discussion on participants’ abilities to independently identify and evaluate evidence, we find few differences in students’ basic understandings of the article. As Figure 2 shows, in the first questionnaire, students in both the control and treatment group were equally likely to identify the article’s data sources and the structure of the argument.

In both phases of the experiment, students demonstrated their ability to successfully engage with the evidence presented in Heaney and Rojas (2011). Regardless of their assigned treatment group, in the initial evaluation all students correctly identified the article’s main argument. Almost all students also correctly characterized the structure of the argument (86%) and were able to distinguish at least two pieces of evidence used by the authors (79%).

In the second phase of the experiment, which asked students to write their own summaries and evaluations of the article, the vast majority of students (27 out of 28) mentioned evidence in their discussion of the argument’s strengths. The content of student responses also highlights their ability to use evidence to evaluate the strength of an argument. Students praised Heaney and Rojas for “presenting their data in a way that the reader can understand” and making it “clear what their argument is and what they are basing their conclusions off of.” In addition to recognizing the benefits of the authors’ evidence, students also identified some weaknesses, for example that “when using statistical analysis to make an argument, there will always be gaps. Correlation does not always prove causation and I would have liked the authors to address other possible reasons why anti-war sentiment declined.” The vast majority of students were also able to identify the empirical expectations of the argument (25 of 28) and all students could offer a basic

*Figure 3: Effects of Treatment on Critical Engagement: Mentioning the Weakness/Purpose of Evidence, Questionnaire 2*
explanation of how Heaney and Rojas used figures to backup their claims. These findings suggest that when engaging with academic articles, students are able to both identify the basic relationship between the argument and evidence and to independently recognize the central role that evidence plays in making a strong argument. Therefore, students are able to work with statistical evidence and the presence of quantitative analysis should not dissuade instructors from assigning material from academic journals in undergraduate political science courses.

In the second questionnaire, administered after a combined group discussion, treatment assignment did not create any noticeable difference in students’ ability to recognize the purpose of the authors’ evidence, incorporate a discussion of evidence into their own summaries of the argument, or identify and evaluate the article’s weaknesses (see Figure 3). In other words, even after participating in a discussion that focused on different aspects of the article, students remained capable of identifying evidence and using it to critically evaluate the article’s claims. They were, however, less capable of directly identifying the purpose of the evidence. Thus, students’ overall competency and any effects of writing or discussion on their ability to work with evidence remain active for at least the duration of the class period.

Levels of Student Preparation
Finally, students’ abilities to understand Heaney and Rojas’ (2011) main argument and use of evidence did not depend on their preparation prior to class. While few students (7 out of 28) reported having read the article closely prior to class or that they had a solid understanding of the argument (10 out of 28), these variables did not significantly affect survey responses. Thus, even when students have not done the necessary background work and are not allotted time to read the article carefully in class, briefly revisiting the text through writing or discussion activities can help them understand the main argument and supporting evidence. This evidence suggests that active learning approaches may provide an alternative or supplement to pre-class preparation exercises (Trudeau 2005).

WRITING AND DISCUSSION ACROSS CONTEXTS
The experiment detailed above examined how students respond to group discussion and structured writing activities in the context of political science seminars. These seminars are ideal for implementing a wide range of active learning techniques because the class sizes are small, instructors are familiar with students’ individual needs and abilities, and instructors can monitor participation to ensure that the relevant learning objectives are met. The results of this study thus speak most directly to the relative effectiveness of structured writing and group discussion activities in similar seminar-style classes. However, our findings also suggest that the benefits of these activities may be conditional on the classroom environment and students’ familiarity with the discussion leader. In this section, we consider the potential benefits of and obstacles to implementing group discussions and structured writing in two alternative classroom environments—online courses and large lecture courses—and identify this as an important area for future research.

First, the interaction between active learning strategies and students’ in-class experience speaks to the ongoing debate about the feasibility of teaching social science concepts through online courses (Keohane 2013; King and Sen 2013). Online courses have become increasingly prominent, with 22 of U.S. News and World Report’s top 25 U.S. universities offering free classes online (Shah 2014). Understanding the extent to which classroom environments moderate the effects of active learning is thus particularly important. While both strategies encourage students to critically engage with the text, structured writing activities and group discussion differ in their emphasis on guidance from the instructor and interactions with other students. Structured writing activities ask students to revisit the text and think closely about their understanding.
of the article’s main argument in order to restate the claims in their own words. This strategy relies on writing prompts to guide students through a reexamination of the text and does not require any direct interactions with instructors or other students. If effective, structured writing activities could thus be easily implemented in online courses. For example, students could be assigned short writing prompts related to the article’s evidence and required to post their responses on discussion forums.

Alternatively, group discussion relies on direct guidance from the instructor and interactions with other students to build comprehension. To the extent that comfort and familiarity with the instructor contribute to the effectiveness of group discussions—as our results suggest is the case—the benefits from this approach may not be easily translated to online environments. In online environments that allow students to interact with one another and the instructor in real time, recreating the familiarity and exchange of ideas that promote discussion may be possible. However, if the online setting prevents instructors from guiding discussion and creating a comfortable environment in which students can share ideas, it presents an obstacle to using class discussion to help students engage with evidence. Future research should more closely investigate the extent to which learning during discussion stems from face-to-face interactions in order to evaluate the utility of online courses for teaching critical thinking skills.

Second, the structured writing and group discussion activities implemented in this study also differ in the ease with which they can be adapted to larger classes or lecture environments. As with online courses, structured writing could be conducted with classes of any size—students simply need to be instructed to respond to writing prompts with access to the original text in class. Student responses could then be handed in to the instructor to ensure that they invested effort in writing comprehensive answers to the question. On the other hand, while it is feasible and recommended for students to discuss concepts with their neighbors during lectures (Smith et al. 2009), our findings suggest that care should be taken to ensure that students become familiar with each other and are guided through the discussion by an instructor. To create a comfortable and familiar environment for discussions, students could be assigned to the same groups over the course of the semester. Similarly, to guide students’ discussions towards comprehensive accounts of academic articles, the instructor and teaching assistants should consider rotating among the groups over the course of the discussion.

Thus, while this study offers suggestive evidence that group discussion is the most effective strategy for teaching students to engage with evidence, this strategy also travels less easily between different classroom environments than the structure writing activities. To bridge this gap, future research should test different strategies for increasing students’ familiarity with the instructor and guiding students through discussion activities. This research will be key for maximizing the positive benefits of group discussion across contexts.

**CONCLUSION AND IMPLICATIONS**

Combined, the results indicate that participation in group discussion better prepared students to integrate evidence into their evaluations of Heaney and Rojas (2011). Group discussions may be more effective because they encourage students to exchange ideas and correct misunderstandings over the course of the discussion, as well as allow the instructor to continue asking for additional responses until the group creates a comprehensive account of the argument. These positive effects are augmented when students are familiar with both the content of the material and the instructor, making group discussions of evidence an excellent fit for small seminars.

These findings are also in line with existing studies that find few benefits to in-class writing exercises (Armstrong et al. 2008; Fry
and Villagomez 2012; Bromley 2013). Thus, as an approach to active learning in general and the comprehension of evidence in particular, discussion appears to be the more effective pedagogical tool. However, this is not to say that writing activities are not useful for assignments that focus on personal opinion or experiences, or as an out-of-class follow-up to reinforce the content of group discussions. Future research should consider how discussion and writing activities can be combined with other approaches to maximize students’ critical engagement with the material.

While discussion most effectively increases comprehension, we find that students are generally capable of critically engaging with academic articles and quantitative evidence. With the opportunity to revisit and reflect on the text in class, even students who had not carefully completed the assigned reading before class were able to grasp and evaluate the main argument. These results are particularly impressive given that the overwhelming majority of the students involved were in their first year of college. Therefore, articles from academic journals, including those that use statistical analysis, can be effectively used in undergraduate seminars when coupled with active learning strategies that guide students through the evidence.

Finally, at a time when liberal arts institutions search for ways to improve the feasibility of teaching online (Young 2015), this study’s findings suggest that the benefits of active learning strategies may not easily translate outside of the classroom environment. While the study does not provide a direct test of how active learning strategies operate online or in large lecture environments, evidence that students were more likely to reap the benefits of discussion when they were familiar with the instructor highlights an aspect of the in-class experience that may be difficult to translate beyond smaller seminars. Future research should examine this finding more closely and compare the effectiveness of both structure writing and group discussion across different environments.
REFERENCES


APPENDIX A

Questionnaire One: Multiple Choice and Open-Ended Responses

We’re going to ask you a few questions about how you prepared for class today and about the content of the Heaney and Rojas article, “The Partisan Dynamics of Contention.” Please answer honestly and carefully.

1. Circle the First-Year Writing Seminar in which you are enrolled:
   “From Social Movements to Political Parties”
   “Humanitarian Intervention”

2. To what extent do you agree with the following statement: I read the Heaney and Rojas article very closely.
   Leave blank if you did not have a chance to read the article before class.
   a) Strongly agree
   b) Agree
   c) Neither agree nor disagree
   d) Disagree
   e) Strongly disagree

3. To what extent do you agree with the following statement: Before class I had a solid understanding of Heaney and Rojas’ argument.
   a) Strongly agree
   b) Agree
   c) Neither agree nor disagree
   d) Disagree
   e) Strongly disagree

4. Did you take any notes on the article before coming to class? This could include written or typed notes, comments in the margins of the article, or highlighting or underlining important phrases in the article. Circle your answer below.
   Yes  No

5. Which of the following describes the data that Heaney and Rojas use to support their claims? Circle all that apply.
   a) Surveys of movement participants
   b) Interviews with party leaders
   c) Interviews with movement leaders
   d) Ethnographic observations of the protests

6. True or False: The authors expect the end of the Bush presidency to increase antiwar activism. Circle your answer below.
   True  False

7. Which of the following best summarizes Heaney and Rojas’ main argument?
   a) Democrats are more likely to protest wars than Republicans.
   b) The anti-war movement demobilized after the U.S. achieved policy success.
   c) The anti-war movement demobilized after Obama was elected president because Democrats were no longer motivated to participate.
   d) The Iraq war led to large-scale protests around the world.

8. How does the following figure contribute to Heaney and Rojas’ (2011, 52) main argument? Explain your answer in a few sentences below.

9. Which of the following best describes the structure of Heaney and Rojas’ article?
   a) Evidence that Democrats stopped participating → Evidence that Democrats’ attitudes changed → There was an active antiwar movement in response to the Iraq War → The movement declined after Obama was elected because Democrats stopped participating → Partisanship shapes movement participation and endurance
   b) There was an active antiwar movement in response to the Iraq War → The movement declined after Obama was elected because Democrats stopped participating → Evidence that Democrats stopped participating → Evidence that Democrats’ attitudes changed → Partisanship shapes movement participation and endurance
   c) There was an active antiwar movement in
response to the Iraq War → The movement declined after Obama was elected because Democrats stopped participating → Partisanship shapes movement participation and endurance → Evidence that Democrats stopped participating → Evidence that Democrats’ attitudes changed

APPENDIX B
Questionnaire Two: Student Summaries and Evaluations

1. In today’s class we discussed the article “The Partisan Dynamics of Contention” by Heaney and Rojas. Based on what you remember from the article and from our class discussion, but without looking back at the article itself, write a short summary of the authors’ main argument in the space below.

2. In the space below, evaluate the strength of Heaney and Rojas’ argument. What’s something that the authors do well? What’s a weakness of the article?

3. What did you think about today’s class? What’s one thing that you think went well? What’s one thing you think could be improved?