Do Classroom Simulations Really Help Students Learn and Engage?

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Introduction

Political science professors have been using simulations to try to enhance student learning for years. Simulations are interesting, a nice change of pace from the traditional lecture, and allow for more student participation in class. But do they really make a difference when it comes to actual learning, and to longer term engagement with the material and with politics? This study attempts to examine the actual impact that simulations are having, by examining attitudes and understanding before and after taking part in a simulation. We study whether participation in classroom and Model United Nations simulations leads to increases in civic attitudes, behaviors, and political literacy.

Simulations in the Literature

Simulations are widely studied in the political science literature. There are a number of significant benefits that scholars have suggested simulations provide, all related to learning and engagement.

First is the assertion that simulations provide students with a deeper connection to the political topic being studied and help develop a longer-term interest in the subject. Bernstein and Meizlish (2003) followed students who took part in a simulation of American politics and asked them three years later about their self-perceived knowledge of the course. They found that

students who had taken part in the simulation seemed to remember the course content better than fellow students who hadn't taken part in the simulation. Frederking (2005) provides a semi-experimental study in which he compares American Government courses that did and did not include a simulation of the U.S. Senate. He found that students who participated in the simulations scored significantly better on course exams and rated their own experiences of the course significantly higher than those students without the simulation. Shellman and Turan (2006) created a simulation focused on international terrorism, the future of Iraq, and globalization. They found support for the assertion that the simulation enhanced student knowledge of substantive course material, and more than 90% of the students stated that the simulation enhanced their knowledge of their assigned country or organization. Alberda (2016) taught two classes on Introduction to American Government, using simulations in only one of the courses. She found that students in the course that utilized simulations reported that simulations got them more involved in the class and were a useful learning tool. Chasek (2005) found that simulations in her International Organizations course led to her students having more understanding of, greater enthusiasm for, and greater appreciation for, the interactions and negotiations that go on between member states in international organizations than had previous classes that did not use simulations.

Second is the hope that simulations allow students to better approach and understand difficult topics. Asal and Schulzke (2012) used simulations to help students understand the complexities of applying ethical reasoning in a situation of political violence. Simulations were a means to help students grapple with the ethical dilemmas encountered by combatants on the battlefield. They found these simulations to be very useful in forcing students to grapple with the complexities of these kind of situations. Asal et al (2014) also reported that students found

simulations helpful in making abstract concepts concrete, giving them greater insight as they played out assigned roles. Elias (2014) found that students who took part in an EU simulation reported deeper understanding of roles and institutions related to European politics. Simulations can provide an "easy entry point" (Marsh and Bucy 2002) for difficult topics that might feel too distant and unapproachable, such as Russian federalism. Students can take on a role that allows them to explore the unique interests and realities of otherwise remote actors. Students come away from simulations with an "improved understanding of complicated phenomena" (Preston and Cottam 1997). Corbeil and Laveault (2011) examined differences in knowledge and comprehension, attitudes, and learning styles between students who did, and did not, take part in simulations in their History of International Relations course. They found that students who took part in the simulation retained more information and had greater comprehension of the material.

Third is the ability to understand different points of view. Bachen et al (2012) look at the perspective of empathy, meaning a connectedness across ethnic, racial, linguistic, and nation-state lines. Their study found that students who took part in their simulation scored higher in posttest global empathy. In addition, they found identification with the characters the students played was associated with increased global empathy. This suggests that taking part in a simulation does encourage students to meaningfully step in to the experiences of a very different character. Pellegrino et al (2012) find that simulations provide an opportunity for students to gain an empathetic view of others, and help them understand historical realities in a deeper way. Andrew and Meligrana (2012) carried out a series of simulations for their Master's level students that focused on various methods of negotiation and then gathered data from two sets of questionnaires. Students highlighted the importance of discovering the interests of the parties that lay behind their stated positions, and they reported that understanding the other party's

viewpoints was a key component of their learning process. The authors found that differences in responses between the pre- and post-simulation questionnaires was due to the simulations' ability change student knowledge, perceptions and opinions. Cuhadar and Kampf (2014) carried out a cross-national study using a computer game called "PeaceMaker." Undergraduates from a university in Turkey, Israeli students in Israel, American students studying in Israel, and Israeli Palestinians studying in Israel took part. Interesting differences were reported as a result of taking part in this game. American and Turkish students reported that their original perceptions were altered after playing the game, but Jewish and Palestinian students did not change their perspectives regarding the rightness of each side after playing the game. The authors conclude that considering these mixed results, they still find that game simulations contribute to the improvement of knowledge and also to improved perspective taking, even if in a limited manner. Krain and Lantis (2006) used two simulations in two classes, each time having one class run a simulation and the other taught only through lecture. They found no significant difference between the two classes regarding understanding negotiation and varying perspective when focusing on weapons proliferation and arms control. However, when they ran a second simulation on torture and war crimes, they found a significant increase in perceived knowledge of specific countries' positions and varied perspectives for the class that used the simulation. Students who took part in that simulation reported a better understanding of country preferences, and of the overall complexity of the issue. The authors conclude that the simulations indeed helped students understand different perspectives.

Fourth is the assertion that simulations increase civic engagement and participation. Zappile et al (2017) ran simulations in four courses across three campuses related to the situation in post-earthquake Haiti and found that students reported gains in global engagement and

increased feelings of global citizenship. Caruson (2005) ran a long-term simulation of a campaign in her course that included aspects such as interest groups, web-based campaigning etc. During the evaluation of the simulation, 97.6% of the students indicated that the simulation caused them to be more interested in the election process, and 71.4% indicated that they would seriously consider working for a political campaign in the future. Mariani (2007) also created a multi course campaign simulation and found that students in both classes reported that they would follow campaigns more closely. The author concludes that the simulations gave students the tools to understand how campaigns work and encouraged them to participate in politics more.

Method

Sample

This study uses a comparison group, difference in difference design to estimate the effects of participating in a simulation on student civic outcomes and knowledge of current events. Participants were students at a university in the Southwestern United States who were enrolled in at least one of three classes or an academic club. All of these groups had a political science focus, and two of them involved political simulation.

Students in the simulation, or "treatment" group participated in Model United Nations (MUN) simulations either as part of a MUN club or a MUN class. Students in the class prepared for and participated in three simulations, and were also encouraged to participate in the MUN club. Students in the club undertook more serious preparation for conference simulation, as well as participating in a number of smaller practice simulations. Students in the comparison group took political science classes but did not participate in political simulations. These students took

either a 200-level political ideologies course, or a Senior capstone course for Politics and International Affairs majors.

A total of 96 students were surveyed as part of the study, but only those who took both the pre- and post-semester survey were included in the analytical sample of 58 students. Of these, 20 students (or about 34% of respondents) participated in one of the simulation groups. Observable characteristics of the sample are displayed in Table 1. Overall, students who participated in the simulations were slightly younger and earlier in their college careers when compared to the rest of the sample, less likely to be Political Science or International Relations majors, less likely to be first generation college students, more likely to be female, and much more likely to have participated in MUN in the past.

Procedure

Students were administered pre-test surveys in the second week of class in hopes of being able to survey a stable set of students after the add/drop period at the beginning of the semester had died down. Surveys were about 28 questions long and divided into five sections: personal information, political engagement & interest, factual test questions about current events (both domestic and international), political alignment within their community, and civic engagement and participation on campus. Students were administered the same survey at the end of the semester. Responses were matched for individual respondents at both time points in order to identify changes in students' knowledge and engagement.

Although we had planned to give students post-test updated current events questions, students were given surveys with the same set of five current events questions. Only 7% of students answered fewer questions correctly on the post-test, and 31% improved their scores.

The stability of scores may be due to previous and stable knowledge about the questions, not current attention to the news, since they addressed news items from several months prior. This mistake occurred due to human error, and subsequent waves of the study will aim to correct for this.

Analysis

We estimate the relationship between participating in simulations and measures of positive civic outcomes which the literature suggests simulations might improves, specifically political knowledge, empathy and perspective taking, and civic engagement. Political knowledge is measured both by scores on the current events questions, a count of correct answers from 0 to 5, and a self-reported measure of whether respondents consider themselves "well informed about what's going on with politics and international affairs," a lichert-type item ranging from 0 "not informed at all" to 3, "very informed." Students' ability to understand different points of view was measured using three lichert-type questions ranging from 0 to 3. These asked how strongly they believed their own opinions were "morally or intellectually 'correct,'" how willing they were to change their minds when learning new information, and how easy they found it to understand where people with different opinions were coming from. Civic engagement consists of two measures of student self-reported involvement in campus life with a social or political focus. The first measure is an absolute count of the number of different types of social/political activities students report taking part in, and the second is a measure of how much time they spend on those activities each week, ranging from 0 "none" to 3, "more than 10 hours per week."

Independent variables included an indicator for participating in the simulation group, and pre-test scores of the same items. We also included two covariate indicators for majoring in

political science or international relations, and prior experience with Model UN. Majoring in political science serves as a proxy for interest and/or investment in the subject matter of the simulations, and prior experience controls for people who may not have participated in simulations this semester but who may have already received some of the potential benefits. Both of these measures were self-reported on surveys and verified by matching pre- and post-semester responses. Students responded consistently to both questions across survey administrations in all 58 cases. We did not include fixed effects for the four class groups due to small sample size, but hope to do so in future waves of the study.

Results

We first conducted basic difference-in-difference estimates for each of the outcomes. While greater increases in current events knowledge did not appear to be associated with simulation participation, students in the simulation group had higher initial scores and the fact that they were so close to the cap of possible scores suggests that using absolute scores may bias our ability to measure growth. In the case of feeling informed, students in the simulation group appeared to get a boost across the semester, while students in the comparison group reported feeling slightly less informed. Initial results for civic engagement were in keeping with our hypothesized outcomes, in that responses in the simulation group rose while the comparison group remained flat or decreased. However, outcomes for the empathy measures did not follow expectations. Students in the simulation group felt less strongly that their opinions were morally or intellectually correct at the end of the semester, which is in line with our hypothesis. However, they reported being less willing to change their minds, and less able to understand others' points

of view. These results run counter to our hypothesized outcomes and existing literature in this area. These preliminary results are represented in Figures 1-7.

Next, we used more robust models to estimate the influence of simulation on knowledge and engagement by adjusting for prior scores, previous experience, and interest or investment in political subject matter. These models suggest that most of these original naive estimates are not statistically robust. First, in Table 2 we see that there is no evidence of a significant association between knowledge of current events and simulations. While this is a disappointing result, it may be due to other factors already discussed, including the repeat test leading to inflated scores and the initial questions being too easy, rather than a lack of a true relationship. Further studies will aim to correct for these problems in order to obtain more valid evidence. However, there does appear to be a positive relationship between simulations and students' self-reported feelings of being informed. By engaging deeply with content through a simulation, students may feel that they have a better grasp of it or are more aware of the details or nuance of an issue, which may lead them to feel more informed. Ideally, future studies could establish a link between feeling informed and higher knowledge of current events, so that we could better understand whether these feelings are based in reality or in other psychological effects of simulations.

Turning to the next set of models in Table 3, there is no evidence of a meaningful relationship between participating in simulations and empathy or perspective taking, which helps explain why our difference-in-difference estimates did not look as expected. Finally, results for the civic engagement measures in Table 4 look more promising. While they do not achieve statistical significance, they show positive trends which are in line with theory. It is possible that true effect sizes are too small to detect with our current sample size, or that it takes time for the association to develop because students do not become more involved on campus overnight.

Thus, while we do not see highly significant effects of simulations in this study, there is some reason to believe that we may in a larger or more longitudinal sample, and these results do provide some justification for continuing to explore these relationships.

Discussion

This study suggests a promising start to empirical evidence tying participation in Model UN-style simulations to a wide range of positive student outcomes, including knowledge, empathy, and engagement. While the results displayed here are weak, they do provide some evidence of a positive association between simulations and student knowledge. Our hope is that by continuing to pursue these outcomes with an increased sample size and more robust procedures, we will be able to find much more concrete evidence to support the positive effects of political science simulations. This is an especially important step for civic engagement outcomes, as prior studies in this area, such as Mariani (2007) and Caruson (2005) who asked students about their intentions for engagement, rather than their actual behaviors. These findings suggest that students who participate in simulations may take immediate and concrete steps to be more involved on campus in social and political groups.

One surprising finding from this study was the lack of association between our empathy outcomes and simulation participation. This could be due to the fact that we ask about perspective taking and understanding different points of view more broadly, whereas most prior studies have focused specifically on understanding different points of view related to the simulation, such as the parties represented. It is also distinct from Bachen et al (2012) who focus on global empathy. Perhaps simulations help students to understand and care about actors far

away, but these outcomes don't translate to their own peers and communities. Studies that explore more closely which entities and actors are better understood through simulations and how these experiences relate to different kinds of empathy may be a fruitful path for further research.

While this is a promising first step, this study has significant limitations. First, this study is not able or designed to establish causation. Though obviously not randomly assigned, our simulation and comparison groups are not as well matched as we might like, though they are similar in many ways. We also had problems with attrition. Twenty-eight students from the initial sample did not complete the post-survey, and ten students who were enrolled at the time of the post-survey were not sampled in the pre-survey. Thus, this analysis only includes about two thirds of our intended sample, which both reduces our power and introduces attrition bias to our results. In addition, as already discussed, we were not able to get a quality measure of current events knowledge, and hope to correct this problem in our next wave of surveys. In addition, due to the time constraints upon students in college classrooms, we were not able to ask about every possible confounding factor in this analysis, but we do hope that as our sample size increases we might reasonably be able to introduce a more robust set of covariates to the analysis.

Overall, this study contributes to a growing literature on the role of classroom simulations in political science education, and seeks to make an empirical contribution to our understanding of how participating in simulations relates to students broader political socialization in terms of developing political knowledge, empathy and perspective taking skills, and civic engagement. We hope that these preliminary results are first step on a path toward a more significant comparison group study that explores these associations.

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Tables & Figures

Table 1: *Mean Sample Characteristics*

	Full Sample	Simulation Group	Comparison Group
Age	19.98	19.65	20.16
Year in School	2.91	2.60	3.08
White	0.84	0.85	0.84
Male	0.5	0.45	0.53
Poli Sci/IR Major	0.79	0.63	0.87
First Gen	0.34	0.30	0.37
Prev. MUN Exp.	0.34	0.70	0.16
n	58	20	38

Table 2: *Models estimating the relationship between simulations and political knowledge*

Variable	CE Knowledge	Feeling Informed
Constant	1.87 (0.34)***	0.62 (0.24)*
Simulation	**0.19 (0.20)**	**0.25 (0.14)°**
Pre-test	0.52 (0.08)***	0.69 (0.10)***
Poli Sci/IR Major	0.24 (0.20)	0.01 (0.14)
Prev. MUN Exp.	-0.14 (0.20)	-0.10 (0.15)
Adj. R-squared	0.47	0.47

$°p < 0.10$ $*p < .05.$ $**p < .01.$ $***p < .001$ (two-tailed tests). n=58
Coefficients shown for each independent variable, standard errors listed in parentheses.

Table 3: *Models estimating the relationship between simulations and empathy*

Variable	"Correct" beliefs	Change Mind	Understand Others
Constant	1.73 (0.29)***	1.02 (0.26)***	1.36 (0.36)***
Simulation	**-0.06 (0.17)**	**-0.17 (0.16)**	**-0.16 (0.24)**
Pre-test	0.37 (0.12)**	0.56 (0.12)***	0.30 (0.13)*
Poli Sci/IR Major	-0.34 (0.17)°	0.00 (.015)	0.21 (0.23)
Prev. MUN Exp.	-0.12 (0.17)	0.19 (0.15)	0.12 (0.24)
Adj. R-squared	0.14	0.29	0.06

$°p < 0.10$ $*p < .05.$ $**p < .01.$ $***p < .001$ (two-tailed tests). n=58
Coefficients shown for each independent variable, standard errors listed in parentheses.

Table 4: *Models estimating the relationship between simulations and civic engagement*

Variable	# Activities	Time Spent
Constant	0.52 (0.46)	0.23 (0.27)
Simulation	**0.67 (0.44)**	**0.33 (0.26)**
Pre-test	0.79 (0.09)***	0.55 (0.11)***
Poli Sci/IR Major	-0.19 (0.44)	0.26 (0.26)
Prev. MUN Exp.	-0.19 (0.44)	-0.03 (0.27)
Adj. R-squared	0.58	0.30

$°p < 0.10$ $*p < .05.$ $**p < .01.$ $***p < .001$ (two-tailed tests). n=58
Coefficients shown for each independent variable, standard errors listed in parentheses.

Figures 1 & 2: *Difference-in-Difference models for knowledge outcomes*
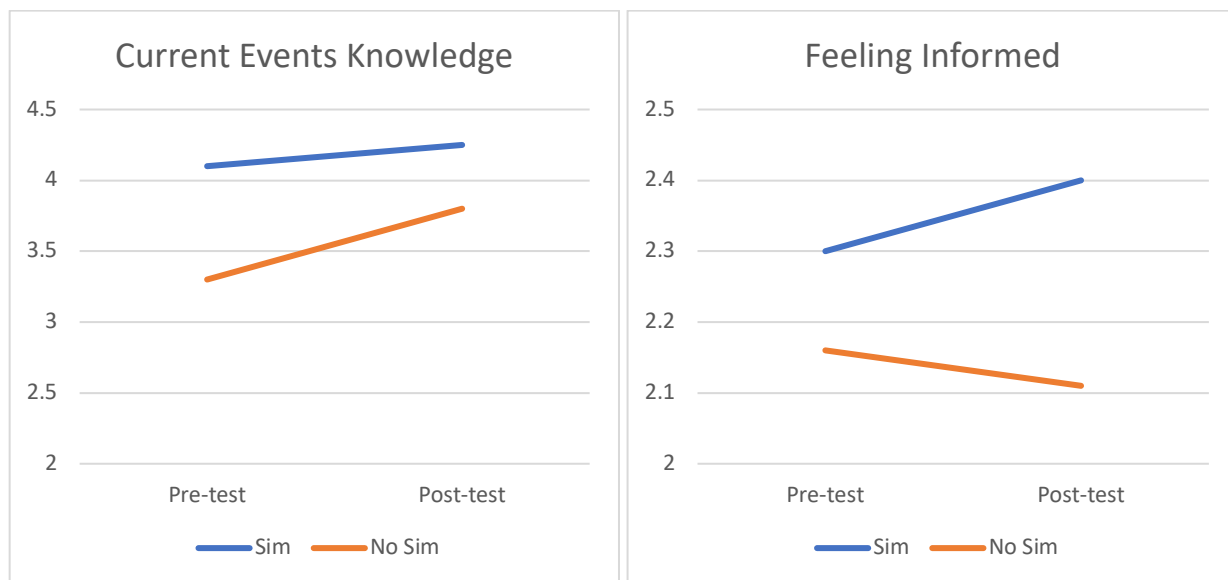
Figures 3, 4 & 5: *Difference-in-Difference models for empathy outcomes*

Figures 6 & 7: *Difference-in-Difference models for civic engagement outcomes*