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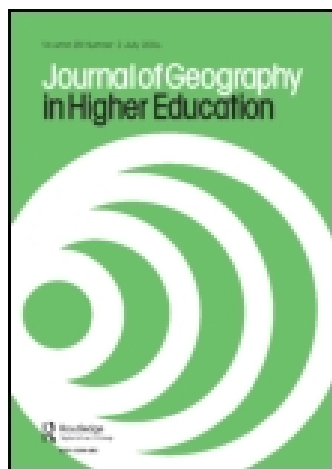
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Publisher: Routledge

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Journal of Geography in Higher Education

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/cjgh20>

What do students learn from a role-play simulation of an international negotiation?

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Published online: 01 Jul 2014.

To cite this article: Matthew A. Schnurr, Elizabeth M. De Santo & Amanda D. Green (2014) What do students learn from a role-play simulation of an international negotiation?, *Journal of Geography in Higher Education*, 38:3, 401-414, DOI: [10.1080/03098265.2014.933789](https://doi.org/10.1080/03098265.2014.933789)

To link to this article: <http://dx.doi.org/10.1080/03098265.2014.933789>

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What do students learn from a role-play simulation of an international negotiation?

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(Received 24 June 2013; final version received 8 June 2014)

This article uses pre- and post-surveys to assess learning outcomes associated with a role-play simulation set within a fictionalized extension of the Convention on Biological Diversity. Quantitative and qualitative data suggest that the simulation increased student appreciation of the complexity of international negotiation, but decreased student interest and self-assessment of skill proficiency. These results underscore the learning potential of the role-play simulation: it challenges notions of student idealism, leaving students with a more realistic sense of why Multilateral Environmental Agreements are so difficult to negotiate in the real-world.

Keywords: role-play simulation; student idealism; Convention on Biological Diversity; Multilateral Environmental Agreements

1. Introduction

Role-play simulations are becoming increasingly popular within geography curricula. Lauded as examples of both active and deep learning, simulations – in which students assume the role of a specific stakeholder and negotiate that perspective in the first-person within a fictionalized context – are particularly well suited to geographical pedagogy as they underscore the complex and multi-scalar nature of human–environment relations. Role-play simulations are especially useful tools for teaching within the realm of environmental governance, as such experiential exercises underline the challenge of achieving consensus on global environmental issues (Andonova & Mendoza-Castro, 2008; Dengler, 2008), augment student interest in these topics (Asal & Blake, 2006), and offer students the opportunity to develop the skills and competencies they will need to navigate these debates in the real-world (Fletcher, 2001).

The existing literature suggests an overwhelmingly positive relationship between role-play simulations and student learning. Within the realm of environmental governance, the most convincing analyses suggest that simulations help students understand the political forces and power relations that shape international negotiation. Simulations set within negotiations around climate change (Andonova & Mendoza-Castro, 2008; Dengler, 2008), conflict management (Belloni, 2009), and legislative debates (Baranowski, 2006) all highlight the value of role playing in helping students gain a better appreciation of how political dynamics shape policy outcomes. Other studies stress the value of such exercises in stimulating student interest (Chasek, 2005; Cutler & Hay, 2000; Kurtz, 2004), and in

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honing skills such as critical thinking (Dengler, 2008), coalition building (Baranowski, 2006), negotiation, and mediation (Fletcher, 2001), as well as public speaking and communication (Asal & Blake, 2006).

Despite favorable views of role play as a teaching tool, there is little research that comprehensively assesses the ways in which role-play simulations facilitate student learning; much of the existing evidence assessing the learning impacts of simulations is anecdotal and, by and large, unsystematic (Baranowski, 2006; Raymond, 2010; Raymond & Usherwood, 2013). Most studies that investigate student learning rely primarily on student feedback mechanisms along with the instructor's own reflections on the learning process. These are both valuable in their own right, but reveal little about the pervasiveness or the precise mechanisms of what students learn from these exercises. Recently, more comprehensive assessments of student learning have begun uncovering the specific processes through which simulations can heighten student learning by comparing self-assessments undertaken both before and after the exercise (Bachen, Hernandez-Ramos, & Raphael, 2012; Bots, Wagenaar, & Willemse, 2010; Brown, 2000; Krain, 2006). These studies suggest that using time sensitive instruments (i.e., staggered before and after the event) is an effective strategy for measuring self-reported learning outcomes.

Our analysis assesses changes in student perceptions of learning outcomes before and after participating in a simulation designed to help students appreciate the nuance and complexity of negotiating Multilateral Environmental Agreements (MEAs). Set within a fictionalized extension of recent debates within the Convention on Biological Diversity (CBD), students assumed the roles of real-life stakeholders and advanced their particular bargaining position in three separate forums – plenary sessions, working groups, and virtual negotiations – adhering to a blended learning model that incorporates both synchronous (face-to-face) and asynchronous (computer-mediated) interactions. The two most important components of the CBD simulation are immersion (providing an authentic replicate of the complex reality of international negotiation) and interaction (facilitating exchanges between students that are engaging, unexpected, and transport them beyond the confines of the traditional classroom). In this sense, the CBD simulation fulfills Gredler's (1992) criteria of a *social process simulation*, in which students learn through communication that produces social and political outcomes within the confines of a simulated reality (as opposed to *teaching-decision simulations*, which serve as iterated games that allow students to experience a more structured set of consequences based on their chosen actions).¹

We employed two sets of surveys to assess the value of this exercise to student learning. The pre-survey was conducted before the simulation began; these answers were then compared with a post-survey distributed after the simulation exercise was complete. Each survey included both closed and open questions: the former (analyzed quantitatively) offered a representative assessment of the specific learning impacts the simulation had on student learning, while the latter (analyzed qualitatively) provided a forum for students to articulate the value of the experience in their own words.

More crucially, our methodological approach responds to Raymond and Usherwood's (2013) call for systematic assessments that evaluate whether the specific learning outcomes associated with a simulation exercise have been achieved. Our study addresses this gap by examining a case in which the assessment of learning outcomes featured prominently in every stage of the pedagogical exercise, from conceptualization to execution to evaluation. The insights gleaned from this life-cycle approach should be valuable to educators wishing to create interactive role-play exercises that target student learning of specific content, attitudes, and skills related to international negotiation, while

incorporating the measurement of learning outcomes to comprehensively evaluate the exercise's overall pedagogical effectiveness.

1.1 The CBD simulation

The CBD simulation takes place within *SUST 2001: Environment, Sustainability, and Governance*. This is a second-year core course offered within Dalhousie's new trans-disciplinary College of Sustainability, which brings together students and professors from seven participating faculties to examine competing perspectives on environmental issues. Co-taught by two geographers appointed to different faculties, SUST 2001 has average enrollments of 100 students per semester. The key learning objectives are to introduce students to pressing issues of global environmental geography and critically evaluate the governance regimes that have emerged to regulate them, anchored by comparisons in theoretical perspectives (regime theory vs. political ecology) and thematic foci (marine vs. terrestrial).

The course culminates in a three-week role-play simulation – described in detail in Schnurr, De Santo, and Craig (2013) – in which students represent the interests of a nation-state, industry organization, NGO, or multinational organization in a simulated Conference of Parties meeting of the CBD. The simulation recreates the 10th Conference of Parties meeting, which took place in October 2010 in Nagoya, Japan, focused primarily on the contentious issue of Access and Benefit Sharing (ABS); that is, the fair and equitable sharing of benefits that arise from the commercialization of genetic resources through such ventures as pharmaceutical bio-prospecting. Students are introduced to the thematic material on CBD and ABS in the first half of the semester, at which point they sign up for the particular stakeholder they wish to represent. Smaller scale role-play exercises and skill development workshops sprinkled throughout the semester help students hone some of the skills they require to be successful in the simulation, including lobbying, policy writing and analysis, negotiation, and public speaking. This self-paced learning prepares students for the procedural and substantive challenges of negotiating MEAs by offering an incremental progression of skills and competencies they need to succeed in the simulation.

The simulation goes live in the final three weeks of the semester. It begins where the real-life negotiation left off: re-opening debate on the five most contentious articles within the Nagoya Protocol on ABS. The rules of procedure governing this exercise are adapted from the real-life rules that govern actual CBD meetings. As course instructors, we assume the roles of Secretaries-General, stressing formality and decorum in order to recreate the feel of a real-life Conference of Parties. A formal meeting room, as well as simulated placards, nametags, and lanyards, helps to immerse students in the experience.

The goal for the negotiation is for students to propose new language on these five articles that achieves consensus with other stakeholders, while still remaining true to their particular bargaining position. Students are able to advance their position in three separate but interconnected forums: plenary sessions (lectures) where all stakeholders meet formally and vote on the final wording of each article, working groups (tutorials) where small groups of stakeholders engage in focused, informal debate on one particular article, and virtual negotiations (online course site) where students make use of digital learning technologies such as wiki documents and discussion boards to propose amendments to existing text, comment on other students' edits, form coalitions, and post documents or media to advance their negotiating position. These three negotiating forums are designed to feed into one another: the plenary sessions allow students to articulate their positions to

other stakeholders, stage objections or protests, and vote on the final text for adoption; the working groups allow students to navigate the particular wordings of an individual article and build coalitions around their positions; and the virtual negotiation allows students to propose specific changes to the text, mediate conflicts, and offer compromise solutions, the final version of which are then voted on in the plenary sessions. In this way all three learning components reinforce one other in order to replicate the nuance and the complexity of negotiating MEAs in the real-world (see Figure 1).

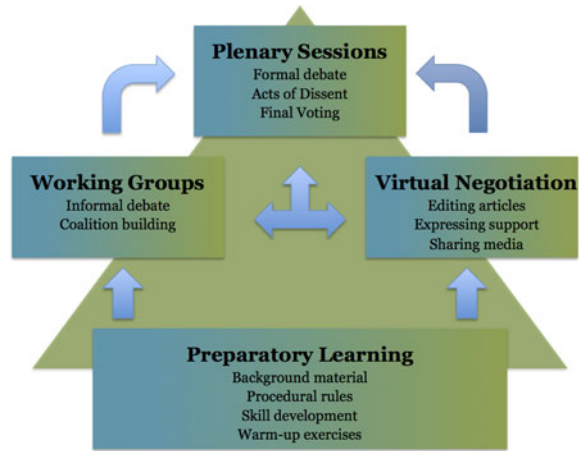


Figure 1. Learning progression of the CBD role-play simulation.

Students are assessed based on the quality and quantity of contributions to the negotiation: 10% of their final course grade is allocated to participation in the three simulation forums. Students are required to complete a position paper articulating their bargaining priorities going into the negotiation, including a one-page proposal detailing specific changes for each one of the five articles under discussion (also worth 10% of their final grade in the course). Students also complete two assignments earlier in the semester designed to introduce relevant skills: one tutorial assignment focuses on constructing an effective position paper (worth 10%), and one policy analysis assignment gives students exposure to critically evaluating the strengths and weaknesses of environmental policy (worth 15%). The remainder of the student's grade is determined by participation in tutorials (10%), tutorial assignments (20%), and a final exam (25%).

2. Methods

The three learning objectives of the CBD simulation are to (1) help students understand the complexity of negotiating MEAs, (2) enhance student interest in current debates around the issue of ABS and the workings of MEAs more broadly, and (3) hone skill development relevant for international negotiation. In order to investigate how successful the simulation was at achieving these learning objectives, we created two surveys – incorporating both quantitative and qualitative questions – and administered them to a cohort of students who took the course in the Winter semester of 2012. Students were asked to evaluate a number of statements on a Likert scale (rating from 1: strongly disagree/poor to 5: strongly agree/excellent) on questions related to complexity of environmental governance issues (See Table 1; Q6,7, Q12), interest in the simulation topics (See Table 3; Q9–13), and self-

assessment of practical skills related to international negotiation (See Table 5; Q17–21). Sixteen questions, from Q6–Q21, were common to both surveys and were used for the pre- to post-survey comparisons.

Pre-surveys were introduced in the fourth week of the semester before any material related to the simulation was introduced in class. Post-surveys were introduced in the final week of the semester after the simulation had been completed. Codes were used to match up pre- and post-surveys while preserving student anonymity: students were asked to construct a four-letter code consisting of the first letter of the city in which they were born, the month in which they were born, and their parents' first names. The surveys were distributed and collected by research assistants. The instructors were not present to ensure that students who did not want to participate did not feel compelled to do so.

Results were compared between the two surveys. Changes in average student responses from pre- to post-simulation were analyzed using repeated measures ANOVA. In cases of significant differences, subsequent analyses were performed using a Wilcoxon signed-rank test to examine differences between pre- and post-simulation responses on individual questions. Pearson's product-moment correlation coefficients were also calculated to examine relationships between the survey subscales (complexity, power dynamics, topic interest, and practical skills) using both pre- and post-simulation responses.

A total of 103 surveys were completed, 85 students completed the pre-survey, and 88 students completed the post-survey. Within these, 70 students completed both surveys, while 33 students completed only one or the other. The first three questions in the surveys addressed demographics. A majority of participants identified themselves as Environment, Sustainability and Society (ESS) majors ($n = 50$) and in their second year ($n = 45$). The remainder included 25 students in their third year, 11 in their fourth, and 4 were not identified. And 19 students reported they had participated in a role-play simulation before, while 66 had not.

3. Results and discussion

This section discusses the results of student learning in the simulation as they relate to the three primary learning objectives: (1) complexity (2) interest, and (3) skill development. In comparing pre- and post-surveys, significant changes were observed pertaining to each of these issues: student appreciation of the complexity of negotiating MEAs increased, while their interest in the topic and their self-assessment of their practical skills decreased. These findings are discussed in detail below.

3.1 Complexity

Overall, students reported a small (an average of 0.13 points, effect size $\eta^2 = 0.06$), significant ($F(1,62) = 3.98$, $p \leq 0.05$) increase in appreciation for the complexity of environmental governance issues from pre- to post-simulation. Examining individual questions within this theme (see Table 1), only Q12 (on the difficulty of achieving consensus in negotiations) was significantly increased from pre- to post-simulation ($p \leq 0.05$). Furthermore, overall student beliefs about the equal negotiating power of stakeholders also decreased after the simulation (Q8). The students' increased appreciation for the complexity of resolving environmental governance issues is also highlighted in our correlational analyses, where higher mean scores of perceived complexity were strongly correlated with a decreased belief in the equal negotiating power of all stakeholders (Q8; $r^2 = -0.32$, $p \leq 0.01$).

Table 1. Mean student responses \pm the Standard Deviation (SD) on questions related to perceived complexity of the simulation and the power dynamics of MEAs, present on both Survey A (pre-simulation) and Survey B (post-simulation), averaged across subscale categories.

| | Mean survey response scores \pm SD | | |
|---|--------------------------------------|------------------------------|-----------------|
| | Survey 1: Pre-simulation | Survey 2: Post-simulation | Sig. change? |
| <i>Overall change in perceived simulation complexity</i> | 3.83 \pm 0.39 | 3.96 \pm 0.43 | ↑ |
| Q6. I achieved my stakeholder's goals in the simulated negotiation | 2.47 \pm 0.81 | 2.59 \pm 0.81 | – |
| Q7. MEAs require substantial negotiation and compromise for progress to be achieved | 4.62 \pm 0.55 | 4.74 \pm 0.51 | – |
| Q12. It is not easy to achieve consensus when negotiating MEAs | 4.45 \pm 0.59 | 4.59 \pm 0.6 | ↑ |
| Q8. Organizations and nation states have the same power the in negotiating MEAs | 2.07 \pm 0.86 | 1.88 \pm 0.96 | – |

Note: ↑ indicates a significant increase and ↓ indicates a significant decrease in average responses from pre- to post-simulation ($p \leq 0.05$), while – indicates no significant changes.

It is important to note that the small size of this effect is likely due to a ceiling effect, as most students had high scores on questions related to complexity prior to the simulation. When asked to rate their level of agreement with the statement “MEAs require substantial negotiation and compromise for progress to be achieved” (Q7) before the simulation, 79/82 respondents either agreed or strongly agreed with this statement, while only 3/82 students neither agreed nor disagreed, and none of the students disagreed with the statement. This suggests that even prior to the exercise, students had some idea that negotiating MEAs was a complex process, and this pattern persisted after the simulation, with 84/88 students agreeing or strongly agreeing, and 4 students neither agreeing nor disagreeing.

Despite the small size of the effect, other parts of the survey suggest that many students gained an increased appreciation for the complexity of negotiating MEAs after participating in the CBD simulation. Prior to the simulation, 51 students agreed or strongly agreed with the statement that they would achieve their stakeholder's goals (Q6), while five students disagreed or strongly disagreed with this statement. After the simulation, the number of students indicating that they had achieved their stakeholders goals decreased to 45, while the number of students disagreeing with this statement increased to 11. On Q26 “The simulated negotiation helped me appreciate the complexity of negotiating consensus within MEAs”, 81/88 students agreed or strongly agreed that the simulation helped them to appreciate the complexity of MEAs (92%), while only 5/88 students gave neutral responses, and 2/88 students disagreed or strongly disagreed.

Qualitative data support this finding. When asked, “In what way(s) did the simulated negotiation help you to better understand course material?” (Q1 in post-survey), 25 of the 81 who replied mentioned a better understanding of the complexity and difficulty of resolving MEAs (see Table 2 for representative comments). One student explained that it “gave us the opportunity to see what a real negotiation was like and gain an appreciation

for their complexity. It is easy enough for us to criticize the proceedings from a classroom setting, but the negotiation gave insight into why things take the time they do". Another stressed that he/she better understood the "intricacies of environmental governance structures and policies because we had to live them". Other students expressed surprise over how much time was needed to make even minimal progress in the negotiations. One student remarked that the simulation "helped me appreciate how difficult it is to pass international treaties with so many different objectives at the table", while another reported that it "showed me how these things actually work and why they take sooooo long".

Table 2. Representative samples of student-written comments on Survey B (post-simulation) pertaining to understanding the complexity of negotiations.

| | |
|-----|--|
| ... | It also gave us an idea of how complex it can be to create international systems of governance which made us look back critically on the examples of governance we were given in class. |
| | I learned about the complexities and difficulties of such negotiations in the real world. |
| | It was definitely an interesting experience highlighting how divergent the interests are negotiation for a common goal. |
| | The simulated negotiation helped my understanding of how difficult it is to address and deal with the simulation negotiations (?), and gave me a better understanding of the time it takes to prepare. |
| | I gained a deeper understanding of how polices are creation and how complicated the process is. |
| | Improved my understanding of policy wording and how complicated multinational conventions are. |
| | Helped us to understand how difficult it is to negotiate policies. |
| | It helped me understand my stakeholders' role better and the complexity of UN negotiations. |
| | Made it clear how complicated international governance is. |
| | Understanding the complexities of international environmental governance ... even though we can critique the CBD and other protocols and agreements a lot of work goes in to getting them to that stage, so even if they don't accomplish everything we want them to, at least it's something. |
| | Talking about the negotiation and plotting outside of the plenary helped my understanding of the language used and the complicated politics behind negotiations. |

These results suggest that the CBD simulation succeeded in helping students appreciate the nuance and complexity of negotiating MEAs. This finding resonates with other evaluations of the utility of role-play simulations in teaching global environmental governance. By allowing students to engage in practical scenarios of global negotiation, role-play simulations allow students to experience the multi-dimensional and multi-faceted challenges of working toward the resolution of global environmental issues among competing interests and perspectives (Andonova & Mendoza-Castro, 2008; Belloni, 2009; Bots et al., 2010; Dengler, 2008; Sasley, 2010; Taylor, 2012). Students gain a better appreciation of the inherently political nature of international negotiation, as well as the complicated geo-political, economic, and inter-personal dynamics that shape policy outcomes. Such issues may seem straightforward when presented in a more traditional classroom setting, but become much more complicated when students are required to navigate these dynamics on their own (Baranowski, 2006; Brynen, 2010; McIntosh, 2001). The accompanying frustrations and failures are one of the simulation's most important lessons.

3.2 Interest in course topics

Participating in the simulation caused a significant decrease in overall interest in course topics ($F(1, 68) = 10.26, p \leq 0.002$) from pre- to post-simulation, moderately decreasing scores by an average of 0.28 points (effect size $\eta^2 = 0.133$). Focusing in on individual

questions, all except Q11 (interest in working as a citizen activist) showed significant decreases from pre- to post-survey, with students showing a decreased interest in working as a real-world delegate (Q10, $p \leq 0.006$), decreased desire to learn more about MEAs (Q9, $p \leq 0.03$) as well as environmental governance issues more generally (Q13; $p \leq 0.03$) (see Table 3). It is important to note that though mean ratings decreased from pre- to post-simulation, these decreases did not result in an overall shift of ratings from positive to negative, but rather to slightly less positive, or more neutral, ratings.

Table 3. Mean student responses \pm SD on questions related to interest in the course topics, present on both Survey A (pre-simulation) and Survey B (post-simulation), averaged across subscale categories

| | Mean survey response scores \pm SD | | |
|--|--------------------------------------|------------------------------|-----------------|
| | Survey 1: Pre-simulation | Survey 2: Post-simulation | Sig. change? |
| <i>Overall change in topic interest</i> | 3.93 \pm 0.59 | 3.65 \pm 0.85 | ↓ |
| Q9. I am interested in learning more about the negotiation of MEAs | 4.13 \pm 0.72 | 3.81 \pm 1.11 | ↓ |
| Q10. I would like to influence “real-world” negotiations of MEAs as a delegate involved in the proceedings | 3.72 \pm 0.92 | 3.33 \pm 1.21 | ↓ |
| Q11. I would like to influence “real world” MEAs as an interested citizen or activist | 3.89 \pm 0.83 | 3.72 \pm 1.02 | – |
| Q13. Please rate your interest in global environmental governance | 3.99 \pm 0.69 | 3.77 \pm 0.9 | ↓ |

Note: ↑ indicates a significant increase and ↓ indicates a significant decrease in average responses from pre- to post-simulation ($p \leq 0.05$), while – indicates no significant changes.

Within individual questions, the largest effect size was found for Q10 (effect size $\eta^2 = 0.107$), suggesting that much of the decrease in interest was driven by a shrinking desire to pursue a career working as a “real-world delegate”. This suggests a dampening of an initially idealistic sense of what working in the realm of international negotiation is really like. In other words, students might still be interested in environmental governance issues after participating in the simulation, but they appear more aware of the challenges and frustrations that come with working on large-scale negotiations. Indeed, correlational analyses revealed that the higher students rated the complexity/difficulty of the issues after the simulation, the greater the decrease in their overall interest in the topic ($r^2 = -0.33$, $p \leq 0.007$). The more students learn about how challenging issues of environmental governance are to resolve, the less enthused they are to learn more about them or experience this type of negotiation outside of the classroom.

Qualitative comments support this interpretation. Many students reported feeling excited to be part of the simulation, reporting that it was “fun”, “engaging”, and “the best part of the course”. In particular, students appreciated the “hands on” element of experiential learning and the “real-world” exposure it offered; said one, “the simulation brought a ‘real-life’ aspect [to the course] which lecture was not able to provide”. Other reflections emphasized that the simulation sparked an increased motivation to learn: “it made me want to learn more”, said one student. Another described his/her elevated interest in the following terms: “We were encouraged and immersed in what we were doing. It was impossible not to understand core material” (see Table 4 for other representative quotations).

Table 4. Representative samples of student-written comments on Survey B (post-simulation) pertaining to increased interest in the course material.

| |
|---|
| It made me <i>want</i> to learn more about the Nagoya Protocol so I went out of my way to find more information. |
| I was more engaged while in the simulation. |
| It made me very much interested in knowing all I could about my country in relation to the convention. Therefore it made me want to learn more. |
| Made it very real! Put you in it – so actually experienced what it would be like . . . made me do more research, because experiencing it more explicitly. |
| The simulated negotiation was challenging, exciting, and educational. I learned so much, and really got a good feel for what negotiations are like in the real world. |
| I really liked the plenary sessions. They were fun and productive and a great learning experience. |
| We were encouraged and immersed in what we were doing. It was impossible not to understand core material after. |
| The simulated negotiation was the best part of the course . . . getting hands on experience through simulated representation was awesome . . . everyone I have talked to in the class loved it! Make it longer! |

The simulation's success in mirroring real-world dynamics also produced negative experiences. "Hard", "difficult", "challenging", and "tedious" were adjectives used to describe the simulation. This real-world experiential learning left many students less enthused about the process of international negotiation than they were at the beginning. One student commented that the exercise "helped me better understand how complicated and tedious a process it is to create international governance [regimes]", while another reflected, "I now understand [the] frustrations of slow progress". One student expressed hesitation about wanting to pursue a career in international negotiation, noting that the "frustration and anxiety experienced during this process is similar to that of the real thing". Another put it more bluntly: "I never, ever want to be involved in something like that again".

These measured declines in student interest conflict with much of the literature, which highlights how effective simulations are in piquing student interest (Belloni, 2009; Chasek, 2005; Shellman & Turan, 2006). However, as previously noted, much of the existing research relies on anecdotal impressions and post-simulation feedback, and several studies have found that role-play exercises do not significantly impact student interest (Raymond, 2010; Raymond & Usherwood, 2013). Indeed, though based on student-led discussions and not a simulation, a recent article using quantitative analysis of a pre- and post-survey in a class on American governance found a small decrease in political interest after learning about sustainability issues, despite increased knowledge of the topic (Smith, 2012). Furthermore, interest alone does not signify significant learning took place (Shellman & Turan, 2006). Because simulations are generally engaging and exciting, there is a tendency to overestimate their learning impacts and assume that this increased interest translates into more effective learning. Following Smith (2012), this study is one of the few to focus on a *change* in interest levels, rather than just post-simulation impressions. We suggest that decreased interest might signify an even more powerful learning moment. Idealized student expectations about the ease of creating viable solutions to global environmental crises are tempered. Students are left feeling frustrated and overwhelmed by the process. These results suggest that students come away with a more realistic assessment of what international negotiation is all about, which dampens their interest in learning more about these topics in the future.

3.3 Practical skills

The third learning objective of the CBD simulation is to help students hone practical skills relevant to the negotiation of environmental agreements, including lobbying, policy analysis, consensus building, and public speaking. Interestingly, there was a trend toward a decrease in perceived skills from pre- to post-simulation ($F(1, 68) = 3.06, p = 0.077$), with a small overall effect size (0.15 points on average, effect size $\eta^2 = 0.04$). When examined by individual questions (see Table 5), only perceived skills in lobbying (Q19) significantly decreased during the simulation, although there were trends toward decreased perceived skills in negotiation (Q17, $p = 0.09$) and public speaking (Q20; $p = 0.08$). The only skill for which there was no significant change was policy analysis (Q21; $p = 0.25$).

Table 5. Mean student responses \pm SD on questions related to perceived practical skills, present on both Survey A (pre-simulation) and Survey B (post-simulation), averaged across subscale categories.

| | Mean survey response scores \pm SD | | |
|--|--------------------------------------|------------------------------|-----------------|
| | Survey 1: Pre-simulation | Survey 2: Post-simulation | Sig. change? |
| <i>Overall change in perceived practical skills</i> | 3.19 \pm 0.72 | 3.04 \pm 0.86 | ↓ |
| Q17. Please rate your skill level in negotiation (i.e. successfully advancing your stakeholder's agenda) | 3.2 \pm 1.11 | 2.98 \pm 1.12 | ↓ |
| Q18. Please rate your skill level in mediation (i.e. facilitating compromise) | 3.53 \pm 0.98 | 3.32 \pm 0.96 | – |
| Q19. Please rate your skill level in lobbying (i.e. influencing others to help achieve your objectives) | 3.29 \pm 1.04 | 2.93 \pm 1.22 | ↓ |
| Q20. Please rate your skill level in public speaking | 3.14 \pm 1.04 | 2.97 \pm 1.2 | ↓ |
| Q21. Please rate your skill level in policy analysis | 2.84 \pm 1.04 | 3 \pm 1.12 | – |

Note: ↑ indicates a significant increase and ↓ indicates a significant decrease in average responses from pre- to post-simulation ($p \leq 0.05$), while ↓ indicates a trend toward a decrease ($p \leq 0.08$), and – indicates no significant changes.

These results further support the idea that participating in the role-play simulation helped students gain a better understanding of the difficulty and complexity of negotiating MEAs by decreasing their (arguably overconfident) assessment of their ability to persuade other stakeholders to share their position. Indeed, decreases in student ratings of their own overall skills were significantly correlated with increased ratings of the complexity of the issues after the simulation ($r^2 = -0.42, p \leq 0.001$).

In answering the qualitative questions, only one student made any mention of skill improvement in the realms of lobbying, negotiation, or public speaking. But there were a number of comments from students stressing how much they learned about policy analysis and writing (the only skill for which no significant negative change was reported). One student reported that the simulation “helped with my overall comfort and confidence in dealing with difficult policy documents”, while another stated that “working on rewording clauses in a group increased my understanding of the language used in the protocol as well

as how language affects the outcomes of the negotiations”. Many students reported feeling more confident in their ability to penetrate the dense and complex policy language used in UN documents (what we introduced in class as UN-ese); “I learned how to read international law text, documents, and agreements”, said one, while another reported that the simulation “helped me to penetrate the language of international policy”. Others emphasized how the detailed debates over the specific wording of each individual clause helped them to appreciate how important particular language choices are in constructing the meaning of environmental policy. These comments suggest that, of all the skills we were attempting to hone during the simulation, policy analysis was the most impactful (or, at the very least, suffered the smallest declines in self-assessment) (see Table 6 for more representative comments).

Table 6. Representative samples of student-written comments on Survey B (post-simulation) pertaining to honing skill development.

| |
|---|
| Real hands on experience which gives a deeper understanding of policy, its creation and implementation. Gives appreciation for the work that goes into creating policy. |
| It gave us experience with policy-making and helped us to exercise our negotiating skills. |
| Bringing in a bit of the real world allowed me to better and more actively apply my knowledge. |
| Increased experience with policy challenges, cooperation skills and negotiation. |
| It really helped me to get a better understanding of international law and governance system. |
| It allowed me to speak better about international issues. |
| Helped me understand how to read UN protocols. |
| That depth helped with my overall comfort and confidence in dealing with difficult policy documents. |
| Able to better understand formal text. |
| I learned how to read international law text, documents, and agreements. |
| Helped me understand the language of the articles, the terms that they use. |
| Improved my understanding of policy wording. |

Again, our findings here conflict with much of the existing literature, which stresses how effective simulations are in honing skill development. Most accounts emphasize the experiential value of the simulation, as it allows students an opportunity to apply the knowledge they have acquired throughout the semester into practice. Simulations offer to social science students what the laboratory offers to students in the natural sciences: an opportunity to gain hands-on experience, to learn through doing, and to experiment with developing strategies for problem solving (Asal & Blake, 2006). Significant empirical evidence suggests that simulations improve student skills in the realms of debate and public speaking (Belloni, 2009; Crossley-Frolick, 2010; Cutler & Hay, 2000), critical and analytical thinking (Dengler, 2008; Shellman & Turan, 2006), and negotiation and mediation (Fletcher, 2001; Krain, 2006).

So how do we reconcile the declines in self-assessment associated with the CBD simulation? Our interpretation is that students overestimated their own proficiencies in their pre-survey responses, and that the diminished self-assessments registered in the post-surveys offer a more accurate reading. Participating in the simulation did not cause student aptitude in lobbying, negotiation, and public speaking to deteriorate. Rather, these declining levels of self-assessment reflect a more accurate perception of student skill levels: students realized they were not as proficient in these skills as they initially thought. This marks another important outcome: the learning is a sort of humbling. This

insight runs counter to the prevailing wisdom in professional fields such as social work (Petracchi, 1999), nursing (Jeffries, 2005), medicine (Nestel & Tierney, 2007), and business (Feinstein, Mann, & Corsun, 2002), where immersive and interactive role plays are employed as tools to help students practice and refine relevant skill development. But clinical and client simulations tend to offer a narrower range of interactions than do those in the realm of international negotiation: the CBD simulation involves multiple stakeholders representing different viewpoints engaged in hundreds of interactions that take place over multiple weeks, which are both face-to-face and computer mediated. What students gain in the area of skill development is a more realistic assessment of their own capacities in these high-level skills, and a more accurate sense of how hard it is to execute these skills in the fast-paced and highly complex realm of international negotiation.

4. Conclusion

As instructors, our motivation for creating the CBD simulation stemmed from previous frustrations we encountered when teaching undergraduate courses on global environmental geography. Having independently taught multiple undergraduate courses in this area over the years, we were struck by how often our students expressed surprise over the challenge of achieving consensus on global environmental issues: why, they would ask us, cannot all the different parties simply come around a table and devise a solution that meets all their diverse needs and priorities? Why is consensus so hard to achieve?

Data gleaned from pre- and post-surveys suggest that the CBD simulation succeeds in overcoming this major stumbling block by helping to dispel such well-meaning but naive understandings of international negotiation. Quantitative and qualitative data reveal that the simulation achieved its first learning objective: helping students to gain a better understanding of the complexity of negotiating MEAs. Data also show that the simulation caused declines in student interest and skill development, which we suggest reflects the deep learning associated with the first learning outcome: diminishing interest and self-assessment of skill proficiency reflect a more accurate estimation of student capacity to effect change in the realm of global environmental governance. Students emerge from the simulation feeling frustrated and humbled. And this might be the most important lesson of all.

Our findings accord with those of Youde (2008), who similarly highlights the value of the role-play simulation as a tool for dulling student idealism. Many of the undergraduate students who gravitate toward the study of global environmental geography suffer from a well-meaning but idealistic sense of their own abilities to change the world. As instructors, we feel it is our responsibility to nurture this idealism, but also to challenge it. The CBD simulation forces students to confront the real-life realities of international negotiation: such processes are often painstakingly slow, nuanced, and unpredictable. They fail more than they succeed. The dose of realism offered by the simulation might allow student idealism to be channeled more effectively. As Sasley (2010) emphasizes, allowing students to confront how international negotiations fail forces them to ask deeper questions about why this is the case, and what can be done to change it. This might be the ultimate value of the role-play simulation: it provokes students to ask questions about the structural conditions, political dynamics, and geo-political realities that hinder the ability to achieve consensus on global environmental issues, and what can be done to change the “rules of the game”.

Acknowledgements

We gratefully acknowledge the various contributions made by our Research Assistants, Reza Shams and Alanna Taylor. We also want to thank Steve Mannell for his constant support of this project, as well as the many students of SUST 2001 who were the single biggest reason for the simulation's success over the years. This research was supported by two Teaching with Technology Grants, administered by Dalhousie University's Centre for Learning and Teaching. The first (Type 2 grant) was awarded in 2010. The second (Type 1 grant) was awarded in 2012.

Note

1. For reviews of different kinds of role-play simulations, see Lean et al. (2006) and Wheeler (2006).

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