From “Spectacular Failure” to Success: Board Games as Effective Teaching Tools

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Abstract

Board games can be successfully harnessed to help students obtain a better understanding of course concepts. Indeed, board games can sometimes be easier to implement than developing a new game, as they come prepackaged with clear rules already in place. They may also already be familiar to students, decreasing the hurdle of grasping the rules of the game in addition to the lessons the games are meant to illuminate. However, care must be taken to strategically use the games. This paper draws lessons from a failed attempt to design a course around board game play, presents data as to the effectiveness of two specific board games, the Risk mobile app and Dice Catan, and provides a discussion of techniques to successfully leverage the board games into course planning.

Introduction

Imagine yourself as a young instructor, just a few semesters after obtaining your Ph.D. You are an apostle at the altar of active learning, but a new enough supplicant to still be inexperienced and overambitious in its application. You are tasked with teaching an introductory class, and want to harness the educational potential of board games as a central focus of the class, immersing students in the world of international relations through play. Your approach is ambitious: a flipped design where lecture content is provided outside of class, with class periods devoted to group completion of assignments and the playing of board games selected to highlight specific IR themes. But ambition and enthusiasm aren't quite sufficient to make up for shortcomings in your overall strategy, students don't quite seem to understand why they're playing the games they are and what they're meant to be learning from them, and data you gathered over the course of the semester reveals that, at term's end, students have ended up less interested in both board games and taking more political science classes. You have ruined their leisure pursuits and driven them from your discipline. You're crushed. You present your findings at APSA TLC to both laughter and sympathy. The findings were so devastating that they stuck with the audience, haunting you at future pedagogy conferences as people ask if you're the one who had "that" paper… It is described later in the summary of the TLC as a class that "failed spectacularly" (Strachan et al. 2018, 690). It is too spectacular a failure, in fact, for the failure issue of *Journal of Political Science Education*.

And yet, you remain hopeful. You talk to colleagues, you attend panels, you dive deep into the literature. You come to the belief that it was not the premise, but rather the implementation that went so wrong. You imagine a future semester in which you're a more experienced instructor and instead of forcing an unnecessarily radical course design on unwitting students, you decide to scale down the size of the project. You will not teach another entire semester constructed around board games, but instead a single class period or two, with more deliberate introduction and debriefing of the game and the lessons it was meant to impart.

This paper is a story of redemption and how to learn from failure to craft success. I will begin by briefly describing the failed attempt, discuss the lessons I took from that experience, and how I have adjusted my teaching strategy to reflect this hard-won wisdom. These lessons draw on my experiences using three different specific mass produced board games (or their mobile apps) in both introductory courses and upper-level electives. IRB approval was obtained for all surveys at the two institutions where research was undertaken. IRB approval information is provided in Appendix 1. Information on all surveys administered for all four courses can be found in the appendix.

Why Games Can Be a Good Idea

A large and developing literature on the use of video games for educational purposes provides helpful insight for this project even though the games used in the courses described here are physical rather than digital. A key distinction in this literature is between games that are designed with educational purposes in mind, and popular games that are applied to an educational setting. Most of the literature focuses on the former (see Annetta et al. 2009; Coller and Scott 2009; Huizenga et al. 2009; Ke 2008; Kebritchi and Hirumi 2008; Kebritchi et al. 2010; Watson et al. 2011), although there has been some attention paid to the latter, especially concerning the virtual world of Second Life (see Jarmon et al. 2009). In the former set of literature, the primary concern is with whether the game helps students develop specific skills or knowledge that can be transferred back to coursework. For instance, a game used in a mechanical engineering classroom leads students to apply numerical methods in order to successfully steer a racecar around a track (Coller and Scott 2009), while a history game helps students develop knowledge about Amsterdam in the 1500s (Huizenga et al. 2009).

In using off-the-shelf games, developed more for entertainment, rather than educational purposes, there is more flexibility to help students become comfortable with more abstract learning goals, such as developing a public relations campaign around developments in a virtual world (Jarmon et al. 2009). The evidence for using digital games is somewhat mixed, although

there is support for their helping students learn course content (see Coller and Scott 2009; Kebritchi et al. 2010); however, students do not always view learning from the game as more enjoyable than conventional methods (see Bourgonjon et al. 2010). There is also evidence that students are able to take their game-based experiences and apply them to the real world around them, as in the case of graduate students who created a non-profit based on their experiences with a project in Second Life (Jarmon et al. 2009). Thus, there is reason to believe that games can help students not only learn course material, but also see the relevance of the games in their daily lives (and when dealing with real-world concepts surrounding international relations, such connections would only serve to make students more aware of the dynamics unfolding in international politics).

The last area of literature pertains specifically to political science and is focused on the importance of reflection when using simulations and games in the classroom. The simulation literature in political science is large and well-developed. The literature focused specifically on games is more limited, but one piece in particular stands out as a useful model. Asal (2005) discusses the use of three games in an introductory international relations class, including the off-the-shelf game of Diplomacy. While the article provides explanations of each of the three games and how it can be used in the classroom, Asal also provides a very useful discussion of reflection and how it can and should be incorporated into the game experience. He identifies six stages of simulations/games during which teaching can occur, and indeed, all six stages (preparation, playing the simulation/game, pauses at critical moments, oral debriefing, written debriefing, and exams) can contain reflection on the part of the students as to what they are learning and what its relevance is. Indeed, virtually every article concerned with the effective use of simulations discusses the critical importance of reflection as part of the learning experience for students (e.g., Asal 2005; Asal and Blake 2006; Asal and Kratoville 2013; Baranowski and Weir 2015; Glazier 2011; Raymond and Sorensen 2008; Raymond and Usherwood 2013). Asal

(2005) also notes the importance of ensuring that the games are not fun for fun's sake alone, but rather that they remain grounded in the educational moment.

The Spectacular Failure of Overambition

The decision to organize an introductory international relations course around the playing of board games was taken as a strategy to maximize student interest in and engagement with the course and course material, as board games have experienced a renaissance in both the variety of games available and the number of people, including young people, who count board games among their hobbies. Lecture content was delivered outside of class, while class time was devoted to group assignments and game play. Students were assigned to the same group throughout the semester as a mechanism for increasing accountability, as the games could not be played and the assignments could not be completed if members of the group did not regularly attend class.

The course was taught in the Spring 2017 semester and consisted of four substantive units: security, cooperation, globalization, and transnational issues, and three games were chosen to highlight topics and themes in those units. Risk was chosen to highlight dynamics of security, the cooperative game Hanabi was chosen to demonstrate cooperation, and a more complex game, Power Grid, was chosen for both the globalization and transnational issues units. The following sections describe the games, intended lessons, and actual impacts in more detail.

Board Game Descriptions and Rationale

Although the games were commercially available at retailers like Target, they also corresponded closely to curricular goals. Both Hanabi and Risk were designed to accommodate 2-5 players, while Power Grid can accommodate up to six. The ability to play with very small numbers of people was taken into consideration because even though groups were meant to make a large class feel smaller, students may still have felt the lack of accountability associated

with larger classes. Having a minimum of two group members present on any given day seemed to the instructor to be a reasonable expectation.

Risk provided students with the opportunity to attempt global conquest, running into issues such as arms races, security dilemmas, and alliances as they did so. For instance, once a player begins increasing the number of troops in any particular geographic area, every other player with any troops in that area is rationally bound to do the same, so that they are not completely overpowered and thus face certain defeat in an area. This occurs regardless of whether the responding player is most concerned with that piece of territory at that time; by having an arms buildup by one player, their attention to that region must be increased. Additionally, this arms race also points to the security dilemma states face. Any one player trying to increase their own capacity to defend a piece of territory could be interpreted as a sign of aggression by players on neighboring territories. Thus, any attempt for one player to feel secure in their hold on a piece of territory was inherently threatening to players nearby, as this security came in the form of increased offensive capability. Troops used for offense and defense were interchangeable and indeed, depended completely on whose turn it was. This may have been the game with the most obvious connections to students' conceptions of international relations as being primarily concerned with war.

Hanabi is a cooperative card game. The premise is that players are tasked with building a firework show (cards numbered 1-5 to be laid in ascending order in each of several colors), but only have limited information about the cards in their own hand. Instead, their teammates can communicate information about their cards along these two dimensions (color and numerical value), but only one dimension at a time; for instance, a player may learn that they have three blue cards, or one card with a value of four. Each piece of information is costly, and only limited pieces of information can be provided before penalties are incurred. As students interacted with one another more and more, especially in the context of this game, it was expected that interactions would become smoother and they would be more likely to succeed at

the game. This game was expected to be the hardest for students to make connections with course material (and indeed was), but was chosen because of the potential for iteration (games lasted around 15 minutes maximum, allowing for repeated play within a class period, as well as across class periods.

Core liberal principles underpinning international cooperation are iteration, familiarity, and incomplete information. Although the game does not mirror the prisoner's dilemma, which is often pointed to as a key to understanding how international relations unfolds in many introductory textbooks, Hanabi does still reflect how success can be met even in the face of incomplete information by structuring how information is shared and providing opportunities for iteration. Indeed, in both the students' and instructor's own experience, as the game is played repeatedly with the same people, players grow more accustomed to how information is shared and how to keep track of the information shared, which makes success more likely. As players grow more familiar both with the game and their groupmates, even though there is still limited information, more can be done with the information that is provided because of heightened awareness of the context.

Power Grid, developed in Germany, was selected for the Globalization and Transnational Issues units. This game was more complex than the other two, and thus carried a longer estimated play time. In order to afford students the opportunity to play several rounds of the game given the shorter globalization unit, the decision was made to use the game for the final two units. Although a number of expansions with different maps exist, the base game board has a map of Germany on one side and of the US on the other. Major cities are identified and connected via lines with connection cost indicators. The connection costs are the cost of moving from one city to another. Costs increase as the number of people trying to build in a city increases. The premise of the game is to be able to power the largest number of cities. In order to do so, players must pay to establish in a city as well as pay for resources to power the city. Types of power plant include coal, waste, nuclear, and wind. The first three require payment for

the resources, while wind plants do not require any resources. Players bid on power plants in an auction-style process, and then purchase resources (including the option to purchase reserve resources) for those plants. At the end of each turn, players receive compensation for powering cities, which provides them with the money necessary to repeat these procedures in future turns. Game progresses in three phases, with the transitions between phases based on the number of plants individual players own.

This game was chosen for both the globalization and transnational issues units because of its flexibility. In the globalization unit, students were encouraged to think about resource management and the trade-offs in choosing some cities over others. That is, did choosing one city over another provide any path dependence in future turns that either increased or limited their options? What emphasis did they place on particular types of power? Did they keep any resources in reserve? Why or why not? How did the increasing costs of energy as the game progressed impact their own economic success and ability to continue expanding? Were there times that they could not expand, or not afford to power their entire network of cities? How did this further impact their economic success in the game? In the transnational issues unit, the focus shifted to thinking about particular dynamics and how they would affect students' decisions in playing the game. For instance, if students were to pretend that the map was international (rather than just Germany or the US), how would a desire to build only in democracies impact their strategy? If one pretended as though some sites on the map were nondemocratic but they only wanted to expand to democracies, how did that impact their expansion choices? In a similar vein, if one assumed that a particular site on the map was engaged in genocide and thus a pariah, how did that site and its specific location affect expansion? Considering the global environment, how would they prioritize the various types of energy? Did the most successful/affordable resource in the beginning remain so throughout the game? What would be the impact of only using wind energy? Were there short-term costs that might help explain why environmental cooperation and improvement is so challenging?

Students were guided in their reflections for Power Grid with worksheets. These are discussed in greater detail below.

Facilitating Reflection

Students were required to complete board game logs every day they played a game. In the logs, the students were instructed to discuss their goal for the day, the strategy they used to try to achieve that goal, the extent to which their strategy was successful, what strategies they thought their group mates were using, and to what effect. Based on student feedback about feelings of disconnect between the games and course material, class time was spent just after spring break drawing connections between their experiences playing the games and different themes in the corresponding units. (The cooperation unit ended just before spring break and the globalization unit began two class periods after, providing one class period that was meant to be spent on a different activity that was easily removed in the interest of having a broader discussion about how the games were relating to course material.) Drawing on the feedback from students, worksheets were made to help students more deliberately and explicitly reflect on what they were doing in the games and the connections to course material. These questions posed on these worksheets can be found in Appendix 3. The worksheets, then, were for Power Grid, played during both the globalization and transnational issues units. The last question on the worksheet varied slightly between units and contained specific cues about relevant course concepts.

Risk and Hanabi were the focus of the reflective class discussion. In the discussion of Risk, students noted that when a groupmate started amassing troops on a border, they felt compelled to do the same; and likewise, when they tried to fortify an area, their group mates responded in kind. Both actions occurred whether or not that particular piece of territory was considered the single most important piece of territory by any given person; once fortifications began occurred, all relevant parties had to respond in kind lest they be caught unprepared in the case of an attack. Such insight is a clear illustration of the security dilemma. Students also

noted the instrumental use of alliances. They would, on occasion and as necessary, strike up agreements with groupmates to help force another player out of the game, knowing full well that they would eventually become adversaries as the game progressed. Indeed, in a situation of power maximization where only one player can win, there is little hope for long-term alliances or agreements on which to build a more peaceful and stable system. As part of this portion of the discussion, students noted that given the objective of the game, power maximization and conflict were inherent to the gaming experience. That is, in an anarchical world without an overarching organization providing governance, each player had no rational alternative but to try to be the player who successfully conquered all territories on the map. Alliances might be pursued to that end, but they were strictly utilitarian and lasted no longer than it took to drive a third player out of the game.

Students struggled a bit more in making connections between Hanabi and course concepts. They admitted that the game became easier to play, and they played more successfully, as the unit wore on and they had played an increasing number of times. The instructor encouraged students to think about principles underpinning international organizations. For instance, by that time in the semester, the students had been working in their groups for a few weeks, and they were growing more familiar with one another. Hanabi provided a new context, with which they were less familiar at the beginning, and in some ways had to re-learn how to communicate with one another to abide by the rules of the game. However, because games were relatively short, 5-15 minutes each, students had several opportunities to interact in the world of the game and grow more comfortable with one another's ways of communicating the information prescribed by the game as well as with the rules and dynamics of the game itself. In international organizations, states come together, perhaps to address new issues; they can build on previous understandings of familiarity, but the nuances of the new issue and the new context can make cooperation more challenging at first. As states grow more familiar with one another and have iterated interactions following a general pattern of behavior,

cooperation becomes easier and deeper. While the instructor played a more active role in guiding these connections, by the end of the discussion, students seemed more comfortable drawing parallels between the games and course material.

As noted above, worksheets were created to guide the students through unit-specific reflection questions for Power Grid. Students were required to submit these worksheets everyday they played the game, and were counted toward their attendance. For the globalization unit, students were asked to focus on resource management. For the transnational issues unit, students were asked to conduct thought experiments about the game board and how different factors, such as only wanting to interact with democracies, or avoid countries engaging in genocide, would impact their strategy.

Survey Results

[Table 1 about here]

Surveys were conducted at the beginning and end of the semester. All results were calculated with N=55 except for three questions, which only had 54 usable responses. The surveys covered a variety of topics, including working in groups, the use of board games, and preferences for a variety of teaching techniques. Questions and responses in each of these categories will be discussed below. Numerical results are provided in Table 1.

Working in Groups

Regarding the group work, students were asked a variety of questions about their comfort with and perceived utility of working with other individuals in a group context. Students reported no significant differences from the end of the semester compared to the beginning of the semester when asked about their comfort with working in groups, their enjoyment of working with groups, their comfort working with a diverse set of people, and comfort reaching consensus with diverse people. When asked about the utility of working in groups, students reported significantly more negative feelings at the end of the semester compared to the beginning of the semester. It is also interesting to note that in addition to a lower score, the variability in

responses also increased from the beginning to the end of the semester, suggesting the possibility that students may have had very different experiences in their groups, causing students to polarize.

Interest in, Enjoyment of, and Possible Educational Application of Board Games

The second set of questions involved students' feelings towards board games and the extent to which they considered them a potentially useful educational tool. When asked if they enjoyed playing board games,[1] there was a significant decline from the beginning of the semester to the end. As in the case of the utility of working in groups, while the mean decreased, the standard deviation increased considerably, again suggesting greater variability in students' experiences over the course of the term. Students' interest in board games likewise experienced significant declines over the course of the semester. By the end of the course, students seemed to be less convinced that board games could have educational utility, although even initially they expressed lower levels of positive affect compared to the questions about enjoyment and interest in board games. The last board-game centric question asked if students believed that board games could/did help them understand the content of the course better. Students expressed higher positive expectations for this question than on the question about the educational utility of board games at the beginning of the semester, but even lower levels at the end of the course. For every question in this portion of the survey, while the means decreased, the standard deviation increased considerably, again suggesting greater variability in students' experiences over the course of the term. Given that the board game experience occurred within their groups, students' experiences and feelings toward their groups could be impacting their affect toward board games by association.

Introduction to International Relations, International Relations and Political Science

[1] Questions concerning attitudes toward board games in general were meant to serve as a sort of baseline and contextualize the responses to the other questions about board games and their potential educational benefit. Additionally, whether students enjoyed board games in general may have had an effect on whether they saw any potential educational benefit of board games and indeed whether they viewed the board games as an important contribution to their own learning throughout the semester.

Several questions were used to assess the impact of the course on students' grasp on and interest in international relations. Students were asked whether they had a strong understanding of international relations. Here, there was a reported increase, but it was not statistically significant. The second question in this section asked students whether they were interested in international relations. Interest significantly declined from the beginning of the semester to the end. However, the level of interest remained fairly high (almost as high as initial affect toward board games), and again, the variability increased, suggesting a polarization over the course of the term. Moving from international relations specifically to political science more broadly, students were asked if they were interested in taking more political science classes. There was a significant decline over the course of the semester, but the variability was again much higher on the post-test than the pre-test. A final question asked about students' expectations of/actual level of engagement in the class. There was a big drop in the mean between the pre-test and the post-test, with again, large increases in the variability of responses between the two surveys. Again, because the entire class experience was based around groups and group work, feelings about that experience could be impacting a wide range of additional opinions related to course content and the discipline in general.

Modes of Instruction

Finally, students were asked several questions about their feelings toward various modes of instruction. When asked if they were interested in flipped classes, students reported at significantly less interest at the end of the semester compared to the beginning. Likewise, their enjoyment of flipped classes also declined during the course. Although there was no significant difference in their enjoyment of lectures, the final question in this grouping asked students if they were interested in non-lecture class activities and formats. There was once again a significant decline between the pre-test and the post-test. While some of this is almost certainly attributable to how this particular class turned out, it is also possible that students experience general fatigue related to class over the course of a semester, and that even in traditional classes there

would be decreases in positive affect toward various instructional modes. This is an interesting question that should be explored in future research.

Lessons Learned from Failure

Lessons Learned from Spring 2017

As the flipped classroom model and heavy incorporation of group work were chosen to help facilitate the emphasis on board games as a cornerstone of the class, the findings related to board games were of the most interest (and subsequent dismay). Two key possibilities are highlighted here, with the second receiving considerable attention and discussion in the next sections.

The decrease in students' interest in and enjoyment of board games could be due to having what was previously strictly a leisure activity turned into something for which they were held accountable. Adding an educational component to the games meant they were no longer primarily being played for leisure. The disconnect between enjoyment of leisure games and educational games is well-documented in the literature on the use of video games in educational settings (e.g., see Bourgonjon et al. 2010). To an extent, these declines may be inevitable, but then making sure the games are indeed useful from an educational perspective becomes especially important.

It could also be that students were disappointed by the small gains to their learning in contrast to the large portions of class time dedicated to playing games. Roughly one-third of class days were allocated to game play, and if students did not feel like the games provided much additional clarity and insight, they could have come to view the games as an ineffective use of class time that could have been spent on more traditional instructional modes, like lecture. Although this phenomenon may indeed be the most damaging in accounting for the findings, the good news is that it is also one of the easiest to reform with the potentially large gains to be made with relatively non-intensive modifications. Indeed, the next two sections consider at length how board games can be more effectively integrated into courses, on both

small, instrumental scales, and in keeping board games as a critical component of the course design.

Reasons to Try Again

I believe that the poor support for the use of board games in an introductory international relations course was a result of the specific implementation of the class rather than the general premise on which it was based. The overarching problem stemmed from the high chance that too much was attempted at once (flipped format, considerable group work, board games[2]) in too large a class with too little accountability on the part of students. With specific regard to the board games, students would be provided with more opportunities for different forms of reflection. Worksheets would continue to be utilized to guide students' observations of their game sessions, but verbal discussions should also be held on a regular basis to reinforce the relevance of game play to the concepts and topics being covered. Such discussions should occur before a unit, to help prime students' thinking, as well as during the unit to check in on the development of their understandings of course materials, and at the end of the unit, to provide an additional opportunity for discussion and a wrap-up of the main themes of the unit and how the game helped highlight those themes. Worksheets would also be provided for all three games, rather than just Power Grid (given that the use of worksheets for that game was an adaptation developed during the semester). Additionally, rather than using these reflections as just an attendance check, students could be graded on the quality of their reflection and ability to draw connections. That is, receiving an actual grade for their reflection might encourage them to take the exercise more seriously than when the reflection was only used to track attendance. Coupled with increased opportunity for in-class discussions of connections, students would be likely to think more critically about the pairing of the game and substantive content of the

[2] In some cases, it could be that too much time was spent on some games and not enough time on others. Risk has a potentially-long playtime, while Hanabi only takes 5-15 minutes per game. Power Grid has a stated playtime of 1-2 hours, so three class periods may not have been enough to both become familiar with the game and draw insights from it.

course. Moreover, Asal (2005) notes that in addition to in-class or written reflections, quizzes and exams also become fertile grounds for encouraging reflection and the making of connections between games and course content. This would also increase the stakes of the games for students and encourage them to take the experience more seriously, as opposed to treating it as functionally optional and consequence-free.

Additionally, choosing games that are more commonly known might decrease the burden on students to both learn a potentially-complicated new game and make connections to class material. For example, many students in the class had prior experience with Risk, which was also the game they had the easiest time connecting to course material. This could be in part the nature of the game (war is an especially prominent feature of international relations, after all), but it could also be because their familiarity with the basic premise if not the precise rules of the game decreased the distraction of having to learn a complex set of rules. In an introduction to comparative politics course, for example, a commercially-popular game like Catan[3] would be more likely to be more familiar to students than a game like Samurai[4], even though the latter may in fact be topically-related to more concepts in comparative politics. By decreasing the cognitive load of the playing of the game, students would have greater capacity to think about the game in the context of the course, rather than being focused on how to play the game for its own sake.

The Power of Instrumental Game Usage

After my experience in the Spring 2017 semester, even with faith that the idea was sound but that it needed a different implementation, I only slowly took steps to incorporate board games into classes for the next several semesters at two additional institutions. Upon arrival at

[3] Also commonly known as Settlers of Catan, published by Mayfair Games. Players are confronted with an island with randomized placement of varying resource tiles. The object is to gain resources and settle the island, competing with other players doing the same. Although there is no conflict mechanism, there is a trading mechanism. This game could be used to help students understand some of the decisions states face, such as using strategy, considering the trade-offs of potential actions, and managing resources.
[4] In this game, published by Fantasy Flight Games, players compete to gain control of three factions in feudal Japan. This game does include a conflict mechanism as players try to gain the most influence with factions in distinct pieces of territory. Here, then, the focus is more on statebuilding.

my current institution I have had the opportunity to put my reformed plans into action on a routine and systematic basis. I discuss the use of three different games in two different contexts below: the Risk mobile app in Introduction to International Relations and Dice Catan in Introduction to Comparative Politics. Data was collected for two semesters for each game. The rest of this section will discuss how and why each game is used and the effectiveness of each game in providing a fuller understanding of course concepts.

Risk Mobile App and Introduction to International Relations

Because Risk was the most successfully used board game even in the failed class, I opted to utilize it in a slightly different format when I resumed teaching Intro to IR in the winter 2021 semester. Games of Risk have the potential to be notoriously long, and less useful from an instrumental perspective, where the game is used for a single class period to illustrate specific concepts. The Risk mobile app is a solution to these problems, as students have some flexibility in choosing the number of opponents they face and the specific map they use. The mobile app also provides first-time players with a tutorial that walks them through their first several turns, so the learning curve is also less steep for students who have not played Risk before. Moreover, students play the mobile app individually, against an AI, so turnout on that day in class does not affect the extent to which the game can be used.

In my current iteration of Introduction to International Relations, I use Henry R. Nau's *Perspectives on International Relations*, published by CQ Press. Nau introduces each of the main theoretical perspectives he uses throughout the book -- realist perspective, liberal perspective, identity perspective (analogous to constructivism), and critical perspectives (largely feminism and Marxism) -- with a chapter devoted to the main concepts and premises associated with that perspective. The introduction to the realist perspective introduces and defines a variety of concepts, including anarchy, power, security dilemma, balance of power, alliances and defense, in addition to discussion of how they fit into the overall realist interpretation of the world. I use Risk in the class period associated with that textbook chapter. Students are given

directions on how to download the app, and given a few guidelines to structure their play -- at a minimum, to vary the number of opponents they face across games, so that they can compare dynamics. They play as many iterations of the game as possible for roughly 70 minutes of a 100-minute class period, and are then given a brief survey (found in Appendix 2) about the extent to which the various realist concepts Nau uses are illustrated and made clearer by the game, as well as a brief description of their strategy and opponents. After the survey, a debriefing discussion is held in which the class as a whole discusses how the various concepts manifest themselves in the game and how realism as a theory explains the world.

Across two semesters, 70 students have completed the survey. Table 2 presents summary statistics of the Risk and realism survey responses. For the first two questions, students selected concepts from a list. For the final question, students had to manually enter the concept they thought was best represented, and a number of students did not answer the final question at all. Of the 16 concepts identified and defined by Nau, at least 50 percent of students identified 10 of them as being present in Risk: states, power, geopolitics, security dilemma, balance of power, power balancing, hegemony, power transition, alliance, and defense. Only 14 percent of students identified compellence as being present in the game, and indeed compellence would probably be the most weakly demonstrated concept, while an overwhelming majority of students, about 93 percent, identified defense as manifesting itself in the game. When asked which of Nau's concepts they understood better as a result of having played the game, more than 50 percent of students identified each of the following concepts: power, geopolitics, security dilemma, power balancing, and defense. Finally, students were asked which concept(s) they thought were best illustrated by the game. The most frequently identified concepts, with more than 15 percent of students singling them out, were security dilemma, hegemony, alliance, and defense.

Students also provided written responses regarding their play iterations, which will be discussed in a future publication. However, even from the lists of concepts provided, students

were able to successfully identify the manifestation of particular concepts, and developed a better understanding of some of the concepts most central to the realist perspective as a result of their time playing the game. Students also tend to remember their experience playing the game throughout the semester, even commenting on it as a useful exercise on end-of-semester teaching evaluations.

Dice Catan and Development

During the political economy unit of my Introduction to Comparative Politics class, I have students play Dice Catan to illustrate the challenges of economic development. Dice Catan is a roll and write version of the board game Catan, discussed above. Instead of the modular game board, the game consists of an individual score sheet and six dice that students roll in order to gain resources. Players can use resources to build roads, settlements, cities, or “knights,” which effectively let them bank one resource of a specific type for use in a future turn. The score sheet consists of a small map depicting a circuit of roads, settlements, and cities. New road segments must connect to previously-built road segments, all settlements and cities must connect with previously-built roads, and settlements and cities must be built in ascending order (following the circuit). Knights must also be built in ascending order, but are somewhat separate from the infrastructure being built, and do not have to “touch” a road in order to be built.

The game is used to help complicate students’ views of development. Often, development (or more specifically underdevelopment) is presented as a matter of poor policy choices and corruption on the part of governments. There is undoubtedly truth to this explanation, but underdevelopment is also in part a function of factors not entirely within a leader’s control, such as resource availability, the role of chance or luck in terms of things like natural disasters or global economic downturns, and the legacy of decisions and policies implemented by their predecessors, who nonetheless also faced constraints outside their control.

Pairs of students are given a copy of the game to play (to minimize costs to the instructor, and to foster a mild sense of competition, so that students can readily compare their level of development with another player's) and take turns completing as much of their maps as possible. My class periods are 100 minutes, so I have students play the game three times: the first two times, they try to complete a map from scratch, and on the third iteration they see how many turns it takes to finish developing one of their previous maps, to help illustrate legacy effects of development.

Before beginning their first game, students complete a survey gauging their initial understandings of development. After completing their third round, students take a second survey, with the same set of rating questions, plus additional open-ended questions after playing the game. Class then ends with a debrief if there is time. If there is not, the debrief occurs at the beginning of the next class period to help cement the nuances of development. The survey questions also help serve as a reflection.

Table 3 shows results of the rating items asked on both the pre- and post-activity survey. There were 26 students who completed both the pre- and post-activity survey across the Fall 2021 and Fall 2022 semesters. The good news is that students began the activity with a fairly nuanced understanding of development, with their pre-activity responses largely clustered around 3, emphasizing a balance between good policy and factors beyond a leader's control. These views largely did not change as a result of playing the game. There were statistically significant shifts in student opinions for questions about the role of luck/chance/factors beyond a leader's control in development and the potential for those factors to hold back development even in the face of good policy by the leader, with students gaining additional appreciation for how factors beyond a leader's control can interfere with development even in the face of a sound development strategy by a leader. Although the game largely reinforced already-nuanced views the students already had, using the game could still serve a purpose, through demonstrating in a hands on manner what it is like to develop a strategy for development and

potentially that strategy thwarted by chance and have to try to either salvage the current strategy or develop additional, perhaps more flexible, goals. This is also where the iterated nature of the activity becomes useful, as students try to maximize their development in each game, but also have an opportunity to effectively be a later leader who has inherited some degree of development and is tasked with generating more. Thus, students see legacy effects first hand, as those students who were able to develop more of an island on the first play-through typically need fewer turns to finish developing the island in the iterated game. Anecdotally, students also identify the game as one of their favorite activities during the end-of-semester reflection period I lead to close out the semester.

Conclusion

Instrumentalism is more effective than radicalism when attempting the incorporation of board games into students' classroom experiences. Data from two instrumental uses of board games -- over the course of a single class period -- are compared to data from a course that was designed to maximize board game play. The two instrumental uses reveal much more encouraging results -- gains in insight, understanding, and nuance -- when compared to the radical use of board games, which resulted in students being less interested in both political science and board games. In addition to the data presented, this paper has reflected on strategies for using board games and discussed how two specific board games have been used in introductory international politics classes. I have intended to provide a call for additional experimentation in the use of board games, and to encourage instructors to consider existing board games as a teaching tool. It is only through additional practice that we can gain more robust knowledge of what games are effective in what contexts and further guidelines about best practices can be developed.

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Table 1. Spring 2017 Beginning-of-Semester and End-of-Semester Paired T-Tests

Question	Beginning of semester	End of semester	Degrees of freedom	t-value
I feel comfortable working in groups	4.35 (0.64)	4.13 (1.11)	54	1.57
I enjoy working in groups	3.76 (0.89)	3.51 (1.51)	54	1.65
I see utility working in groups	4.09 (0.53)	3.71 (1.36)	54	2.58*
I feel comfortable working with diverse people	4.35 (1.08)	4.38 (0.54)	54	-0.25
I feel comfortable reaching consensus in a diverse group	4.20 (0.62)	4.15 (0.54)	53	0.49
I enjoy playing board games	3.85 (1.03)	3.13 (2.23)	53	3.67***
I am interested in playing board games	3.67 (1.26)	2.80 (2.31)	54	4.41***

I see educational utility in board games	3.27 (1.05)	2.40 (1.91)	54	4.75***
I believe board games can help me understand the content of this course better	3.35 (1.27)	2.00 (1.67)	54	7.39***
I have a strong understanding of international relations	2.75 (1.08)	2.80 (1.68)	54	-0.30
I am interested in international relations	4.22 (0.54)	3.76 (1.41)	54	3.06**
I am interested in flipped classes	2.69 (1.54)	2.09 (1.60)	54	3.61***
I enjoy flipped classes	2.55 (1.14)	1.89 (1.36)	54	4.19***
I am interested in lectures	3.49 (0.92)	3.16 (1.18)	54	1.99
I am interested in non-lecture class activities and formats	3.65 (0.79)	3.27 (1.28)	54	2.43*

I am interested in taking more political science classes	4.02 (0.91)	3.38 (2.17)	54	4.25***
I feel like I will be/was engaged in this course	4.07 (0.67)	2.78 (1.46)	53	7.18***
*p<0.05, **p<0.01, ***p<0.001, two-tailed				

Table 2. Risk and Realism Summary Statistics

Concept	Represented in Risk (N=/%)	Understand better as a result of playing Risk (N=/%)	Best represented by Risk (N=/%)
Anarchy	30 (42.86%)	15 (21.43%)	3 (4.29%)
Self-Help	20 (28.58%)	13 (18.57%)	5 (7.14%)
States	48 (68.57%)	22 (31.43%)	2 (2.86%)
Sovereignty	25 (35.71%)	13 (18.57%)	0 (0.00%)
Power	62 (86.57%)	44 (62.86%)	11 (15.71%)
Geopolitics	48 (69.57%)	35 (50.00%	10 (14.29%)
Security Dilemma	50 (71.43%)	47 (67.14%)	13 (18.57%)
Balance of Power	50 (71.43%)	32 (45.71%)	10 (14.29%)
Power Balancing	42 (60.00%)	36 (51.43%)	8 (11.43%)
Hegemony	36 (51.43%)	28 (40.00%)	11 (15.71%)
Power Transition	35 (50.00%)	29 (41.43%)	9 (12.86%)
Polarity	30 (42.86%)	18 (25.71%)	5 (7.14%)
Alliance	44 (62.86%)	31 (44.29%)	13 (18.57%)
Defense	65 (92.86%)	52 (74.29%)	17 (24.29%)
Deterrence	27 (38.57%)	16 (22.86%)	3 (4.29%)
Compellence	10 (14.29%)	5 (7.14%)	0 (0.00%)

Table 3. Dice Catan Pre- and Post-Activity Rating Items.

Question	Pre-Activity	Post-Activity	Degrees of freedom	t-value
How much control do leaders have over the development of their country?	3.31 (0.46)	3.11 (0.75)	25	1.22
How much of a role does luck/chance/factors outside a leader's control impact development?	3.58 (0.57)	4.00 (0.96)	25	-2.67*
How much can bad luck/chance/factors outside a leader's control hold back development even in the face of a good strategy?	3.62 (0.57)	4.08 (0.63)	25	-3.09**
How much can leaders adjust their strategy in the face of bad luck/chance/factors outside their control to make gains in development?	3.19 (0.40)	3.15 (0.70)	25	0.21
To what extent are leaders able to provide a buffer to protect against the worst development outcomes?	3.04 (0.60)	3.08 (0.55)	25	-0.20
To what extent do you think past development success or failure affects future development success or failure?	3.73 (0.92)	4.00 (1.04)	25	-1.27

Which is most important for development? (Luck/chance dominant in scores 1-2; leader's strategy dominant in scores 4-5)	3.08 (1.43)	2.73 (1.16)	25	1.43
*p<0.05, **p<0.01, ***p<0.001, two-tailed				

Appendix 1. IRB Information.

Institution	Game(s) Used/Class Information	Semester(s)	IRB Approval Information
Michigan State University	Risk, Hanabi, and Power Grid/Introduction to International Relations	Spring 2017	
Northern Michigan University	Risk mobile app/Introduction to International Relations	Winter 2021, Winter 2022	
Northern Michigan University	Catan Dice/Introduction to Comparative Politics	Fall 2021, Fall 2022	
Northern Michigan University	13 Minutes/American Foreign Policy	Fall 2021	

Appendix 2. Survey Instruments.

Risk, Hanabi, and Power Grid/Introduction to International Relations

Pre-/Post-Test

For each of the following statements, select your response on a scale from 1- Strongly Disagree to 5- Strongly Agree.

- I feel comfortable working in groups.
- I enjoy working in groups.
- I see utility working in groups.
- I feel comfortable working with diverse people.
- I feel comfortable reaching consensus in a diverse group.
- I enjoy playing board games.
- I am interested in playing board games.
- I see educational utility in board games.
- I believe board games can help me understand the content of this course better.
- I have a strong understanding of international relations.
- I am interested in international relations.
- I am interested in flipped classes (classes that deliver lecture content outside of class and have activities in class).
- I enjoy flipped classes (classes that deliver lecture content outside of class and have activities in class).
- I am interested in lectures.
- I am interested in non-lecture class activities and formats.
- I enjoy non-lecture class activities and formats.
- I am interested in taking more PLS classes.
- I feel like I will be/was engaged in this course.

For each of the following statements, please select yes or no.

1. I have experience with:

    - Flipped classes (classes that deliver lecture content outside of class and have activities in class)
    - Lectures
    - Group work
    - Group assignments
    - Collaboration
    - Board games
    - Working with data sets
    - Drawing conclusions from data

2. Is this class bigger or smaller than most of your other classes for your major?

    a. Larger

    b. Smaller

    c. About the same size

3. What is your major?

4. What is your year in school?

    a. Freshman

    b. Sophomore

    c. Junior

d. Senior

5. What is your estimate of your cumulative GPA?

    a. 4.0

    b. 3.5

    c. 3.0

    d. 2.5

    e. 2.0

    f. 1.5

    g. 1.0

    h. 0.0

6. What is your gender?

    a. Male

    b. Female

    c. Non-binary

Risk Mobile App/Introduction to International Relations

Post-Test

1. Which of the following realism concepts identified by the textbook do you think were present in Risk? (select all that apply)

    1. Anarchy
    2. Self-help
    3. States
    4. Sovereignty
    5. Power
    6. Geopolitics
    7. Security dilemma
    8. Balance of power
    9. Power balancing
    10. Hegemony
    11. Power transition
    12. Polarity
    13. Alliance
    14. Defense
    15. Deterrence
    16. Compellence

2. Which of the following realism concepts identified by the textbook do you think you understand better as a result of playing Risk? (select all that apply)
    1. Anarchy
    2. Self-help
    3. States
    4. Sovereignty
    5. Power
    6. Geopolitics
    7. Security dilemma
    8. Balance of power

9. Power balancing
10. Hegemony
11. Power transition
12. Polarity
13. Alliance
14. Defense
15. Deterrence
16. Compellence

3. Which concept(s) do you think were best illustrated as you played Risk? Why?
    1. Open-ended
4. How many players did you play against? What did you do to try to win? How effective was this strategy? Did you win? How long did the game take? (rough estimate of "not very long," "a long time," etc. is fine)
    1. Open-ended

Dice Catan/Introduction to Comparative Politics

Pre-/Post-Test

1. How much control do leaders have over the development of their country?
    1. Scale from 1-5 (not/none at all-a tremendous amount)
2. How much of a role does luck/chance/factors outside a leader's control impact development?
    1. Scale from 1-5 (not/none at all-a tremendous amount)
3. How much can back luck/chance/factors outside a leader's control hold back development even in the face of a good strategy?
    1. Scale from 1-5 (not/none at all-a tremendous amount)

4. How much can leaders adjust their strategy in the face of back luck/chance/factors outside their control to make gains in development?
    1. Scale from 1-5 (not/none at all-a tremendous amount)
5. To what extent are leaders able to provide a buffer to protect against the worst development outcomes?
    1. Scale from 1-5 (not/none at all-a tremendous amount)
6. To what extent do you think past development success or failure affects future development success or failure?
    1. Scale from 1-5 (not/none at all-a tremendous amount)
7. Which is most important for development?
    1. Luck/chance/factors outside a leader's control are much more important
    2. Luck/chance/factors outside a leader's control are a little more important
    3. Both are equally important
    4. Leader's strategy is a little more important
    5. Leader' strategy is much more important

Pre- only

1. What is your strategy for the game? What will you focus on -- roads, settlements, cities, knights, or a specific combination? Why? What is your plan for adjusting to potential bad luck on dice rolls?

Post- only

1. What was the outcome of your game? How many points did you score? Do you consider this a successful or unsuccessful outcome? Why?
2. What resources did you come to rely on most heavily? Why? What did this resource allow you to accomplish?

3. Which resource(s) were the hardest for you to obtain? How did you react to these shortfalls?
4. How closely were you able to stick to your original strategy? What helped or hindered you in doing so?
5. To what extent did luck/chance on dice rolls play a role in your overall success or failure? How did luck affect your strategy? Did you change overall strategies at any point based on your dice rolls? Why?
6. What are some of the possible legacy effects of development or lack thereof? That is, if one leader is successful or unsuccessful, how is that likely to affect the next leader, and other leaders into the future? Why?
7. Do you think it would be easier for democratic or authoritarian leaders to develop their country? Why? How often do you think this ease translates into actual development? Why?
8. What similarities do you see between building your Catan island and a leader trying to develop their country?