

A Formative Evaluation of the *Balance of Power* Game and Curriculum

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Abstract: A formative evaluation of the *Balance of Power* game and curriculum was conducted at a junior high school in a large southwestern metropolitan area. The evaluation consisted of a pretest, lesson, game play, posttest, attitudinal survey, second posttest, interview and observation in order to determine the effectiveness of the *Balance of Power* game and lesson curriculum. There was an increase in mean performance test scores from pretest to posttest 1 and pretest to posttest 2. Overall, student and teacher ratings of the program were favorable.

Keywords: civics, *iCivics*, gaming, evaluation, middle-school curriculum

Introduction

Our Courts (currently renamed *iCivics*) is a web-based program designed to help middle-school children learn about civics and civics participation in the United States. *iCivics* had released three civics-based games at the time of this evaluation: *Do I Have a Right?*, *Supreme Decision*, and *Argument Wars*. In addition to providing an engaging environment for students to learn about governmental processes, the *Our Courts* instructional package includes lesson plans and teaching resources to supplement the classroom learning process. In a response to a call for an evaluation of a beta-version of the game, the researchers planned and conducted an evaluation of the game and lesson plan in an effort to support and expand the material prior to its release to the public. The evaluation was performed in order to determine the following: The extent to which the instructional unit as a whole meets its instructional goals; the extent to which the instructional unit engages the students and increases their interest in the subject matter; the extent to which the instructional program meets the needs of the users; the extent to which the instructional program is usable and marketable to schools and school districts.

Review of the Literature

Civics Learning

A democracy depends on its citizens to be more informed and more involved in the democratic process than a simple presidential vote every four years. However, evidence has shown that our schools are not adequately preparing the next generation to be citizens with a complete understanding of their role in our government (Fleming, 2011; U.S. Department of Education, 2012; Feldmann, 2010). The 2010 National Assessment of Educational Progress (NAEP) found that an achievement gap in civics still exists between racial and ethnic groups and that barely one-quarter of students in grades 4, 8, and 12 are performing at proficiency level. Clearly, the effectiveness of current civics programs in engaging students and encouraging transfer of civic awareness and knowledge is questionable. Justice Sandra Day O'Connor (Ret.) has led a push for civics education reform. The former Supreme Court Justice and Congressman Lee Hamilton (2008) argue:

If we hope to sustain American democracy, we need to treat civic learning as on a par with other academic subjects. To participate fully in our democracy, students need to understand our government, our history, and our laws. They need to appreciate the skills democracy imposes on us – consensus building, compromise, civility, and rational discourse – and how they can be applied to the problems confronted by their communities and our nation as a whole. Restoring this civic mission of schools will require a concerted effort in school districts, at statehouses, and by the federal government (Hamilton & O'Connor, ¶ 8).

As with any content area, inspiring civic action begins with building in students a basic understanding of our government and its processes, our role in a global society, and the history that shaped our country. More importantly, civics programs must connect what is learned in the classroom to the world outside, in order for students to feel empowered in their own abilities to participate in the civic process (Feldmann, 2010). A call for curricular reform has been issued that includes civics as an essential core of the secondary curriculum (U.S. Department of Education, 2012). In this climate of curricular reform, the question then turns to finding the best method for engaging and inspiring students to civic participation. A curriculum for democracy, as described by Fleming (2011), is one in which “civic participation is critical for creating citizens who contribute toward public goals, and it is critical for preserving a democracy of citizens who are rulers” (p. 48). A curriculum for democracy would include opportunities for students to practice civic participation in the school and in the community through “service learning, peer mediation, ethical use of the Internet, and a free student press” (Fleming, 2011, p. 42). The key components to a curriculum for democracy are deliberation and action in and out of the school, providing students with authentic civic experiences that allow them to learn by doing (Fleming, 2011).

Learning Civics through Gaming

Many programs, such as Americorps (2012), Public Achievement (Center for Democracy and Citizenship, n.d.), Mikva Challenge (2012), and Facing History and Ourselves (2012) address the civics learning that can take place in the community. There are some projects, such as *iCivics* (n.d.), that aim at increasing student engagement with the civics content within the boundaries of the classroom, yet still encourage the “learning by doing” ideal.

Learning through gaming is not a new concept. Gee (2005) argues that it is not just about learning through

games, it is about learning through the method that good games use to enable a user’s success. In games, the knowing comes from the experience of doing:

Players can perform before they are competent, supported by the design of the game, the “smart tools” that the game offers, and often, too, the support of other, more advanced players (in multiplayer games, in chat rooms, or standing there in the living room). Language acquisition itself works this way. However, schools frequently do not. They often demand that students gain competence through reading texts before they can perform in the domain that they are learning (Gee, 2005, p. 37).

Even games not designed specifically for education can be connected to learning. Arguments have been made that the Massively Multiplayer Online Role-Playing Game (MMORPG), *World of Warcraft* (Blizzard Entertainment, 2004-2013) can be useful in teaching the basic concepts of citizenship, democracy, and community. Through the very interactive nature of the game, participants collaborate and build a society based on civic principles. Because success in the game depends on a collaborative, community effort, a sense of community responsibility is fostered and rules are often established (Curry, 2010). Through building their own society, users can engage in an exploration of the tenets of democracy by putting them into action outside the classroom.

Unlike games such as *World of Warcraft* (Blizzard Entertainment, 2004-2013), the *iCivics* (n.d.) stable of games has been tailored to include lesson plans that specifically and purposefully connect game play to the content. The *iCivics* curriculum offers students and teachers an opportunity to learn “how to persuade others by logic, seeking consensus, understanding and creating constructive dissent—such critical-thinking skills are vital to successful citizenship” (Wormeli, 2012, p. 52). Students can campaign for an issue of their choice, cast a vote for a candidate, lead someone through the process of becoming a citizen, argue a Supreme Court case, be the president for a day, or make some laws. Through each of the games, the user explores a specific area of civics content that illustrates the impact each individual has on the processes of our government.

Game-based learning is a hot topic in education today. Parents, teachers and students do not necessarily agree on the value of games in educational settings. But as Prensky (2003) points out :

... the attitude of today’s children toward their video and computer games is the very opposite

of the attitude that most of them have toward school. Yet it is the very attitude we would all like our learners to have: interested, competitive, cooperative, results-oriented, actively seeking information and solutions (Prensky, 2003, p. 1).

The goal of using games in any learning scenario, whether Civics or Social Studies, Math or Reading, is to engage the learner and provide them motivation to continue exploring the content in a meaningful way. Gee (2005) reminds us that “challenge and learning are a large part of what makes good video games motivating and entertaining. Humans actually enjoy learning, though sometimes in school you would not know it” (Gee, 2005, p. 34). By using games in school, hopefully the joy in learning can become evident for students and teachers alike.

iCivics

The *iCivics* project was launched in 2009 at the direction of former Supreme Court Justice Sandra Day O'Connor. The driving force behind the creation of the non-profit organization was the result of the 2010 National Assessment of Educational Progress (NAEP) in civics. The report showed that only one in four students performed at the proficiency level of content mastery for civics. Justice O'Connor responded:

These students will inherit our democracy, and we must empower them to preserve it. Knowledge of our system of government is not handed down through the gene pool. The habits of citizenship must be learned, and our public schools were founded to educate students for democratic participation. The problem is that we have neglected civic education for the past several decades, and the results are predictably dismal (As cited in Wormeli, 2012, p. 52).

The *iCivics* website was developed as a repository for interactive games and related curriculum that could be used both in and out of the classroom to teach middle school children about “laws, U.S. government, individual rights, courts, politics, and other elements of civil society” (Wormeli, 2012, p.52). The *iCivics* team has developed 16 civics-themed video games and corresponding curriculum materials that are available to teachers and students at no cost. Currently, the *iCivics* website also allows users to register and share achievements, complete (or assign) exercises, and view game scores.

Rationale for the Evaluation

The evaluation team performed an evaluation of the *iCivics Balance of Power* game and lesson plan

to determine the following: the extent to which the instructional unit as a whole meets its instructional goals which are: “Students learn about the three branches of government and find out how the three branches interact with each another. Through the process of creating a healthy school lunch menu, students role-play each branch’s responsibility in the law-making process” (*iCivics*, n.d., Separation of Powers: What’s for Lunch? Section); the extent to which the instructional unit engages the students and increases their interest in the subject matter; the extent to which the instructional program meets the needs of the users; and the extent to which the instructional program is usable and marketable to schools and school districts.

In an effort to curb the diminishing levels of civics education in our school systems the *iCivics* program seeks to develop educational games and materials. Furthermore, the level of offerings from *iCivics* in this content area is high. Evaluating the effectiveness of this educational game was determined to also be beneficial to the development of more games across the full spectrum of civics and government education.

In addition, the evaluation was designed to identify modifications to improve the *Balance of Power* game’s effectiveness and to refine the accompanying curriculum. The value of an educational game is often dependent on its perceived role and effectiveness within existing school agendas. Additionally, teachers are often too busy to do this type of assessment, and would not be likely to attempt to convince their school or district to implement the curriculum without sound evaluative evidence.

Method

Participants

A social studies teacher agreed to have one eighth-grade middle school class participate in the field test of the *Balance of Power* program. The school is a public middle school in a large southwestern suburban area. There were 28 student participants: 16 male and 12 female, ranging from ages 12-15. Participants were already students in the social studies class in which the teacher agreed to participate in the study.

Materials

The *Balance of Power* (currently renamed *Branches of Power*) game was designed by Filament Games (n.d.), a production studio that specializes in educational gaming, specifically for the *iCivics* project. *iCivics’s Balance of Power* game is designed

to help students understand the process of making a law and the role of the three branches of government. Additionally, students learn how each branch is necessary to balance each other. Students can choose from multiple social issues and walk the issue through a town hall, a press conference, a congressional meeting and a presidential approval process depending upon the branch of government they are exploring. The game emphasizes the need to balance the three branches and receive approval from all three before a bill can become a law. One interesting feature is the ability for players to sign a bill by controlling a pen with their mouse as if they were actually signing paper, albeit in this instance it is an electronic representation of a bill.

The pre-game lesson walks the students through creating a healthier lunch menu by dividing the class into three “committees” to vote and veto the lunch selection within given guidelines. There are 5 rounds to the in-class activity.

In Round 1, students act in the role of the executive branch as “lead chefs” and decide the menu options. In Round 2, students act in the role of the legislative branch as “writers” and choose what specific food will be served, using the executive branch’s categories to guide them. In Round 3, students again play “lead chefs” and decide whether to sign or veto the new menu. In Round 4, students again act as the “writers” and, if necessary, try to override a veto. In Round 5, the students are “judges” and evaluate whether the menu meets guidelines for healthiness (Our Courts, n.d).

The post-lesson reinforces the role that citizens play in the process of sponsoring a bill through direct instruction regarding the three branches of government. The combined pre-game lesson, game play, and post-game lesson are planned to take four class days. The Balance of Power instructional unit includes handouts, overheads, a PowerPoint presentation, answer keys, and lesson plan.

Procedures

A one-group pretest, posttest 1, posttest 2, mixed-method evaluation design (see Table 1) was used in the evaluation of the *Balance of Power* instructional unit. In order to measure the effectiveness of the program, attitudinal survey instruments were administered to program participants and their teacher. The survey instruments were designed in conjunction with the stakeholders and validated by content reviewers. Additionally, a pretest and posttest were administered during the field-testing of the instructional program. The pretest and posttests were developed by the evaluators and reviewed by content experts for validity and reliability. Revisions to several questions were made based on suggestions from the expert reviewers. Furthermore, the field test allowed the evaluators to observe the implementation of the unit.

The lesson took place in a classroom setting, while game play took place in a school computer lab. The students accessed the *Balance of Power* game through the Our Courts website (currently renamed *iCivics*). The *Balance of Power* instructional package was designed to be deployed across four-one hour class periods. The schedule for the participating class consisted of 40-minute class periods. Prior to day one of the field test, a 12-item pretest consisting of questions about the Executive, Judicial, and Legislative branches of the government was administered to students. During the field test, the teacher followed the *What’s for Lunch?* lesson plan on day one (Figure 1).

Days two and three of the field test consisted of students playing the *Balance of Power* game in the school’s computer lab (Figure 2). When playing the game, participants are first presented with the main screen after launching the flash-based *Balance of Power* game. The options presented on the main screen are beginner, regular, and credits (see Figure 1). Beginner mode allows participants to play a shorter, more focused round of the game before progressing towards the regular level.

Table 1

Evaluation Design Matrix (time series)

| <i>Pretest</i> | <i>Pre-Game Lesson & Game Play</i> | <i>Posttest 1</i> | <i>Post-Game Lesson</i> | <i>Posttest 2</i> |
|----------------|--|-------------------|-----------------------------|-------------------|
| O ₁ | X ₁ | O ₂ | X ₂ | O ₃ |

Note. O = assessment, X = treatment.

Designing a New Lunch Menu!

Round 1: Choosing the Categories

- Role = Lead Chef

Round 2: Creating the Menu

- Role: The Writers

Round 3: Move Forward or Try Again?

- Role: Lead Chef

Round 4: Where to go now?

- If the Lead Chef said NO, then the WRITERS must vote again on the menu.

Round 5: Evaluating the Results

- Role: The Judge

Final Result: Will your lunch be made?

- Raise your hand if your lunch will be made?
- Raise your hand if your lunch will NOT be made?

Designing the Menu:

Round 1:

Group Members: _____

Role = Lead Chef

Directions: As a group, decide on what 5 categories of food should be served every day for lunch at your school. Mark each with an X.

The Rule: School lunches must be healthy!

| | | | |
|---------------------------------------|--------------------------------------|---|---------------------------------------|
| <input type="checkbox"/> a hot drink | <input type="checkbox"/> salad | <input type="checkbox"/> a sandwich | <input type="checkbox"/> dessert |
| <input type="checkbox"/> a cold drink | <input type="checkbox"/> vegetables | <input type="checkbox"/> meat | <input type="checkbox"/> no dessert |
| <input type="checkbox"/> milk | <input type="checkbox"/> fruit | <input type="checkbox"/> something cooked | <input type="checkbox"/> bugs |
| <input type="checkbox"/> juice | <input type="checkbox"/> chips | <input type="checkbox"/> pasta | <input type="checkbox"/> yoghurt |
| <input type="checkbox"/> bread | <input type="checkbox"/> a side dish | <input type="checkbox"/> fish | <input type="checkbox"/> Your Choice: |

STOP!

Round 2:

Group Members: _____

Role = The Writer

Directions: Using the 5 categories marked with an X above, decide as a group on what EXACT food will be served for one day's lunch.

Your Menu:

| Write the 5 checked categories above in the lines below: | Choose a food for each category, and write it below: |
|--|--|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |
| 5. _____ | _____ |

STOP!

Figure 1: What's for Lunch? lesson plan instructions (image courtesy of iCivics)

Additionally, the beginner level has all the instructions on game play and controls. Once the player is comfortable with the concepts, they can play the regular mode that allows for a full game, complete with numerous “issues” they must address in order to send a bill through the creation process. Players must also uphold a bill by taking on the role of the Judicial Branch. Furthermore, players are able to experience the role of all three branches and gain insight into how each contributes to the process. Subsequently, the posttest was administered after all students played the game on day three.

Day four concluded the schedule with a follow-up, post-game lesson. Students were then administered a second 12-item posttest, as well as the attitudinal survey. The evaluators conducted interviews with students ($n = 2$) on day four.

Instruments

The pretest and posttests were developed by the evaluation team in collaboration with the iCivics project team. The twelve multiple-choice questions were taken directly from the *Balance of Power* game and were divided into four categories. The questions referenced the Executive Branch, the Judicial Branch, the Legislative Branch, and general questions regarding all three branches. The questions were reworded and reorganized on each of the three versions of the tests.

An example of a test item is:

A bill that makes citizens unhappy might be

- Sponsored
- Proposed
- Passed
- Vetoed

The teacher and student attitude surveys were developed by the evaluation team and reviewed by content experts. The Likert-type questions were designed to measure participants' overall opinions of both the game play and the lesson plan and activities and included six choices from “strongly disagree” to “strongly agree” without the choice of “neutral” or “N/A”. The student survey consisted of an attitudinal instrument with eight demographic and background items, sixteen Likert-type items, and five open-ended and list items designed to elicit the students' feelings and perceptions of the *Balance of Power* lesson plan and the educational computer-based game. Using a scale of Strongly Agree to Strongly Disagree, students were asked, for example, to rate their opinions on such items as: “I liked learning about this subject by playing a game,” “I feel the game was easy to play,” and “I intend to play this game at home.” Students were also asked several open-ended questions, enabling them to



Figure 2: Title Screen to Branches (formerly Balance) of Power Game (image courtesy of Filament Games)

describe any problems they had playing the game, what they felt was the most important thing they learned, what they liked most and least, and how they would improve the game. Demographic information was also collected, although the individual participant was not asked to self-identify. The teacher was asked to respond to similar items, though related to her experience with both the game and the lesson plan materials, such as: “I feel the lesson plan was appropriate for the grade level I teach,” “I feel the content is challenging for the students,” and “I feel the game was well designed.”

Though not many students were able to participate, teacher and student interview protocols were created with the intention of collecting follow-up attitudinal data and open-ended responses regarding game play and the *What’s For Lunch?* lesson plan. Questions for the students included, for example: “Do you feel like the game helped you learn more about the three branches of government,” followed by, “What did you learn.”

Results

The following are the results of the evaluation of the field test of the *Balance of Power* game and lesson plan curriculum. The results for the mean performance scores are summarized in Table 2. Additionally, data for all tests and attitude surveys

can be found within this section. Results are separated by section: pre- and posttests, student attitudes, game play, and teacher attitudes. There was an increase in the mean score from pretest (5.10) to posttest 1 (6.90) (with an increase of 1.8, $n = 20$) and pretest to posttest 2 (7.80) (increase of 2.4, $n = 20$).

Pre and Posttests

The pretest and posttest (1 and 2) results were based on responses from 20 students, as eight of the students did not complete all three tests. The pretest was administered prior to day one, before the implementation of the “*What’s for Lunch?*” pre-game lesson plan that accompanies the *Balance of Power* instructional package. The results for the pretest are shown in Table 2. The mean percentage for the entire pre-test was 43%. Additionally, the twelve questions were broken down into the four topic categories, three questions per category, as illustrated in Table 2, for a total possible score of 12.

The first posttest was administered after game play on day three of the instructional module. The results of this posttest showed a slight improvement in students’ scores over those on the pretest, a mean score increase of 1.8 points. In this first posttest there was a marked improvement in

Table 2
Mean Test Scores by Category

| Category / Topic | Number of Questions | Pretest | | | Posttest 1 | | | Posttest 2 | | |
|------------------------------|---------------------|-------------|---------------|-----------|-------------|---------------|-----------|-------------|---------------|-----------|
| | | M | (SD) | % | M | (SD) | % | M | (SD) | % |
| 1. Exec. Branch | 3 | 1.10 | (0.85) | 37 | 1.56 | (0.76) | 52 | 1.60 | (0.82) | 53 |
| 2. Legis. Branch | 3 | 1.10 | (0.91) | 37 | 1.80 | (1.01) | 60 | 2.10 | (0.91) | 70 |
| 3. Judicial Branch | 3 | 1.20 | (0.83) | 40 | 1.30 | (0.98) | 43 | 1.55 | (0.94) | 52 |
| All three branches (general) | 3 | 1.70 | (1.22) | 57 | 2.25 | (0.85) | 75 | 2.25 | (0.64) | 75 |
| Overall | 12 | 5.10 | (2.07) | 43 | 6.90 | (2.25) | 58 | 7.50 | (2.12) | 63 |

Note. Sample size ($n = 20$). Results do not include the eight participants (29%, $n = 28$) that failed to complete all three tests.

performance on both the Category 2 / Legislative Branch (+ 23%) and Category 4 / All Three Branches (+18%) questions.

Posttest 2 was administered after completion of the follow-on, post-game lesson and review, on day four of the instructional module. The results of this test show a mean score percentage of 63%. On this second posttest, too, there was improvement on the overall scores, and specifically in the Category 2 / Legislative Branch (+10%) and 3 / Judicial Branch (+9%) questions. An increase of 1% was seen on the Category 1 / Executive Branch questions and no change was evident for the Category 4 / All Three Branches questions. Additionally, there was a 0.6-point increase from posttest 1 to posttest 2, indicating a slight improvement in scores overall. This result should perhaps be viewed with some caution, as seven students' scores (35%, $n = 20$) decreased from posttest 1 to posttest 2.

Student Attitudes

The student survey, as a reminder, consisted of eight demographic and background items, sixteen Likert-type items, and five open-ended and list items. Twenty-eight students completed the attitudinal surveys, 16 males (57.1%) and 12 females (42.9%). Distribution of ages ranged between 12 and 15 years of age (*Mean age* = 13.75). A summary of the students' attitudinal responses can be seen in Table 3.

As can be seen in Table 3, regarding student's experience with video games, interestingly, the results show a wide variation in frequency of game play. The majority of the 28 students indicated that they *seldom* (50%) or *never* (21.4%) play games, as opposed to students who indicated that they play games from 2-5

times per week (17.9%), or once a week, daily (1-2 hours) or daily (2+ hours) (each 3.6%).

With regard to their perceived learning, an important positive finding is that most (about 77%) of the students also somewhat agreed, agreed or strongly agreed with the statement, "I feel I have a better understanding of how the government works after playing the game."

Students' responses indicated that they generally enjoyed learning through the game. Most (about 84%) somewhat agreed, agreed or strongly agreed that they liked learning about this subject by playing a game; similarly about 85% somewhat agreed, agreed or strongly agreed with the statement, "I enjoyed playing the game."

Students' responses were somewhat less positive about some aspects of the game and curriculum. For example, when asked if they would recommend the *Balance of Power* game to their friends, about half (48%) somewhat agreed or agreed. However, about 71% did indicate they somewhat agreed, agreed or strongly agreed with the statement, "The game helped me learn about issues I care about."

The series of open-ended questions at the end of the student survey gave the students the opportunity to describe any problems they experienced during game play, discuss what they liked and did not like about the game, and to recommend any changes. In response to questions regarding any problems experienced during game play, students indicated that the main problem was related to technical issues. Fifteen students reported having the game "freeze", or about other technical difficulties during play, while two reported problems moving their avatar. Eight students reported

Table 3*Student Attitude Survey Reponses as Percentage of Students by Item*

| | <i>n</i> | <i>Yes</i> | <i>No</i> | | | | |
|---|----------|----------------------------|------------------|----------------------------|-------------------------|-------------------------|------------------------|
| Do you have regular access to a computer outside of school? | (28) | 82.1 | 17.9 | | | | |
| Did you ever use the help menu during game play? | (27) | 18.5 | 81.5 | | | | |
| At any time, were you confused or "stuck" while playing the <i>Balance of Power</i> game? | (27) | 70.4 | 29.6 | | | | |
| | <i>n</i> | <i>Never</i> | <i>Seldom</i> | <i>Once A Week</i> | <i>2-5 Times A Week</i> | <i>Daily (1 -2 hrs)</i> | <i>Daily (2 + hrs)</i> |
| How often do you play video games? | (28) | 21.4 | 50 | 3.6 | 17.9 | 3.6 | 3.6 |
| How often do you use a computer to complete homework? | (27) | 33.3 | 48.1 | 7.4 | 7.4 | 3.7 | |
| | <i>n</i> | <i>Strong-ly Disa-gree</i> | <i>Disa-gree</i> | <i>Some-what Disa-gree</i> | <i>Some-what Agree</i> | <i>Agree</i> | <i>Strongly Agree</i> |
| I liked learning about this subject by playing a game. | (26) | | 7.7 | 7.7 | 30.8 | 42.3 | 11.5 |
| I feel that the game was easy to play. | (27) | 3.7 | 7.4 | 7.4 | 29.6 | 33.3 | 18.5 |
| I feel the game instructions were clear. | (27) | 3.7 | 7.4 | 25.9 | 18.5 | 22.2 | 22.2 |
| I enjoyed playing the game. | (27) | 3.7 | 3.7 | 7.4 | 44.4 | 25.9 | 14.8 |
| I feel I have a better understanding of how the government works after playing the game. | (27) | 7.4 | 7.4 | 7.4 | 14.8 | 29.6 | 33.3 |
| I intend to play this game at home. | (27) | 18.5 | 18.5 | 14.8 | 33.3 | 11.1 | 3.7 |
| I feel the game's subject was appropriate for my grade level. | (27) | 3.7 | 7.4 | 14.8 | 40.7 | 22.2 | 11.1 |
| I intend to try other games on the Our Court's website. | (27) | 18.5 | 18.5 | 22.2 | 22.2 | 18.5 | |
| I feel there should be more games similar to the <i>Balance of Power</i> game. | (27) | 11.1 | 3.7 | 22.2 | 18.5 | 25.9 | 18.5 |
| I feel the game was at the right level of challenge to play. | (27) | 7.4 | 14.8 | 14.8 | 33.3 | 29.6 | |
| I would recommend this game to my friends. | (27) | 11.1 | 18.5 | 22.2 | 22.2 | 25.9 | |
| My interest in this subject has increased since playing the <i>Balance of Power</i> game. | (28) | 7.4 | 18.5 | 22.2 | 25.9 | 14.8 | 11.1 |

Table 3 (continued)*Student Attitude Survey Responses as Percentage of Students by Item*

| | <i>n</i> | <i>Strong- ly Disa- gree</i> | <i>Disa- gree</i> | <i>Some- what Disa- gree</i> | <i>Some- what Agree</i> | <i>Agree</i> | <i>Strongly Agree</i> |
|--|----------|--------------------------------------|-----------------------|--|---------------------------------|--------------|---------------------------|
| I would rather learn from a game than from a text-book and worksheets. | (27) | 10.7 | 3.6 | 10.7 | 3.6 | 17.9 | 53.6 |
| The game instructions were useful to me. | (27) | 3.7 | 14.8 | 11.1 | 33.3 | 22.2 | 14.8 |
| I intend to play this game again in my free time. | (27) | 18.5 | 18.5 | 14.8 | 33.3 | 11.1 | 3.7 |
| The game helped me learn about issues I care about. | (28) | 10.7 | 7.1 | 10.7 | 32.1 | 21.4 | 17.9 |
| | <i>n</i> | <i>Begin- ner</i> | <i>Regular</i> | <i>Both</i> | | | |
| What level(s) did you play? | (27) | 7.4 | 33.3 | 59.3 | | | |

Note. Numbers for response items are percentages. *n* above is the number of students responding per item (of 28)

being confused about the game or game play. One student reported that they felt the game was too easy and one thought the town hall questions were too easy. Another student indicated the game had too many rules.

When asked what they would improve about the game, seven students indicated that they would add more characters and game options, four would add more action to the game play, four would change the town hall questions by increasing the difficulty level, three would make the overall game more challenging or difficult, two would shrink the game stage area, one would fix the technical difficulties, one would allow the user to choose the qualities of the branches, one would add more instructions, one would make the help bar more helpful, one would keep the user from writing out the laws, and two students wouldn't change anything about the game.

When asked what they liked most, several students (18%, $n = 28$) indicated that they liked signing the bill the most out of the game play, four liked the town hall meetings, four liked being able to choose the topics for bills, three liked going through the bill-making process, two liked being able to explore with the avatar, two liked the complete control the user had over the process, one liked the level of challenge, one liked the entertainment value, one liked the characters, and one enjoyed exploring the three branches of government.

When asked what they liked least about the

game, four students mentioned the town hall questions (too easy or obvious), three students thought the game was confusing, two disliked the lack of action/violence, one did not like the characters, one disliked the technical issues, one mentioned the repetitive nature of the game play, one the Judicial Branch's role in the game play, one the difficulties in the actual signing of the bill, and two students indicated that they didn't like or didn't understand the game.

Forty-six percent of the students ($n = 28$) indicated that they learned about the three branches of government from the *Balance of Power* game play, while five indicated they learned about making a law, four learned about the government as a whole, one student learned that the issues involved everyone, one learned about decision making, two learned about the game itself, and two students reported learning nothing.

Teacher Attitudes

The eighth-grade social studies teacher who agreed to field test the *Balance of Power* instructional game agreed or strongly agreed, to all of the questions on the survey. This may indicate that the teacher's perceived value of the *Balance of Power* game and educational games, as a whole, was very high. The teacher made several suggestions regarding the improvement of the game and lesson plans, focusing mostly on the accompanying lesson plans. The

suggestions specific to the game focused on both the technical issues that the students experienced (i.e. the freezing screens), and restricting the freedom of movement of the avatars. Additionally, the teacher indicated that she felt the students were very engaged, both in the game play and in the idea of playing an educational game. This teacher made specific suggestions regarding the improvement of the “*What’s for Lunch?*” pre-game lesson plan, including the creation of a time chart and the revision of the PowerPoint presentation to match the accompanying student handouts.

Discussion

The purpose of this evaluation was to gain an understanding of the effectiveness of the *Balance of Power* game and curriculum. Additionally, the results can be used to further develop this and other games.

The results on the pretest and two posttests, as well as those on the student and teacher attitudinal surveys, indicate that the instructional unit as a whole meets the intended instructional goals. An increase in test means was evident between the pretest and both posttests, specifically showing improvements in all areas. Moreover, the category dealing with information on all three branches of government showed the greatest increase in student scores. Although a determination of the cause for a high number of decreased scores cannot be ascertained, it should be considered, as evidenced by the survey and observation data, that some students may have become confused with the extraneous information presented in the follow-on lesson plan. The overall scores were lower than anticipated and could be a result of the very abbreviated time frame of the field trial. They are, however, in line with the 2010 NAEP findings that seventy-two percent of eighth graders performed at or below *Basic* level of civics knowledge. The *Basic* level is defined as:

Eighth-grade students performing at the *Basic* level should have some understanding of competing ideas about purposes of government, and they should be able to describe advantages of limited government. They should be able to define what is meant by government, constitution, the rule of law, and politics. These students should be able to identify fundamental principles and values of American democracy, such as federalism, the separation of powers, checks and balances, government by the consent of the governed, and individual rights. They should understand that the Declaration of Independence and the U.S. Constitution, including the Bill of Rights and other amendments, are sources of these ideas. These students should be able to explain

why it is important that citizens share the values and principles expressed in the nation’s core documents, and they should understand functions of elections, political parties, and interest groups in a democratic society. They should know that American citizenship is attained by birth or through naturalization. They should be able to identify personal, political, and economic rights of Americans and should understand the responsibilities that these rights imply. Finally, these students should be able to describe purposes of international organizations to which the United States belongs (National Center for Education Statistics [NCES], 2011, p.28).

Results of the student attitude surveys indicated that the students felt they learned new information regarding how the three branches of government worked and the role citizens play in government processes. The teacher and the students both indicated that the *Balance of Power* game engaged the students and increased their interest in the subject matter, particularly in reference to the issues of children’s rights. The observations of the evaluators also support these assertions. However, responses on both the student and teacher surveys also indicate that the level of engagement was much lower during both the pre- and post-game lessons. Whether this was due to the shorter class periods or due to the material, is difficult to determine. The evaluators also noticed that the student engagement during the “*What’s for Lunch?*” lesson plan was very low, stemming from apparent confusion about the procedure as well as the perceived disconnect between the lesson-plan material and the topic of the Three Branches of Government.

Areas of perceived improvement for the instructional package include the reduction of technological problems unrelated to the game. Revision of the *What’s for Lunch?* lesson plan is suggested. The suggestion from the teacher was to include a specific timeline and to increase the scaffolding of prior knowledge into the game play. Additionally, the game may benefit from minor revisions, such as including a larger character selection and removal of town hall questions that students perceive to be easy or silly. Game revisions may be necessary to increase student engagement; particularly the students who regularly play games are accustomed to choosing their avatar and personalizing their environment, supporting what Gee (2005) states is a fundamental learning principle supported by learning through gaming: customization. According to Alessi and Trollip (2001) it is all too often that instructional materials bypass comprehension for the sake of rote memorization of information or for the

successful attainment of skills. While already engaging, by increasing student engagement still more, and refining the content of the *Balance of Power* game, it is likely that student comprehension will ultimately be increased. With increased comprehension will come increased civics learning as defined by the Campaign for the Civic Mission of Schools (n.d.): “Civics learning is the tool by which individuals living here become Americans, equipped with the knowledge, skills, and dispositions to participate in the life of their nation” (p. 15).

Results on performance tests and attitudinal surveys indicate that the instructional program as a whole meets the needs of the users and could be marketable to schools and their respective districts. One possible drawback would be ensuring schools’ or districts’ ability to meet the technological requirements of game play. While this may be beyond the scope or purpose of the *Balance of Power* game, future researchers might consider focusing on engaging more of the female students, who indicate that they do not regularly play video games. Lastly, the inclusion of a computerized test and/or survey within the game itself may be beneficial to students and teachers, as well as for ease of future data collection.

Due to the time constraints of completing the full instructional program in four 40-minute, rather than one-hour class periods, only two student interviews were conducted by these evaluators, with students chosen at random. Had there been sufficient class time, the researchers had planned to interview a minimum of ten students in order to get a better understanding of their opinions and thought processes regarding the game and lesson plan. Overall, the interview responses indicate that students enjoyed the *Balance of Power* game and lesson plan. Additionally, students indicated that a few minor adjustments to the instructions and town hall questions would be useful. There was little dissatisfaction reported regarding the game and instructional module as a whole.

Additional evaluations of game-based curriculum such as the *Balance of Power* game and lesson plan should include data on game-play behaviors and further exploration of the gaming experience level of the participants. More thorough observation protocols and a think-aloud game play session would allow for better triangulation of the results as the participants share their thoughts as they move through game play.

The time allocated for the teacher interview was pushed back due to scheduling conflicts in addition to the length of time needed to complete the

instructional program. It was decided to forego the teacher interview to allow the full class periods to be utilized for instruction and other data collection. In the future, consideration should be given to modifying the current four-day plan to allow for further data collection and interview time. The 40-minute class period was barely adequate for the teacher to instruct the curriculum and for students to complete the assessments. Students and the teacher were unable to remain after the class period and had to quickly move on to the following class period.

It is suggested that future evaluations might include a comparison group of students that would take both pretest and posttests, but will not be given the lesson plan nor play the game, in order to facilitate a more precise inferential statistical analysis of the program’s effectiveness. In the case of a pretest, posttest 1, posttest 2 design, the second posttest could be administered to the comparison group after a specified time, in relation to the administration of each posttest, to the treatment group, in order to retain between-group congruency. Further improvements to evaluations might include conducting a higher number of student and teacher interviews.

The evaluators are also of the opinion that the game and content might be appropriate for field-testing in a high-school setting. However, the lesson plan may then need to be modified to include current high-school-level civics instruction.

Conclusion

In conclusion, the *Balance of Power* game and curriculum does well to facilitate students’ understanding of the three branches of government and the role each plays. The first step in increasing what Justice O’Connor (2008) calls civic engagement is to engage the students with the methods of learning the content, and the *Balance of Power* game does indeed engage students. Furthermore, it appears students gain valuable insight into the process of passing a bill, and subsequently upholding that bill. The game was well received by students and teacher alike. Additionally, the evaluators posit that the value inherent in engaging and well-designed educational games, such as *Balance of Power*, is essential in teaching subjects that are fundamental to empowering children as citizens of democracy. As a step forward in game-based learning, games such as *Balance of Power* engage students while providing real-world scenarios through which they can explore content and enjoy learning in the classroom.

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