Effective citizenship education through mobile game based learning: The statecraft X curriculum

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Effective Citizenship Education Through Mobile Game Based Learning: The Statecraft X Curriculum

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Abstract: Educating for effective citizenship remains a largely elusive goal in schools. All too often, schools only educate students about citizenship. This outcome does not translate into the dispositions and capacities for active citizenship widely sought in students’ post-school years. To address traditional weaknesses of citizenship education in schools, we developed and researched the Statecraft X curriculum in classrooms. Unlike learning about content related to citizenship, students learn governance and its relation to citizenship by enacting governance, that is, by performing governance. Performance is enacted through role taking in immersive game play on a mobile device—an Apple iPhone—and through dialogic conversations in the classroom, where students reflect on the significations arising from game play. Teachers facilitate these conversations and help students to “play between worlds” by making pertinent connections between issues arising in the game world and in the real world. They encourage students to be reflexive in their learning, directing them to the actions that they took in playing the game and thinking through the ensuing consequences. In this paper, we report an implementation of the Statecraft X curriculum in a Social Studies class attended by 42 15-year-olds attending a government secondary school. At the conclusion of the three-week curricular program, students wrote an extended essay related to governance that served as the summative assessment. They were asked to identify key issues of personal concern and to suggest how the government should deal with the problems highlighted. The essays of the intervention class were compared with those of a control class comprising 40 students who were taught governance using traditional instruction. Essays were evaluated on the basis of four criteria: (1) multiple viewpoints, (2) solutions supported by evidence and argumentation, (3) disposition of active citizen, and (4) persuasiveness. The results indicate that students of the intervention class outperformed those of the control class on all four criteria. Our findings suggest that the Statecraft X curriculum has efficacy in achieving the desired curricular learning outcomes. We discuss some challenges that teachers needed to work through and to resolve in order to effectively appropriate the understandings, beliefs, and dispositions essential to enacting the curriculum successfully in the classroom.

Keywords: citizenship education, mobile game, performance, dialog, learning outcomes

1. Introduction

Educating for effective citizenship remains a largely elusive goal in schools. All too often, schools only educate students about citizenship. This outcome does not translate into the dispositions and capacities for active citizenship widely sought in students’ post-school years (Selwyn, 2006). Consequently, research evidence suggests that mature democracies face declining rates of civic participation (Banaji & Buckingham, 2010).

Research on the use of digital games in education has traditionally favored the domain of science education (for example, Barab et al., 2009; Kettlehut, 2006). Notwithstanding, Kahne, Middaugh, and Evans (2009) report that teens with civic gaming experiences, for instance, playing games that simulate government processes or playing games that deal with social and moral issues, report much higher levels of civic and political engagement than those without these kinds of experiences. They further argue that educators should exploit the civic possibilities of games in curricula and in the classroom. They suggest that “[s]ocial studies educators . . . might be interested in using a game like Democracy in a government class. Democracy is a multidimensional political simulation in which players respond to varied constituencies, shape policies, and interpret data on approval ratings in an effort to win reelection” (p. 52). Raphael et al. (2010) echo this enthusiasm and advocate using games to advance civic learning. They articulate a conceptual framework and agenda for research and the design of games. They hypothesize that civic games can help players make connections between individual actions and larger social structures and also to link and contrast ethical reasoning and expedient reasoning in the civic action space.

We are unaware of any significant use of digital games in social studies. Well-known work of Barab and Dede, based on the multi-user virtual environments Quest Atlantis and River City, is oriented toward science education. The only relevant known work is by Lim (2008). Students are positioned as
global citizens in *Quest Atlantis*. However, they are required to solve quests related to mathematics, English, and science. Consequently, citizenship and social studies are not the focus.

In Singapore’s education system, citizenship education is addressed via the social studies curriculum. Our research efforts in the classroom with the Statecraft X curriculum take place in the context of increasing recognition being given to the role of social studies in character development and nation building. While we strongly resonate with the suggestion by Kahne et al. (2009) to use digital games for social studies education, especially as it relates to the topic of governance, we are also sensitive to Poblocki’s (2002) critique against “bio-cultural imperialism” that may be embedded in digital games developed in North America. As cultural artifacts, digital games, especially commercial off-the-shelf games, always carry the potential for cultural bias. In designing and developing our own educational game, *Statecraft X*, we attempted to minimize this risk by locating the game within a medieval fantasy kingdom. The medieval element unavoidably retains early European cultural associations. However, unlike Sid Meier’s portrayal of the clash of civilizations as historical “truth”—the target of Poblocki’s critique—the fantasy element ameliorates the cultural imperialism of grand narratives of human history created in the West. Thus, we sought to maximize the portability of our game’s adoption across national contexts. In the next section of the paper, we describe the theoretical underpinnings of the Statecraft X learning program, comprising the game and a set of associated curriculum materials. We also illustrate the multiplayer mobile game *Statecraft X*. We then report an empirical study of the enaction of the Statecraft X curriculum in the classroom focusing primarily on student learning outcomes.

2. The Statecraft X learning program

In defining the social studies, Barr, Barth, and Shermis (1977) identify three key approaches to designing curriculum. They are: (1) social studies as citizenship transmission, (2) social studies taught as social science, and (3) social studies taught as reflective inquiry. Interrogating our own educational values and philosophical commitments, we are of the view that an inquiry approach to citizenship education aligns best with our pedagogical goals and objectives. We thus designed a curriculum based on inquiry learning (Dewey, 1938/1991).

2.1 Theoretical underpinnings

In prior work, we proposed the performance–play–dialog (PPD) design model for game-based learning (Chee, 2011). Drawing upon this model, we view learning through the theoretical lens of performance (Bell, 2008; Schechner, 2003). As Carlson (2004) argues, performance is distinguished by three critical features: (1) patterned behavior entailing constant doing and redoing, (2) self-consciousness of the doing and redoing, and (3) a double consciousness of actual behavior compared against ideal behavior. From this perspective, learning through performance engages the learner in reflection, and it is deeply reflexive. It is a mode of learning that any concert pianist or competitive swimmer understands. Performance requires constant self-interrogation of how well one is doing compared with an ideal benchmark. By this means, performers improve their performance and thereby learn. Performance is inherently value laden, and it is deeply intertwined with the development of personal identity. Through performance-oriented learning, a person develops a keen sense of self-identity. Jarvis (2009) expresses this idea eloquently: “Learning to be a person in society: Learning to be me.”

Digital games such as MMORPGs allow players to naturally re-orientate learning away from learning about to learning to be (a type of person) (Thomas & Brown, 2007). This reorientation is very productive for citizenship education. Its success, or otherwise, is wholly dependent on whether an individual has learned to enact active and responsible citizenship. In the day-to-day affairs of nations, governments, civic organizations, and citizens, performing as a citizen is what counts. Knowing about citizenship has little value. In the PPD design model, performance is depicted as a developmental trajectory wherein a student learns to become an active citizen (see Figure 1). Performance, in turn, is cultivated through play and dialog, mirroring Dewey’s action–reflection dialectic (J. Dewey, 1910/1981; R. E. Dewey, 1977). Building on Shaffer’s (2006) framework that views game-based learning in terms of developing skills, knowledge, identity, values, and epistemology—that is, SKIVE—the PPD model further raises the standard of desired learning outcomes by requiring that knowledge and skills be integrated and leveled up to a seamless capacity to act and speak competently in ways befitting the enaction of a human role. We refer to this standard of learning outcome as VIP: values, identity, and performance. Via performative learning, students appropriate a
personal understanding of citizenship and develop a citizen self-identity. To the extent that learning has been effective, the learner will perform in an informed and responsible manner when faced with problematic real world situations, such as being faced with a riotous crowd (depicted in the top right of Figure 1). Will the learner act in a manner becoming of a good citizen, or will he not?

Figure 1: The performance–play–dialog model of the Statecraft X learning program

In the PPD model, the construct play is instantiated by students playing Statecraft X. As a multiplayer client-server game, the game state is maintained on the server. The state of the game is persistent and represented by the “game cloud” shown in Figure 1. The game runs continuously regardless of whether any players are logged in. In-game events such as epidemics, bandit attacks, and invasion by a neighboring kingdom are triggered at times predetermined by the game administrator. A typical game session supports 20 concurrent players. They are divided into four factions, where a faction represents members who share an ideological affinity. The duration of each game session is typically three weeks. Epistemologically, the significance of engaging in play is that learning to be is experienced in the first person because the player takes the role of an agent or protagonist in the game. This first person orientation contrasts with traditional learning about where the learner is positioned in the third person with respect to what is being learned. Being engaged in an action space, learning is transactional (Garrison, 2001). It is further embodied through role taking (Mead, 1934), embedded through immersion into a virtual game world, and experiential in nature (Dewey, 1925/1988). As a mobile game played on a personal device, the mode of play is one that requires continuous partial divided attention. Students weave game play into their everyday activities, logging in from time to time to execute several actions, then logging out of the game.

As part of an inquiry curriculum, engagement in dialog is critical because it prompts reflection and sense making. In our design of the Statecraft X curriculum, dialog takes place in the classroom during scheduled lesson time. It is facilitated by a teacher. The construct of dialog draws upon the writings of Bakhtin (1981). Dialog has little in common with discussion, a word whose root is more closely related to the idea of conducting a judicial examination (Senge, 1990). Instead, “[e]ntering into dialog entails taking a stance. It is the means through which we develop openness to others different from ourselves and relate to people and ideas that remain separate and distinct from our own. Dialog is the means through which new ideas are born” (Chee, 2011). Through engaging students in dialog, we seek to cultivate a culture of expansive conversations where ideas are increasingly connected,
juxtaposed, interrogated, and critically evaluated so that students can achieve deeper meaning making and understanding.

2.2 The Statecraft X game

The *Statecraft X* game supports students learning the topic of governance in the social studies curriculum for 15-year-old students. Through the PPD model, students learn governance and its relation to citizenship by *enacting* governorship, that is, by performing governance. During dialog, teachers facilitate conversations and help students to “play between worlds” by making pertinent connections between issues arising in the game world and in the real world. They encourage students to be reflexive in their learning, directing them to the actions that they took in playing the game and thinking through the ensuing consequences. The game is typically played on Apple iPhones. Figure 2 shows a zoomed in view of part of a town in the game world of Velar. The buildings shown are the barracks on the left and the embassy (seen only in the capital city) on the right. Game resources are shown in the resource bar at the top of the screen. Students are assigned the role of town governor in the game. When the game begins, each student is the governor of one town. As students play the game, they seek to become the governor of more towns so as to expand their influence over an increasing number of the Velar citizens. In so doing, they also advance the cause of the faction they belong to. Akin to political parties, factions are bound together by ideologies of good governance. Students thus compete with one another in the game, as well as ideologically, with a view to eventually occupying the capital city of Velar and to governing the entire kingdom. Using a functionally equivalent Web version, the Statecraft X game can also be played on tablet devices such as the Apple iPad. Figure 3 illustrates the game’s world map, which allows players to traverse between different towns in Velar, on an Apple iPad.

As students play *Statecraft X*, many challenges come their way. Apart from having to meet the basic needs of citizens in the town, such as needs for food, water, and housing, they must also develop and sustain a thriving economy. In order to do so, they must trade with neighboring towns to acquire the resources needed to build factories, healing centers, and army barracks. These resources comprise wood and ore. By design, however, each town can produce wood or ore but not both. If citizens’ needs are not adequately met, they become unhappy. They may even leave the player’s town in search of a better life in another town. Trying to increase a town’s economic wealth tends to take a toll on citizens’ happiness as they are worked harder, paid less, or taxed more highly. As a game, therefore, a complex simulation with multiple embedded interdependencies runs continuously. Outcomes can play out in many different and often unpredictable ways for players. Through careful game balancing, several patterns of play typically emerge. The tension between achieving economic wealth and increasing citizen happiness is one such pattern. These tensions are the triggers for productive dialog. How can the challenges that players experience be dealt with? There are no right
answers. There are only better or worse solutions, and these solutions are always contingent on what other players do as well as on game events that players have no control over. Such events include the influx of refugees, epidemics, bandit attacks, and invasion by a neighboring kingdom. Playing the game, students learn that effective governance is a complex challenge. It entails wrestling with conflicting demands and making value-laden trade-offs between alternative courses of action.

![Figure 3: View of the game's web-based world map played on a tablet computer](image)

3. Method

The empirical study reported in this paper examines the comparative learning outcomes of students who participated in the Statecraft X curriculum with those from a control class. The study took place over three weeks in January 2012. Learning outcomes were evaluated on the basis of a summative essay-writing task. As classroom researchers, we observed all classroom enactions of the Statecraft X curriculum. We also administered pre-intervention and post-intervention surveys to students in the intervention class. In addition, we conducted post-session interviews with the collaborating teachers after all sessions other than the first.

3.1 Subjects

The intervention class comprised 42 high ability students in the Express academic stream of the school where we conducted our research. Twenty-seven students were boys (64%) and 15 were girls (36%). On average, students were 15 years old. The control class consisted of 40 students from a comparable high-ability class. Nineteen of the control class students were boys (45%) and 23 were girls (55%). Students belonging to the control class were taught by a separate social studies teacher using traditional classroom instruction.

3.2 Materials

Students from the intervention class played the Statecraft X game on Apple iPhones. The phones were loaned to them for the purpose of the research project. The students responded to an attitudinal survey on citizenship and governance at the commencement of the intervention and at the close.
During the intervention, they were required to complete two online reflection posts that sought their responses to online source materials—one focusing on national defense and the other on government allocation of the national budget—and the underlying reasons for their responses. Students in the control class were taught using presentation slides. They also took notes and completed worksheets on the subject during curriculum time. A common summative assessment, lasting 40 min, was administered to students from both classes after the research intervention concluded. The assessment question stated:

Singapore has a number of well known political blog sites such as mrbrown, Temasek Review, and The Online Citizen.

You are a concerned, responsible, and active Singapore citizen. You wish to set up your own blog site to address issues of deep personal concern. These issues may relate to sustaining economic prosperity, maintaining racial harmony, managing immigration, encouraging international trade, establishing strong national defense, handling diplomatic relations, and developing a global citizenry that remains rooted locally.

You are preparing the very first entry on your blog site. In preparation for this entry, write an essay of about 300 words to identify 3 or 4 issues that you are most concerned about, to express your views concerning these issues, and to suggest how the Singapore government should deal with the issues that you identify. To create a positive impact, make your statement as balanced, persuasive, and well supported by evidence as possible.

### 3.3 Procedure

The Statecraft X curriculum extended over three weeks, with two one-hour classroom sessions held each week. Game play took place entirely outside of classroom time. Students played the game on weekdays between 6:00–8:00 a.m. and between 2:30–10:00 p.m. On Saturdays, they were allowed to play the game from 6:00 a.m. to 11:00 p.m. Game play was not permitted on Sundays. This condition was imposed by the school administration. Access to the game was controlled by the server. Members of the research team led the first classroom session. They shared the backstory of the game and oriented students to the game interface. They also administered the pretest survey. The next four sessions comprised dialogic classroom sessions where students conversed about their in-game experiences and challenges. For the purposes of game play and dialog, the students were divided into two groups of 21 students each. The two participating teachers facilitated the dialogic conversations, with each teacher taking charge over one group of students. Teachers supported the students by helping them to make connections between the ideas contributed and to distill the ideas from the level of game experience to that of concepts, themes, and “big ideas.” In the process, students addressed the challenges of governance, moving fluidly between game-triggered experiences, textbook ideas, and personal knowledge and experience. They also listened critically to suggestions proposed by classmates to deal with the challenges faced, and they interrogated the suggestions of others as and when they saw fit. In the final class session, students delivered a speech to make a case for why they were best qualified to be elected to the governing council of Velar that would help govern the kingdom until the young heir to the throne came of age to be king, given the demise of his father. Following through with role-play induced by the backstory of the game and based on the quality of speech delivered, four students from each group were finally chosen as worthy members of the governing council. This selection represents an individual “win” outcome for the selected students. At the same time, the faction that attained the highest average score between economic wealth and citizen happiness was regarded as winners of the game. This outcome represents a group “win” condition.

### 4. Data analysis and results

Students’ essays were evaluated on the basis of a four-level rubric encompassing four criteria: (1) multiple viewpoints with balanced, coherent perspective, (2) proposed solutions supported by strong evidence and argumentation, (3) disposition of active citizen, and (4) persuasiveness. (Lack of space precludes the inclusion of the rubrics in the paper.) To ensure objectivity in the evaluation, 20 scripts out of the total of 84 (24%), were first randomly selected and evaluated on each criterion by two qualified independent assessors: the second author, who holds a doctorate in education, and a history and social studies schoolteacher teaching these subjects at the upper secondary level. The measures of inter-rater agreement based on Cohen’s kappa were 0.78, 0.70, 0.81, and 0.83 on
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criteria (1) to (4) respectively, indicating a substantial level of agreement. On the strength of this outcome, the second author proceeded to evaluate the remaining essays.

We used SPSS to run our data analysis. The results are summarized in Table 1 below.

**Table 1:** Significance test of difference between intervention and control classes on four criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple viewpoints</td>
<td>Intervention</td>
<td>42</td>
<td>2.74</td>
<td>.734</td>
<td>6.83</td>
<td>80</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>40</td>
<td>1.73</td>
<td>.599</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed solutions</td>
<td>Intervention</td>
<td>42</td>
<td>2.21</td>
<td>.782</td>
<td>5.48</td>
<td>80</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>40</td>
<td>1.38</td>
<td>.586</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposition</td>
<td>Intervention</td>
<td>42</td>
<td>2.62</td>
<td>.697</td>
<td>5.22</td>
<td>80</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>40</td>
<td>1.80</td>
<td>.723</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persuasiveness</td>
<td>Intervention</td>
<td>42</td>
<td>2.55</td>
<td>.772</td>
<td>5.17</td>
<td>80</td>
<td>&lt; .001</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>40</td>
<td>1.65</td>
<td>.802</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows that, on all four essay criteria, students from the intervention group outperformed those in the control group. Their mean rubric scores, coded from 1 (lowest) to 4 (highest) based on the level of attainment on each criterion, were higher than those of the control students. The t-tests show that the hypothesis of equality of means between the two groups is rejected for each criterion.

5. **Discussion**

In evaluating the student essays, we were struck by the extent to which essays of the intervention group students conveyed a strong sense of personal voice and an agency to act to achieve changes sought by the students. In contrast, essays of control group students showed a tendency to reproduce what was contained in the social studies textbook on the topic being studied, namely, the principles of governance. Some students from this group felt a sense of dislocation when attempting to respond to the essay question because they had prepared for this assessment by memorizing content. As a curriculum innovation, the Statecraft X learning program signals a significant change in valuation applied to traditional student learning practices and outcomes. An inquiry curriculum represents a critically important pedagogical shift requiring a concomitant shift in classroom cultural toward critical thinking, questioning, and dialog.

Our collaborating teachers had the benefit of a professional development program held about a month and a half prior to the commencement of the research intervention. This program comprised four half-day face-to-face meetings during which the theoretical and pedagogical underpinnings of the Statecraft X curriculum were discussed. Teachers were furnished with a set of relevant readings prior to the commencement of the meetings. As part of the training, teachers played the game in their own time over the duration of the development program, using an iPhone loaned to them by the research team. This activity was instrumental in preparing them to teach the curriculum in class. Notwithstanding, it could not entirely equip them for what was to come because the training program afforded them no opportunity to teach the curriculum with real students. For this reason, as part of continuing professional development, we, as researchers, were present to further guide teachers. Subsequent to the observation of each lesson, we employed a structured interview technique to prompt teachers to reflect on their practice. We suggested ways to deal with the challenges that they surfaced for discussion. This handholding constitutes a critical part of our efforts to help teachers level up their capacity to enact a performance oriented game-based learning pedagogy in the classroom.

On their part, our collaborating teachers invested themselves in the process of learning to enact the Statecraft X curriculum in the classroom. We observed a genuine desire to master the pedagogy, and the teachers were open-minded and receptive to the feedback that we offered. Being their first attempt to teach using a game-based learning pedagogy, their journey was not always smooth. Notwithstanding, the teachers’ perseverance paid off, and they felt that their efforts were worthwhile at the conclusion of the intervention. Another critical factor at play in the research intervention was the full support of the school principal and the humanities head of department in the enterprise. The head of department invested the time to be present at all the classroom sessions so that she could personally observe the enaction of the curriculum and support the development of the teachers under her charge. By participating in this manner, the head of department also developed a deep personal understanding of Statecraft X’s game-based learning pedagogy, and she expressed her desire to extend the curriculum innovation to all classes in the same level in the next school year.
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6. Conclusion

In this paper, we have described the Statecraft X curriculum and shown its efficacy for citizenship education through a performance-oriented game-based learning pedagogy. We explained the performance–play–dialog model of design for game-based learning and reported how a class that adopted the curriculum outperformed a control class on a summative essay writing task evaluated on four criteria: multiple viewpoints, proposed solutions, disposition of active citizen, and persuasiveness. Many attempts at curriculum innovation and educational reform in schools have failed due to the perturbation and dislocation they bring to deeply entrenched classroom teaching practices. A confluence of positive forces at work in the school where we conducted our research allowed the strong empirical results that we reported to emerge. Our experience suggests that it is vital to nurture and orchestrate such positive forces in order to secure the desired educational improvements. Our ongoing research in additional schools and contexts will help us better understand both the positive forces that can be harnessed to enhance teaching practice as well as the negative forces that work to keep it stagnant.

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