Promoting Engagement in Social Studies through an Online Simulation of Political and Economic Development

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This study investigates the impact of an online simulation on student engagement related to social studies. Using a one-group, pretest-posttest design, sixty-two (n = 49) middle school students led simulated countries for eight, two-hour sessions. Within the simulation, participants were situated as national leaders making key decisions about trade and production, and how to negotiate national and international challenges such as resource scarcity and natural disasters. Findings from self-reports showed high levels of engagement for the simulation as measured by interest/enjoyment, perceived competence, effort/importance, and value/usefulness. In addition, the simulation had a marginally significant impact on student engagement for social studies as a domain. The paper concludes by discussing how interdisciplinary social studies simulations might be designed to encourage student engagement, while promoting the knowledge, skills, and dispositions necessary for an active civic life.

Keywords: Social Studies, Simulations, Engagement, Game-Based Learning

Introduction

In 2014, the National Council for the Social Studies released the College, Career, and Civic Life Framework for Social Studies State Standards (C3 Framework). This framework includes descriptions of the structure and tools of four core disciplines (civics, economics, geography, and history), as well as the habits of mind common within those fields. In addition, the framework's authors argue schools should "support students in learning to be actively engaged in civic life" and that an "essential element of social studies education…is experiential" (NCSS, 2014, p. 6).

Given the well-documented relationship between student engagement and learning (e.g., Christenson, Reschly, & Wylie, 2012), and the C3 Framework's call to make social studies education more experiential, social studies education might benefit from finding new ways to use technology to engage students in "practicing the arts and habits of civic life" (NCSS, 2014, p. 6). To this end, the following study explores the impact of an interdisciplinary social studies simulation on student engagement. It begins by focusing on engagement as an important educational construct, defining its meaning and distinguishing several of its dimensions. From there, evidence is examined that students feel disengaged from social studies as a subject matter and that simulations with game-like qualities might be a means for promoting student engagement. A study is then described that examined the impact of a simulation of economic and political development on middle school students' levels of engagement. The paper ends with a discussion of how interdisciplinary simulations with game-like qualities might be used to support portions of the C3 Framework.

Background

Student engagement has been defined as the attention, investment, and effort students expend in the work of school (Marks, 2000). In a recent overview, Finn (2012) explained that newer models of engagement distinguish between various dimensions such as affective and cognitive engagement. Finn (2012) goes on to explain that *affective engagement* is a level of emotional response characterized by a feeling that school is a place and set of activities worth pursuing, whereas, *cognitive engagement,* is the expenditure of the energy needed to comprehend ideas in order to go beyond minimal requirements.

What is the relationship between student engagement and social studies? Unfortunately, much of what is known about student engagement—affective and cognitive—and social studies, is a cause for concern. For instance, many social studies teachers report that they don't see their schools as "placing much importance on social studies… compared to other subjects" (Leming, Ellington, Schug, 2006, p. 322). Other research suggests that "enduring trends of marginalization and decreased instructional autonomy" (Fitchett & Heafner, 2010, p. 128) has resulted in a diminished

role for social studies within school curricula. Of course, positioning social studies as a less important subject matter may compound students' already low sense of engagement with the domain. In fact, it is widely recognized that many students find social studies content boring, feeling that they have to memorize facts (e.g., Who is the 42nd president of United States?) in a rote manner (Byrd, 2012; Chiodo & Byford, 2004; Schug, Todd, & Berry, 1984). The end result is that too many students feel a lack of affective and cognitive engagement when it comes to learning social studies.

Given this situation, how can educators provide students opportunities to practice the "arts and habits of civic life" (NCSS, 2013, p. 6)? And, how can this be done in a more meaningful and engaging manner? One possible solution to these challenges is using simulations. Simulations are computer-based interactive environments with underlying models of systems or processes (Banks, Carson, Nelson, & Nicol, 2009). Often associated with learning in science, technology, engineering, and mathematics, simulations have been used to explore a variety of social studies topics, for example, the *Stock Market Game,* (DiCamillo & Gradwell, 2012), *eLECTIONS: Your Adventure in Politics* (Moore, Beshke, & Bohan, 2014), and *EU Simulations* (Guasti, Muno, & Niemann, 2015).

Many of the simulations studied over the years leverage principles of videogame design, making them "more learner-centered, easier, more enjoyable, more interesting, and, thus, more effective" (Papastergiou, 2009, p. 1). For example, Oblinger (2004) documents how some principles of good pedagogy are present in well-designed videogame environments, such as individualization, immediate feedback, active learning, social structures, and scaffolding. If an interdisciplinary social studies simulation was built around similar principles, would it help promote student engagement with social studies?

To address this over-arching question, the current research examined the impact of a simulation of political and economic development on student engagement, posing five related questions:

1. How does playing a simulation of political and economic development impact student engagement as measured by interest/enjoyment?
2. How does playing a simulation of political and economic development impact student engagement as measured by perceived competence?
3. How does playing a simulation of political and economic development impact student engagement as measured by effort/importance?
4. How does playing a simulation of political and economic development impact student engagement as measured by value/usefulness?
5. To what extent does a simulation of political and economic development have an impact on student engagement for the domain of social studies?

Method

Participants & Design

Forty-nine (n = 49) students, aged 9 to 15, participated in the study. The participants were recruited from a university summer program. The majority of participants were male (65%) and the study used a one-group, pretest-posttest design.

Procedure

The study consisted of three phases. In the first phase, participants were given an orientation. They were introduced to the research team, provided an overview of the study, and given the opportunity to ask questions. Participants then completed two electronic surveys about engagement. Near the end of the session, participants were randomly assigned virtual countries in the simulation that they would lead in subsequent sessions. It was explained that as leaders of their respective countries, participants were responsible for all decisions and that their goal was to develop a thriving and sustainable nation. In total, phase one took approximately 60 minutes to complete.

The second phase consisted of eight, two-hour sessions. Each session began with a 15-minute lesson in which the teacher introduced key elements of the simulation. Topics for these lessons included concepts such as trade and migration. Following each lesson, participants were given 90 minutes to "lead their countries" in the simulated world. During this time, participants ran the online simulation on a laptop computer and were free to ask questions and collaborate during the 90 minutes. At the end of each session, participants logged out of the simulation, and without their computers, joined a whole-group discussion about the events and happenings of the simulated world. The end-of-session discussions lasted about 15 minutes.

The final phase consisted of one, two-hour session. In this session participants completed the same engagement surveys from the first session and participated in a final discussion about the events of the simulated world. This marked the end of the study.

Materials

The Simulation
The simulation used for the study was a free, online simulation of economic development and political development owned and operated by the Akwaaba Foundation. In the simulation, every participant leads a single country from the real world (e.g., China, Brazil, Zimbabwe). Every country begins the simulation with a limited amount of land, mineral deposits, unskilled labor, and hand tools. Participants are tasked with using these resources to develop their countries, making decisions about production, pollution, and trade. The goal of the simulation is to create a thriving and sustainable country. To succeed, participants must strategize and understand how decisions made at the local level also have a global impact (and vice versa).
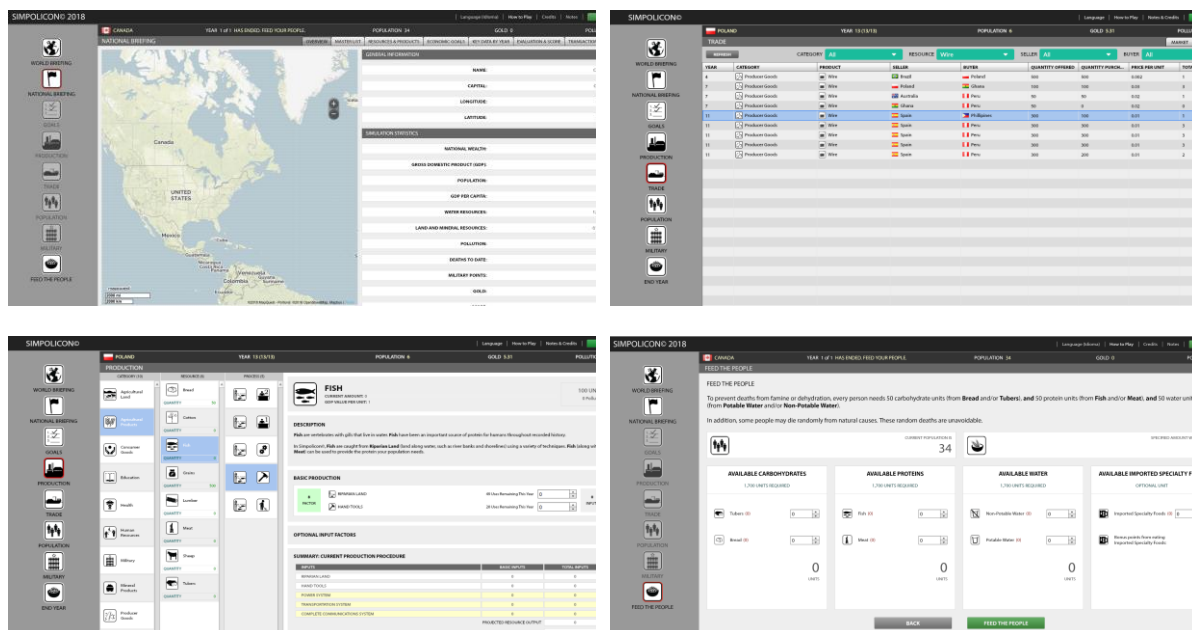

Figure 1. Images of the Akwaaba Foundation's simulation, *Simpolicon*. Each country's resources can be managed through various interfaces including, National Briefing (top-left), Trade (top-right), Production (bottom-left), and End the Year (bottom-right).

Simulation Engagement Survey
The purpose of the simulation engagement survey was to examine participants' level of engagement with the simulation itself. The items on the survey were adapted from the Intrinsic Motivation Survey, a tool developed by Ryan and colleagues (see Ryan, Mims, & Koestner, 1983; Ryan, Koestner, & Deci, 1991; SDT, n.d.) and used in numerous studies related to student motivation (e.g., Mekler, Brühlmann, Tuch, & Opwis, 2017; Hanus & Fox, 2015). The items were adapted such that they referenced the simulation specifically. For example, the generic question, "I think this *task* is very interesting," was changed to, "I think this *simulation* is very interesting." All items used a seven-point Likert-scale anchored at the end points (1 = Not at all true; 7 = Very True). To avoid survey fatigue, only four of the seven subscales from the original instrument were included: interest/enjoyment, perceived competence, effort/importance, and value/usefulness. The survey was administered twice, once after the first session and again after the eighth and final session. Previous research has found strong support for the validity of the Intrinsic Motivation Survey (McAuley, Duncan, & Tammen, 1989). Administered electronically, the survey yielded four measures pertaining to participants' engagement with the simulation: a score for interest/enjoyment, perceived competence, effort/importance, and value/usefulness.

Social Studies Engagement Survey
The purpose of the social studies engagement survey was to measure participants' feelings of involvement with social studies as a set of activities worth pursuing. The eleven items on the survey were adapted from Wigfield and Eccles (2000), who found students have "distinct beliefs about what they are good at and what they value in different

achievement domains" (p. 75). The survey was administered twice (first session, eighth session) and used a five-point Likert-scale anchored at the end points (1 = Not at all good; 5 = Very Good). Previous work has discussed the psychometric properties of the survey (see Eccles, Adler, & Meece, 1984; Eccles et al., 1983). The electronic survey yielded a single measure: a score for participants' sense of engagement with the domain of social studies.

Results

The survey data were analyzed in order to examine the influence of the social studies themed simulation on student engagement. The first research question asked if a simulation of political and economic development would impact student engagement as measured by interest/enjoyment. The analysis found no significant change in participants' self-reported interest/enjoyment from the first session to the eighth session. See Table 1 for details.

The second research question asked if a simulation of political and economic development would impact student engagement as measured by perceived competence. The analysis found a significant difference in perceived competence from the first session to the eighth session. Specifically, a paired samples t-test showed a significant increase in perceived competence between sessions: $t(44) = 2.95$, $p = .005$. The average perceived competence score after the first session was 4.23 ($SD = 1.73$). This average rose to 5.01 ($SD = 1.56$) after the eighth session.

The third research question asked if a simulation of political and economic development would impact student engagement as measured by effort/importance. In this case, the analysis found no significant change in effort/importance from the first session to the eighth session. See Table 1 for details.

The fourth research question asked if a simulation of political and economic development would impact student engagement as measured by value/usefulness. The analysis found no significant change in value/usefulness from the first to the eighth session. See Table 1 for details.

Table 1
Means and Standard Deviations for Participants' Self-Reported Engagement for the Simulation

	n^1	Pre-Simulation		Post-Simulation	
		M	SD	M	SD
Interest/Enjoyment	45	5.72	1.11	5.64	1.59
Perceived Competence	45	4.23	1.73	5.01	1.56
Effort/Importance	45	5.64	1.10	5.50	1.38
Value/Usefulness	45	5.62	1.35	5.37	1.60

[1.] *Out of 49 students, four students did not complete one of the surveys (pre-test or post-test)*
[2.] *The survey used 1-7 Likert-scale*

The fifth and final research question asked to what extent a simulation of political and economic development would impact student engagement for the domain of social studies. The results of a paired samples t-test revealed a marginally significant change from the first session to the eighth session, $t(47) = 1.711$, $p = .094$. Specifically, participants' self-reported engagement for the domain of social studies *increased* from the first session ($M = 3.50$, $SD = .60$) to the eighth session ($M = 3.62$, $SD = .62$). See Table 2 for details.

Table 2
Means and Standard Deviations for Participants' Self-Reported Motivation for the Domain of Social Studies

	n	Pre-Simulation		Post-Simulation	
		M	SD	M	SD
Motivation for Social Studies[1]	48	3.51	.62	3.64	.58

[1.] *Out of 49 students, one student did not complete one of the post survey.*
[2.] *The survey used 1-5 Likert-scale.*

Discussion

The purpose of this study was to investigate the impact of a simulation of political and economic development on young learners' levels of engagement. The rationale for the study was based on the premise that unlike traditional social studies instruction, well-designed simulations that have a number of game-like characteristics might prompt students to attend, invest, and expend effort into the experience. So, what were the results?

Statistically speaking, the only significant change found was related to participants' level of perceived competence. Perceived competence is defined as the confidence one has in his/her ability or will to accomplish a task at hand (Law, Elliot, Murayama, 2012). In this case, the task was leading a country in the simulated world. At the beginning of the intervention, participants reported an average perceived competence score of 4.23 (SD = 1.73) out of seven. However, after eight sessions with the simulation, the score increased to 5.01 (SD = 1.56). This is an encouraging finding as previous work has shown that individuals with higher perceived competence experience more positive motivations during task engagement (Pekrun and Stephens, 2010).

One reason for the increase in perceived competence may have to do with how the simulation was designed. To borrow from Resnick and Silverman (2005), the simulation used in the study had a "low floor and high ceiling," meaning it was easy for novices to get started (low floor) while being sophisticated enough for more advanced users (high ceiling). Specifically, the simulation began with each country possessing only four items: land, mineral deposits, unskilled labor, and hand tools. Such a small number of resources constituted a low floor for beginners as they were relatively easy to manage. However, over time, as students combined these resources in different ways and began trading them with other countries, they started gaining access to more advanced resources and products (e.g., skilled labor, schools, machines). In turn, these new resources and products opened up even more possibilities. Thus, the simulation started out easy while quickly expanding the play experience as students began to develop an understanding of the simulation's core mechanics.

In terms of interest/enjoyment, the simulation of political and economic development appeared to do two things. Initially, it captured students' interest/enjoyment as the average interest/enjoyment score after the first session was 5.72 (SD = 1.11) out of seven. This relatively high score provides evidence that students were open to—even enthusiastic about—the idea of engaging with social studies content through an online simulated environment. Further still, the high initial interest/enjoyment scores were *maintained* across eight sessions, registering a final score of 5.64 (SD = 1.59) out of seven. Why did this happen?

This finding suggests that the simulation resonated with participants throughout the study. Encouragingly, the novelty of the initial experience with the simulation did not seem to diminish. This is important because research has shown that sustained interest is essential to academic success and that interventions to develop student interest matter and are most needed in academic domains that many students do not find initially interesting (Harackiewicz, Smith, & Priniski, 2016). While these findings warrant further investigation, one possibility as to why the simulation maintained such high levels of interest/enjoyment may have to do with the simulation's flexibility in terms of goal setting and play style. While the overarching goal of the simulation was to create a thriving and sustainable country, within that larger goal students had to prioritize a number of national goals such as educating people, conserving natural resources, or developing military strength. This aspect of the simulation gave players choices about how to lead their countries and allowed for different approaches and play styles.

Similar results were found for participants' self-reported levels of effort/importance. For this measure, participants gave the simulation of political and economic development an initial effort/importance score of 5.64 (SD = 1.10) on a seven-point scale. And like the previous measures, this one maintained a high average of 5.50 (SD = 1.38) after eight sessions. This result may have been obtained because the simulation was designed to embody what Gee (2007) calls the *performance before competence* principle. This principle states that in game-based environments, competency occurs through taking action. By positioning students as leaders of countries in a simulated world, they were tasked explicitly and immediately with taking action. They were decision makers from the minute they started the simulation. Thus, students got to try out ideas and test theories about how to build successful countries. This aspect of the simulation experience ties in nicely with the C3 Framework's idea of *practicing* the arts and habits of civic life.

Another measure used in the study was related to participants' perceptions of the value/usefulness of the simulation. Although there was a non-significant drop across the eight sessions, the level of value/usefulness reported started high at 5.62 (SD = 1.35). After the eighth session, the average value/usefulness score decreased to 5.37 (SD = 1.60). These relatively high scores on value/usefulness were surprising. Participants' were not told how or why the simulation might be useful or valuable to them. Perhaps the richness of the simulated world somehow prompted students to recognize some of its educational and/or real-world applicability. For example, students may have picked up on

situated meanings (Gee, 2007) such as vocabulary and concepts (e.g., Gross National Product) that were part and parcel of the simulated world and drawn purposefully from the domain of social studies. This aspect of the simulation warrants further investigation. Indeed, future research should attempt to better understand what aspects of the simulation itself, as well as the interactions between the players of the simulation, resulted in the high value/usefulness scores.

The final measure focused on participants' interest in social studies as a discipline. Consistent with previous work showing students are somewhat mixed in their engagement for social studies (e.g., Byrd, 2012), the initial engagement score after the first session was 3.51 ($SD = 0.62$) out of five. This score increased to 3.64 ($SD = 0.58$) after eight sessions, a change that approached, but did not achieve, statistical significance. Upon reflection, this result is encouraging in that the participants' interest in the domain did not *decrease* over the period of the study. Unfortunately, the design of the study makes it unclear if the slight uptick in engagement can be attributed to the simulation experience. Future research should explore the extent to which students felt the simulation embodied social studies, a domain that many feel is less defined and certain than mathematics (Buehl, Alexander, & Murphy, 2002). A related question for the field to contemplate is how explicitly the core disciplines of the C3 Framework (civics, economics, geography, and history) should be represented in simulation environments, and how, in turn, this impacts beliefs and perceptions about the simulation and the domain itself.

In closing, this study contributes to the growing body of evidence that simulations can be used as vehicles for engaging students in social studies. Even though we did not find statistically significant differences in student engagement across all measures, the authors were encouraged to produce some preliminary findings that a simulation of economic and political development has the *potential* to be an effective educational tool. To recap, the study produced two important findings related to engagement. First, participants, who started using the simulation with high levels of engagement *maintained* that level of engagement over the course of eight, two-hour periods, and showed an increase in their perceived competence at playing the simulation. Second, using the simulation over two weeks, participants' self-reported motivation for social studies increased slightly, which a marginally significant change of note. More research is needed to better understand how simulations might be designed and used to create opportunities for students to practice the arts and habits of civic life.

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