Using Games to Teach Global Interconnectedness

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Abstract: In the fall of 2014, Matthew Farber, a middle school social studies teacher, created a project-based learning (PBL) unit with essential questions supported by tabletop and digital games. The PBL centered on the Columbian Exchange, the intentional and unintentional exchange of goods, ideas, and diseases between Europe and the New World. Farber consulted Matt Leacock, designer of the award-winning cooperative tabletop game *Pandemic,* and designers from GlassLab, publishers of *SimCityEDU.* As a result, a mix of digital games (i.e., *SimCityEDU* and *Pox: Save the People*), along with the board game *Pandemic,* was used to teach themes of global interconnectedness and systems thinking competencies. After the project concluded, students continues to displayed the ability to be systems thinkers, such as the role the Silk Road network played in the spread of the Black Death from Asia to Europe.

Interconnectedness

The world is comprised of complex and dynamic interconnected systems. In a causal loop, a cause has an effect, which becomes another cause, and so on (Senge, 2006). Actions have consequential effects, setting other events in motion. The smallest interconnection of a system is the feedback loop—also a component in the ecology of games.

If a goal is to create a game out of schoolwork, then all parts of the game system must be present and functioning (Farber, 2015). Games are models of interconnected systems that "encourage players to think about relationships, not isolated events, facts, and skills" (Gee, 2005, p. 36). It was proposed that, if a game had the core mechanic of balancing systems, then competency would be reinforced.

Role-Playing in the Classroom

When students learn in a project-based environment in a physical classroom, they are often arranged to be working in specified stations, or learning centers. The classroom space is, in essence, the "magic circle" where learning happens. Students in this project were arranged in groups of four, each with an assigned role and task. This arrangement combined Kagan's cooperative learning structures with *The Multiplayer Classroom's* guild configurations (Clowes, 2011; Sheldon, 2012; Farber, 2015).

Pandemic—a four-player, role-playing cooperative tabletop game—was the culminating activity. Either everyone wins together, or all is lost. The board itself is a map of interconnected world cities. Like a personalized "power-up," roles in *Pandemic* are unique for each player. For example, "Dispatchers" can move players anywhere around the board; "Quarantine Experts" curtail outbreaks. The game's roles gave meaning to Farber's students. After play, students were observed bonding over the roles each group shared. *Pandemic* designer Matt Leacock explained the power of role-play. In a December 2014 interview with Farber, he said,

> You turn everyone into superheroes. I believe it was Steve Jackson [designer of the popular role-playing series, *Munchkin,* and *Zombie Dice*] who said that every game is a role-playing game. I try to create hooks so people can pour themselves into their character (personal communication).

Aside from divvying responsibilities in cooperative projects, (i.e., one student researches facts on the Internet, while another is tasked with curating digital images), roles in the context of games have the potential to empower learners.

The Columbian Exchange as a Game

In the fall of 2014, Farber created a project-based learning (PBL) unit supported by games for a sixth grade social studies class. (Farber is also a published author on game-based learning, as well as a doctoral candidate on the topic. The book was written from a practitioner's standpoint.) The result was a project centered on the Columbian Exchange, the intentional and unintentional exchange of goods, ideas, and diseases between Europe and the New World. During the Age of Exploration, Europeans brought animals and crops back and forth from the New World (Crosby, 2003). Small pox also travelled to the Americas, which wiped out much of the native populations.

Games are an interconnected system of goals and rules, where all components interconnect; change one piece and the entire dynamic shifts. To illustrate this to students, Farber had students modify ("mod") rules to Rock-Paper-Scissors. The PBL also involved playing through *SimCityEDU: Pollution Challenge!* The game's objective—balancing city systems (i.e., pollution and employment rates)—served as a contextual lens to view historical cause and effect loops. Farber was able to assess student competencies using the GlassLab Teacher Dashboard feature.

Next, students conducted Internet research. They each designed a playable deck of trading cards about the Maya, Inca, and Aztec civilizations. Read-Write-Think's Trading Card application was the authoring tool. Students wrote rules for their card games and then playtested one another's designs. Other resources came from the Institute of Play's Q Games & Learning Design Pack, including the "Parts of a Game" chart and the "Playtest Reflection Template."

The mechanics of interconnectedness supported Columbian Exchange concepts. The final stage of the PBL pertained to interconnected global cultural exchange. Farber asked the class to predict how the *system* of Meso-American life changed once the Conquistadors arrived. Learning centers were set up throughout the classroom. Primary source documents in Stanford History Education's Reading Like a Historian curriculum, in which the Incas met the Conquistadors, served as the text-based assignment. The other was video-based, from PBS Learning Media. Connections to current events were also made, including the Ebola outbreaks in Western African nations and the recent measles outbreaks in America, using BrainPOP resources. To learn about outbreaks, students played *Pox: Save the People* on iPads. Its mechanics teach vaccinations circles.

For formative assessments, Farber used exit tickets, asking reflection opne-ended questions before students left the classroom. For example, students were asked how *Pox's* core mechanics delivered its message. In other words, how does a vaccination circle work? Regarding *Pandemic* in the culminating station, game play was not assessed; rather, as students played, they took "field journal" notes, written from the point-of-view of the roles they chose. Students who were the Quarantine Experts boasted on their ability to halt disease outbreaks. Furthermore, many displayed the ability to be systems thinkers in subsequent units, such as the role the Silk Road network played in the spread of the Black Death from Asia to Europe.

In cooperative games, players must look at the others' faces just as much as the game board. Players must communicate with others to succeed. Leacock discussed social mechanics—actions taken in games with the goal of promoting player interactions—with Farber. He said,

> Naturally, it's in the very structure of a board game—you've got the board on a table with players encircling it. It forms a common space, a circle—a protected area of interaction, where all the players feel safe within all of the confines of the rules. You're not just staring at a screen; it's not a solitary experience (personal communication).

In December 2014, "Pandemic Parties" began sprouting up around the globe. They were organized to raise awareness and money for Doctors Without Borders (the goal of $50,000 was met in 2015). To that end, Farber added his class to the Pandemic Parties Google Map and Facebook page, enabling students to make authentic connections from the map on the game's board to the real world.

References

Farber, M. (2015). *Gamify your classroom: A field guide to game-based learning*. New York, NY: Peter Lang.

Clowes, G. (2011). *The essential 5: A starting point for Kagan Cooperative Learning.* San Clemente, CA: Kagan Publishing.

Crosby, A. W. (2003). *The Columbian exchange: Biological and cultural consequences of 1492*. Westport, CT: Praeger.

Gee, J. P. (2005). *Good video games and good learning.* Retrieved December 14, 2013, from http://www.jamespaulgee.com/sites/default/files/pub/GoodVideoGamesLearning.pdf

Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization* (rev. ed.). New York, NY: Doubleday/Currency.

Sheldon, L. (2012). *The multiplayer classroom: Designing coursework as a game*. Boston, MA: Course Technology/Cengage Learning.