



# PILOT PROGRAM INTEGRATES GAMES INTO ONLINE LEARNING

BY JENNA KERWIN

It is spring 1916. In front of you, a fog rolls across the barbed wire and shell craters of No Man's Land. The raw smell of upturned earth hangs in the air—along with a feeling of uneasiness. You are a general on the front lines along the Western Front, and after a long, uncertain winter in the trenches, it's time to make a move against the enemy. Your government is eager for a renewed offensive, but you know whatever decision you make will not be easy. Your soldiers' lives are in your hands. There is no time to waste.... What do you do?

Students enrolled in HIS 350: World War I decide the next move in this scenario-driven, decision-based game.

Mary Berkery, faculty program director for history, thought HIS 350's syllabus would be well-suited for game-based learning. In the resulting three WWI games, decision-making is crucial. Berkery explains that decision-based games naturally lend themselves well to history because "one of the key skills that we teach students in history...is the idea of contingency, which is the idea that what happened in the past wasn't inevitable."

In HIS 350 (to be changed to HIS 250 in the fall), the games introduce the idea that WWI didn't have to happen like it did; it happened because of context. So, while playing the games, students can make different choices while playing as different historical figures: Kaiser Wilhelm II, a general on the Western Front, and President Woodrow Wilson.

"There's no winning a game, necessarily; there's no one right answer," says Berkery. The idea is to leave the decision making up to the students: do they play for peace or war; what is their goal? As Berkery points out, they must ask the question, "How much does history change depending on the choices that I make?"

HIS 350: World War I is one of several scenario, decision-based game courses offered as part of a pilot program to determine whether the games help students meet learning outcomes and, if so, to develop a plan to include games into more courses. Faculty program advisors from several programs volunteered to participate in the pilot with the belief that games would be a good way to improve learning outcomes and student engagement in their programs.

The Excelsiorville Management Challenge is the capstone course (MPA 698) of the Master of Public Administration program. Students work in online teams of three to solve reality-based problems of the fictional city, Excelsiorville. "Public administration, in its most usual form, is really about administering government," says Karen Bryce, faculty program director for the MPA. She explains the capstone was a good candidate for gamification, emphasizing that it helps students learn how to work together.

In the course, students work to solve problems in three scenarios. In Scenario 1, students must conduct investigation and analysis to get to the bottom of shift swapping, fraud, and discrimination issues. In Scenario 2, students must work to overcome a budget shortfall; in Scenario 3, students must decide how to make a vehicle sticker program successful by coming up with the proper finances and technology. The game is a good way for students to practice what they've learned in the program, says Bryce.

Anna Zendell, a faculty program director in the School of Health Sciences, selected the nutrition course HSC 403: Nutrition for Wellness for gamification. She notes there are several factors that prevent people from having access to healthful food, and two games help students understand that.

The first game targets the DASH (Dietary Approaches to Stop Hypertension) diet for cardiovascular disease, where students must pick from a menu selection while staying within the guidelines for sodium, fiber, etc. The second game simulates living in poverty with food insecurity. In it, the student "shops" from the perspective of a family of four, can spend no more than \$25, and must consider different health conditions of family members.

Carmen Roberts, a registered dietitian and faculty member with Excelsior, was the subject matter expert for HSC 403. She was asked to determine how two games could be used in the course. "I really wanted [the students] to be exposed to real-life situations on the challenges that people face, whether it's being healthy or whether it's staying within a budget," Roberts explains. She used real-life scenarios from her patients on which to base the games. She also made sure to look at the back of products for the nutrition facts to make sure the game reflected correct information.

Grading for the games varies by course. Berkery notes that in HIS 350, students aren't graded on gameplay; they get a participation score. Themes in the games are tied to larger concepts discussed in class and a research project. She says it is possible for an instructor to see how many times and for how long students played the game. Berkery was pleased to see students choosing to play as the general on the Western Front 10 or 11 times. That scenario depended on gathering

intelligence and deciding how to launch an attack, so it was interesting to see what different choices students made to influence the outcome.

The choices students make within the MPA 698 game do reflect in their overall grade. Bryce points out, however, that “what really matters is them showing us that they’ve had this practical experience within the game and then they show us their analysis through reports and memos.”

## BRINGING GAMES TO LIFE

Excelsior partnered with Muzzy Lane, a technology company that develops game-based learning software, to actively bring its games to fruition.

Jeff Fiske, the company’s vice president of production, remarks that the most important things to ask when developing a game is, “What do you want the student to gain from this activity? What are the learning objectives?” It is what he asked himself when he developed his first game, Robert E. Lee: Civil War General, in 1995. “I learned to start every software project the same way, and this lesson transitions directly to educational software as well,” he says. “If you answer this question well and use that as a guide, you can get to an inner truth about the content. This content can be experienced in a way that only games can do, that other media can’t.”

From 2015 to 2016, Muzzy Lane and Excelsior worked on the games anywhere from a few months to more than a year. For example, a premise and prototype for HSC 403 was hashed out within a week; the MPA capstone was an “enormous undertaking” that took 13 months to complete. The MPA game is an intricate, complex, multiplayer game, and the subject matter experts involved were new to game design. HIS 350 was “right in between,” says Fiske; the subject matter expert, John Riley, “had a firm grasp on the story he wanted to tell.”

“Overall,” states Fiske, “I wish I could take more credit for how all three of these projects came together, but Excelsior did all the content and I think all three of these projects will be appreciated by the students as real-world applications of practical knowledge through role-playing.”

## BENEFITS OF GAMING

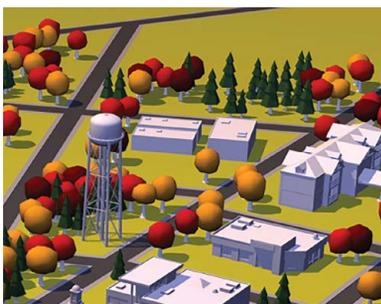
The Entertainment Software Association’s 2016 annual report indicates that 63 percent of American households are home to at least one person who plays video games three or more hours a week. People play games on traditional game consoles, on their computers, or on their smartphones. Since games are now even in the classroom—and appear here to stay—it is important to study their impacts.

According to the 2013 American Psychological Association article, “The Benefits of Playing Video Games,” gameplay has positive cognitive, motivational, emotional, and social impacts. Authors Isabela Granic, Adam Lobel, and Rutger C. M. E. Engels explain that games have: cognitive benefit because they have been shown to improve attention, focus, and reaction time; emotional benefit because they induce positive mood states; motivational benefit because they encourage hard work and effort; and social benefit because gamers can translate skills they learn from multiplayer gameplay to peer and family relationships.

Zendell comments, “So often our courses are ‘read the following, view the following videos, visit the following websites,’ and that’s all good; it’s strong, solid pedagogy... But games certainly have a little more potential to target the social and affective domains of learning, and I think those domains are the ones that help the learning to translate over time, to persist over time.” Gaming helps students retain the material and reinforces the idea of lifelong learning. Students are doing something interactive, problem-solving, and reiterating the knowledge that they’ve learned in a course.

It’s widely held that game-based applications allow students to become transported into real-life scenarios, thus allowing them to become more active learners, rather than just listening to lectures or reading from textbooks. In game-based environments, students are forced to think about the “hows” and “whys” of a situation, not just the facts.

Bryce discusses this idea with the MPA capstone game: “Until you actually have to look at an issue from the standpoint of being a city manager, and how the decisions that you make can affect your citizenry and can affect your fellow workers, then you actually have a different point of view and a different



➡ The games in MPA 698, HSC 403, and HIS 350 transport students into real-life scenarios, forcing them to make difficult decisions from someone else’s perspective.

## RECREATING REAL LIFE IN THE CLASSROOM

**There are several game-based and simulation-based** courses as part of the gamification pilot program. In addition to HIS 350, MPA 698, and HSC 403, there are two simulations: HUM 325: Secrets: A Cyberculture Mystery Game and NUC 350: Plant Systems Overview: Reactor Plant Simulator.

In HUM 325: Secrets: A Cyberculture Mystery Game, students go on multiple quests, accumulate experience points, engage in lively internet forums, and work together to solve the internet mystery at the heart of the course. Learners explore essential questions about how and why the internet has changed and continues to change our sense of identity. Students will create their own evolving, digital story as they analyze, evaluate, and reflect on cyber-based phenomena such as social media, online games and relationships, and engaging virtual realities represented by “The Matrix” and “Neuromancer.”

In NUC 350: Plant Systems Overview: Reactor Plant Simulator, students are tasked with building a power plant system by system. The game covers major system components, controls, and their design features, and emphasizes the systems’ interconnection and functions. Systems are grouped/classified regarding their use and characteristics, e.g. production vs. safety, primary (nuclear interface) vs. balance of plant, active vs. passive.

way to look at that issue that you didn’t think of when you were a student. And so putting it in this place where [students] get to be—they get to run a city—it changes your motivation; you automatically care more about the situation...”

Berkery also agrees with this idea for the HIS 350 gaming course, saying, “The lessons that the games were meant to teach were more about contingency and about the ability to be a historical agent who can affect change rather than things should have gone this way or this way.” She adds that she hopes students take away the idea that nothing is set in stone; nothing is inevitable.

“I also hope they learn the skill of historical empathy, which is something that is stressed in our history program...and that’s the idea that we should judge the past based on the past lens and not based on our present-day mindset,” says Berkery. This is a difficult skill to teach, so gaming offers a way to touch upon this.

All three courses seem to stress the importance of empathy and making decisions from someone else’s perspective. “It’s a chance for [students] to get a real-life perspective on a lot of the complicated decisions that people have to make every day,” says Roberts, referring to the difficult issues some people face, like health concerns such as diabetes or cardiovascular disease, or day-to-day challenges such as staying within a budget or keeping within their family’s preferences.

“It should be eye-opening for the student that it’s not always black and white; that sometimes you have to make sacrifices, and decisions you make about your health every day—there are many different elements that go into that,” Roberts says. “My hope, because many of these students are going on to healthcare careers such as nursing, physical therapy, or even just health education in general, is that they can gain a better understanding of the challenges that their clients in the future will face, and to be a little bit more sympathetic and helpful to them, and helping them basically make the best decision that they can based on what they have access to.”

Zendell notes that HSC 403’s games were so influential on students that some even took the game’s scenarios on as personal challenges in their own lives. Some students tested themselves to stay within the confines outlined within the games, and shared their experiences with their peers in the class’s online discussion boards. “I was a little nervous about whether these games...could touch the heart in that way, in that affective learning domain, and I’ve been really pleasantly surprised how well [the students] did,” reports Zendell.

The pilot program continues until fall 2017 before results are organized. If the games meet the student learning outcomes and improve student engagement and retention, administrators will consider an implementation plan to include games in additional courses. So far, those involved believe that other courses also could be successful as game-based courses.

Anecdotal feedback shows that the students have appreciated these courses. One learner commented on HIS 350: “I enjoyed the active role-play for the gaming module. It made understanding the material easy.” For HSC 403, a student noted the idea of cultural humility: “I felt that the gaming activities highlighted some important real-life scenarios for families, as most of us have money struggles at some point in our life. These activities really made you sit down and consider a variety of elements in making the best food decisions on multiple levels.”

Even if it’s not with games, creating something interactive in courses can be beneficial to students. Zendell indicates that you don’t want a game just for game’s sake; you want students to grow from the experience. When students engage in course material, they become better active learners. In turn, they apply classroom teachings to the everyday world and continue their lifelong learning. ■