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### Proceedings of the 3rd Annual CUNY Games Festival

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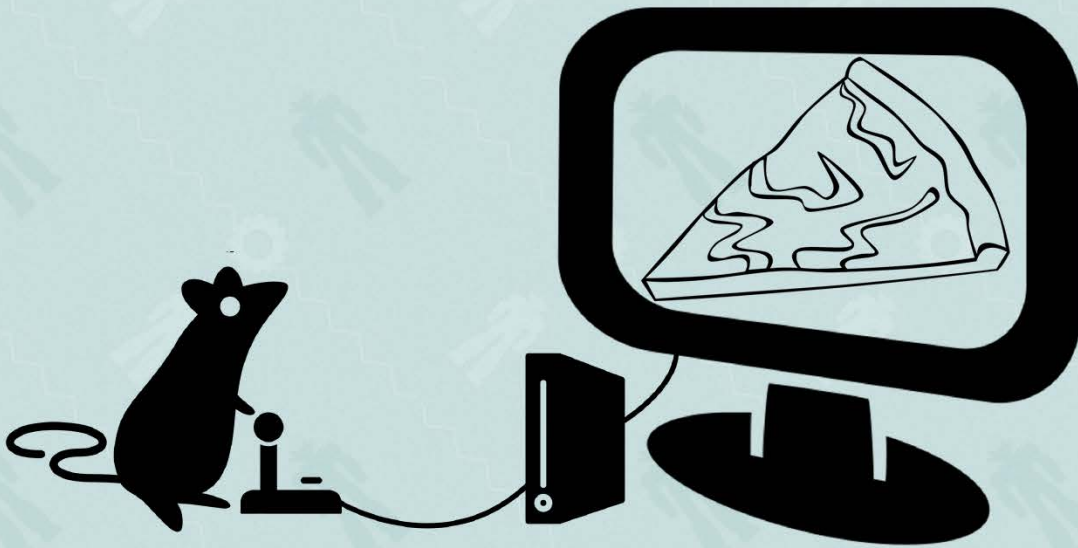
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# Proceedings of the 3rd Annual CUNY Games Festival



**January 22 - 23, 2016**

**The Graduate Center  
City University of New York  
365 Fifth Avenue  
New York, NY 10016**

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# Proceedings of the 3<sup>rd</sup> Annual CUNY Games Festival

The CUNY Games Network, City University of New York

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# About

## About CUNY

The City University of New York provides high-quality, accessible education for more than 269,000 degree-credit students and 247,000 adult, continuing and professional education students at 24 campuses across New York City.

The University is an integrated system of senior and community colleges, graduate and professional schools, research centers, institutes and consortia. From certificate courses to Ph.D. programs, CUNY offers postsecondary learning to students of all backgrounds. It provides the city with graduates trained for high-demand positions in the sciences, technology, mathematics, teaching, nursing and other fields. As CUNY has grown, the University also has strengthened its mission as a premier research institution, building an array of modern facilities and expanding the ranks of its world-class faculty. Throughout its history, the University has been an integral part of the city and state through partnerships with public schools, economic development initiatives, immigration aid and financial advice services and other community outreach programs. Today, CUNY faculty and staff members continue to benefit New York City — as well as the entire nation — by serving as policy experts to business and government, advisers to nonprofit institutions, civic organizations and community groups. Students, too, are strongly encouraged to experience the cultural, educational and community-based opportunities of the five boroughs, through a network of internships and fellowships, to embracing the city as their campus.

## About the CUNY Games Network

The CUNY Games Network is an organization dedicated to encouraging research, scholarship and teaching in the developing field of games-based learning. We connect educators from every campus and discipline at CUNY and beyond who are interested in digital and non-digital games, simulations, and other forms of interactive teaching and inquiry-based learning.

# Summary Itinerary

## Friday, January 22<sup>nd</sup>, The CUNY Graduate Center

8:45 AM	Registration and Coffee
9:15 AM	Welcome and Opening Remarks
9:30 AM	Session 1
11:00 AM	Plenary Panel
12:00 PM	Lunch & Poster Session
1:30 PM	Session 2
2:45 PM	Coffee Break
3:00 PM	Session 3
4:15 PM	Break
4:30 PM	Session 4

## Saturday, January 23<sup>rd</sup>, BMCC

The second day of the conference is much more informal. Most of the day we will be playing board and card games (both educational and entertainment) together in a social, bonding atmosphere. We welcome you to bring your own educational games for play testing and feedback. Also, we will feature one friendly game design workshop. Both the workshop and the game play will inspire you to create your own gamed-up, instructional lessons. We hope to see you there!

10:30 am – 6 pm	Borough of Manhattan Community College (BMCC) 199 Chambers St. New York, NY 10007
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# Full Schedule

Friday, January 22<sup>nd</sup>

The CUNY Graduate Center

365 Fifth Avenue between 34th and 35th Sts, New York City

8:45 am – Registration, Coffee, and Icebreaker

9:15 am – Welcome and Opening Remarks

## Session 1 – 9:30 to 10:45am

Room C202	Literacy and Story
Room C203	Anything Can be Attempted: In-Person Simulations and Role-Plays in Educations
Room C198	Game Design
Room C197	STEM

11:20 am – Break

11 to 12pm – Plenary Panel Session – Main Auditorium

12 to 1:30 pm – Lunch and Poster Sessions (Rooms C204 & C205)

## Session 2 - 1:30 to 2:45 pm

Room C202	STEM
Room C203	Design Research
Room C198	Literature and Story
Room C197	Awareness: Gender and Sex

2:45 to 3 pm – Coffee Break

## Session 3 - 3:00 to 4:15 pm

Room C201	Transformative Games Initiative: Game Design as a Classroom Laboratory for Any Discipline
Room C202	Narrative and Rhetoric
Room C203	Design Challenges
Room C198	Information Literacy and Language
Room C197	STEM

4:15 to 4:30 pm – Break

### Session 4 - 4:30 to 5:30 pm

Room C201	Game Design for All: What's Your Game Plan? Turn Any Idea into a Game!
Room C202	Ghosts in the Machine
Room C203	Game Types and Design
Room C198	Research and Perspectives
Room C197	Gameful Classrooms

## Saturday, January 23<sup>rd</sup>

**Borough of Manhattan Community College (BMCC)**  
199 Chambers Street  
New York, NY 10007

### Game Day, 10:30 am to 6 pm

On this more informal day, we will be playing popular board/card games and offering feedback to educational games that attendees have created. Feel free to bring games of your design. We will have game designers on hand! During this time we will get to know each other better and hopefully discover opportunities for future collaborations.

### **2nd Day Workshop:** “Playing and Redesigning Commercial Board Games For Training and Instruction” by Joe Bisz

Co-organizer Joe Bisz ([www.joebisz.com](http://www.joebisz.com)) will be facilitating this unique workshop of his own design. This is a 2-hour event where faculty and staff can play a few carefully selected commercial board games together. While playing, participants will read over reference cards that not only break down each of these popular game’s core mechanics, but explain how the game might be re-designed for any training or instructional exercise. When finished playing, participants will pick one lesson or instructional goal, and spend 30 minutes designing a new instructional game, one that mimics and is inspired by the first game.

## Abstracts

*\*Affiliation and contact information listed for corresponding author*

### THE DEVELOPMENT OF GAME-BASED VIRTUAL PATIENT SIMULATIONS FOR COMMUNICATION SKILLS PRACTICE AND ASSESSMENT IN HEALTH PROFESSIONS

**Cyrille Adam & Allisun O'Connell**

KOGNITO

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Substance abuse remains one of the largest public health issues facing our society. Early alcohol and drug use is linked to a range of immediate and long-term consequences, and recent data shows that youths are widely using drugs and alcohol. The cost of substance use disorders (SUDs), in both adults and adolescents, can be reduced through Screening, Brief Intervention, and Referral to Treatment (SBIRT), which is an effective protocol for the early identification and treatment of problematic alcohol use. This process involves an initial assessment of an individual's substance use, followed by, as appropriate, a brief motivational conversation about substance use, with collaborative planning for behavior change, and/or a referral to specialist treatment. However, education and training on SBIRT are often optional or specialized, as opposed to being required course work in higher education programs for health professionals. In addition, there is widespread agreement that learning the communication skills needed for SBIRT is best achieved through active and deliberate practice rather than didactically; yet most education programs, at best, provide practice opportunities through role-play with standardized patients, a costly and logistically difficult solution to implement that provides little fidelity in skills training and assessment. To address this problem, technology company Kognito is partnering with NORC at the University of Chicago, nursing and social work professional associations and accrediting bodies to disseminate two innovative game-based SBIRT simulations for skills practice and assessment in over 60 schools of nursing and social work. These simulations allow health professionals to learn about the SBIRT framework, as well as techniques like motivational interviewing that have been shown to help engage patients or clients on the topic of substance use and other health behaviors, and improve their motivation to abstain from or lower substance use. In addition, these simulations offer a virtual practice environment in which learners can practice conducting brief interventions with fully animated, emotionally-responsive virtual patients with realistic personalities and medical conditions. Learners can choose what to say at each turn, see how the patient reacts, and receive feedback from a virtual coach and other in-game features. These simulations also offer automated, in-conversation scoring of learners' competency in applying the conversation model and using a motivational style. This interactive presentation will provide a detailed view into the development of these simulations, the ongoing collaboration with subject-matter experts to define learning goals, minimum competencies for assessment, and scoring systems. The presenters will also provide an overview of research on providing learners with adaptive feedback, and of the iterative development of a comprehensive user dashboard. Finally, this interactive presentation will provide attendees with an opportunity to interact hands-on with these simulations.

## SUPER MARIO WORLD AND GAME-BASED LEARNING: NEW LITERACY DEVELOPMENT IN ADULTS

**Beatriz Albuquerque**

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This study is focused on media literacy, game-based learning and its relationship with development of critical thinking in an adult educational arena, and looks at the applicability of various approaches to game-based learning, and how adults learn through game-based learning. Twenty-first century higher education is unimaginable without media literacy skills such as the use of the internet, touchscreens and e-readers, keyboards and mice, software and the like. Students and facilitators alike must utilize these skills to even begin to access new technologies which are inextricably linked with the higher education sector. But media literacy is not the focus of higher education, only the medium through which education is now largely transmitted. How game-based learning is transposed to real life learning, and how that relates to developing media literacy as well as critical thinking skills is the framework of the study. Gamification learning can be transposed to the classroom in a higher education setting.

## TABLETOP EXERCISES AND TABLETOP GAMES: BRIDGING THE GAP

**Tavis Allison**

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Tabletop exercises and simulations are essential tools for training and preparedness in the fields of emergency management, security, public safety, and medical education. Learning to design and conduct these "serious games" can prepare students for careers in these fields. Can student interest in recreational tabletop games be leveraged to increase engagement in pre-professional education? How might tabletop exercises be enhanced using game design elements familiar from tabletop games? This presentation will review the standards established by the Homeland Security Exercise and Evaluation Program (HSEEP) and lead participants through the collaborative process of designing a game within its constraints.

## THE GAME OF COLLEGE

**Melissa Barlett**

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Two years ago, I presented the in-progress version of the Game of College, a game created to help community college students get an idea of what is expected of them to earn an Associate's degree. Since then, the game has been updated, modified, and played by numerous students and faculty. The current version makes a great college success classroom activity and could act as a model for every school to create their own version so that their students can also win The Game of College to earn their degree.

## INTEGRATING BOARD GAMES INTO A SCIENCE CLASSROOM

### **Melissa Barlett**

MOHAWK VALLEY COMMUNITY COLLEGE

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In a community college setting, the student body is often diverse and students come from many backgrounds and levels of preparation. Science classes make this distinction even more apparent, with the material requiring a large amount of time and effort to understand. Often, games such as Jeopardy are used to review concepts, but this can further enhance the divide between those who easily understand or have more time to study and those who are less confident or slower to pick up the concepts. I have been integrating board games based on scientific concepts into the classroom to help have a more inclusive gaming and review experience. The games do not require the external knowledge to play and win, but create an open situation for discussion of difficult topics such as cellular respiration.

## ROLEPLAYING HISTORY: A POLITICAL SIMULATION OF WORLD WAR II IN THE CLASSROOM

### **Michael Barnhart**

STONY BROOK UNIVERSITY, DEPARTMENT OF HISTORY

*michael.barnhart@stonybrook.edu*

Michael Barnhart has spent the last 18 years developing and running a political simulation of World War II for undergraduate history students at Stony Brook University. Barnhart will discuss how he has designed, iterated, and facilitated the simulation through the years. Barnhart has run the class every other year. As of January 2016 the simulation will have just finished its tenth iteration (not counting the multiple instances of the simulation run by class alumni for their own enjoyment). Students take the WWII Simulation class for credit. It has proved exceptionally popular with students, many of whom join the waitlist a year — sometimes two years — in advance. Students break into teams representing the major powers of WWII. Each student chooses a role from within their nation's top leadership. While students are free to make decisions which differ from history, they must role-play as their historical figure. To support this, each student starts the game with a basic understanding of their figure's attitudes and goals, which, as in reality, often fail to align with other members of their own government/team. Final assignments include a biographical research paper on the student's chosen figure as well as a mock-journal written 'in-character' throughout the semester. Outside of students' role-played decisions, the simulation strives for accuracy. In addition to his own qualitative insight (especially when determining non-player-character actions), Barnhart uses detailed spreadsheets to determine the results of various political, economic, and military moves made by students. Finally, Barnhart's talk will include a discussion of his learning objectives and performance assessments. One key objective is that students understand the factors senior policymakers had to consider given the radical asymmetry of positions. For example, while the student playing Franklin Roosevelt never has to worry about losing his home country, the goal of China's Wang Ching-wei is to forge a nation of his own. Needless to say, the performance of these two students cannot use the same yardstick.

## "HI, I'M BETH" -- SPEED DATING FOR EDITORS: WHY GAMES OF INTRODUCTION ARE CRITICAL FOR THE COLLEGE CLASSROOM

**Beth Boswell**

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One of the most intimidating moments in our students' lives happens on the first day of school. Each semester, students pour into our classrooms with trepidation about their courses, their professors, their classmates, and (perhaps most importantly) their position within the learning community. For our newest college students, the first days of school in each course offer an opportunity for new invention – will they continue to be the person they were before they walked in on campus? Will college offer them the opportunity for a new beginning? Is this the place where a once-socially-shy student blossoms into a lesson-leading powerhouse? Is this the place where an extraverted socialite finds they feel insecure and awkward amongst a new group of peers? Whether we acknowledge these social anxieties or not, their presence determines a significant portion of our students' identities as learners. This presentation explores an introduction game called "Speed Dating for Editors," developed for my freshman composition courses at the University of North Alabama. It is a suggestion for playful introductions between students in which they learn more about one another than a mumbled name and a general seating area in the classroom. It encourages students to look each other in the eyes, shake hands, and sit for a moment of brief introduction which encourages a greater sense of classroom community, eases the tension of first-time introductions, and presents an opportunity for students to learn skills to identify study mates who can hold them accountable in every class of their collegiate careers.

53X (WORKING TITLE)

**Marty Buccafusco**

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53X is a casual learning mobile game that will be designed to prepare players for real world sexual encounters by allowing them to experience the circumstances that might occur during genuine social situations. Gameplay will be generally text-based and loosely implement the mechanics of a trading card battle game. Players will build a diverse deck of characters that can be used to engage in "battles" presented as simulated social encounters relating specifically to sexual relationships. The learning goal is to teach players how to make mindful decisions about sexual behavior, thus promoting safer and more respectful practices. 53X will incorporate characters and events that present players with the opportunity to simulate social situations that can lead to sexual encounters. In doing so, players will gain experiential awareness of the decision--making that leads to sex and the possible consequences of those actions. Risky behavior will not be vilified, so as to maintain a morally impartial stance on the topic. Instead, the game will reward players with attribute points for choices that do not result in negative outcomes. In real life, not all risky decisions lead to negative results, some trusting and loving relationships can still be dangerous (due to cheating), and sometimes prudent behavior can still result in tragic consequences (such as date rape, slut shaming, or physical abuse). By allowing teenagers to role play through simulated experiences, they will be exposed to a wide range of personalities, have the opportunity to test multiple hypotheses, and encounter numerous unexpected variables. This situational knowledge should influence their real world decision--making in ways that traditional in--school learning cannot. The game will also provide players with a unique learning environment that reflects the language and cultural norms of their communities. Learning opportunities will be presented in subtle, yet meaningful ways and will draw upon multiple cognitive science theories of learning – particularly anchored instruction and cognitive flexibility. Rather than replace traditional methods of sex education, 53X will indirectly

supplement in--class curricula by providing the player with opportunities to both demonstrate her current knowledge, gain real--world experience, and be introduced to topics not covered in traditional classroom environments. Sexual encounters vary in countless ways, yet the basic tenets of safe and respectful practices are essentially quite simple and specific (i.e., use birth control, respect yourself and your partner, communicate clearly, use protection, avoid chemically-induced decision-making). The key in sex education is to provide learners with this basic knowledge that they will be able to apply to a host of unforeseen circumstances. Teenagers have little to no experience with the vast array of sexually--based situations that await them. 53X will provide them with a space to follow their instincts, experience both positive and negative results, and assess the consequences - all within the safety and privacy of a videogame. This is a new spin on sex ed and a new spin on game-based learning.

## INTEGRATING GENERAL EDUCATION, COMPUTATIONAL THINKING AND INTERDISCIPLINARY AWARENESS IN GAME DESIGN

**Reneta D. Lansiquot, Candido Cabo & Tamrah D. Cunningham**

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To introduce computational and interdisciplinary thinking for non-computer majors, we created a general education (liberal arts and sciences) interdisciplinary writing-intensive course, *Programming Narratives: Computer Animated Storytelling*, in which students integrate writing and problem solving with computer programming to produce a narrative-driven video game prototype. In this course, students write original video game stories and then present their ideas to their classmates who choose a few story ideas to develop and then revise these stories collaboratively, initially using concept maps to represent the current story. Finally, each student develops an engaging character side-quest (i.e., a branching story path) and an accompanying concept map, an illustration created to represent the elements of a plot and/or the relationships between characters. Students must also present a rationale explaining why the side-quest is meaningful for the protagonist as well as for the target audience of the game. The final game design document, which accompanies student groups' video game prototype or trailer as part of the final project, includes sections on the analysis conducted (video game narrative, target audience, delivery platform, and review of competing games), design (player characteristics, game mechanics, and challenge), and project description (video game prototype, review of relevant literature, pseudocode, concept maps and storyboards). In order to explore the concept of "story," students are introduced to Aristotle's *Poetics* and his six elements of drama, "unity of action," stages of the plot, and types of conflict in various media genres, emphasizing those found in recent movies and classic stories. Students then learn Joseph Campbell's theory of the hero's journey, a structure as common in ancient epics as in more modern works and movies. This narrative structure works especially well for heroic quests and epic adventures. Short narrative readings of various kinds are assigned to help students make connections between classic literature and modern styles of storytelling—that is, between general education and computer science. These works range from Leo Tolstoy's "The Three Questions" and Sophocles' *Oedipus the King* to Richard Connell's "The Most Dangerous Game" and Ray Bradbury's "A Sound of Thunder." Students collaboratively implement their stories using Alice ([www.alice.org](http://www.alice.org), a publicly available computer programming environment that supports the creation of three-dimensional animations as a video game prototype) and they learn computational thinking concepts along the way. Early on, students are tasked with, for example, reading and annotating "The Three Questions," and then creating a scene from this story in Alice explaining its significance, as well as applying the hero's journey plot structure to *Oedipus the King*. The structure of narratives and concepts of problem solving are introduced by using the logical constructs inherent in computer programming languages. In this presentation, we will explain how reading classic literature, creative and technical writing, and computer programming can be best integrated to create a video game



prototype and to help students transfer skills between general education courses and specialized professional courses.

## USING GAMES AND GAME COMPONENTS TO TEACH NUMBER SYSTEMS AND COMPUTER CONCEPTS

**Daryl Dates**

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Two games were created which were used in a computer hardware class to teach students how to convert between different number systems: binary, decimal, octal, and hexadecimal. The game components are also used as manipulative models to explain and demonstrate related concepts and terminology with concrete examples. One group of students played a card game where players lay cards as tiles, matching the bits (ones and zeros) of vertically adjacent cards, in order to create the hexadecimal number that is on their goal card. The game was made more challenging by requiring students to perform binary to hexadecimal number conversions and write the results on their cards with an erasable marker as cards were played. Another group of students played a dice game that used dice labeled with positional notation, indicating the place value and number system of each die. Students must determine the value of a set of dice, and then decide whether to save their progress and end their turn or roll again and push their luck. Students begin with decimal dice, but move on to other dice that represent binary, octal, and hexadecimal numbers, requiring students to perform number system conversions to add these dice rolls to their scores. These games are a work in progress, but will continue to be refined and used in future classes.

## PLAYING VIDEO GAMES TO LEARN ABOUT THE NATURE OF SCIENCE AND TECHNOLOGY? INVESTIGATING THE LEARNING POTENTIAL OF FALLOUT 3/4 VIDEO GAME PLAY FROM A SCIENCE EDUCATION PERSPECTIVE

**Stephen DeMeo & Dennis M. Robbins**

HUNTER COLLEGE OF THE CITY UNIVERSITY OF NEW YORK  
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Three important goals of science education in terms of student learning as well as of the preparation of new science teachers, are to understand the nature of science (NOS), the nature of technology (NOT), and how these disciplines relate to society. It is clear to us that there is great potential in NOS and NOT education within the 21st Century video game culture. The Fallout video game series is a popular and acclaimed open-world role-playing game (RPG) that creates an alternative American history set in a post-apocalyptic world. The third and fourth games in this series possess significant story threads related to NOS and NOT. This presentation will examine selective game play from the Fallout 3/4 video games that capture key aspects of the NOS-NOT-Society relationship. An interactive discussion of potential strategies about how to use Fallout in the science education classroom will be presented.

## A NOVEL METHOD FOR MEASURING AND FOSTERING GROWTH MINDSET USING GAMES

**Ecem Olcem & Robert O. Duncan**

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Implicit theories of intelligence suggest that beliefs about intelligence influence one's behavior, goals, and success in challenging situations. According to this view, individuals who have a fixed



mindset believe intelligence is a fixed trait that cannot be changed, while those who have a growth mindset believe intelligence is malleable. Further evidence suggests these beliefs are domain-specific. In most research paradigms, mindset is measured using self-reports, surveys, and Likert scales. The validity of these subjective measurements is called into question. While more objective measurements of mindset exist, they are relatively rare. Digital games afford objective, real-time measurements of behavior that can be used to influence player attitudes. This exploratory study will use games to collect online measurements of mindset. It is predicted that these online measurements can be used to positively affect both performance and, in turn, mindset. Furthermore, it is predicted that changes in mindset will transfer to different lessons and domains. Participants will be recruited from an undergraduate research subjects pool at York College of The City University of New York, an ethnically diverse urban institution. Participants will be screened, and students with prior knowledge of physiological psychology will be excluded from the study. Participants will be randomly assigned to one of two groups. In each group, participants will play a game designed to teach students about structure-function relationships in the human brain. Measurements of performance will be acquired using accuracy and reaction times for matching structure-function pairs. Measurements of mindset will be acquired using a two-alternative forced-choice paradigm (2-AFC) where participants must choose between a familiar challenge and a novel challenge. Affinity for novel situations is presumed to reflect a growth mindset. In the experimental condition, mindset data will be used to adjust task difficulty in a way that fosters growth mindset. The control condition will be identical to the experimental condition with the exception that mindset data will not be used to adjust task difficulty. Performance for subjects in the experimental condition is predicted to exceed that for control subjects. Additionally, a greater number of subjects in the experimental condition are expected to convert from fixed- to growth-mindset. In a second experiment, the same subjects will participate in digital and text-based learning experiences within the same domain, physiological psychology, and in a new domain (e.g., physics). For digital games, performance and mindset data will be collected online, but these measures will not be used to foster growth mindset. For text-based methods of learning, performance and mindset data will be collected using standard methods (e.g., post-intervention surveys). Performance for participants who previously adopted a growth mindset is predicted to exceed those for control subjects who did not adopt a growth mindset. Others have demonstrated that rewarding intelligence, as opposed to effort, has a negligible effect on performance. Unlike traditional methods for analyzing mindset, games offer new opportunities for collecting and assessing data in real time to provide learners with just-in-time feedback. We predict that this immediate feedback is critical to improving both performance and mindset.

## A GAMES-BASED LEARNING APPROACH TO TEACHING AND ASSESSING STRUCTURE-FUNCTION RELATIONSHIPS IN FUNCTIONAL NEUROANATOMY

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At present, the education system in the United States is unable to compete with many countries on standardized assessments of performance in science, technology, engineering, and mathematics (STEM). Undergraduates in the United States are taking longer to graduate than before, and fewer students are completing degrees in STEM. Active learning, inquiry-based learning, undergraduate research, and other high-impact practices are known to increase student performance in STEM. Game-based learning is an active-learning pedagogy that provides opportunities for focused practice, self-paced learning, and just-in-time feedback. Consequently, we developed a game-based learning program to improve learning outcomes for students of functional neuroanatomy. Participants will either play an adaptive digital game that adjusts task difficulty according to performance, or they will play a non-adaptive game. It is predicted that students who participate in the adaptive game will outperform students who play non-adaptive games. Undergraduate students

will volunteer for the study through the York College Research Subjects Pool. All participants will be 18 years or older and will provide consent to participate in the study. Participants with prior knowledge of physiological psychology will be excluded from the study. Eligible participants will be assigned an ID number that cannot be traced back to their identities. Participants will be compensated for their time via research credits, applicable towards the fulfillment of a course requirement. Participants will be randomly assigned to either an experimental or control group based on the day of participation. Participants will play a digital game based on a classic “first-person shooter” (FPS) where they must combat opponents. Each encounter with an opponent provides an opportunity to challenge participants with a structure or function in neuroanatomy. Participants must correctly match the sample with its appropriate structure-function complement. Progression through the game will require correct decisions. Reaction times will also be measured. Task difficulty will be adjusted using performance data and a 3-up/1-down psychophysical staircase procedure. Participants will receive immediate feedback on performance to better inform their decisions. Participants in the control group will play a non-adaptive version of the game that also does not provide just-in-time feedback. In addition to in-game assessment of performance, participants will complete a pre- and post-intervention assessment of functional neuroanatomy. Pre- and post-intervention scores will be compared to assess learning for both experimental and control groups. Participants who play the adaptive version of our game are expected to outperform participants who play versions of the game that do not adapt to student performance. This game-based learning approach has implications for student success in STEM. While this game is designed to address structure-function relationships in physiological psychology, the core game mechanics can be adapted to any match-to-sample task in a variety of disciplines. This quantitative games-based learning approach may contribute to closing the international achievement gap in STEM.

## A NOVEL METHOD FOR CONTROLLING NARRATIVE FLOW IN GAMES

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Game-based learning (GBL) is now an established genre of active learning with the potential to become recognized as a high-impact practice. Most GBL research seeks to improve learning outcomes by adjusting task demands using player performance. Dramatic elements are also included in games to enhance engagement, which can have a positive effect on learning outcomes. While most classic media like books and movies employ linear narratives, games often use emergent narratives to introduce story elements in quasi-random order depending upon player choice. Emergent narrative is a distinctive feature of gaming because it gives players a sense of autonomy and agency in virtual worlds. However, classic dramatic elements (e.g., story arc, climax, and denouement) and structures (e.g., the Hero’s Journey) are difficult to implement in a quasi-random narrative. For example, a player could conceivably start their game with the denouement in a truly random narrative. The interaction between emergent narratives and in-game assessment is also problematic. Games that use performance metrics to improve learning outcomes also use performance to drive the narrative. However, because the narrative flow depends upon performance, the narrative cannot be used independently to improve engagement independent of performance. We argue that narrative should be used to engage players when performance is lacking. David Huron’s (2006) theory of anticipation (ITPRA theory) posits that novelty is the most important factor in driving engagement. Unlike Csikszentmihalyi’s (1990) well-known theory of flow, ITPRA theory can account for boredom during a monotonous task even when performance has plateaued. Learning outcomes might be better served by measurements of novelty. Consequently, we developed a method for controlling narrative flow in a game using measurements of novelty that are orthogonal to performance. It is predicted that performance for our game will be enhanced relative to a control condition where narrative flow is governed by performance. Subjects will be recruited from the York College Research Subjects Pool to participate in a game that was designed

to teach students about structure-function relationships in neuroanatomy. The game will present students with challenges where they must match neuroanatomical structures to neurological behaviors, or vice versa. Subjects will also be asked to choose between familiar and novel challenges. The dynamics of each branch in the story will vary in emotional intensity or content. While performance data will be used to adjust task difficulty throughout the game, the story dynamics will be independently controlled by measurements of novelty. For example, a player that consistently chooses familiar or random quests is presumed disengaged. Players that consistently choose novel quests are presumably engaged. When players are disengaged, they will be presented with more dramatic story dynamics and new story elements to enhance engagement. When players are engaged, they will be presented with fewer dramatic story dynamics and no new story elements. It is predicted that performance will be enhanced for conditions where novelty is used to control narrative flow. Independent control of narrative flow may be used to enhance engagement independent of performance, which has implications for GBL.

## GEM SPINNER: CREATING A SANDBOX FOR LEARNING PROBABILITY

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Gem Spinner is a growth game prototype designed to be a commercially viable mobile game that provides players with a sandbox in which to learn probability. The target audience for the game are high school and college students, though ideally the gameplay will be accessible to a broader audience. As a self-funded indie game by Fay Games, a small team of developers have been working on the project since May 2015. The development team includes experienced professional game developers (2+ decades of experience) and undergraduate students, so we can also discuss the merits and challenges of such team composition. The efficacy of the game is unknown as of the time of this writing, though we hope to have more data to share in the future. For this presentation, we describe in detail the design goals (both for educational value and entertainment value), the development process, and our assessment plans. We will also include a live demo of the current prototype of the game.

## WRITING GAME RULES AND INSTRUCTIONS AS A COMMUNICATION EXERCISE

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For several years now, I've been teaching game design and programming in interdisciplinary media arts programs in higher education. To teach beginning students the importance of observation during playtesting, I require them to playtest their games as silent observers outside of the play experience. They cannot be players, nor can they run the game or intervene in any way to clarify the rules. The players of the games must use the written rules, game space and pieces, and their own agreed-upon assumptions (should there be any confusion) to play the game prototypes. I originally did this because I believed that student game designers might learn something useful about their games by seeing how others played the games without their interference. Players might, for example, adopt a rule that the designer didn't intend that actually results in a better game. The designer could then incorporate the modification into their design and test further. But over the years I've collected anecdotal evidence that students also learn important lessons in written and visual communication from this exercise. Players of their games misunderstand complicated rules that could have been explained instead with a series of diagrams showing possible play scenarios. They make shared assumptions when the designer's grammar is unclear. They butcher the rules and

play a game that's very different than what the designer intended. Most students care about their game designs, and thus it can be a frustrating experience for them to watch others misinterpret what was very clear in their own minds and not be able to intervene. The questions I am interested in investigating is: how does this exercise relate to learning activities in writing (especially technical writing) and visual communication fields? Are there activities from those fields that I can incorporate into my own teaching to improve this and other activities? Is this activity worth studying in a larger study to find out if it might be useful to other fields? I've only just begun researching these questions, which is what lead me to submit this proposal in the exploratory category and as a short presentation.

## INFORMATION GAMES & THE SCHOLARLY CONVERSATION

### **Nancy Foasberg**

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Both writing and library pedagogy recognize a social aspect to writing and research. The new Framework for Information Literacy puts particular emphasis on it with frames like "scholarship as a conversation." The notion of the scholarly conversation draws heavily on Kenneth Burke's famous parlor metaphor. In this metaphor, participants find themselves in the midst of a conversation in progress. By listening carefully, they are eventually able to participate in the conversation, which continues long after they leave. Games, like writing, is are social experiences, and we can use them to teach students about scholarly communication. Social deduction games are a popular board game genre in which players use ambiguous information to discover whether other players are their friends or their foes. Such games provide an opportunity to consider the uses of rhetoric in signaling affiliation. Alexandr Ushan's 2014 game, *Spyfall*, goes a step further. In *Spyfall*, players find themselves in a specific location; most know what the location is, but one player—the "spy"—does not. Players ask each other questions, attempting to uncover the spy. *Spyfall*, then, is a Burkean parlor. The spy's role is to listen carefully enough to become a participant in the conversation, while the other players must choose their answers carefully to "prove" that they belong in the conversation in progress. This presentation will explore how *Spyfall* and similar games might be used to teach rhetorical concepts in a more accessible way. If the Burkean parlor is useful as a vivid metaphor, a more interactive version of it allows students to consider more carefully how this scenario works out in practice. Additionally, this facilitates discussions about the accessibility of scholarly communication.

## USING SIMPLE STUDENT SURVEYS TO INSPIRE AND AUGMENT GAME DESIGN

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As professors, we frequently know when our lessons are not reaching our students, but we are not always sure what should be changed to improve the delivery of the lesson. It is easy to think "a game would be better" but more difficult to determine the objective and mechanics for a game. Using a simple survey of students can help to identify what is not working, the way in which it is not working, and how a game can be designed to improve the lesson. This presentation is based on a Fall 2015 study conducted in a First Year Studies Program. For seven years, professors in the program had attempted to devise a game or other more effective learning activity but had been unable to do so. The study began with a simple four question survey which gauged student impression of the Paul and Elder Critical Thinking Elements after the initial lecture explaining the Elements. The examination of the data allowed for the development of a game to introduce the Elements in a more effective way. Although the game based solution will not be tested until Spring

2016, the process of surveying students and analyzing the data helped the faculty to realize a key constituency whose needs were not met through the traditional presentation and to develop a method of delivery that will benefit that constituency and many other students as well. It is believed that this process can offer similar insights to faculty across higher education, leading to improved student learning.

## TEACHING STATISTICAL LABORATORY SESSIONS THROUGH A GAMIFIED LEARNING EXPERIENCE

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Fifty students from an undergraduate psychology statistics course will be assigned to an experimental group that adds a gamified learning program to standard laboratory activities (n=25) or a control group (n=25). Pretest and posttests will assess material learned in lab. The design will be a 2 (types of the tests: pre-post tests) X 2 (types of groups: lab in a gamified learning environment versus traditional lab) mixed factorial design. The traditional lab section will consist of weekly multiple-choice quizzes on the class lecture, review of course content, and in-class SPSS activities. The gamified learning section will add reward-based gamification tools. The study will be carried out over 5 weeks. In Week 1 students will be given a diary to report weekly time devoted to studying. They will take a posttest at the end of Week 5. The pre-post tests will be only related to lab materials. The gamified learning group will have a shared dropbox folder with the instructor to follow points earned and a leadership board. We hypothesize that post-test scores of students from the gamified learning class will be higher than the traditional class. If the research hypothesis is supported, additional undergraduate courses might be enhanced via gamified learning tools.

## USING GBL TO ENHANCE WRITING AND TO SPECULATE ON THE FUTURE OF EDUCATION

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Students at CUNY's Medgar Evers College are experimenting with the future of writing and literacy by playing games. Presentation will examine student process and outcomes piloting Toolwire.com's writing game sequence at Medgar Evers College. For over 15 years, Toolwire has developed, hosted, and supported immersive learning tools for online and blended learning courses within some of the world's largest Higher Education institutions, K-12 Virtual Schools, Publishers, and Enterprises. Their Game-based Learning and Virtual Desktop products and solutions allow educational institutions to engage learners and prepare them for success in the classroom and the workplace. This study seeks to enhance student essay writing skills, but also to speculate on how these types of learning tools might affect students of the future. Using the platform of a 300-level writing intensive Young Adult Literature class in which the population is racially, culturally, linguistically, learning and physical ability diverse and inclusive, the pilot gives Education majors interested teaching English Language Arts the chance to experience GBL. The foundational pedagogy of the syllabus is focused on social justice and how to experience literature and writing in multimodal ways. The aim of the pilot was to assess how unconventional students interact with unconventional learning methods, and to assess if and how GBL might increase academic writing skills. Toolwire's highly authentic game-based simulations incorporate live-action video characters filmed both on-set and on-location; cognitive research supports how realistic experiences elicit emotional responses lead to deeper learning. The presentation will be led by Professor Tonya C. Hegamin, MFA who developed the course curriculum and coordinates the MEC Creative Writing



program in the English Department. Students from the class will also be invited to speak about their gaming experience. Deirdre Cohen, Toolwire Client Success Manager, and Peyton Williams, Toolwire Director of marketing will also speak about Toolwire's products and how they address issues of diversity and inclusion.

## EXPERIENCING THE BUFFALO STATE INSANE ASYLUM: A 3D RECONSTRUCTION AND GAME NARRATIVE

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This presentation will discuss an undergraduate 3D animation project and interactive game examining the architectural history and cultural meaning of the Buffalo State Insane Asylum. Now known as the Richardson Olmsted Complex, the Asylum was a collaborative project between noted American architect H.H. Richardson and famed landscape designer Frederick Law Olmsted. A state-of-the-art facility when completed in 1895, the Asylum was built on the so-called "Kirkbride Plan," which sought to ease mental and psychological distress via architectural reform. Though scholars continue to debate the efficacy of asylum reform, it remains a key area of study. Through our students' game-based narrative, visitors may step inside a virtual atmosphere that simulates a nineteenth century asylum experience. Early promise of such environment was articulated by the thirteen asylum superintendents, who were among the first citizens in America to advocate for state funding, discuss treatment options, or to share classification systems and statistical information regarding rates of insanity. Very early, however, literary figures began to criticize asylums as ghastly haunts and monstrous institutions that perpetuated rather than relieved the tortures of insanity. Finally, asylum patients themselves drafted narratives describing their time in the asylum. The most well known and widely read patient narrative is that written by Elizabeth Parsons Ware Packard, who was committed to the Jacksonville Insane Asylum. Once released, she founded the Anti-Insane Asylum Society and published a book revealing details about her treatment in the asylum. Other patient narratives find the asylum surroundings less confining and leave declaring themselves cured of a "temporary insanity." The narrative game, currently under development, will allow players to explore the space by choosing one of three different characters, each a composite of individuals who spent time in nineteenth century asylums. The gameplay highlights how a person's gender and economic standing could have a profound impact on how they experienced the asylum. Wealthy people with mild conditions were treated to a resort-like atmosphere in airy rooms full of light, while the poor or those with more acute illnesses would be relegated to spaces resembling dungeons of our darkest imaginations. The choice of character collapses the number of narrative options available for the player, restricting them to portions of the asylum, and they must make a series of conflicting, and often confusing, choices to prove that they have been successfully rehabilitated so they may be discharged from the asylum. The game's language and decision points are based the narratives of real-life nineteenth century asylum inmates, highlighting how players' modern notions of sound medical treatment may complicate their decisions in the game—for example, whether or not to take a prescribed medication that appears to make the character's symptoms worse, yet knowing that the consequences for refusal may be even more severe. The presenters will speak to the challenges and rewards of working with undergraduate students, and how the Buffalo Asylum Project is one of the models for the project-based learning curriculum of RIT's new undergraduate degree in Digital Humanities and Social Sciences.

## PERSPECTIVES ON GAMEFUL DESIGN IN AN ONLINE BUSINESS DEGREE PROGRAM

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Over the last year, Saint Peter's University has developed ten courses with seven different instructors as part of an online business degree, all of which integrate gameful design elements. Ranging from accounting to economics to marketing, the courses help learners move toward competence through establishing individualized goals, clear rules, interesting challenges, and relevant feedback. This presentation will showcase the elements common to the courses in addition to the more unique ways in which the instructors incorporated game elements and game-based learning. Although initially hesitant at moving outside of their comfort zone, most faculty members embraced these gameful design principles. Departing from the high-stakes assessments typical across their discipline, faculty members designed innovative ways of motivating learners through infusing competition and role-play into class asynchronous discussions and group projects. Students competed in teams in one discussion forum and addressed case studies in the roles of lawyer, judge, and appeals court in another, with the "winning" argument being voted on by the class. One group project involved students playing a marketing game while another allowed learners to craft and award their own badges. The similarities as well as the variation in techniques showcases how gameful design works on a wider, programmatic level. Acknowledging that the real test of gameful learning is determined by experience of the players, this presentation concludes by sharing the lessons learned from the Fall Semester. Participants will be engaged throughout as they not only interact with the courses from the perspective of learners but also debate how the techniques could be applied to the courses they work with or teach.

## ROAD TO DAMASCUS: GAMING THE SYRIAN CIVIL WAR

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Over the past year, beginning as an independent study project at McGill University under the supervision of Professor Rex Brynen and continuing as a personal project, I developed a conflict simulation of the Syrian Civil War, entitled Road to Damascus. The game pits three rebel factions—representing moderate, Islamist and Kurdish rebels—against the Assad regime. The game models a variety of facets of the conflict, including: the fragmentation of the Syrian opposition into numerous small forces; the key role played by domestic sectarian and foreign actors; the importance of base infrastructure, lines of communication and air power to the Assad regime;; the ideological gaps and conflicting goals of the different streams of Syrian rebel forces; and the steady destruction of Syria and the suffering of Syria's people. Designing the game served two key educational purposes. First in order to create both simple and generalizable game mechanics to represent phenomena like the fragmentation of the Syrian opposition and the asymmetric objectives of the various players in the conflict (both Syrian and foreign), I needed to understand and analyze the larger processes underpinning individual actions in the conflict. Second, this project also pushed me to engage with the moral quandaries of political science and simulation. By simulating a conflict and taking on the role of its actors, I was able to better understand their motivations, as well as grapple with the magnitude of the atrocities being committed in Syria by both the Assad regime and many of Syria's rebel forces.

## GRADUATING FROM THE ELECTORAL

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In political science classes, students are often called upon to imagine how politicians might make decisions in a range of different environments. One problem is that the life experience of students is quite distant from that of the actors they study. However, many students play strategy board games. Can political strategy games enhance student learning in political science classes? Which students gain the most? To answer this question, we ran an experiment on students of international political economy. Students took a quiz asking questions about the relationship between political institutions and the politics of trade, and then played a modified version of the election board game, Consensus. In consensus, students were cast as candidates in a presidential election. Each turn, they allocated scarce campaign resources to different states. When candidates took the lead in a state, they also gained some support among interest groups prominent in the state (e.g. agriculture in Iowa). If they won enough support with an interest group, the interest group could give them extra campaign hours. In the class following the game, a second quiz was held asking similarly themed questions. We believe this exercise was helpful for student learning (performance improved by 1 standard deviation), and also a useful way to examine the distributional learning impact of relatively unguided board games address course concepts indirectly. Like most of the games students play for fun, Consensus does not mimic course concepts directly. Rather, it pushed students to think about elections as battles not just for voters, but for regionally concentrated interest groups. Our positive results would suggest that. In addition, our design - including both an honors and a non-honors class - gives us a unique vantage point to explore which students tend to gain the most from board game exercises within class.

## AN INTERACTIVE IL GAME THAT TEACHES STUDENTS HOW TO CREATE A QUESTION FOR RESEARCH

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At 2015 CUNY Games Festival I made a presentation of an interactive low-tech game called "Create a question for research," that I created while teaching Library one-credit course on Internet Research Strategies. Since then the game has been modified and improved. This is to propose a 20-minute presentation including short introduction of an interactive Information Literacy game, its learning goals, objectives and outcomes (about 5 minutes); an interactive component when participant will actually play the game (10 minutes); and game discussion (5 minutes). To play the game I will divide the participants by small workgroups and provide them with detailed description of the game rules. Each workgroup will have 8 minutes to create 5-10 research questions (followed by 2-4 keywords) focused on any issue/aspect of the proposed general topic. The participants may consult electronic reference resources to acquire background information on the topic. The research questions created by each workgroup may be displayed using Poll Everywhere Classroom Response System (available in any room with at least one computer, access to the Internet, and a projector). An important part of the game is the peer analyses of the research questions created by each team.



## DEVELOPING AN ACCESSIBLE ONLINE GAME DESIGN COURSE: CHALLENGES AND SOLUTIONS FOR ADA COMPLIANCE

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Developing an entirely online course in Game Design and Development requires special consideration to ensure that the instructional materials and resources and the instructional activities are accessible for students with disabilities and support the course instructional goals and learning outcomes. The inherent visual and aural nature of video games and the software tools used to develop these games necessitate instructional design flexibility and creativity. This presentation will provide a brief overview of the currently offered Game Design and Development course and the standards that were applied during the course instructional design and development including the American Disabilities Act, Section 508 Amendment to the Rehabilitation Act of 1973 and WCAG 2.0. The overview will include a discussion of the course materials and activities that teach the principles of designing accessible games to students. Specific challenges and solutions will be covered including the evaluation and selection of online course resources (blog posts, videos and PDF files) and methods for achieving compliance, the design of collaborative group creative activities, facilitating group critiques of designs and the issues in locating and selecting game development software tools which are accessible. Copyright issues and permissions related to ADA compliance will be discussed, including contacting game publishers for permissions. The presentation will conclude with a brief discussion evaluating the first offering of the course.

## NEW AMERICAN SWEATSHOP: TRAINING MODULE

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In the global economy, we have enjoyed more connectedness than ever before; but have paid a price in privacy and autonomy. Governments can and will suppress communication, as we have seen during Arab Spring and the Hong Kong protests. Centralized internet and phone systems are not able to survive natural disasters, as we've seen during the Tohoku Earthquake and Hurricane Sandy. If roads are closed, gas is rationed and the internet is down, it is impossible to order any supplies. We must learn to use what is at hand to be prepared for disruptions; and we must re-think our relationship to technology to build systems that are more democratic. New American Sweatshop: Training Module addresses the lack of common knowledge surrounding electronics manufacturing in the United States, through a tabletop resource sharing game. Players become trainees in a fictional electronics cooperative. They barter for materials, using real electronic waste as game pieces, while avoiding hazards. The goal is to complete simple circuits that become building blocks for futuristic communication devices. In this way, they contribute to new models for economics and manufacturing. The game teaches players to identify common electronic components, and introduces the idea of a schematic. This will benefit people who are completely new to electronic design. For everyone else, the game uses barter, strategy, and chance to achieve its goals, raising the question of how a phone company could function in a dystopian future.

## LOCATION-BASED AUGMENTED REALITY GAMES (ARGS) IN THE CLASSROOM

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Augmented reality games map the game environment on top of the physical world in a way that encourages players to explore or interact with their surroundings in order to play the game. Given that higher-level learning is facilitated by personal experience or play with the phenomena under study, such games have significant potential in higher education. In this presentation, I will describe my recent experience incorporating Ingress, a massively-multiplayer, location-based, augmented reality game into an upper-level college course on “The Psychology of Gaming.” In this game, players fight for one of two factions (the Resistance and the Enlightened) to control ‘portals’ that exist in places of scenic, historic, or artistic significance across the globe, and use those portals to create geometric fields to score points for their faction. I will begin the presentation by introducing the audience to the game with a live play demonstration, with an opportunity for anyone interested to download the app on their own devices. Then, I will describe how I attempted to integrate student gameplay into course discussions, projects, and assessment. I will draw on student feedback from the experience to discuss challenges, successes, and failures. Finally, I will conclude with recommendations for the use of augmented reality games such as Ingress in a variety of manners and for a variety of disciplines, including those with no direct link to game studies.

## MOVING PAST K-12: BUILDING OUR OWN GAMES FOR HIGHER LEARNING

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Our nursing students demonstrate a high degree of frustration and difficulty learning pharmacology practices. Our Solution: Design an engaging and interactive learning game that reinforces principles of pharmacology and challenges students with standard patient care practice while emphasizing improvements in student success through knowledge retention, persistence, and satisfaction. The Results: Students who played the game scored significantly higher on standardized final exams and reported increased comprehension of and interest in pharmacology content. The Larger Impact: We now have an internal game-development studio focused solely on creating and studying GBL for students in multiple programs throughout multiple institutions within DeVry Education Group.

## THERE AND BACK AGAIN WITH SKILL AND DRILL GAMES: WHEN TO USE THEM OR LOOK ELSEWHERE

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This ten-minute presentation will offer participants a method to select specific types of learning games to align with common undergraduate Student Learning Outcomes (SLOs) at various levels of proficiency. Using the seven-step Decoding the Disciplines framework for Teaching, Learning, and Assessment, which was initially developed by faculty and staff at Indiana University in the 1990s, the presenter will focus on two of the key Decoding steps, “Offer student opportunities to practice and receive feedback.” Joining this framework to the most recent research findings relating to higher educational settings, human cognition, learning, and memory, we are able to be more intentional about designing learning games and selecting game mechanics for maximum student learning. The method explicitly calls for the alignment of SLOs to aspects of gameplay. In this way, one is better able to discern optimal game mechanics and the overall type of learning game that is best suited to

the SLOs, student level, and academic discipline. The presenter will illustrate the method by applying it to specific SLOs, showing that through multiple opportunities for effortful retrieval of new content, that skill and drill games are particularly well-aligned with SLOs aiming to build foundational knowledge in 100-level undergraduate courses such as Introduction to Biology and History. To make this ten-minute presentation somewhat interactive, the presenter will query the group to write down on index cards what types of learning games they would instinctively pair with specific SLOs and invite them to share rationales for these pairings. The presenter will choose at least two examples from the stack of index cards to raise with the larger group, and discuss in three – four minutes.

## NARRATING AMERICA: PROBLEM SOLVING THROUGH INTERACTIVE DIGITAL STORYTELLING

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The Narrating America Game is a problem-solving game for participants with varying roles within community colleges. It is an extension of the “Community Voice” (CV) research project on the meaning of community college for students’ education and civic participation toward their own development and that of American society (Daiute & Caicedo, 2012; Daiute & Kreniske, 2015). The goal of the game is to foster communication among students, faculty, and administrators by mining hundreds of narratives from the CV study for scenarios to use in an interactive digital storytelling (IDS) mode. The game also extends the “Narrating America in the Contemporary Community College Forum,” where students, faculty, administrators, and researchers met to discuss and create action plans based on narratives of students’ experiences and goals (Daiute, Murray & Kreniske, 2015), continuing that work as players in diverse roles in education interact with the CV community college narratives. The game is built on the Undum framework and uses the Bitstrips comic generator for imagery. Undum awards points for choices in scenarios, customized as three skills, we are piloting as initiative, perspective taking, and communication. Narrating America asks the player to assume roles of a rotating cast of characters, including teachers, students, and administrators. Scenario pairs present the point of view of both characters in two-way interactions. The prototype presents a scene with characters and an underlying plot, which has important theoretical connections to narrative research (Murray & Daiute, 2015). Plot theory has explained that plots in complex IDS story worlds mediate players’ connection to a story, while also inviting innovations to it (Daiute, 2015). Analyses of narratives in three IDS environments revealed anchoring and expanding plot elements. Anchoring elements include setting, character, initiating action, high point, and ending, and expanding elements include character enactments (actions, thoughts, feelings), complicating actions (problems or events that build suspense), and resolution strategies. In addition to guiding game design options, this theory of plot as a cultural medium has been useful for building options of different sensitivities to the plights of the characters. Points are based, for example, on the relative relational sophistication of options depicting unilateral action, perspective taking, or relational communication. This presentation is based on several phases of research and development, the first addressing: “Will a significant number of student narratives written in the CV project be amenable to IDS plot theory game design?” This phase will inform the creation of character enactments, complicating actions, and resolution strategies, as well as Bitstrip scenarios. Pilot testing of the game addresses questions including: “Do complicating actions and resolution strategies provide engaging options for players, as assessed by their choices?” “Do player choices indicate interactions with diverse college roles and understandings?” “What are player ratings (on 5 point Likert scales) for playing to provide insights about experiences of different characters; believability of stories; creativity options; enjoyment; offering insights for improvements of practice or policy at the college?” Presentation of the game to a group of relevant participants will inform development and evaluation of the game.

## LEARNING FROM NATURE: MARINE EDUCATIONAL GAMES THAT SCAFFOLD SCIENCE INQUIRY

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The USA is currently ranked 52nd in the world in science, technology, engineering, and mathematics (STEM) education. This is detrimental intellectually and economically to the future of American society. While strategies to increase USA ranking in STEM are complex, they have largely focused on improving the rigor in STEM teaching (Klahr, Zimmerman, & Jirout, 2011; Sanders, 2009). As schools of education are tasked with educating future STEM teachers, they continue to seek out the most effective methods of engaging learners and are quick to embrace technologies that teachers may use to engage their students (Niess, 2005). Therefore, in our presentation, we will demonstrate how the Killer Snails game aims to advance the understanding of how people learn while capitalizing on the excitement of games for learning. Recent studies have indicated it is not what we teach, but how we teach that enhances student learning abilities, particularly as it pertains to STEM (Bao et al., 2009; Eshach, 2007; Gerber, Cavallo, & Marek, 2001). Game based learning is quickly providing the optimal canvas to support STEM education and engage learners in the authentic application of scientific concepts (Gee, 2003; Steadman et al., 2006). The Killer Snails game simulates scientific researchers seeking out, capturing, and extracting deadly venom cocktails from these unique marine creatures whose peptides are used for biomedical application. This deck building game engages learners in a scientifically sound inquiry process while slowly revealing important conceptual knowledge as learners work to solve the peptide puzzle and win the game. The game based approach to teaching this content is an opportunity to support current and future educators whose goal is to teach science content in engaging and applicable ways. Our current research of the effectiveness of this game is in its infancy. We are in the process of evaluating the mechanisms underlying science learning as a result of this game by assessing the learning progression that a student travels during game play. By mapping learning outcomes of the game to specific pieces of content we hope to understand how scientific knowledge is constructed and what components are most useful to secure knowledge acquisition. What is more, we hope to evaluate the transfer of learning from this deck building game to other domains. For example, how do learners come to see the utility of the scientific process of research, publication, and conference presentations in moving the field forward, and how does this knowledge transfer to other domains? The Killer Snails learning game aims to advance how we teach STEM in order to increase scientific learning skills by using venomous marine snails as a conduit to explore issues of biodiversity, ecology, and drug discovery. The exciting content encourages students to think analytically about the world around them and the many opportunities and challenges present in scientific exploration. This game and research will help advance our understanding of science content and presents opportunities for innovative instruction, assessment, and application of inquiry.

## PROJECT ONEIROS

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Computational thinking (or CT) is often thought about as synonymous with programming education. However, CT encompasses a wide range of skills (including abstraction and decomposition) that are applicable to many disciplines and subjects beyond computer science. Project Oneiros is a game designed to foster CT skills using a familiar adventure-game-like framework. The puzzles in it

revolve around computational logic and problem deconstruction in order to open doors that bar the player's progress. Mechanically, the game is akin to a dungeon crawler, where each floor is gated by a puzzle that the player needs to figure out how to solve--usually by getting an appropriate amount of keyed energies from "reactors" on the floor to special nodes, while placing other nodes which manipulate the effects that the energies have on the field and logically how they interact with the gates. The game is still in development but it aims to provide a fun and engaging space for people to learn how to think computationally.

## NOSTALGIC CHILDHOOD PUZZLE GAMES UTILIZED AS LEARNING AIDS

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I am developing and refining a puzzle game learning aid model. The purpose of the puzzle game model is to develop and reinforce students' comprehension of the theoretical concepts and terminology required by the curriculum. I am teaching two sections of a business course during Spring 2016 at a private NYC junior college with a population of 40% ESL students and 35% non-traditional students. I plan to test the model within the two course sections. The model's approach is three pronged in nature, comprised of word search, fortune teller(see description below) , and crossword game puzzles. Using familiar, and perhaps nostalgic, childhood puzzle games promotes a non-threatening and supportive learning environment. The intentional minimalist model avoids adding a layer of technological complexity to the learning environment. The technological complexity layer could be viewed, by the students, as yet another barrier to overcome in the learning process. An additional consideration for focusing on a simplistic model is that students might become focused more on learning the technology rather than the content. The application of the minimalistic approach benefits both returning adult non-traditional and ESL students. The word search introduces and/or reinforces concepts and terminologies required by the curriculum. The first of the three pronged approach is the Word search which when administered prior to a reading assignment would include a word key. Upon completion of their word search puzzles, the class discusses the theory and meaning of the applicable concepts and terminologies. This pre-learning puzzle exercise would serve to enhance the students' comprehension of the future reading assignment. Word searches administered post-reading assignment would provide no word key, requiring students to find words (concepts or terminologies) recognized from the text. Administering a post-reading puzzle promotes retention of learning. The use of the fortune teller is as a knowledge check of concepts and terminologies required by the curriculum. The learning aid model fortune teller puzzle substitutes the childhood lunchroom type questions, such as "Who will you marry when you grow up" with curriculum specific ones. The crossword puzzle serves as a summative assessment (portion of the final exam). The learning aid model crossword puzzles utilize the theory and meaning of the applicable concepts and terminologies as word clues. My presentation would explore my ideation and development of the puzzle game model as well as a live demonstration of the "creation" (production of the origami-like model) and "play" of the fortune teller puzzle game. Fortune Teller: Folded paper origami-like puzzle toy. Questions are written on top of folded flaps with answers written underneath. A standard NYC school yard/lunchroom game originating in the 1970's and its popularity lasting through present.



## STORYTELLING, GAME-BASED LEARNING AND THE STUDENT EXPERIENCE; TWO CASE STUDIES

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Online learning continues to expand, but are students receiving the learning experience they need to be prepared, socially conscious citizens capable of making valuable contributions in a fast-evolving 21st century? Traditional colleges still resist online learning, and that resistance, in part, reflects an educational crossroads. According to the Association of American Colleges & Universities (AAC&U), more than one-third of college students is over the age of twenty-five. According to another recent survey, the average gamer is 31 years old, as likely to be female as male, and often is more social and socially conscious than non-gamers. Online learning offers flexibility and cost advantages a traditional college does not, and this flexibility suits older students and gamers alike. Online learning, however, like traditional education, must face the fact that millennials (born after 1980) and future students raised in a digital environment expect a more engaging experience than they currently receive in the classroom. We propose using a game-based story or narrative-based approach to teaching. Storytelling stretches back into prehistory, and people in general, not just students, remember and learn better when material is presented in the context of a meaningful story. Aristotle knew the ingredients of a good story 2,500 years ago because he watched them acted out on stage. A compelling plot, empathetic characters and powerful emotion (pity and fear for Aristotle) contribute to good storytelling. Most Millennials identify themselves as gamers and prefer activities that are social, interactive and engaging. In game-based learning, the unfolding narrative engages the audience or players directly in a way that affects the story's trajectory and outcome and not only raises awareness of social issues but engages students in critical thinking skills and activities that have a visible social impact in the game-based world and serve humanitarian as well as educational goals. In this presentation, we will show segments of two (2) story-based courses and talk about the courses' design, development, and delivery. Dr. Nelson-Born will discuss ENG 102—Composition II, a required writing course, which she has transformed from a standard "Writing about Literature" class to an immersive story-based class subtitled "War of the Words" where students are immersed into a post-apocalypse world brought down by a bioelectronics virus and must fight off "furies of fallacy" in an effort to liberate a captive civilization no longer allowed to think or speak for themselves. The course focuses on argumentative writing and critical literacy with students completing quests and moving from one settlement to another to engage in new, staged critical thinking and writing challenges and, of course, saving the world. Dr. Seelow will discuss HUM 325--Secrets: A Cyberculture Mystery Game, designed by game designer Lee Sheldon, modelled on an Alternate Reality Game. Alternate Reality Games (ARGs) are particularly well suited for online courses because the ARGs primary platform is the Internet. This course teaches students about Internet culture through a game about the Internet

## ADDRESSING REMEDIATION AND RETENTION THROUGH PLAY-BASED ENGAGEMENT

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The Game-Framed Math & Science Initiative (G-FMS) at Hostos began as a National Science Foundation sponsored project to explore and develop an innovative pedagogy to engage math and science phobic students through gameplay. A series of fourteen inexpensive tabletop games were created in direct response to problematic student learning outcomes (SLOs) identified by participating faculty. Support materials were then designed for these educators to use in delivering

their material through the pedagogy of play, providing students an engaging means of honing and practicing skills. The project resulted in higher student retention, engagement, and pass rates. The designers of these games have since incorporated as Colmena Design, and are working with Hostos Community College faculty to engage with K-12 educators in developing materials and methodologies that assist teachers in helping students rethink how they can learn. In this way they hope to address the college remediation issue at its root – engaging students with STEAM earlier and more effectively.

## A PRACTICAL HISTORY OF GEOPOLITICAL SIMULATIONS IN RESEARCH AND EDUCATION

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Scott Silsbe's talk will contextualize Strassfeld's Watch the Skies and Barnhart's World War II simulation in the greater landscape of in-person simulation and role-playing in education. This talk will briefly review the history and development of political simulations and role-plays from their origins in 1920s era model congresses, through the Cold War-era political simulations of The RAND Corporation, and up to the recent renaissance in tabletop gaming and contemporary megagames such as Watch the Skies. The historical portion of this talk will be loosely structured around 'lessons learned' by past innovators and how those lessons can be used by contemporary educators interested in designing and/or running their own exercises. Silsbe will also summarize the empirical evidence supporting the efficacy and benefit of simulations and role-plays as educational tools as well as highlight areas where evidence is lacking. Greenblat's categories will help frame this section of the talk. Greenblat (1973) divided the claimed educational benefits of simulations and role-plays into six categories: (1) Cognitive learning (e.g. analytical and decision making skills); (2) Affective learning (e.g. empathy); (3) Motivation and interest; (4) Follow-on effects (e.g. retention of information, interest going forward, etc.); (5) Self-awareness and personal efficacy; and (6) Student-teacher relations. The remainder of this talk will be dedicated to very recent and ongoing developments in the field, including 1) the integration of social media and other digital tools into in-person events, and 2) how educators can use digital tools to measure exercise outcomes. The talk will conclude with an eye to how educators can use simulation and role-play to complement their own curriculum and research.

## BACK TO THE FUTURE: STUDYING PERIODIZATION AND LITERATURE IN AN EARLY MODERN CARD GAME

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Although historical contexts and primary sources tend to be foundational to the study of literature, it is often difficult to teach them in meaningful and innovative ways. In a flipped classroom, where students earn the opportunity to interrogate and disrupt canonical practices, historical backgrounds often appear to be strictly linear and unmovable even to the most critical of students. In this short presentation, I will discuss an attempt to address this problem by having students design a time-travelling card game that reflects on the historical influences for early modern works. Using the mechanics of the game Chrononauts, students were asked to propose historical changes and invent new timelines for the early modern period, considering how and when authors might be affected by these changes. Ultimately, this assignment aimed to encourage students to feel deeply connected to the history of the period without further sedimenting issues of periodization and canonicity.

## CLASS

### **Lauren Spradlin**

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Class is an adaptation of the visual pattern perception card game Set. In Set, players make three card sets exhibiting the same setting across four parameters: color, shape, shading, and number. Class applies the same principles to the sounds of the International Phonetic Alphabet (IPA), and provides students new to phonology a useful tool for seeing patterns, establishing commonalities to and defining classes of sounds, and learning the sounds IPA symbols denote. Phonology is the linguistic sub-discipline concerned with human speech sounds, sound inventories, and sound patterns present within individual languages and cross-linguistically. Phonologists categorize sounds most broadly in terms of place of articulation (where a sound is made in the mouth), manner of articulation (how a sound is produced), and whether the vocal folds are vibrating or not. The IPA chart organizes the world's languages' consonants following these conventions as well. Each of the world's languages uses a subset of these consonants, though none is known to use them all. Often, groups of sounds share certain properties (features) and behave as a group, being subject to certain changes and exempt from others. Because these features are often phonetically grounded, and are 'natural' with regard to human speech production and perception, they are called 'natural classes.' The technical definition of a natural class is a group of sounds that includes all of the relevant sounds to the exclusion of all other sounds in the language. Distinctive features are often used to define natural classes, the changes that class undergoes, and the adjacent sounds triggering the change. For example, the English plural suffix is stored in the minds of English speakers as a /z/ sound. It is pronounced as a [z] after a voiced sound, like the [g] in dog (plural dogs). When nouns ending in voiceless sounds, like the [t] in cat, are pluralized, the same /z/ sound is pronounced as an [s] sound instead. Using features, one would say that [-voice] sounds cause the /z/ to become voiceless as well, a process known as voicing assimilation. Class can be played in a variety of configurations. The basic deck includes 91 cards, one for each of the consonant and vowel sounds on the IPA chart. The cards are arranged in a 3x4 array, and the objective is to find as many natural classes (of at least three sounds) as quickly as possible. Each natural class must share at least three feature values, which the player must name and their opponents validate before removing the cards from play. Alternatively, players may define a natural class as it's commonly referred to in the field (e.g., 'voiced consonants'). The game is over when the deck is exhausted and no possible natural classes remain. The player with the most natural classes wins. The game can be easily modified to be restricted to individual languages' phonemic inventories (e.g., English sounds, Navajo sounds, etc.), to be played with only consonants or only vowels, to be played with non-feature based descriptions (which is well-suited to beginning students).

## STEPPING THROUGH THE DARKNESS: REENACTING THE JOURNEYS OF REFUGEES

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"Stepping Through the Darkness" is a live action role-playing game designed to teach college students and staff about the journeys refugees and immigrants make to reach the United States. The program was first implemented in 2012 at The College of Saint Rose, a university which recognized the importance of educating students about newcomers entering not only the nation but also the local community. The game's success in 2012 led to its replication in 2013, attracting over 80 participants and resulting in an increased number of Saint Rose students and professors becoming involved in a nearby refugee support program. In this presentation, participants will walk through a



modified version of “Stepping Through the Darkness” and learn how to implement similar live action games on college campuses. Strategies for organizing games, attracting an audience, and leading post-game reflection will also be discussed.

## MEGAGAMES IN THE CLASSROOM: HOW EDUCATORS CAN BUILD AND RUN THEIR OWN

**Noam Strassfeld**

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As president of the Megagame Society, Noam Strassfeld has spent the last 18 months designing, developing, and running Watch the Skies, a science fiction ‘megagame’ about global geopolitics and the arrival of aliens on Earth. Strassfeld will talk about how educators can develop and run their own megagames with themes and mechanisms tailored to the needs of their schools and students. Megagames are day-long strategy role-playing games for 50+ players. The most popular and well-developed games currently available simulate — or are, at least, inspired by — geopolitics, with combinations of teams and individuals playing as national governments and other influential organizations (corporations, media outlets, NGOs, etc.). While these games often utilize a slew of board and war game inspired mechanisms, roleplaying, negotiation, and social deduction make up the core game experience. Though some teams may perform better ‘in-game’ than others, megagame rulesets and facilitators tend to emphasize shared experience and lessons learned over winning or losing. Aside from being genuinely fun experiences, megagames provide novel spaces for students to practice individual and team skills, including: (1) Critical thinking and decision making; (2) Crisis response and management; (3) Communication and conflict resolution; and (4) Negotiation and mediation. Playing a megagame, students (and instructors) can share in genuine emotional intensity and work through cognitive challenges together. Students can learn to make decisions on the fly given incomplete information, manage complex and dynamic ‘professional’ relationships, and work through conflicts in a safe, structured environment. And students will come out of the immersive experience with the opportunity for post-game analysis and reflection.

## REACHING LEVEL 100: LITERACY IN WORDLESS NARRATIVES ACROSS PLATFORMS

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In our modern lives, we are constantly bombarded with images. We have developed the ability to read signs and symbols effortlessly, without any need for words that explain the pictures we are seeing. This kind of visual literacy is pervasive. Longer wordless narratives are capable of helping us to learn what it means to be visually literate as well as exercise and identify the skills we use to read a series of images without the help of words. In this paper I will focus on wordless narratives in the genres of children's picture books and platform based video games. A wordless narrative, as defined for this analysis, is a series of images that tell a complex story with no text used to explain it. My focus in looking at these stories is to explore the ways in which the stories help you to make meaning of the images provided and to extrapolate the skills used to acquire that meaning. Both print and digital stories are explored to see if wordless narratives across media require the same series and level of skills to read. In examining these narratives, I will highlight the value of wordless stories for developing key literacy skills and challenging our ability to make meaning in the digital age.

## GAMIFIED COMPOSITION STUDIES: PLAYING WITH AGENCY AT THE RHETORICAL INN

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How do we get college freshmen to not only engage with writing, but also have a deeper understanding of its function? My goal was to gamify my first year writing course based on Lee Sheldon's concepts of the multiplayer classroom, but also avoid many pitfalls instructors encounter through gamification. I found that many instructors have created a game based learning environment primarily to increase "engagement," however, entertainment often overshadows learning outcomes. I took my program's course outcomes and mapped them in rhetorical activities to not only have the students more engaged, but understand writing through rhetorical and gaming concepts. Gamification oftentimes alienates those that do not have access to technology, so my course website serves as the platform for the game, guiding the students through a three part narrative, which allows the player to engage in their learning with agency. Through creating avatars, assigning specializations, earning experience points to advance in level, and using earned in-game currency to buy "quest" altering items makes their experience an individually tailored one. The players engage in choice, strategy, reflection, reward, narratology, creation, and design; concepts synonymous with both writing and gaming. The way the game based learning platform is established, it can easily be printed out to disregard technological concerns, or it can be built upon for a fully online experience. Even though the course is based in writing, the platform could be adapted to any discipline with ease. Using the gaming concepts to talk about genre, rhetoric, and writing, the students found a deeper understanding of difficult concepts. Instead of just focusing on engagement and enjoyment, I created a course with substance and challenge.

## CONNECTING USING KINECT: ASSESSING COLLABORATIVE LEARNING

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We report on an ongoing project to build a two player collaborative game designed to support student engagement. We are studying whether students, including those on the autism spectrum, communicate and collaborate more effectively when engaging in a collaborative activity with one another through an intermediate medium (as cartoon avatars in a digital work space) relative to an in-person version of the same task. In one collaborative emotion building task, two players work together to assemble a puzzle that expresses an emotion that is consistent with the background context. Players use Picture Exchange Communication System (PECS) cards (digital or real depending on task-space) to confirm agreement on the next action. Through the Kinect platform, the players are fully engaged, standing, using their hands as a mouse (without a physical controller) to move the puzzle pieces on a common screen. The game is programmed using Unity with C#. This technology should allow us to study dyadic interactions between pairs of players both of whom have autism, pairs wherein one player has autism and one is typically developing, and pairs of typically developing individuals. Our long-term goal in this study is to compare engagement, social interaction, and learning across two conditions, game mediated or in-person. We expect that technologically mediated collaboration may be maximally engaging for students with autism as they tend to struggle with collaboration during in-person interactions.

## GAME BASED LEARNING IN A GAME DEVELOPMENT COURSE

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We describe a college-level game development course with a game-based learning component. We have two game development courses in our major; the first is a 200-level course that is offered as an early elective and has only an introductory programming course as a prerequisite. The second is a 400-level advanced elective with a course in data structures as a prerequisite. Students can complete a concentration in Game Development when they complete these two courses together with an Artificial Intelligence course and a Graphics course. We recently added a component to the early elective that covers James Paul Gee 13 principles of game based learning applied to serious and research games. Each student game was peer-evaluated using a rubric based on Gee's principles. We present projects developed in the course and report on the successes and challenges.

### SUMER (GAME DEMO)

#### **Geoffrey Suthers, Misha Favorov, Sig Gunnarsson & Josh Raab**

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In Sumerian mythology, mankind was made to serve the Anunnaki, the heaven-gods. The priest-kings of the first cities gave them beer, bread, and all that is good, and received the divine right of rulership in return. In this retelling, the struggle for power is painted across a living Mesopotamian mural as players compete to fulfill the sacrificial rituals prescribed by heaven. The swiftest and cleverest will ascend the ziggurat and be crowned king or queen. Sumer introduces the elegance of modern European board game design to the world of digital games. Its unique mix of turn-based and real-time gameplay creates a tense, cyclical rhythm where players must plan, execute, and adapt in order to achieve victory. We had hoped to also share the challenges in developing Sumer through a presentation, but our presenter, Geoffrey Suthers, will be in Jerusalem during the conference this year. One of our team members, Misha Favorov, is able to demo the game instead.

### I AM PLUTO, A MOBILE VIDEO GAME ABOUT PLUTO GETTING KICKED OUT OF OUR SOLAR SYSTEM

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We are 2nd year students at NYU Game Center for our thesis project, we wanted to create a video game that can not only tell a compelling story but still be linked to science. We are aiming for this game to be approachable by people of all ages and also gaming experience. We used Pluto being delisted as a planet as the kick off point for our story and aim to use astronomy and scientific facts to tell the story and engage players.

## DIGITAL GAME-BASED LEARNING AND COLLEGE COURSES: THE EFFECT OF TEXTBOOK FORMAT ON MENTAL EFFORT AND TIME ON TASK

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Although previous studies have been conducted on educational games and their relation to student learning (Adams et al., 2012; Alsagoff, 2005; Baek & Heo, 2010; Kiili, 2005; Pivec, 2009), this is the first study to address the gap in the literature on digital game-based learning theory and its relation to student involvement with college course content. The relatively little amount of time that some college students spend reading their textbooks outside of lectures presents a significant threat to their academic success. One possible solution to this problem is the use of digital games as an alternative to outside-of-class textbook reading, but a review of previous research did not reveal much information on their efficacy when compared to traditional textbooks. Using Astin's theory of student engagement as a framework, the purpose of this quantitative causal-comparative study was to determine whether a significant difference in engagement, as indicated by mental effort and time on task, existed for college students who used a digital game-based textbook versus students who used a traditional print-based textbook. A digital game-based textbook template was developed by the first presenter across a five-year period using a popular game engine. A college-level introduction-to-psychology textbook chapter was developed by the second presenter, a full-time psychology professor, and utilized. Textbook content for the digital-game based textbook and traditional print-based textbook was identical. The 54 undergraduate college students in this convenience sample were randomly assigned to one of the two textbook types and completed a textbook activity session at an individual workstation. The dependent variables were time on task and mental effort. Time on task was measured with a stopwatch and mental effort with the Mental Effort Scale. The results showed a statistically significant difference in engagement between participants in the digital game-based and traditional print-based textbook groups, Hotelling's  $T^2(2, 52) = 25.11, p < .001, D^2 = 1.86$ . A large effect size was obtained for this study ( $D^2 = 1.86$ ). In the post hoc analyses, the digital game-based group had significantly higher time on task scores than the traditional print-based textbook group ( $t = 34.61, p < .001$ ). The mental effort difference was significant at the  $p < .05$  level, but not at the  $.01$  level, with significantly higher mental effort scores for the digital game-based group than the traditional print-based textbook group ( $t = 2.30, p = .021$ ). This study provides college educators with compelling evidence that the digital game-based textbook is a viable alternative textbook format to the traditional print based textbook format.

## WE GOT THIS: STRATEGIES FOR RIGHT SIZED FACILITATION OF YOUTH CREATED LOCATION-BASED DIGITAL GAMES

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Last year, myself and a colleague from the youth-development non-profit, Global Kids, presented at the CUNY Games conference about the organization's location-based game design program for youth, NYC Haunts. We discussed the theories that framed our pedagogical approach and program design, and featured some of our students' work as part of a longer interactive workshop which introduced participants to the TaleBlazer software. This coming year at CUNY Games, now as a doctoral student at the CUNY-Graduate Center, I would like to share some preliminary findings from a study of the specific practices of the educators who guided youth during those programs. As more and more in-school and out-of-school-time programs look to engage young people with design projects of greater and greater complexity -- the creation of media, games, robots, interactive textiles, activist campaigns, and other digital projects, adult facilitators of these programs and

projects face a core tension. On the one hand, youth agency and ownership over projects, and participants' development of critical skills is central. On the other hand, there is a desire to ensure outputs are high-quality products that youth can be proud of (Kirshner, 2008). Young participants were framed as the engines behind a location-based game design program run by a New York City-based youth development organization at public schools and cultural institutions during the Spring and Summer of 2014. In order to ensure youth had the opportunity to experience and work through meaningful design challenges and also produce a playable game, adults intervened at key points during the process. Through an analysis of facilitator journal entries, student and facilitator-created artifacts, interviews with students, and pre, midway, and post-program surveys, the study sought to name specific moves and interventions carried out by adult facilitators of location-based game design programs. Data is being used to support a discussion of what those moves afforded youth participants in terms of opportunities to internalize the design process, gain ownership over the project's outcomes and process, and to grapple with design challenges. During my talk, I will frame the tension discussed above, then present data from interviews, surveys, and student work to describe facilitator moves. These included synthesizing and structuring youth ideas, being more and less prescriptive about game topic, and creating specific structures for collaboration. I will use the data to argue that rather than closing off opportunities for youth to internalize the design process, when facilitators stepped in to structure youth ideas, youth were afforded the opportunity to engage with a greater range of design challenges and could take more ownership over the process from start to finish. Further analysis is needed on the affordances of the facilitator's interventions in the realm of choosing a game topic and group dynamics, and I look forward to conference attendees' questions and feedback. I presented a version of this talk at the Silver Gaming Intergenerational Summer School (SGISS) in Quebec City this past summer, though the analysis is further along now than it was in August.

## A JOURNEY TO GENDER EQUALITY - USING BOARD GAME TO RAISE THE AWARENESS OF GENDER EQUALITY

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"A Journey to Gender Equality" is a board game to address gender equality. The game is a fun and strategic board game, involving resources management, strategic thinking and achieves a good balance between chance, surprise element and strategy. In the game, 2 to 5 players embark on a journey to create a society from complete gender inequality to gender equality. They achieve this by either having equal number of male and female talents in their society, or by launching movements that can improve gender equality. Through a carefully designed mechanics, players will experience the struggle of extreme gender inequality at the first stage of game and gradually feel the benefits of a gender equal society. We talk in the context of the workplace, especially focused on four professional areas where women are underrepresented or biased. The game is aiming to reflect the real world scenario where men and women with equal abilities or education are valued differently, thus we make explicit inequalities in the game mechanics, for example, different values for male and female with the same "Education Cost". Players will also learn about the efforts made and can be made to promote gender equality, the existing bias against females, and the organizations that promote gender equality, as well as the great female / male talents in real world.

## GHOSTS IN THE LIBRARY

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How do you introduce creativity, playfulness and storytelling into a boring required library session in a stuffy computer classroom? What if the building you are in is also under construction and students are afraid to go in there because of the random noises, wet spots, burning smells, and poured concrete that is occasionally oozing down the walls? "Ghosts in the Library" adds contextual narrative to the traditional library instruction session, requiring teams of students to utilize library resources in the creation of an artifact that will appease a historically relevant ghost haunting the library. The ghosts in question are important and diverse figures to the heritage Hudson Valley. The game is problem-based, with a disturbance at the center of the game. Acting in resolution of this problem, teams of students seek order in the library and to appease the ghost by virtually creating and placing an historic marker somewhere in the library, solving a supernatural problem for which there is no incorrect answer. Students are tasked with figuring out applications of library resources, evaluation of information sources, analysis of arguments and ideas, and communicating as a team along the way; learning outcomes are achieved through game play and are used to create a coherent project. This multi-faceted, complex, and collaborative approach to solving a paranormal problem gets at the ways in which college level research can be confusing, overwhelming and even otherworldly to new students, while game rules allow students to make order out of disorder and create meaning and way finding for their future studies. Using games based learning (GBL), this lesson plan fosters student participation in a project based on collaborative storytelling and peer assessment. Building on Marcia Baxter Magolda's "learning partnerships," "Ghosts in the Library" is a collaborative space that encourages students to take control of their own learning and knowledge construction, and fosters a "self-authorship" approach to learning applicable to all disciplines and student learning styles. To guide self-learning, students receive packets with resource cards depicting library resources needed at each level of research to create the virtual historic markers. Each team presents its marker to the class, reviewing the process in which the information was acquired, added to the marker, and used to justify the marker's placement in the library. At the end of the game, students reflect upon each team's work, and vote on how well team artifacts fit the game criteria. With contextual narrative, collaborative learning, peer assessment, and a project-based approach, "Ghosts in the Library" re-positioning standardized learning outcomes into a problem-based context.

## THE RPG CLASSROOM

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Role Playing Games, made famous by the genre-defining Dungeons & Dragons game, represent an unconventional and underutilized technology of open discussion and organized conversation. This unique format of gameplay creates an effective, productive, and comfortable learning environment, and in fact represents one of the most ideal classroom spaces imaginable. RPGs generate a context wherein learning is facilitated but not regimented, enabled but not enforced, and in specific instances can yield dividends as a pedagogical model.



## DO ONLINE GAMIFIED LEARNING PROGRAMS INCREASE PERFORMANCE IN AN UNDERGRADUATE PSYCHOLOGY STATISTICS COURSE?

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Fifty students from an undergraduate psychology statistics course will be assigned to an experimental group that adds an online gamified learning program to standard laboratory activities (n=25) or a control group (n=25). Pretest and posttest scores in the course will be recorded. The online gamified program will be carried out over a 5-week period. Each week, participants will undertake 30 questions (10 per difficulty level of easy, medium, hard) related to course content and their runtime will be calculated for correct answerers. Each week, participants will earn badges/points through: engagement (time spent on the program), completion (number of questions attempted), and performance (runtime for answers accounting for difficulty level). Participants will be able to view their progress and position relative to others. Points and badges will not affect course grade though incentives will be awarded to high earners. Data will be subjected to a 2 (pretest vs. posttest) by 2 (experiment vs. control) ANOVA. Posttest scores in the course for the experimental group are expected to be significantly higher than for the control group. Replication and generalizing of findings to other courses represent important future directions.

Participants & Method: Fifty students from an undergraduate psychology statistics course will be assigned to an experimental group that adds an online gamified learning program to standard laboratory activities (n=25) or a control group (n=25). Pretest and posttest scores in the course will be recorded. The online gamified program will be carried out over a 5-week period. Each week, participants will undertake 30 questions (10 per difficulty level of easy, medium, hard) related to course content and their runtime will be calculated for correct answerers. Each week, participants will earn badges/points through: engagement (time spent on the program), completion (number of questions attempted), and performance (runtime for answers accounting for difficulty level). Participants will be able to view their progress and position relative to others. Points and badges will not affect course grade though incentives will be awarded to high earners. Data Analyses Plan: Data will be subjected to a 2 (pretest vs. posttest) by 2 (experiment vs. control) ANOVA. Posttest scores in the course for the experimental group are expected to be significantly higher than for the control group. Replication and generalizing of findings to other courses represent important future directions.

## WINNING ALONE: A GAMEFUL APPROACH TO SOLO MUSICAL IMPROVISATION

**Tom Zlabinger**

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Technology has always been part of music. And with the continually reduced cost of music production, musicians now have more access to more tools than ever before. The number of options is simultaneously exciting and overwhelming. To combat the decision fatigue that is a product of these options, I have elected to begin exploring the possibilities of performance as a soloist using some of the latest looping technologies. Musicians have utilized looped sounds since the first tape loops in the 1940s and continued with solid state delay units in the 1970s. In 2013, Boss released the the RC-505, the five-channel loop station. With individual faders, each user-generated loop can be mixed as part of a greater whole. Using this technology, a very complex performance can be created quite quickly by a solo performer. But how does one know the performance is successful? A gameful approach to music making allows a soloist to step outside of a performance as it is created, similar to a DJ. Since the loop station combines several musical fragments in real time, the musician

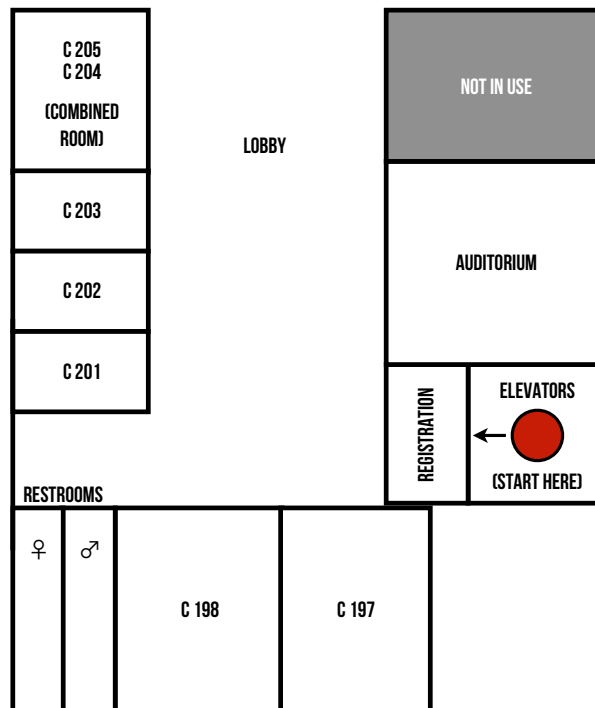
is liberated from the generation of sound and can hear the composite. But questions of "winning" the moment with the music are reliant on the musician having set goals and outcomes as a performer. These goals will be discussed and the presentation will conclude with a performance using the loop station.




## General Statistics

Registered Attendees	137
Full-time	65
Part-time	50
Students	20
Other	2
Total posters and oral presentations	55
Posters and arcade demos	11
Oral Presentations	44
<i>10 minute shorts</i>	21
<i>20 minute talks</i>	15
<i>30 minute talks</i>	8

### MAP FOR C LEVEL OF CUNY GRADUATE CENTER



TIME	EVENT	Room C201	Room C202	Room C203	Room C198	Room C197	Rooms C204 & C205
8:45 AM	Registration/Coffee						<b>POSTERS AND DEMOS</b>  Einstein & the Honeybee – Tabletop game, Rocio Rayo, Dylan Shad, Rees Shad  New American Sweatshop: Training Module, Amelia Marzec  Project Oneiros, Ramsay Shepard  Road to Damascus: Gaining the Syrian Civil War, Alexander Langer  Connecting using Kinect: Assessing Collaborative Learning, Deborah Sturm, Kristen Gillespie-Lynch, Pavel Asanov, Gabriel Goldstein  Game Based Learning in a Game Development Course, Deborah Sturm  The Game Of College, Melissa A Barlett  A Novel Method for Measuring and Fostering Growth Mindset Using Games, Ecem Olcem, Robert O Duncan  Sumer, Games Geoffrey Suthers, Misha Favorov, Sig Gunnarsson, Josh Raab  A Games-Based Learning Approach to Teaching and Assessing Structure-Function Relationships in Functional Neuroanatomy, Rose Deng, Robert O. Duncan  A Novel Method for Controlling Narrative Flow in Games, Kashfi Fahim, Robert O. Duncan    Ten minute short presentations are in gray.
9 AM	Icebreaker activity						
9:15 AM	Opening Remarks						
9:30 – 10:45 AM	Session 1 (75 min)		<b>LITERACY AND STORY</b> Storytelling, Game-based Learning and the Student Experience; Two Case Studies (30-minute interactive), David D. Seelow, Katherine Nelson-Born  Reaching Level 100: Literacy in Wordless Narratives across Platforms, Susan M. Strayer  Super Mario World and Game-Based Learning: New Literacy Development in Adults, Beatriz Albuquerque  Writing Game Rules and Instructions as a Communication Exercise, Joshua Fishburn	<b>ANYTHING CAN BE ATTEMPTED: In-Person Simulations and Role-plays in Education</b> A Practical History of Geopolitical Simulations in Research and Education, Scott Silsbe  Roleplaying History: A Political Simulation of World War II in the Classroom, Michael Barnhart  Megagames in the Classroom: How Educators Can Build and Run Their Own, Noam Strassfeld	<b>GAME DESIGN</b> Colmena Design - PlugNPlay: An Educational Game Design System for Non-Designers (30-minute interactive), Dylan Shad, Rocio Rayo, Rees H. Shad  Tabletop Exercises and Tabletop Games: Bridging the Gap (30-minute interactive), Tavis L. Allison	<b>STEM</b> The Development of Game-Based Virtual Patient Simulations for Communication Skills Practice and Assessment in Health Professions (30-minute interactive), Cyrille Adam, Allisun O'Connell  Playing Video Games to Learn about the Nature of Science and Technology? Investigating the Learning Potential of Fallout 3/4 Video Game Play from a Science Education Perspective (20 minutes), Stephen DeMeo, Dennis Robbins	
11 AM – 12	Plenary (60 min)	Four experts consider the state of game-based learning today: Josh Debonis, Game Designer, Sortasoft ☼ Carlos Hernandez, Professor, English Department, BMCC, CUNY ☼ Jennifer Mangels, Professor, Psychology Department, Baruch College, CUNY ☼ Leah Potter, Senior Instructional Designer, Electric Funstuff					
12 – 1:30 PM	Lunch, Posters, Games						
1:30 – 2:45 PM	Session 2 (75 min)		<b>STEM</b> Integrating Board Games into a Science Classroom (20 minutes), Melissa A. Barlett  Learning from Nature: Marine Educational Games that Scaffold Science Inquiry (20 minutes), Lindsay Portnoy, Jessica Ochoa Hendrix, Mande Holford  Designing Digital Games for Math: Choices and Questions, Francesco Crocco and Kathleen Offenholley	<b>DESIGN RESEARCH</b> We Got This: Strategies for Right Sized Facilitation of Youth Created Location-Based Digital Games, Sara Vogel, Judy Schiller Perry  Do Online Gamified Learning Programs Increase Performance in an Undergraduate Psychology Statistics Course? Wei Zhang, Beliz Hazan, Ecem Olcum, Laura Rabin  Graduating from the Electoral, Michael J Lee, Zachary Shirkey	<b>LITERATURE AND STORY</b> Stepping Through The Darkness: Reenacting The Journeys of Refugees (30-minute interactive), J Stallard  Narrating America: Problem Solving through Interactive Digital Storytelling, Colette Daiute, Jessica Murray  Back to the Future: Studying Periodization and Literature in an Early Modern Card Game, Andie Silva  Sumer: Addressing Tensions Between Historical Accuracy and Fun in Educational Games, Geoffrey Suthers	<b>AWARENESS: GENDER AND SEX</b> Journey to Gender Equality - Using Board Game to Raise The Awareness of Gender Equality (30-minute interactive), Linying Wang, Zhuo Wang, Rishica Jain, Zui Cheng  Tryst: Teaching Sex Ed through a Mobile Card Battle Game (20 minutes), Marty Buccafusco	
2:45 – 3	Break						
3 – 4:15 PM	Session 3 (75 min)	<b>TRANSFORMATIVE GAMES INITIATIVE: GAME DESIGN AS A CLASSROOM LABORATORY FOR ANY DISCIPLINE</b>  (1-hour interactive) Robert O. Duncan	<b>NARRATIVE AND RHETORIC</b> Experiencing the Buffalo State Insane Asylum: A 3D Reconstruction and Game Narrative (20 minutes), Trent Hergenrader, Lisa Hermsen  Gamified Composition Studies: Playing with Agency at the Rhetorical Inn (20 minutes), Christopher M. Stuart  Using GBL To Enhance Writing and To Speculate on the Future of Education (20 minutes), Tonya C. Hegamin	<b>DESIGN CHALLENGES</b> Developing an Accessible Online Game Design Course: Challenges and Solutions for ADA Compliance (20 minutes), Mark A. Lewis, Justin Albohn  Integrating General Education, Computational Thinking and Interdisciplinary Awareness in Game Design (20 minutes), Reneta Lansiquot, Candido Cabo, Tamrah, D. Cunningham  Moving Past K-12: Building Our Own Games for Higher Learning (20 minutes), Leila McKinney	<b>INFORMATION LITERACY AND LANGUAGE</b> An Interactive IL Game that Teaches Students How to Create a Question for Research (20 minutes), Galina Letnikova  Information Games & the Scholarly Conversation, Nancy M Foasberg  Class! A Game of Phonetics, Phonology, and Categorizing Sounds (30-minute interactive), Lauren Spradlin	<b>STEM</b> Addressing Remediation and Retention Through Play-based Engagement (20 minutes), Rees Shad, Rocio Rayo  Gem Spinner: Creating a Sandbox for Learning Probability, Ira Fay  Using Games and Game Components to Teach Number Systems and Computer Concepts, Daryl J. Dates  Teaching Statistical Laboratory Sessions Through A Gamified Learning Experience, B. Hazan, W. Zhang, E. Olcum, L. Rabin	
4:15 – 4:30	Break						
4:30 – 5:30 PM	Session 4 (60 min)	<b>GAME DESIGN FOR ALL</b> What's Your Game Plan? Turn Any Idea into a Game!  (1-hour interactive) Joe Bisz	<b>GHOSTS IN THE MACHINE</b> Ghosts in the Library (30-minute interactive), Lydia Willoughby, Heather Shimon, Amanda Babirad  Winning Alone: A Gameful Approach to Solo Musical Improvisation (20 minutes), Tom Zlabinger	<b>GAME TYPES AND DESIGN</b> There and Back Again with Skill and Drill Games: When to Use Them or Look Elsewhere, Victoria (Tori) Mondelli  "Hi, I'm Beth" -- Speed Dating for Editors: Why Games of Introduction are Critical for the College Classroom, Beth Boswell  Using Simple Student Surveys to Inspire and Augment Game Design, Mary T. Gross  Nostalgic Childhood Puzzle Games Utilized as Learning Aids, Eda Sanchez-Persampieri	<b>RESEARCH AND PERSPECTIVES</b> Perspectives on Gameful Design in an Online Business Degree Program (20 minutes), Suzanne L. Kissel, Elizabeth Kane  Digital Game-Based Learning and College Courses: The Effect of Textbook Format on Mental Effort and Time on Task (20 minutes), Antonio L Thomas, Nichole G. Thomas	<b>GAMEFUL CLASSROOMS</b> Location-based Augmented Reality Games (ARGs) in the Classroom (30-minute interactive), Doug C Maynard  The RPG Classroom, Timothy J. Woods	

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