Building Worlds & Making Meaning Through Games
Provocation: How do we use and design games (analog and digital) that support new literacies?
Discussant: Kurt Squire

Analog Media and Learning: What's So Special About "Digital?"
Sean Duncan, Indiana University

Historically, DML and recent initiatives such as Connected Learning have highlighted numerous productive ways that engagement with "digital media"(cast broadly) can guide innovation in learning. But, what exactly is special about "digital media?"What shared meaning of the term, if any, does the DML community have, and in what ways has our field begun to move past the early framings of "digital media"that brought us together? In this presentation, I seek to interrogate the framing of "digital media and learning"as well as explore its potential utility outside of digital implementations through a deep dive into a relevant subfield.

In this presentation, I will hone in on an early and persistent DML domain: Games. Describing recent work into "analog games,"or non-digital, tabletop, role-playing, and card games, I will describe how the early, diverse emphases in games and learning (e.g., Squire, 2006) have given way to a more restrictive "games for learning"framing (Duncan, 2016a) that has focused on technological implementations at the expense of entertaining a broader conception of "game."Toward this end, I will describe results from three recent studies of non-digital and analog games, focusing on insights drawn from studies of computational thinking implemented in analog form (Berland & Duncan, 2016), role-playing games to enhance teaching (Georgen & Duncan, 2017), and from studies of analog, competitive gaming participatory culture (Duncan, 2016b; Duncan, 2016c).

Highlighting these three emphases entertained by DML , computational thinking, game-based teaching innovation, and engagement in participatory culture , I aim to explicate how new research on "analog games and learning"can build from "digital media and learning"into non-digital and hybrid forms, while still maintaining perspectives nurtured by initial research in the DML community. With the goal of pushing research on learning with digital media toward those which can be implemented in analog and hybrid media, I seek to provoke the DML community to further consider the ways that "digital media and learning"has continued utility beyond its initial, heavily technological sites of investigation.

From Pokemon to STEM Game Based Learning: Anatomy of a Crowdsourced Trading Card Game
David Ng, University of British Columbia

The Phylo Trading Card Game (http://phylogame.org) is an exercise in crowd sourcing, open access, and open game development to create a trading card game that focuses on STEM content. Beginning as a reaction to the following nugget: "Kids know more about Pokemon creatures than they do about real creatures,"this project has grown to broach elements of game based science education, ecological literacy, and hackathon mechanics. Given its flexible and open workflow, Since 2010, Phylo has benefited from the input of many expert communities, and many collaborations (formal and spontaneous) leading to a continually expanding resource that is under constant reiteration. This, in turn, has led to the steady and spontaneous creation of several new decks each year addressing a variety of different themes and championed by diverse group types (http://phylogame.org/decks/). Furthermore, this project has also been used to facilitate (analog) game design hackathons (particularly for teacher and student communities); and has recently been the subject of a pilot research project assessing the use of the card game in influencing environmental perceptions.

Game Changers: Making New Meanings and New Media with Videogames
Catherine Burwell, University of Calgary

This short presentation will report on research investigating the literacy practices associated with Let's Play videos (or LPs) on YouTube. A hybrid of digital gaming and video, LPs feature gameplay footage accompanied by simultaneous commentary recorded by the player. Players may set out to promote, review, critique or satirize a game. In recent years, LPs have become popular with young audiences, and currently make up over half the top hundred channels on YouTube. I consider LPs as emerging videogame paratexts with pedagogical potential. In particular, I ask how LPs function as sites of new literacies. I answer that question by discussing two key characteristics of LP practices: their emphasis on processes of meaning-making within games and their mobilization of literacies associated with remix and appropriation.

Game theorist James Newman (2013) writes that Let's Play videos give us unique insight into the gaming "performances, observations and techniques of others."Through their unique combination of oral commentary and visual gameplay, LPs reveal the complex, multimodal and situated ways that meaning is created in games. In doing so, they launch productive conversations in which participants share interpretations of games and reflect on the nature of interpretation itself. As a form of media that appropriates and transforms another medium, LPs also activate a host of remix literacies. These remix literacies apply to the capacities required to produce effective LPs by (re)combining materials and modes in ways that are recognized by participants in the LP community. They also apply to the critical awareness that is required to produce and circulate appropriated game content at a time when conceptualizations of copyright, fair use and ownership are in flux.

Based on these observations, I suggest that the range of practices associated with LPs (online discussion, shared and personal meaning-making, multimodal production, appropriation and critical decision-making) provide useful models for critical and creative engagement with games in literacy education.

MarsU: A Game to Teach Introductory Stats Concepts to Deaf and Hearing Students
David Simkins, Rochester Institute of Technology

MarsU is a game developed by a collaboration of the MAGIC Center, the School of Interactive Games and Media, the College of Science, and the National Technical Institute for the Deaf, all located within the Rochester Institute of Technology campus. The challenge is to make a game that teaches the concept of population and sample in context, taking advantage of many of the affordances of games for learning and using an approach that is inviting to all users, but that is always first welcoming to students in the deaf and hard of hearing (DHH) community. MarsU is a web-based game that follows a new undergraduate student enrolled in the premier university on Mars as they seek to be elected to President of the student government. The game is not intended to replace but to supplement statistics curriculum, and includes embedded and integrated links, providing several modes of interaction with statistics concepts both in play and through practice and video instruction. The game itself is dynamic, highly re-playable, and includes a surface focus on population and sample while also providing a deeper exploration of how these concepts are relevant in everyday contexts. This presentation will discuss the creation and flow of the game, the methods of approaching and remaining approachable to the DHH community, and methods of integrating intermediate statistics knowledge context while teaching introductory statistics content without overwhelming introductory statistics students. The game is complete, free, and in testing and will be available to interested participants.

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Collaborative Worldbuilding in the Classroom

Trent Hergenrader, Rochester Institute of Technology

This paper discusses the topic of my upcoming book COLLABORATIVE WORLDBUILDING for WRITERS & GAMERS, which is intended to be used in college-level classrooms and also by writers outside of schools. In my collaborative world building courses, students use digital tools such as wikis and Google maps to create sprawling fictional worlds for their character to explore. This methodology uses role-playing games (RPGs) as models for world building project, as their combination of quantitative and qualitative information about the world ensures consistency and coherence while allowing for diversity and individual expression.

Collaborative worldbuilding begins with a group discussion where students agree to a metanarrative, or a story that describes the world's political structures, economic systems, social relations, and cultural influences. Students compare the rules of the fictional world they're building to the consensus reality we all share, discussing how individuals can experience the same world in very different ways. Once they've written the metanarrative, students begin populating a wiki with entries of people, places, and things and pin them to a Google map. These entries become an enormous catalog that students will draw from when writing their fiction. They then create their own perspective characters (PCs), who face different social pressures and challenges based on their skills, attributes, and social standing.

In this presentation, I will share examples from collaborative world building courses I have taught with themes ranging from post-apocalyptic visions of Milwaukee, to an alternate history set in "Steampunk Rochester,"to fanfiction taking place in the world of George R.R. Martin's Game of Thrones, to an alt-history world of Porto created during a study abroad course in the summer of 2017. In all cases, students contemplated how different societies operate and how individuals feel social pressures differently based on a variety of factors. Students navigate these questions as a group and express their ideas individually through fiction writing. Digital tools make this large-scale projects manageable and publicly visible, and this progressive approach to creative writing asks students to critically consider their fictional representations of others in light of their own material conditions and embodied existence.

Dig Deeper: A Unity-based Biblical Archaeology Game

Emily Johnson, University of Central Florida

Educational games do not need to be limited to the skill-and-drill level of thinking. While many learning games do this well and remain motivational enough to encourage repeat play, games are just as capable of promoting critical thinking skills. This project was inspired by the innovative documentary-style video presentations currently being used in several of our university's online Judaic Studies courses. The authors are developing a learning game to complement the video episodes of one course in particular, Biblical Archaeology, with the intent of iterating it into a suite of games for this course and others to follow.

Beginning with the question, "What are the origins of Israel?"this learning game utilizes documentary-style

video vignettes populated by an assortment of historical personages as well as a Sherlock Holmes character, who questions the validity of artifacts and the scholarly theories explaining them. The platform being developed in-house utilizes Unity to deliver a choice-based parallel narrative game that incorporates short video segments created by the course's professor.

The gameplay follows actual discoveries and scholarship of biblical archaeologists across the last two centuries, highlighting the multiple methods of uncovering artifacts and the way they illuminate our understanding of history and culture. Players must rely on critical thinking skills as they seek to piece together the stories of the past and sift through different--and often incompatible--scholarly explanations of the events surrounding the relics, increasing learner interest and learning.

In this single presentation, the authors will elucidate and explain the different design choices that went into the game's development. We will also share screenshots and video of the prototypes and seek to discuss ways that the game could additionally be leveraged into a learning assessment tool through data mining.

Kenneth Hanson, University of Central Florida
Peter Smith, University of Central Florida

Math instead of chocolate –What German kids really want for Christmas
Robert Wistenfeld, Mathe im Leben gGmbH

"Mathe im Advent"is an 'online advent calendar' for school kids (www.mathe-im-advent.de). The German Mathematical Society introduced it in 2008, so has been developing for a decade now. With interesting mathematical problems and concepts, it reveals to the students the often-surprising message: Math can be fun and very useful!

For two difficulty levels a new problem is published every day from December 1–24. They come in form of a short and fun story about the elves organizing the "Christmas Gift Business"and every day life in their North Pole village. These stories are immensely popular, each year up to 150,000 German pupils play along [extra-curricular], over 50% of them being female. As a special teaser, the students can participate in a built-in Germany-wide competition and win attractive prices both as single competitors and together with their classes.

The "Mathe im Advent"project aims at school students of all abilities aged 9-15. Our puzzles –together with a detailed answer and the section "The Wider Angle"about the thematic background beyond mathematics –show mathematics as a multi-facetted cultural achievement, a useful toolbox, a way of thinking ahead, and vital basis for decision-making. They are especially designed for fostering students in creative exploring, analyzing, logic reasoning, and problem solving, and through that a confidence in their own abilities. In the long run, we aim to raise general numeracy and digital literacy as well as interest in mathematical careers in science and economy.

We want to discuss the characteristics of the competition and its benefits –on different valuable layers –to the students and the other stakeholders like teachers, parents, education research, and funders. We also want to raise the question if and how this project could be transferred to other countries and cultures like the U.S..