Guest editorial

Foregrounding play: an interdisciplinary dialogue on video games and learning

Introduction

Educators did not pay much attention to video games until computers were introduced into schools in the USA in the late 1980s and early 1990s. Even then, it took another 10 years or so for video games to be taken seriously as an important tool for teaching and learning. However, in the past 15 years, we have seen an exponential growth in the number of studies that have investigated how people learn through video games across a variety of contexts. Today, video games are integrated into classrooms and informal learning environments such as libraries, museums and community centers. And more recently, the educational potential of video games has been recognized at the national level, and their widespread use is further supported through initiatives such as White House Apps for Healthy Kids Challenge and the National STEM Video Game Challenge.

It is exciting to witness the shift in the perception of video games in our society from being a distraction or merely a recreational activity to a powerful teaching and learning tool for youth and adults. That said, many educators and researchers tend to approach video games from an instrumental point of view and use them as a motivational context to teach academic content and change students' behaviors. For example, libraries might integrate video games to their collection to attract youth or they might hold workshops to design video games to engage young people and teach them coding. However, the relationship between games and learning, cannot solely be understood through this instrumental lens, given the complexities of young people's social practices with and around games (Barron *et al.*, 2014; Ito *et al.*, 2009; Salen, 2008).

We, the co-editors of this special issue, believe that play has been considered an epiphenomenon in games and learning research, and needs to be foregrounded in the pursuit of effective designs and understanding the conditions that are necessary for the successful game and learning experiences. The articles in this special issue address our call by unpacking the relationship between games, play, and learning as well as connecting games and play to theories, designs, processes and outcomes of learning. Collectively, they engage scholars in an interdisciplinary dialogue on video games in ways that put play and learning to the forefront at the intersection of the information and learning sciences.

Why games and learning in information and learning sciences?

Information Sciences is concerned with presentation, collection, analysis, categorization and making sense of information, traditionally in the context of libraries. Learning Sciences, on the other hand, focuses on understanding learning and designing learning experiences, especially in the context of schools. What these fields share in common is the impact digital media and computer technology have on redefining the boundaries of learning which now includes the digital tools and communities. The ubiquity of digital interconnectivity and the growing need to address complex issues has made learning messy – much messier than how learning was historically conceptualized in the Information and Learning Sciences. What people learn, how they learn, where they find information and how they share and use information are all situated within a complex network of relationships and tools that are ever-changing, and new theories and research is needed to understand this complexity as well as to inform the development of new configurations for learning.

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This special issue focuses on video games from Information and Learning Sciences perspectives for several reasons. First, video games can present models of the world, and in these cases, playing video games can be transactive – gameplay can inform what we think about the world, and the world can inform what we do in the games we play and the meanings we construct as a result. Second, the models foregrounded in video games are representations of the world, and like all models, highlight some aspects of reality while obfuscating others. If playing video games is a means for developing an understanding of the real world, then helping students to learn through using or thinking with the game-based models requires further investigation.

Third, players develop digital literacy when they engage in video games as they learn to play within a system. Through play, they develop an understanding of the underlying grammar of how they find information, who they elicit help from, how they share information and build a network of people and tools to accomplish individual and collective goals. There continues to be a digital divide of a different kind: youth have access to computers, gaming consoles, tablets or smartphones but not all are participating in the kinds of practices necessary to survive in the digital world (Watkins, 2009). Bridging the digital divide means understanding how best to use tools like video games to support youth in developing knowledge, skills, and dispositions (digital literacy) that will help them to be successful in the twenty-first century – a concern for both Information and Learning Sciences to ensure the playing field is leveled in education.

Finally, throughout the past decade, researchers from both Information and Learning Sciences have increasingly become interested in understanding learning in the context of designed experiences where researchers had taken on the dual role of researcher-designer as they engage in iteratively designing, implementing, testing and studying how people learn. As a designed digital context, video games offer opportunities for researchers to explore different arrangements for learning and expand their methodological toolkit for collecting and analyzing data as they unfold the relationship between context, learning processes and outcomes. Interrogating these designs in terms of the values that are embedded in them through critical examinations of play and games provides necessary insight into the politics of our designs.

Given the trends across the two fields and their shared interests, we see this issue as a shift toward focusing on play to create a space for interdisciplinary work that Information and Learning Sciences engages in around video games. Fundamentally, we believe play allows people to connect with information in a different way, providing experiences and information that can be used as tools to think with especially concerning how to act in the world as well as in terms of who people want to become. In what follows, we provide a background on play to ground the discussion on video games and learning. From there, we highlight the themes that cut across the papers in the special issue. Finally, we end with concluding remarks on possible directions for future work.

Background on play

Play involves voluntary participation in physical- and technology-mediated spaces that serve as an end in itself wherein young people share information, pursue their interests, develop their agency and sense of identity and build meaningful and deep relationships (De Mul, 2015; Pearce, 2011; Siyahhan and Gee, 2017; Sutton-Smith, 2009). Thus, our designs for games and game-based learning must respect rather than subvert the interests and experiences of the players who are also learners ("player-learners"). As such, there is a need to understand the affordances of games for intentional as well as incidental teaching and learning within the broader context of play and creating playful experiences for youth.

Play is essential for making sense of oneself and others, developing a deeper understanding of the world, and a necessary aspect of social development and learning in the twenty-first century – a time defined by constant change (Thomas and Brown, 2011). It is the unique quality of crossing boundaries between real life and fantasy as well as leisure and work that makes play a rich context for teaching and learning. Plato believed that children explore their desires, future adult roles, and acculturate into society through play (D'Angour, 2013). Later, psychologists like Piaget (1962) and Vygotsky (1978), explored how play creates opportunities for children to learn adult ways of thinking and doing. From this vantage point, play functions as a catalyst for generational continuity, social order, and social identity formation in society.

Further, the "playfulness" of play provides a context for adults to step out of their social reality without fear or worry over the consequences of their actions. Thomas and Brown (2009) identify knowing, making and playing as fundamental practices that define what it means to be human and as important dimensions of contemporary learning. Drawing upon Johan Huizinga, they suggest that play is particularly important because it engages people in active experimentation and imagination which are important in today's digitally connected society. Similarly, Murray (2006) points out that through creating joint attentional scenes, games provide an "understanding of the self both as an agent and an object within a community of intentional agent-objects" and help:

> [. . .] develop the ability to shift perspective from one's own point of view to the point of view of others, to imagine what someone else is thinking, to see oneself from the point of view of the other

while engaging those who play simultaneously in teaching and learning (p. 189).

This special issue foregrounds play as the broader context for games and learning research due to its interdisciplinary nature that can speak to both Information and Learning Sciences. It is a site for the integration of theory, design, and practice in the development of research and products that span different disciplines to support learning.

Articles in this special issue

The six articles in this special issue discuss the emergent issues and practices around play, games, and learning. Specifically, they describe the theoretical, conceptual, methodological and design issues that are necessary to unpack the role of play in engaging youth and adults with information in the context of science, technology, engineering and math across formal (e.g. school) and informal (e.g. museums) environments.

One of the themes running through the articles is the tension between the player's agency and game structure in creating playful experiences for learners that cross the boundaries of real and imaginary. For example, Saleh *et al.* (2019) share their takeaways from a design-based research project where they iteratively designed and tested a game environment that allows players to engage in collaborative story-driven inquiry play in the context of school. Similarly, Jeon Kim and Pavlov (2019) describe their process of developing a pedagogical framework called the Game-Based Structural Debriefing (GBSD) that leverages the affordances of existing video games for teaching systems thinking by integrating system dynamics tools within a set of debriefing activities to help learners deconstruct the game systems.

In her paper, Williams-Pierce (2019) examines the same player agency/structure tension in the context of "mathematical play" Implementing a methodological approach that focuses on unpacking designed artifacts as the object of the scientific inquiry – an approach that could be utilized more often in the Information and Learning Sciences. Further, she alludes to the second theme that emerges across the articles in this special issue: How are games

different than other digital contexts such as simulations? And what value do different games and forms of play have for supporting learning? While Williams-Pierce (2019) compares and contrasts the affordances of games, simulations, and tutors, and how they support mathematical play, Davis *et al.* (2019) dive deeper into the forms of play afforded by different game contexts. They make the keen observation that existing research on play, games, and learning often "treats all games as having the same properties, or all play as having the same value".

Another theme that runs across different articles is a need to explore new and innovative methodologies in investigating the relationship between play, games, and learning. Like Williams-Pierce (2019), Foster *et al.* (2019) utilize a methodological approach that is less common in the Information and Learning Sciences. Using quantitative ethnography techniques such as Epistemic Network Analysis (ENA), they analyze in-game logged data and in-class student data to understand how high school freshmen students' identity exploration evolves as they engage in city planning. The paper also speaks to the importance of embedding game experiences within a larger designed context of play in the classroom and facilitating learners' reflection of their activities while playing games and within the larger designed context of play explicitly – a theme that emerges in Jeon Kim and Pavlov's paper as well.

Finally, in their paper, DeVane *et al.* (2019) focus on iteratively designing, implementing, and studying games, play, and learning in an out-of-school context. Specifically, it investigates how to design game-based experiences in museums that present multiple modes of play for players that bring different skills, needs, expectations and values such as parents and children and clearly and quickly communicate the possible activities and interactions given the time and space constraints of the museum context.

Concluding remarks

Play can be found across cultures, throughout individuals' lives, and is both a social and individual activity. Foregrounding play in research on games and learning provides opportunities to work across disciplines and bridge disparate theories and paradigms. Further work is needed for the Information and Learning Sciences to make connections that these articles point toward, including but not limited to:

- developing new methods that can characterize play as it is unfolding;
- theories that navigate the tension between player agency and game structure; especially over time, relative to learning, and in relation to meaning and value for the players; and
- frameworks or other structures for advancing our theories of play in the designs of games for learning.

We hope that a focus on play will allow scholars make connections across the two disciplines while expanding our understanding of games and learning across, for example, schools, home, libraries, museums, online interest groups, generations of players and cultures.

We believe that applications of work on play, games and learning will be particularly exciting in the near future, as studies of games continue to explore:

- the potential of video games in engaging players in civic life and activism;
- lack of diversity in representation of players of different genders and ethnicity in video games and their stories;

- the role of games in adult education; and
- using video games as a vehicle for making sense of the news.

Game technologies like Virtual Reality (VR) and easy to use development platforms such as Unity also offer new and exciting possibilities for research on games and learning where an interdisciplinary lens is better suited to address the issues of design, theory, and methodology. This special issue is an attempt to engage scholars in interdisciplinary dialogue around games and learning across the Information and Learning Sciences.

Sinem Siyahhan
School of Education, California State University, Bakersfield, California, USA, and
Matthew Gaydos
Mathematics, Natural Science, Akita International University, Akita, Japan

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About the Guest Editors

Sinem Siyahhan, PhD, is an Associate Professor of Educational Technology and Learning Sciences at California State University, San Marcos. Her research focuses on designing and studying learning experiences with and around digital media technologies including video games to support meaningful social interactions, deep engagement with content and development of twenty-first century skills. Sinem Siyahhan is the corresponding author and can be contacted at: ssiyahhan@csusm.edu

Matthew Gaydos, PhD, is an Assistant Professor at Akita University, Japan. He studies and develops games for play-based learning, working at the intersection of theory, design and policy. He is interested in better understanding how to apply principles of learning to the development and use of playful interactive media.