

LS 451 :: Design of Playful Learning Environments

Northwestern University, School of Education and Social Policy

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SUMMARY

This seminar course explores how playful environments can be designed to support learning in exciting and unexpected ways. We define play broadly, as the act of exploring or manipulating to satisfy curiosity, which can arise through engagement with fantasy and narrative, making and creating, as well as structured games and sports. To guide our exploration we will read and discuss a variety of research papers including:

- foundational papers that unpack the relationship between play, games, and learning to provide a theoretical background for thinking about designs.
- papers that provide examples of learning environments that incorporate play to show how playful learning theories can be integrated into designs.
- papers that describe methods for analyzing the mechanisms of how learning happens in playful learning environments to understand designs more deeply.

Students will apply their knowledge of these papers through a quarter-long project on a topic of their choice, which must involve either the design of a playful learning environment or the analysis of a playful learning environment design. My hope is that students choose projects that are directly related to their main-line research, such that the project allows them to practice core Learning Sciences research skills while furthering their own research agenda.

LEARNING OBJECTIVES

By the end of the quarter, students will develop a deep understanding of the playful learning landscape and related literature. They will practice core research skills including argument development, design, analysis, writing, and integrating of the three strands of the learning sciences (cognition, sociocultural context, and design). They will also practice core professional skills such as leading discussions, giving and receiving feedback on research ideas, and presenting in-progress work.

COURSE CULTURE

In this course, I will be encouraging students to take on a playful approach to their own learning. We will be forming an open, engaged, and close community during the ten weeks we’re working together. Expect to get to know your classmates and their research projects well, and to engage in group activities that challenge your assumptions, encourage you to explore new perspectives on your research, and help you develop stronger arguments to support your ideas.

COURSE STRUCTURE

This course is a reading seminar with an individual research project component. Each week, we will spend one class discussing the readings and the other class on activities that apply ideas from the readings, with four project-related assignments due throughout the quarter.

- **Reading Posts:** Each week, students will be responsible for writing a short discussion post on the readings for the week. The objective of these posts is for students to identify connections between the readings, highlight any questions that arose, and relate the readings to their personal research project.
- **Discussion Leads:** Each student will lead 1-2 class discussions (depending on enrollment) during the quarter. Discussion leads will review their classmates' reading posts and develop a set of topics and questions to guide the class. Discussion leads will meet with Nell before class to get feedback on their plans for the discussion.
- **Class Activities:** Each week, students will participate in activities during class designed to help them apply the readings to their own project. This may involve critiquing playful learning environments, designing simple games, giving peers feedback on their projects, and workshopping sections of your final papers.
- **Research Project:** Each student will conduct an independent research project as part of this class, ideally related to their main-line research. The final deliverable is a paper describing the core contributions of the project. For more details on the project requirements and deliverables, see the *Research Project* section below.

GRADING

The research project deliverables will be worth 60% of your grade, and participation through discussion posts, leading discussions, and in-class activities will be worth 40% of your grade.

- **Research Project:**
 - Milestone 1: 10%
 - Milestone 2: 10%
 - Milestone 3: 10%
 - Final Deliverable: 30%
- **Class Participation:**
 - Reading posts: 18%
 - Discussion lead: 12%
 - Participation in discussions and in-class activities: 10%

RESEARCH PROJECT

The quarter-long project is designed to help students apply the playful learning ideas we explore in class through a personally meaningful research problem. Since this class is about the **design** of playful learning environments, the project must involve either (a) the design of a new playful learning environment or (b) the analysis of an existing playful learning environment design. My hope is that students choose projects related to their main-line research, so that working on the project through class will further their personal research goals. If playful learning does not relate to your main-line research, I'd be happy to help you choose a personally meaningful project. Given that there is some flexibility in topics, there are a few options for the final deliverable:

- **Playful Learning Environment Design:** If you will be designing a new playful learning environment, your final deliverable can be a research paper that provides: (a) motivation for why this new design will make a contribution to the research community, (b) a background or theoretical framework that describes the theory of learning driving your design, (c) design arguments describing the target outcomes and core characteristics of your design, (d) a description of your design process, and (e) a description of your design. You can view this deliverable as the first half of a design research paper, minus the formal evaluation of your design.
- **Playful Learning Environment Analysis:** If you will be analyzing learning in an existing playful environment, your final deliverable can be a research paper that provides (a) motivation for why analyzing this playful design will make a contribution to the research community, (b) a background or theoretical framework that describes the theory of learning driving your analysis, (c) a description of the learning environment and its target outcomes, (d) a description of your analysis methodology, and (e) the results of your analysis. You can view this deliverable as a slice of a design analysis paper, where the scope is smaller or more focused than what you would submit for publication.
- **Other Research Artifact:** If you are currently working on a research artifact for the project you will be exploring through class, such as a paper to submit to an upcoming conference or a fellowship or grant application, we may be able to adjust your final deliverable to be in-line with this other research artifact. If you think working on a deliverable other than the two paper options proposed above would be more productive for you, reach out and we can discuss this option in person. Note that I must sign off on this option after our discussion before you can do this one.

The research project will be scaffolded through three mid-quarter milestones before the final paper is due during exam week. The milestones will focus on your project motivation, background, and design/analysis respectively. The goal of these milestones is to ensure that you are making progress throughout the quarter, and to allow you to get early feedback from both me and your classmates to refine and improve your arguments, designs, and analyses.

READINGS

Week 1: Perspectives on play, games, and learning

- Resnick, M. and Robinson, K., 2017. Ch 5: Play. *Lifelong kindergarten: Cultivating creativity through projects, passion, peers, and play*. MIT press.
- Shaffer, D.W., Squire, K.R., Halverson, R. and Gee, J.P., 2005. Video games and the future of learning. *Phi delta kappan*, 87(2), pp.105-111.

Week 2: Defining play, games, and their role in development

- Schell, J., 2014. Ch 3: The Experience Rises Out of a Game. *The Art of Game Design: A book of lenses*. AK Peters/CRC Press.
- Vygotsky, L.S., 1978. Ch 7: The role of play in development. *Mind in society*, pp.92-104.

Week 3: Design examples - playful learning

- Berland, M., 2016. Making, tinkering, and computational literacy. *Makeology: Makers as learners*, 2, pp.196-205.
- Lillard, A.S., 2013. Playful learning and Montessori education. *NAMTA Journal*, 38(2), pp.137-174.

Week 4: Games, learning, and identity

- Gee, J.P., 2003. Ch 2. Semiotic domains: Is playing video games a waste of time? *What video games have to teach us about learning and literacy*, pp.13-50.
- Gee, J.P., 2007. Ch 3. Learning and Identity: What does it mean to be a Half-Elf? *What Video Games Have to Teach Us About Learning and Literacy*, pp.45-69.

Week 5: Landscape of games for learning

- Steinkuehler, C. and Squire, K., 2014. Videogames and learning. *Cambridge handbook of the learning sciences*, pp.377-396.
- Kafai, Y.B., 2006. Playing and making games for learning: Instructionist and constructionist perspectives for game studies. *Games and culture*, 1(1), pp.36-40.

Week 6: Analyzing learning in games

- Shaffer, D.W., 2012. Models of situated action: Computer games and the problem of transfer. *Games, learning, and society: Learning and meaning in the digital age*, pp.403-433.
- Nasir, N.I.S., 2005. Individual cognitive structuring and the sociocultural context: Strategy shifts in the game of dominoes. *The Journal of the Learning Sciences*, 14(1), pp.5-34.

Week 7: Design examples - games for learning

- Holbert, N.R. and Wilensky, U., 2014. Constructible authentic representations: Designing video games that enable players to utilize knowledge developed in-game to reason about science. *Technology, Knowledge and Learning*, 19(1-2), pp.53-79.
- O'Rourke, E., Haimovitz, K., Ballweber, C., Dweck, C. and Popović, Z., 2014. Brain points: a growth mindset incentive structure boosts persistence in an educational game. In *Proceedings of the SIGCHI conference on human factors in computing systems* (pp. 3339-3348). ACM.

Week 8: Design recipes and frameworks

- Alevan, V., Myers, E., Easterday, M. and Ogan, A., 2010, April. Toward a framework for the analysis and design of educational games. In *2010 third IEEE international conference on digital game and intelligent toy enhanced learning* (pp. 69-76). IEEE.
- Nicholson, S., 2015. A recipe for meaningful gamification. In *Gamification in education and business* (pp. 1-20). Springer, Cham.

Week 9: No reading, Thanksgiving break

Week 10: Computational approaches for analyzing learning in games

- Berland, M., Baker, R.S. and Blikstein, P., 2014. Educational data mining and learning analytics: Applications to constructionist research. *Technology, Knowledge and Learning*, 19(1-2), pp.205-220.
- Shute, V.J., Ventura, M., Bauer, M. and Zapata-Rivera, D., 2009. Melding the power of serious games and embedded assessment to monitor and foster learning. *Serious games: Mechanisms and effects*, 2, pp.295-321.

LATE WORK & ABSENCES

Late work will not be accepted in most cases, since in-class discussions and activities are dependent on work being submitted on time. Please reach out as early as possible if you anticipate struggling to submit work on time. Absences will have a negative impact on your participation evaluation.

NORTHWESTERN POLICIES

Academic Integrity

Students in this course are required to comply with the policies found in the booklet, "Academic Integrity at Northwestern University: A Basic guide". All papers submitted for credit in this course must be submitted electronically unless otherwise instructed by the professor. Your written work may be tested for plagiarized content. For details regarding academic integrity at Northwestern or to download the guide, visit:

<http://www.northwestern.edu/provost/policies/academic-integrity/index.html>.

Accessibility Accommodations

Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

CHANGES TO SYLLABUS

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be discussed in class and on slack.

ACKNOWLEDGEMENTS

The design of this course draws on syllabi from other instructors who have taught similar courses and subjects, including: Matt Easterday and Darren Gergle.