

Martin J. (2010). Gaming the Outdoors: Motivating Interaction with Place Through Mobile Games. 2010 American Educational Research Association annual meeting in Denver, CO. April 30-May 4, 2010.

Gaming the Outdoors:
Motivating Interaction with Place Through Mobile Games

John Martin, Ph.D.
University of Wisconsin – Madison

Presented at the
2010 American Educational Research Association annual meeting
SIG-Media, Culture, and Curriculum
The Benefits of Games and Gaming in Informal Learning Contexts
Denver, Colorado. April 30-May 4, 2010.

1. Objectives	2
2. Theory	3
2.1. Remediating Place in Learning.....	3
2.2. The Mystery Trip as Medium for Place-Based Inquiry	4
3. Methods	4
4. Data Sources	5
5. Findings	5
6. Significance	6
7. Sources.....	6

1. Objectives

Reframing learning ‘work’ into ‘fun’ to promote intrinsic motivation is an age-old teaching strategy (Locke, 1963; Lepper & Henderlong, 2000), and in educational technology research since the beginning (Malone, 1980). Introduction of fantasy elements further increases learner motivation (see, for example, Parker & Lepper, 1992). This paper focuses on how an Augmented Reality (AR) video game re-creation of a natural world hiking game motivated campers to ‘work playfully’ on hiking trips — fostering deep connections to community and culture.

The following vignette recalls a 1927 summer camp’s “Mystery Trip” that reframed work inherent in hiking trips into a fantasy game:

Plans had to be changed at the last moment, and all our energies were to be devoted to helping the local authorities, whoever they were, hunt down the criminals and bring them to justice. At the same time we would uphold the honor of the camp, and in all probability bring fame and fortune to ourselves and our counselors.

Assignments were quickly made. For the sake of expediency, the original trip groupings would be maintained, but we would travel unexpected paths. All of this had been well arranged beforehand; and I can visualize the counselors now constructing the complicated plot in the evenings after we had gone to bed. Now they were ready to play it out.

I can’t remember much of that first Mystery Trip except that it rained. It rained all the time. The villains, whoever they were, had left clues and trails as they challenged us to track them down. Coded messages were found and deciphered. The net was slowly tightening. In tracking those undesirables, we learned more than we at the moment wanted to know about following trails in the woods. I clearly remember looking for stone cairns on the mountain side under what were certainly not the most favorable conditions (Price 1986, p. 65).

People like to play, and willingly endure harsh conditions to learn more than they “at the moment wanted” if motivated — in video games it’s called *grinding*. This was also the case with this study’s participants. When immersed in good games, kids often learn complex rules and structures of game systems; to better interact with and ‘play well’ with other players; and cultural

undergirding of game narratives (Gee, 2003). Essentially, games mediate world perspectives—players see objects through game systems. Consequently, by restructuring daily activities into games, we can affect participants' attitudes towards activities. Significant learning repercussions ensue; for example, in good video games, players solve problems to get more challenging ones (Gee, 2003). As this study shows, this also occurs through virtual overlays in natural world games.

2. Theory

2.1. *Remediating Place in Learning*

Like place itself, the *importance* of place does not manifest itself as a central focus of activity-centered theories, it hides in plain sight all around studied activities. For example, in his seminal study of the navigation of a ship, Hutchins (1995) socially situates cognition in a system of distributed beings and tools. Activity Theorists rightly focus on social distribution of knowledge and socially designed tools, but it is important to note that the system he examined was for navigating a ship through geographical space, and the physical attributes of the places that the participants on the ship operated within had much to do with the *affordances* (Norman, 1993) of those places. Additionally, in Pea's (1993) focus on tools and modes of representation, too often we overlook that the affordances and constraints physical setting, whether designed or merely repurposed, also serves as a tool or mode of representation.

While place is acknowledged as being important to the learning process, we often shortchange its importance. Exploring pedagogically charged environments outside classrooms, Ellsworth (2005) argues that architects, designers and museum curators create “processural paths” through mediated environments—and therefore new pedagogies of sensation, not “as having bodies” but “*as bodies* whose movements and sensations are crucial to our understandings” (p. 27).

However, rather than address physical learning environments, much research focuses on shared activity in *virtual* places of cyberspace, promising anytime, anywhere learning. And while amazing learning happens in online sociocultural learning tools like video games, chat, wikis, and blogs, the focus may also increase a larger disconnect from the land and physical places students actually live in and rely upon. Video game designers in particular are doing this with less physicality, creating “immersive worlds with embedded rules and relationships among objects that enable dynamic experiences” (Jenkins & Squire, 2002, p. 65).

One way to resolve this rift is through locative technologies that allow features of physical and virtual space in learning to work in concert with each other to create *game* space. These games merge handheld computers with Global Positioning System (GPS) units. For players, game space is real space, tracked by GPS and plotted onto a handheld computer (Klopfer & Squire, in press). The space that they move through is familiar—with recognizable and culturally familiar features—but games reveal added or *augmented* content that is meaningful within its frame. In the activity of *playing* an AR game, players move their own bodies (instead of digital avatars) through culturally significant real-world environments collecting data to solve problems and attain goals. University of Wisconsin, and MIT researchers have demonstrated effective learning

in AR experiences (Squire & Jan, 2007; Klopfer & Squire, 2003), an outcome also demonstrated in this study.

2.2. *The Mystery Trip as Medium for Place-Based Inquiry*

The Mystery Trip at Flying Moose Lodge serves as an ideal opportunity to enact active place-based learning through AR technology. To explore learning and engagement through AR technology at a deep woods camp in Maine, I resurrected and updated a camping activity that had not been practiced for over 40 years. I modified the Mystery Trip to evolve through a succession of design narratives (Hoadley, 2002) to allow for iterative updates that included players' own cultural infusions into it.

The Mystery Trip, which began in the early 1920s and lasted until the 1950s, was certainly effective in its own right but would likely have not met the same demise in a more technologically advanced era. Absent current technology, the Mystery Trip could be hindered by inclement weather that often destroyed or obscured clues, leading to narrative dead-ends. Additionally, it required too much time and energy to create and plant clues for campers to find. AR technology made possible a Mystery Trip adventure with location-based codes, pictures and video clues that cannot be accomplished with a map-and-compass game. The GPS-enabled game allows working games to be created and deployed quickly without having to plant clues. Furthermore, the design experience allows participants to test a game and offer feedback and suggestions, simultaneously taking on roles of player and designer, and working collaboratively on tasks related to camping, playing, and critiquing/redesigning the game—allowing for a level of engagement that would not have been possible in the Trip's earlier incarnations.

3. Methods

The Mystery Trip, where campers were sent out to track forgers, kidnappers, and thieves, was enormously popular at a small New England camp in the early 20th century. Campers used to spend nearly all their time camping within 10-15 miles of the camp, so who better for “helping the local authorities ... hunt down the criminals” who were hiding out in their own backyard? But the game fell to the wayside for many reasons.

In 2005, a game technology that used GPS allowed scavenger hunt activities where instead of hiding and finding *physical* objects one could manipulate *virtual* objects and program them to appear or play on handheld computers at specific locations. This allowed an easy re-creation of the Mystery Trip.

To examine community, I use McMillan & Chavis's (1986) definition of a Sense of Community: 1) membership, or a right to belong; 2) influence, or a sense of mattering; 3) reinforcement, or a sense of security, and 4) shared emotional connection, or a sense that members have shared and will share history, common places, time together, and similar experiences (p. 4).

To assess how this activity mediated identity in a community, I used ethnographic methods of observations, videotaped interviews, written journals, and software iterations. The data was compared to find patterns of similar statements or contrasting opinions and ideas. It was then

categorized and analyzed to ascertain participants' engagement, involvement, and understanding of their social/working communities.

4. Data Sources

In 2005, five campers spent a four-day hiking trip mapping out game space, creating characters, and building a loose game narrative. A 2006 group modified it to the narrative that was subsequently used. The starting point was a familiar trail all had hiked. The narrative unfolded by triggering an event (beeping to notify players) when players reach pre-programmed locations. The handheld computer became a communicator and displayed urgent "live messages" revealing that a rival camp for rich kids took over camp to use the lake's "crystal clear water" for a factory to make tastier sandwich mustard. "Saving" camp and thwarting invaders' plans involves climbing three mountains to triangulate and decode a radio signal from the rivals' transmitter. As the trip progressed, campers got clues to reconstruct the story and better understand how to help.

When participants returned, video interviews were collected and analyzed for emergent themes and compared with existing cultural models of the camp community, both through previously analyzed cultural artifacts and through participants' own understanding of 'the way things work' in the camp community.

5. Findings

The AR game increased understanding of, appreciation for, and connection to, the land where it takes place. On a four-day trip, campers spend ~80 hours together repeating a sequence of hiking, resting, setting up campsites, cooking, eating, cleaning, etc. Challenged by both terrain and weather, and lacking layers of modern climate control between body and environment, natural elements take on significant and deeply embodied meanings.

This game gave trips an *unfolding narrative* that motivated off-trail movement while GPS-tracking *reassured* campers. This in turn *restructured* participants' perspective of *place*, and their understanding of *self*, and their relation to camp culture.

The game scaffolded intimate connections to place by motivating off-trail movement and making navigation less intimidating, as one participant indicated: it "allows you to be a bit more adventurous... we can bushwhack down here, and just follow our GPS back." Its significance emerged in almost every interview. Because AR technology relies on triggering specific GPS *locations* rather than *routes*, campers determined paths between locations however they saw fit, (terrain rarely allowed straight paths). Of the motivation to bushwhack, one participant noted, "It's not just 'Oh let's just climb this mountain because it's what we're doing.' It's 'let's hike this mountain because that's the next part of the game'.... had that not been a part of it we almost certainly would have just gone up the regular trail."

The narrative also helped reframe players' connection to community. One participant described motivation for hiking as, "because, you know, camp's in trouble," whereas another suggested, "It was more fun to have a goal, instead of 'let's just climb this mountain,' we have to get the radio signals. And we'd want to know 'what's [the camp director] going to say?'"

6. Significance

We must invest in place-based games to reconnect learners to land and communities (Gruenewald, 2003), because we often take place for granted (Casey, 1997; Geertz, 1996) instead of harnessing it for learning. Consequently, there is little research on its effect in contemporary learning (Ellsworth, 2005; Orr, 1992). The classrooms that Dewey (1900) termed as “made for listening” (p. 31) are still mainstream (Meyer, 1992).

Mobile games can bridge philosophical gaps between video game researchers and environmentalists by promising active outdoor games that connect players to real-world situations. “Getting back to nature” is both a mission and draw of deep woods camps, and heeds to Louv’s (2006) call to get children back outside.

7. Sources

- Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141-178.
- Bruner, J. (1996). *The culture of education*. Cambridge: Harvard University Press.
- Casey, E. (1997). *The fate of place: A philosophical history*. Berkeley: University of California Press.
- Childs, D. (2002). Personal conversation. July 23, 2002.
- Coles, R. (1989). *The call of stories: Teaching and the moral imagination*. Boston, MA: Houghton Mifflin.
- Dewey, J. (1900). *The school and society*. Chicago: University of Chicago Press.
- Ellsworth, E. (2005). *Places of learning: Media, architectures, pedagogy*. New York: Routledge.
- Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Straus, and Giroux.
- Gee, J.P. (2003). *What video games have to teach us about learning and literacy*. New York: Palgrave/Macmillan.
- Gee, J. P. (1999). *An introduction to discourse analysis: Theory and method*. London: Routledge.
- Geertz, C. (1996). Afterword, In S. Feld & K. H. Basso. “Senses of Place, (pp. 259-262). Santa Fe, NM: School of American Research Press.
- Gruenewald, D. (2003). The Best of Both Worlds: A Critical Pedagogy of Place. *Educational Researcher*, 32 (4), (pp. 3–12).
- Hoadley, C. (2002). Creating context: Design based research in creating and understanding CSCL. In G. Stahl (Ed.), *Computer support for collaborative learning* (pp. 453–462). Mahwah, NJ: Erlbaum.
- Holland, D. C., Quinn, Naomi (1987). *Cultural models in language & thought*. Cambridge: Cambridge University Press.
- Hutchins, E. (1995). *Cognition in the wild*. Cambridge, MA: MIT Press.
- Klopfer, E. & Squire, K. (2003). *Environmental Detectives—Developing a platform for Augmented Reality Platform for Environmental Simulations*. Educational Technology Research & Development.
- Lave, J., & Wenger, E. (1991). *Situated learning*. New York: Cambridge University Press.

- Lee, T., & Breen, L. (2007). Young People's Perceptions and Experiences of Leaving High School Early: An Exploration, *Journal of Community & Applied Social Psychology*, 17, 329-347.
- Lepper, M. R., & Henderlong, J. (2000). Turning "play" into "work" and "work" into "play": 25 years of research on intrinsic versus extrinsic motivation. In C. Sansone & J. M. Harackiewicz (Eds.), *Intrinsic and extrinsic motivation: The search for optimal motivation and performance* (pp. 257-307). San Diego, CA: Academic Press.
- Leont'ev, A. (1978). *Activity, consciousness, and personality*. Englewood Cliffs, NJ: Prentice-Hall.
- Locke, J. (1963). *Some thoughts concerning education*. London: A. & J. Churchill.
- Louv, Richard. (2005). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Chapel Hill: Algonquin Books.
- Malone T W (1980) What makes things fun to learn? A study of intrinsically motivating computer games Technical Report CIS-7 Xerox PARC, Palo Alto.
- Martin, J. (2005). Wild Moose. An augmented reality game. [electronic source, Feb 25, 2008] <http://www.regardingjohn.com/blog/2007/04/04/fml-ar-game-wild-moose/>.
- Martin, J. (2006). Mitchville: Where the War Began. An augmented reality game. [electronic source, Feb 25, 2008] <http://www.regardingjohn.com/blog/2007/04/06/mitchville-where-the-war-began/>.
- Martin, J. (2008). Gaming and Reframing Experiences with Place-Based Inquiry. To be presented at the International Congress of Qualitative Inquiry. University of Illinois at Urbana-Champaign, May 14-17, 2008. Available online <http://www.regardingjohn.com/papers/>.
- Martin, J., Jan, M., Mathews, J. Holden, C. (2008). Gaming My Community: Kids Designing Local Video Games. To be presented at American Educational Research Association Annual Meeting. New York, March 24-29, 2008. Available online <http://www.regardingjohn.com/papers/>.
- Meyer, J., Kamens, D., & Benavot, A. (1992). *School knowledge for the masses: World models and national primary curricular categories in the twentieth century*. Washington, DC: Falmer Press.
- Norman, D. (1993). *Things that make us smart*. Reading, MA.: Perseus Books.
- Orr, D. W. (1992). *Ecological literacy: Education and the transition to a postmodern world*. Albany: State University of New York Press.
- Pea, R. (1993). Practices of distributed intelligence and designs for education. In G. Salomon (Ed.), *Distributed cognitions* (pp. 47-87). New York: Cambridge University Press.
- Squire, K. D., & Jan, M. (2007). Mad City Mystery: Developing scientific argumentation skills with a place-based augmented reality game on handheld computers. *Journal of Science Education and Technology*. 16(1), 5-29.
- Squire, K., Jan, M., Mathews, J., Wagler, M., Martin, J., DeVane, B., & Holden, C. (2007). *Wherever You Go, There You Are: Place-Based Augmented Reality Games for Learning*. In Shelton, B. E., & Wiley, D. (Eds.). *The Educational Design and Use of Simulation Computer Games*. Rotterdam, The Netherlands: Sense Publishers.
- Steinkuehler, C. A. (2005). The new third place: Massively multiplayer online gaming in American youth culture. *Tidskrift Journal of Research in Teacher Education*, 3. Umeå: Umeå University, The Faculty of Teacher Education Board. [electronic source, Nov 21, 2005] http://www.academiccolab.org/resources/documents/Steinkuehler_ThirdPlace.pdf

Tuan, Y. (1977). *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. In M. Cole, J. Steiner, S. Scribner & E. Souberman (Eds.). Cambridge, MA : Harvard University Press.