

# An Ethnographic Perspective On Video Game Play & Science Learning

---

Reed Stevens

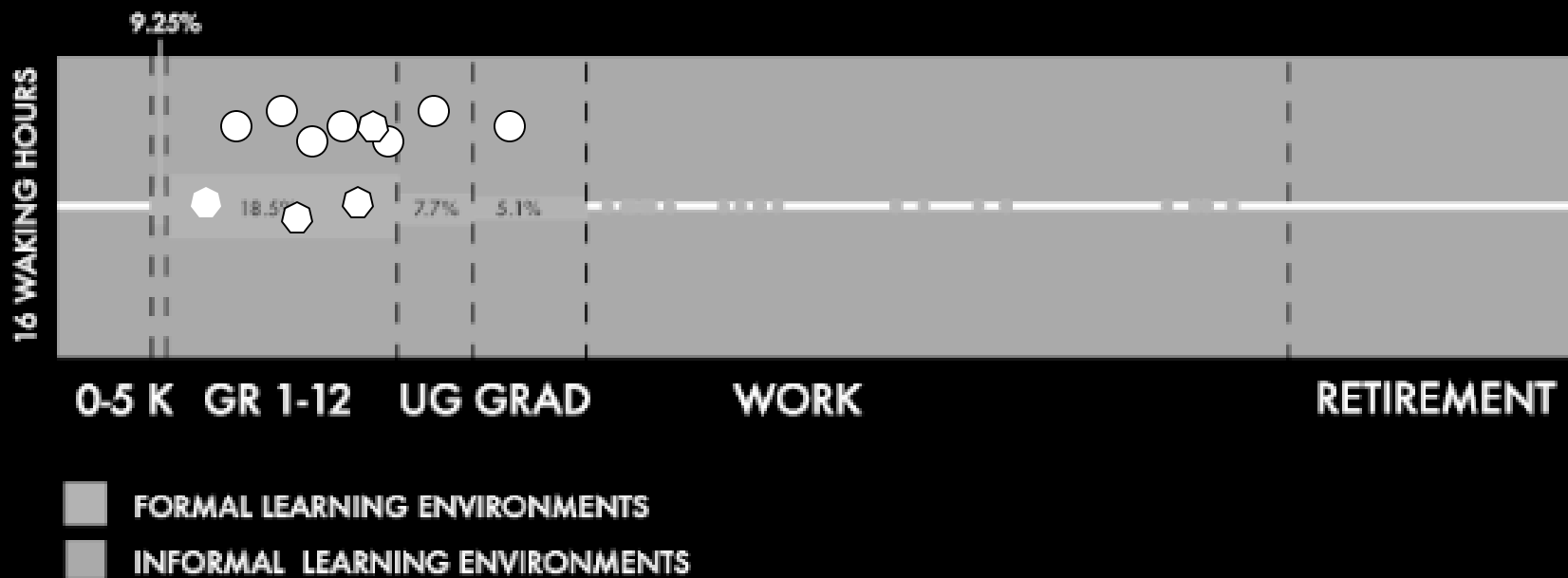
Northwestern University & the NSF LIFE Center

Computer Games, Simulations, and Education Meeting

October 6-7, 2009



## LIFELONG AND LIFEWIDE LEARNING



Premise: Video game play is a well established part of kid culture. An understanding should shape new game designs for science learning.

## Line Of Studies About “Learning & Media Controversies”

---

- § What these studies share:
  - § Significant controversy about the the value and effects of a particular form of media engagement for young people’s learning & development
  - § Relative absence of ethnographic research that follows people out from the direct media experience to its connections with the world

Study 1: Video game play at home



Study 2: Television watching study



Study 3: Texting study (planned)



## Ethnographic Study Of Commercial Video Game Play in Homes

---



- § Intense controversy about what playing video games means for young people's learning & development...little ethnographic field research of everyday play
  - § One side: Playing video games promotes violence, blind consumption, physical & moral lassitude
  - § Other side: Games make you smarter, more creative, a better problem-solver...
- § Most kids spend significant out of school time every day playing video games. From a study of kids aged 10-19 (data collected in 2000-2003).
  - § Female gamers: 44 minutes (weekdays) and 1 hour and 4 minutes (weekends)
  - § Male gamers: 58 minutes (weekdays) and 1 hour 37 minutes (weekends)
- § More time per day and per week time than in educationally organized science or math activities

## Findings From This Study Relevant To Science & Math Learning

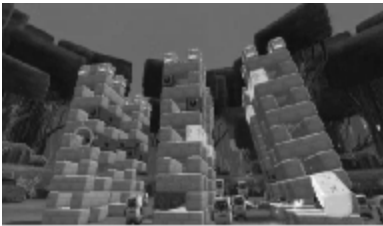
---

- § Very little observed activity or talk can be tied to explicit scientific knowledge of the kind represented in science standards documents
- § Implicit and arguably important meta-understandings easier to ascribe. These include:
  - § Understandings that there is an underlying causal model that dictates outcomes and events that one can try to discover through play.
  - § Understandings that properties in a modeled world are attached to quantities that vary systematically
  - § Understandings that quantities vary systematically in relation to each other (e.g. direct and indirect variation)

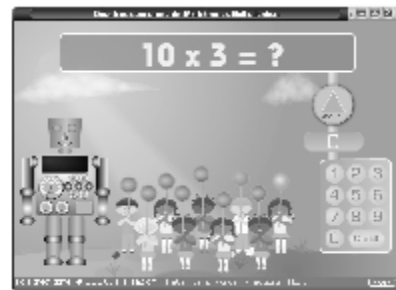
# The Need For A Common Research Approach to Games & Learning that is Indifferent to the Design Source

---

Entertainment games designed commercially



Educational games designed commercially



Educational games designed by learning scientists



## The In Game, In Room, In World Research Strategy

---

- § In game: Close analyses of qualities and patterns of interactivity between person and game/media
- § In room: Relate interactions between person(s) and game to in room social activities and resources
- § In world: Trace meanings and connections from game play to other parts of kids' lives and back into game play.

Stevens, R., Satwicz, T., & McCarthy, L. (2008). In game, In room, In world: Reconnecting video game play to the rest of kids' lives. *The Ecology of Games*. Salen, K. (Ed.), Cambridge: MIT Press.

## Issue for Further Research

---

- § CLAIM: Video games have special properties as learning environments.
  
- § RESPONSE: Our study suggests that the special properties may not be primarily “in game” but “in room”—in the flexible *learning arrangements* created by young people.

## Diversity Of Kid Created And Sustained “Learning Arrangements”

---



Rachel uses her brother as used as a just-in-time guide and instructor to allow her to pursue customized goals in the game. He is brought in and then sent away.



A physical instantiation of Legitimate Peripheral Participation (LPP). Mikey and Ted play in the central space. Little sister Maddy watches from periphery and plays a retired handheld. Sometimes Mikey stops the action and brings Maddy in to give her a chance to try a sub-skill in the game. Then she steps out and game play between the two older siblings continues.



Tyler (left) devises multiple ways to demonstrate key moves amidst the flow Andrew’s active play, either taking over quickly and displaying his hands as he performs a move or using an inactive controller in Andrew’s field of vision

## What Game Play Looks Like In Homes: The Non-standard, Heterogeneous Resources That Support Game Play

---



## Issue for Further Research

---

**CLAIM:** Educationally designed games will help people learn science better than commercial games (because they are designed with this goal in mind).

**RESPONSE:** We need a better understanding of the broader contexts and timescales of play and better sense of trade-offs between curricularly assigned games and those played electively.

Performance results on pre- and post-test provide a small window through which to explore this comparative issue

## An example of a planned study of science learning in commercial game play

---

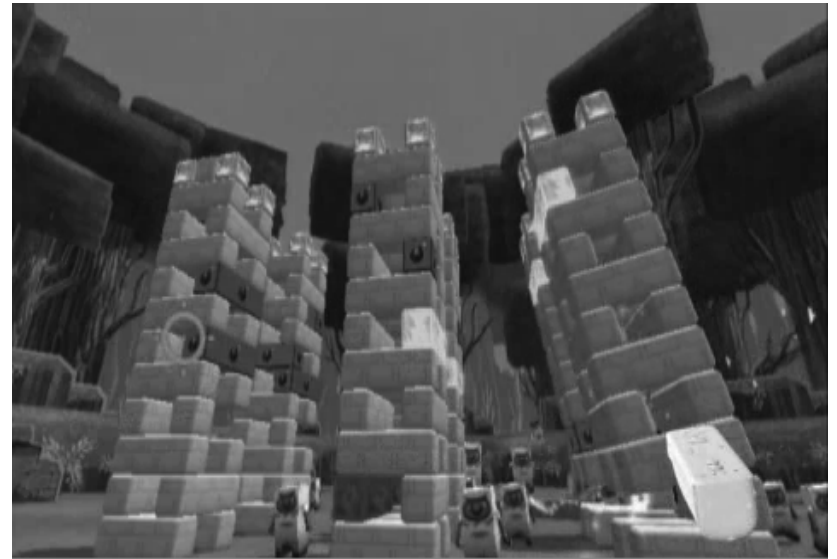
Boom Blox (Wii game, designed by EA/Speilberg) has realistic physic engine.

To succeed at game you “throw” a ball at a arrangement of blocks. Blocks fall according to accurate physics model.

Two research questions:

Do adults with physics expertise play better or differently than matched adults without that expertise? (expert-novice)

What kind of physics knowledge do young people develop through extended game play? (learning & transfer)



## Issues for Further Research

---

**CLAIM:** The power of video game play can be leveraged to help kids learn science and to have greater interest in science

**RESPONSE:** Games have a pre-existing place in kid culture. Attempts to appropriate them for normative educational goals is going to be more complex than we think, as evidence from literary education suggests. We need a better understanding of what video games mean for kids, how they are already “tangled up” in their lives. In our study, game play is an activity often set *in contrast to contexts* like school (both by kids and parents).