

# CS/INFO 4154:

## Analytics-driven Game Design

Class 38:

Final Logistics and  
Summary

Mon

Wed

Fri

Sat

11/27

11/29  
Kongregate  
Release 1

12/1  
Kongregate  
Release 2

12/9

12/11

Final Report due @ **NOON**

Final Peer Evaluations due @ 11:59pm

# Kongregate Release 11/29-12/1

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- Requirements
  - 15 levels
  - Address feedback from Newgrounds
- A/B test not required (but you can if you want)
- CMS deadline = Friday, 12/1 at 10:10am
- May release in class 11/29 if you are ready
- Must release by end of class Friday, 12/1
- **Highly recommended:** upload test game

# Kongregate Release

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- BOTH Wednesday and Friday are playtesting days
  - (Attendance will be taken)
- If releasing on Friday, then think of Wednesday as a mandatory in-class workday

# Final Report

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- Due Saturday, December 9<sup>th</sup>, at **NOON**
  - (end of the final exam period)
- We will ***not*** meet during the final exam period
  - No way to remove this from StudentCenter

# Final Report: Part 1/2

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- Provide convincing, well-justified analysis that is thoroughly grounded in the data.
  - Must show heatmaps or provide other data
- **Q1:** Did engagement improve *overall* from Friends to Newgrounds to Kongregate?
  - Show two separate burndown charts for:
    - *time played* (1 chart with all three releases)
    - *levels completed* (1 chart with all three releases)
    - Can choose the best A/B test condition, or show all conditions
  - Did engagement improve *overall* across all three releases?
    - No fence sitting. Yes or no. Explain with data.

# Final Report: Part 2/2

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- **Q2:** Analyze **one** design problem across three releases:
  - What was the *most persistent, challenging* problem you worked on for both Newgrounds and Kongregate?
    - There was such a problem.
    - If you think there was no such problem, see above.
  - Present data from *Friends* showing the problem.
    - What did you learn from *Friends* about this problem?
    - What did you change to address this problem for *Newgrounds*?
  - Did it work? Present data from *Newgrounds* showing yes or no.
    - What did you learn from *Newgrounds* about this problem?
    - What did you change to address this problem for *Kongregate*?
  - Did it work? Show data from *Kongregate* showing yes or no.
    - What did you learn from *Kongregate* about this problem?
  - If you had more time, how would you address this problem?

# Final Peer Evaluations

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- Instructions will be on website
- Due Monday, December 11<sup>th</sup>, at 11:59pm

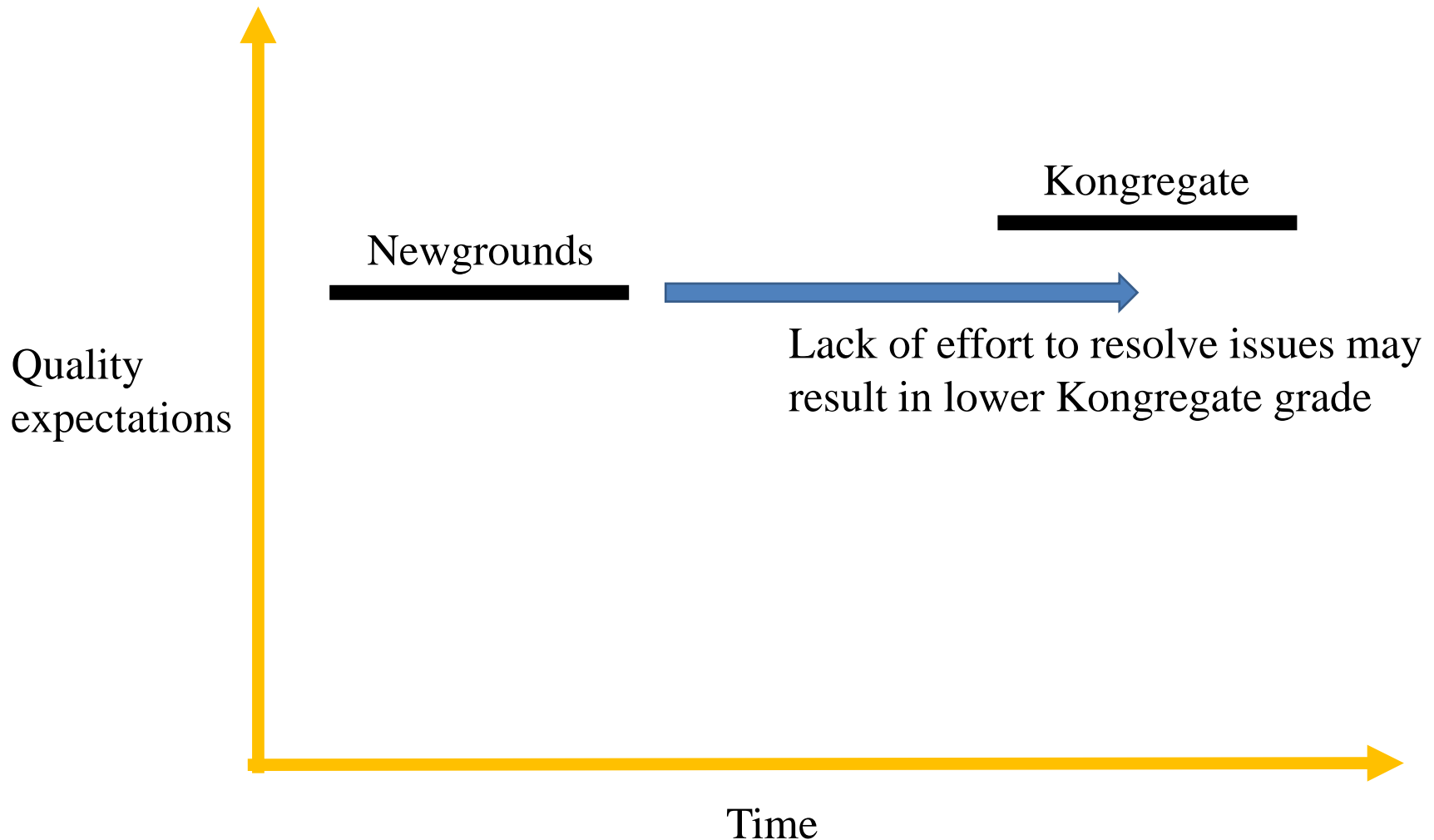
# Course Evaluations

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- You should have received an email about this
- Please fill it out!
- I really value your feedback
  - Example: throwaway prototype cycle

# Kongregate Grading

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# Kongregate

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- Founded 2006
- Owned by:
  - Gamestop 2010-2017
  - Modern Times Group 2017-
- 117,308 games
- In 2010:
  - 10 million players / month
  - 23 million hours



Jim and Emily Greer

# Kongregate Monthly Contest

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## OCTOBER 2017 CONTEST WINNERS

Each month, developers win cash prizes for having the highest-rated new games! [Click here for official rules.](#)



### **Aground** by terra0nova

One of the last human survivors, you find yourself stranded on an u...



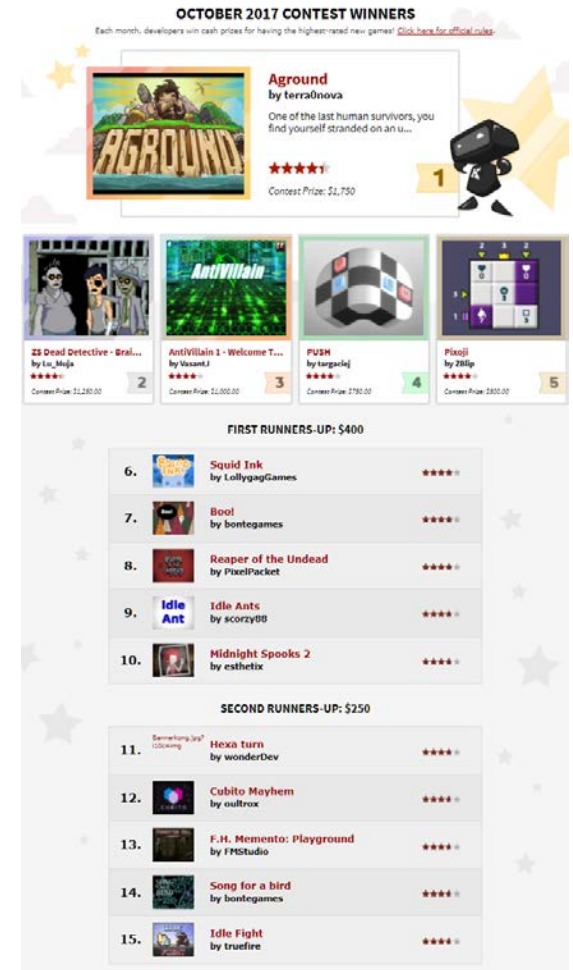
Contest Prize: \$1,750

1



# Kongregate Monthly Contest

- Prizes for top 15 games of month
- Range from \$250 to \$1750
- Some conditions:
  - must implement Kongregate Statistics API





## FEATURED GAMES



To collect this week's Kongpanion:  
**Saturn**




Complete the *Badge of the Day* in  
[The Soul Driver](#)

**PLAY NOW »**

[Learn more about Kongpanions »](#)

TRENDING [\(see all\)](#)**The Soul Driver**

CAR POLICE

## BADGE OF THE DAY

Earn **Double**  
the points »

## LEVEL UP!

**jflat06**

is now level 3!



Say congrats »

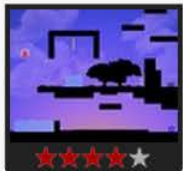
## BADGE

**Incursion 2: The Artif...**

TOWER DEFENSE

**Cedgta 16**

First Defense

HOT NEW GAMES [\(see all\)](#)**Thermo**

PUZZLE PLATFORM

A unique water-based puzzle  
platformer where you must  
use...**BOX!**

PUZZLE BOX BLOCK

Build, break, and twist your way  
to victory in this mind-...**That's How We Roll**

ACTION CUTE GRAVITY

That's How We Roll is a fast-  
paced adventure-platformer g...RECOMMENDED GAMES [\(see all\)](#)**Game of Thrones Ascent**

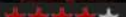
MMO MULTIPLAYER FANTASY

Because you rated [Free Traders](#)  
highly.**Contract Wars**

UNITY MULTIPLAYER

Because you rated [Time Decay](#)  
highly.**Tyrant Unleashed**

CARD MMO MULTIPLAYER

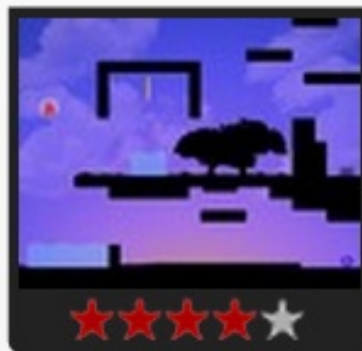
Because you rated [Free Traders](#)  
highly.Free lifetime  
printer service.Available on all  
desktop printers with  
Xerox eConcierge®**get one now****xerox**

## SPONSORED LISTING

**Fuel up for Battle**

Make Your Codes Count!

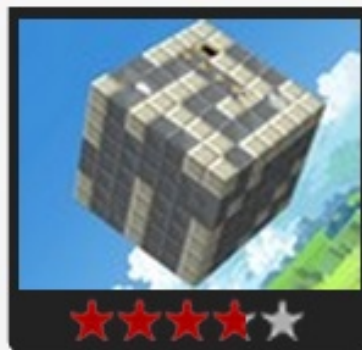
[get the goods »](#)



### Thermo

PUZZLE PLATFORM

A unique water-based puzzle platformer where you must use...



### BOX!

PUZZLE BOX BLOCK

Build, break, and twist your way to victory in this mind-...



### That's How We Roll

ACTION CUTE GRAVITY

That's How We Roll is a fast-paced adventure-platformer g...

# You can respond to comments

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**JCBourgault** 46 K+

Dec. 4, 2014

This is really awesome. The concept is really good, and thanks for the peeking. The only thing is that only one cube limit your possibilities. Could you make portal doors that lead to other cubes? It could expand the level capacity by a lot. Anyway 5/5

(35) — +



DEVELOPER RESPONSE  
FROM [CASIOGRE](#) D

Thanks for the compliment and suggestion! Initially we did consider cross-cube portals, but given how many players were confused as it was with just a single cube, we decided we were not yet ready to design puzzles of that caliber. Hopefully we can develop a sequel or future update with such levels!

# Activity: Choose Kongregate Tags

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# Summary

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1. Game Mechanics
2. Prototyping
3. Learnability
4. Engagement
5. Balance
6. Polish
7. Playtesting
8. Telemetry
9. Data Analysis
10. Visualization
11. Applications

# Summary: Game Mechanics

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- Games have:
  - rules
    - actions
    - interactions
  - conflict
  - *decisions*

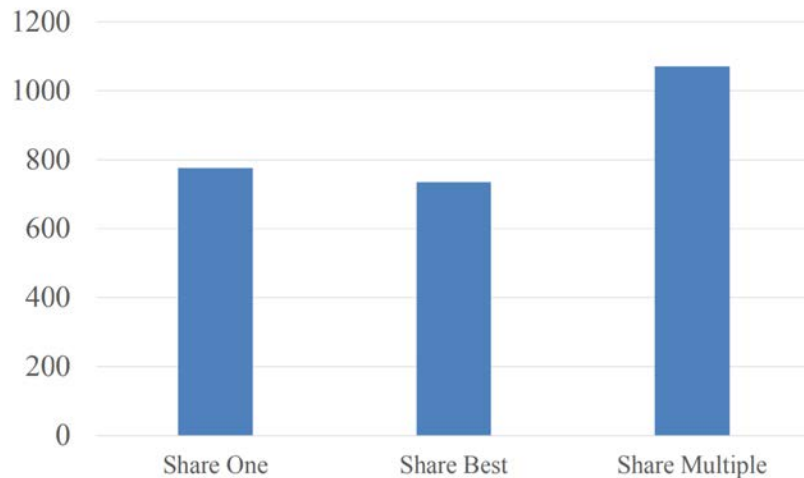


# Summary: Prototyping

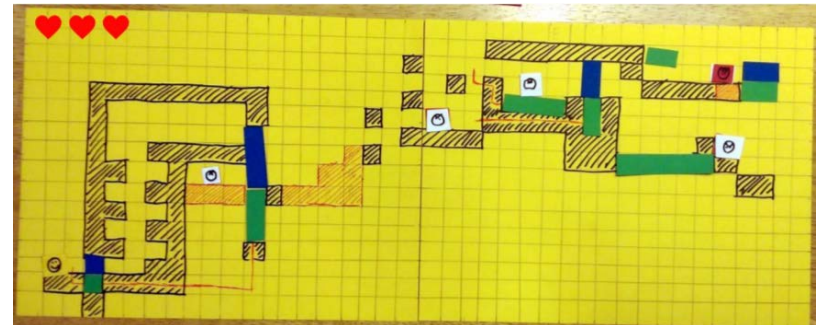
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- Generating, sharing, and testing *multiple ideas* leads to better outcomes
- Great way to prototype is with *paper*

Clicks per million impressions



Dow et al. CHI 2011



# Summary: Learnability

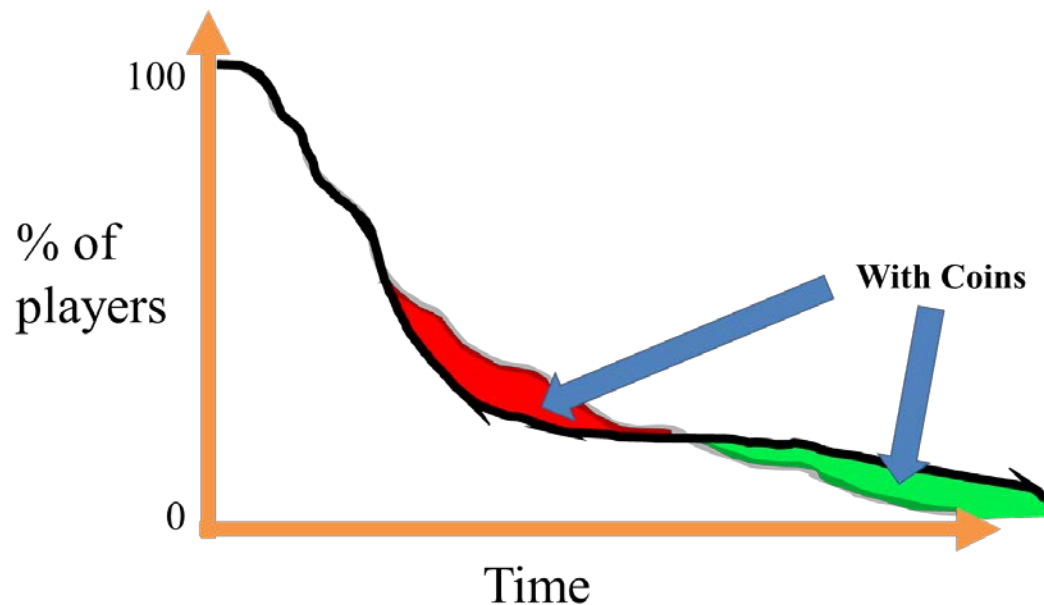
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- Learnability is often the *central design challenge*
  - Developers often overestimate players' skills
- “Nobody reads and nobody listens”
- Learnability is enabled by:
  - *tutorials* that present information in context
  - an intuitive *user interface*
  - a *level progression* that grows in complexity
  - *learning pathways* that prioritize training of key skills

# Summary: Engagement

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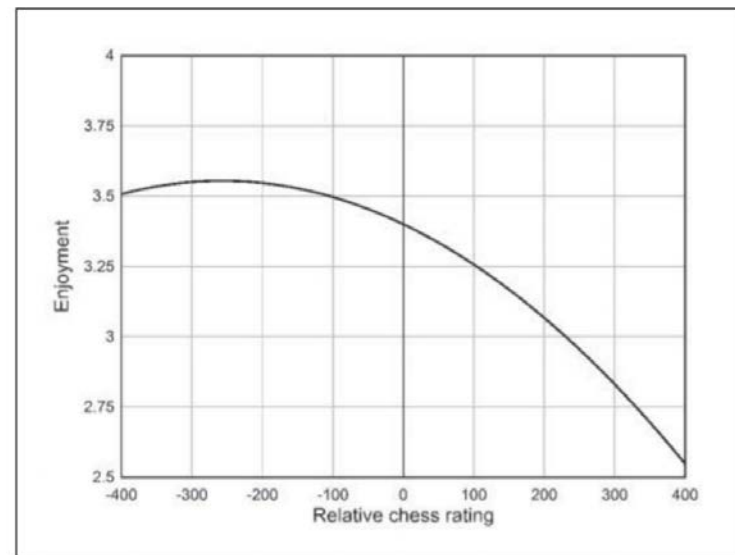
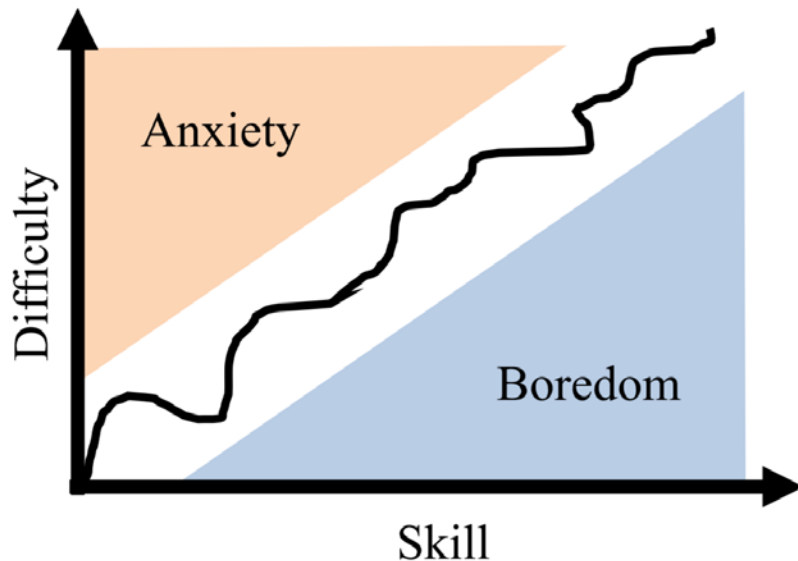
- Players are driven by *incentives* and *mastery*
- Incentives can affect players differently



Andersen et al. FDG 2011

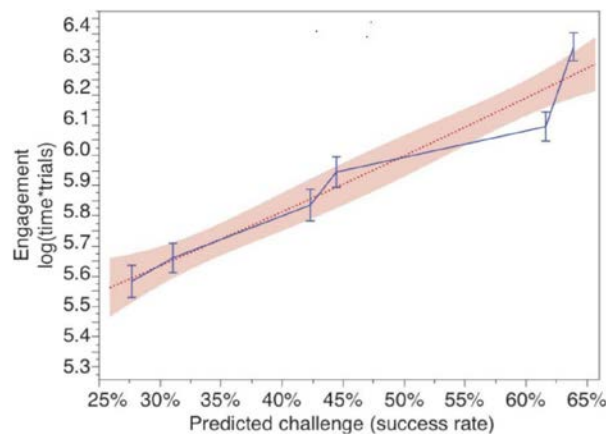
# Summary: Engagement

- Players are driven by *incentives* and *mastery*
- Incentives can affect players differently
- Moderate difficulty seems important

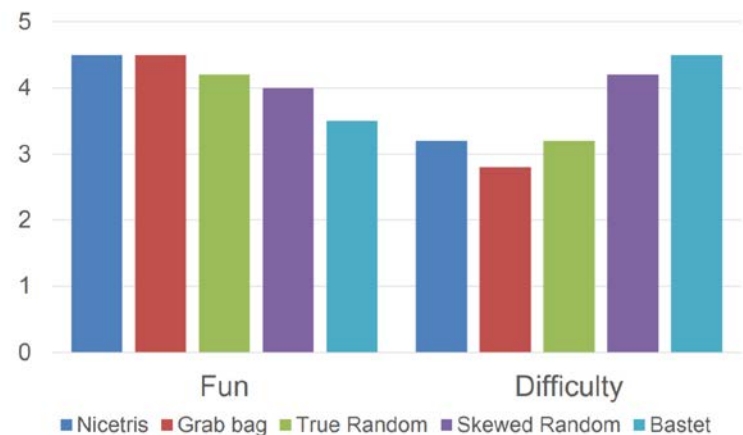


# Summary: Engagement

- Players are driven by *incentives* and *mastery*
- Incentives can affect players differently
- Moderate difficulty seems important, but...
- ... when in doubt, *make the game easier*



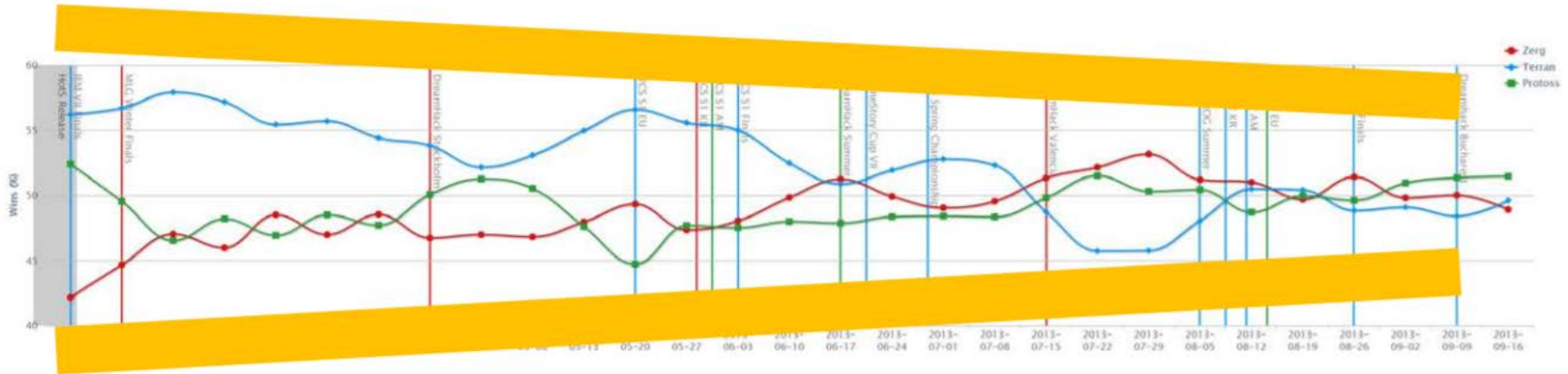
Lomas et al. CHI 2013



Spiel et al. CHI 2017

# Summary: Balance

- Key properties of the game's *decision space*:
  - Are the starting conditions of the game fair?
  - Does it matter what the player does?
  - Is an action too powerful?
  - Is the outcome known long before the game's end?
  - Is some strategy useless?

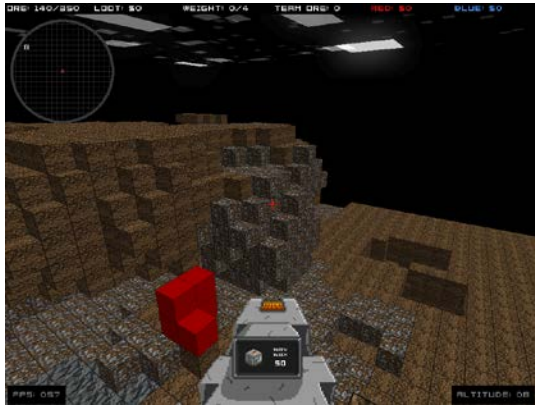


StarCraft 2 Balance

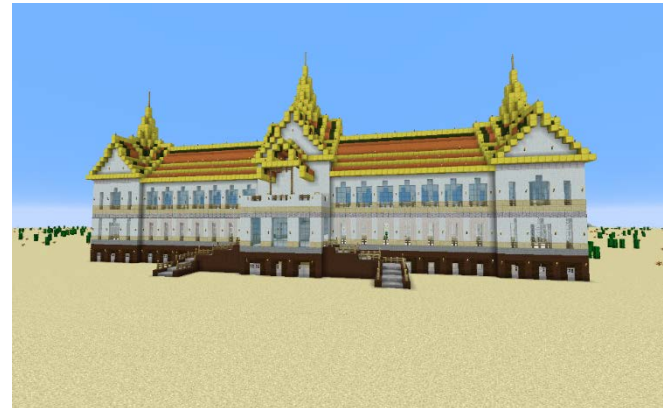
# Summary: Polish

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- Presentation matters!



Infiniminer

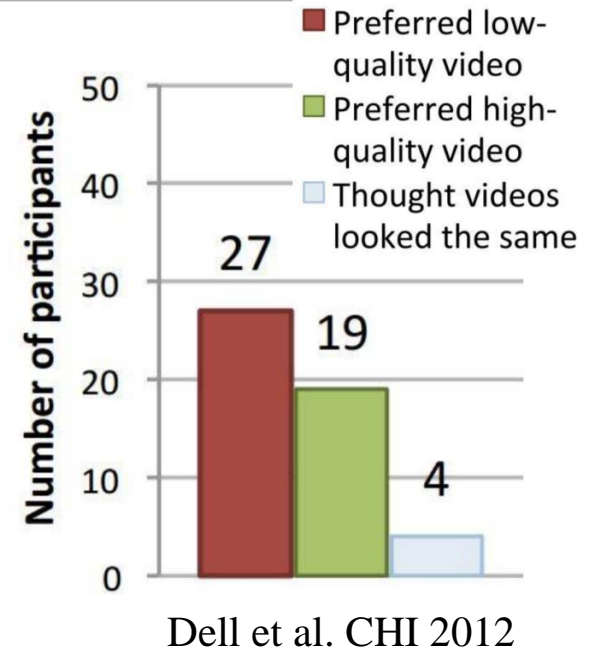


Minecraft

- Hard to define exactly
- **Technique:** look at games and analyze polish
- Disney animation techniques help
  - stretch and squash, easing, staging, exaggeration

# Summary: Playtesting

- Bias is *pervasive*
- To overcome, use *multiple techniques*:
  - Direct observation
  - Think-alouds
  - Question & answer
  - Surveys
- Must read emotions



Ambinder GDC 2011

# Summary: Telemetry & Analysis

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- Visualization techniques
  - *Burndown charts* can show problems with retention
  - *Heatmaps* can show where problems are occurring
  - *Sankey & state transition diagrams* can show how various groups of players are affected by a problem
- *SQL* is used for storing and querying data
- *Null-hypothesis statistical testing* helps resolve whether differences in A/B tests are due to chance

# Summary: Applications

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- Analytics can be used to understand:
  - *Who pays* for free-to-play games
  - How alternate reality games encourage people to *move*
  - How games can solve *scientific questions*
  - How games can help students *learn*

# Why should you take this class?

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real-world impact, *this semester*

# Real-world impact, *this semester*

