SOCIAL GAMES FOR LEARNING SCIENCE

Ben Shapiro

Postdoc at
Morgridge Institute for Research &
University of Wisconsin, Madison

ben@getdown.org

OVERVIEW

- Selected learning goals from CADRE curriculum
- About *Social* Gaming
- Outline of a Social Game about GMO decisions

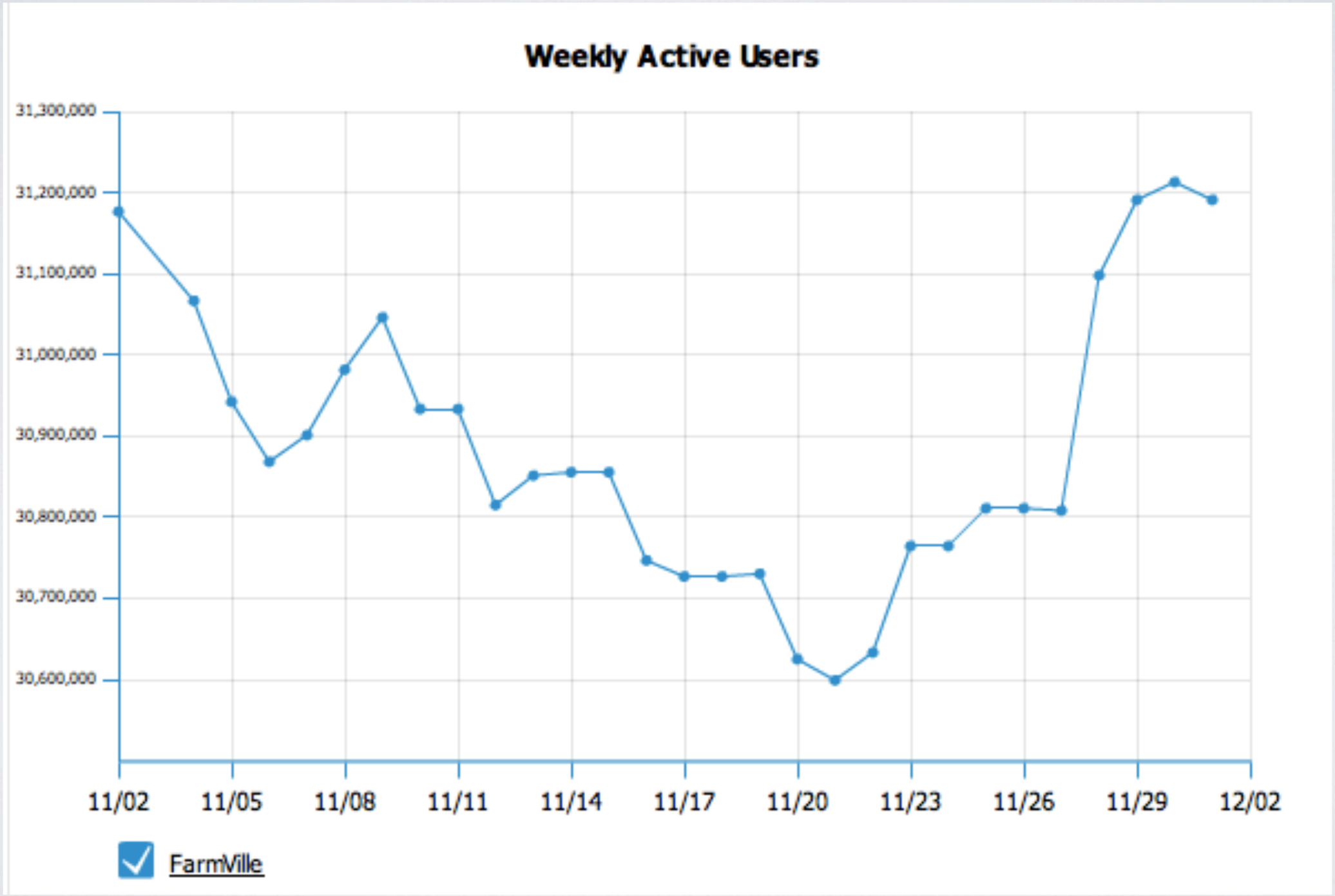
A SUBSET OF A CADRE CURRICULUM'S *CHAPTER 3* CONTENT

- Traits are expressions of genes.
- Organisms can be modified to have new traits.
- To add traits to an organism, scientists add the genes for those traits to the organism's genome.
  - For simple organisms (e.g., bacteria), lab techniques to do so are relatively simple. Students can use them.
- Food can be modified to have new traits, e.g., pest resistance, faster maturation, and greater durability.
- These modifications are controversial and may have environmental, safety, and economic costs and benefits.

SOCIAL GAMES

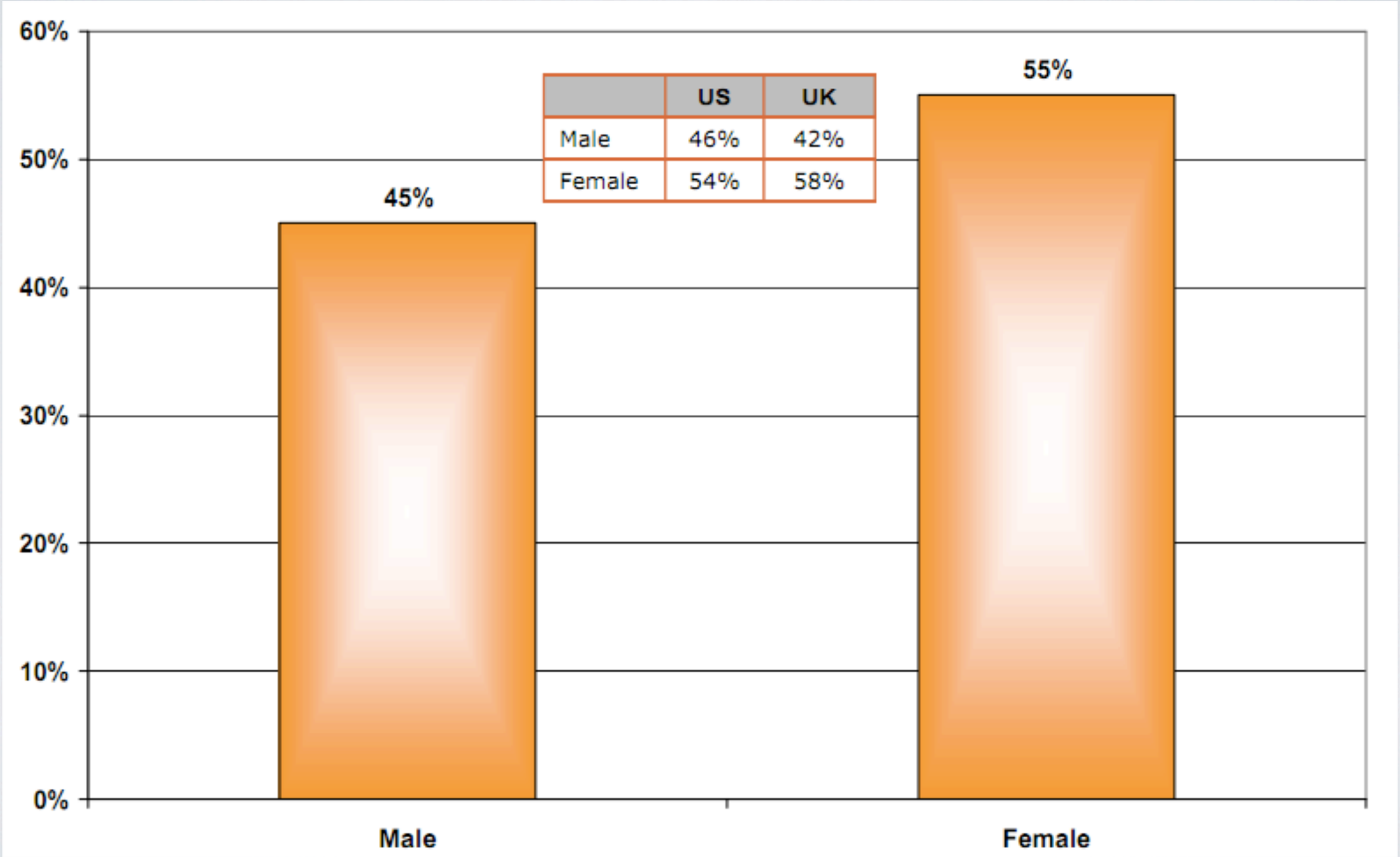
- Social games are (typically)
  - played with friends
    - connected to social networks
  - flexible about when and where played
  - easy to learn
- e.g., FarmVille, Words with Friends (aka Facebook Scrabble)

VERY POPULAR



http://statistics.allfacebook.com

BROAD APPEAL



Information Solutions Group and PopCap Games (2010)

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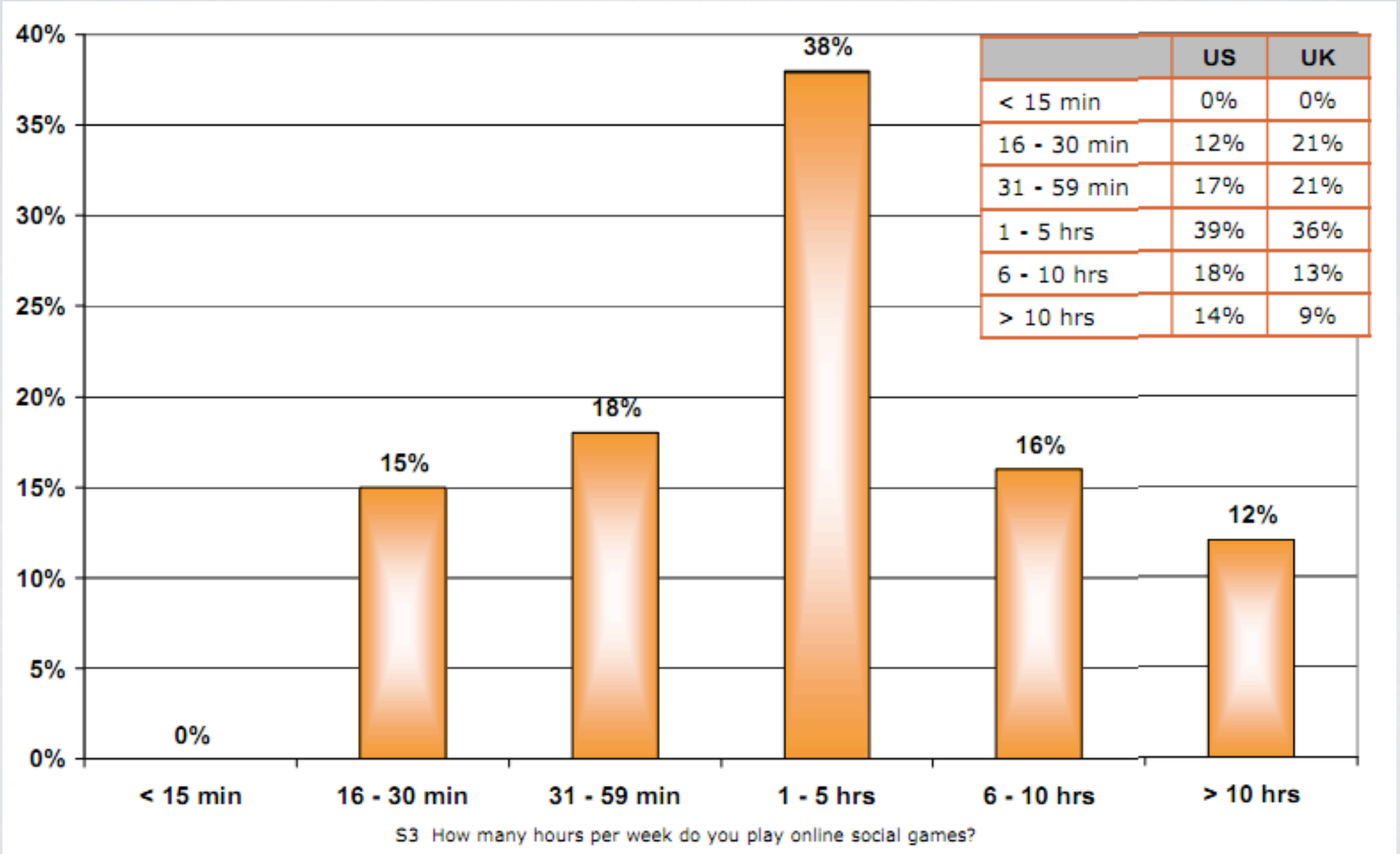


	US	UK
< 15 min	0%	0%
16 - 30 min	12%	21%
31 - 59 min	17%	21%
1 - 5 hrs	39%	36%
6 - 10 hrs	18%	13%
> 10 hrs	14%	9%

S3 How many hours per week do you play online social games?

Information Solutions Group and PopCap Games (2010)

RE: *FARMVILLE*

- Pros
  - People who play, play a lot.
  - It attracts a wide range of ages, across genders.
  - Playable anywhere, anytime.
  - Makes money. (Maybe similar games could motivate students to spend *time/effort* on content?)

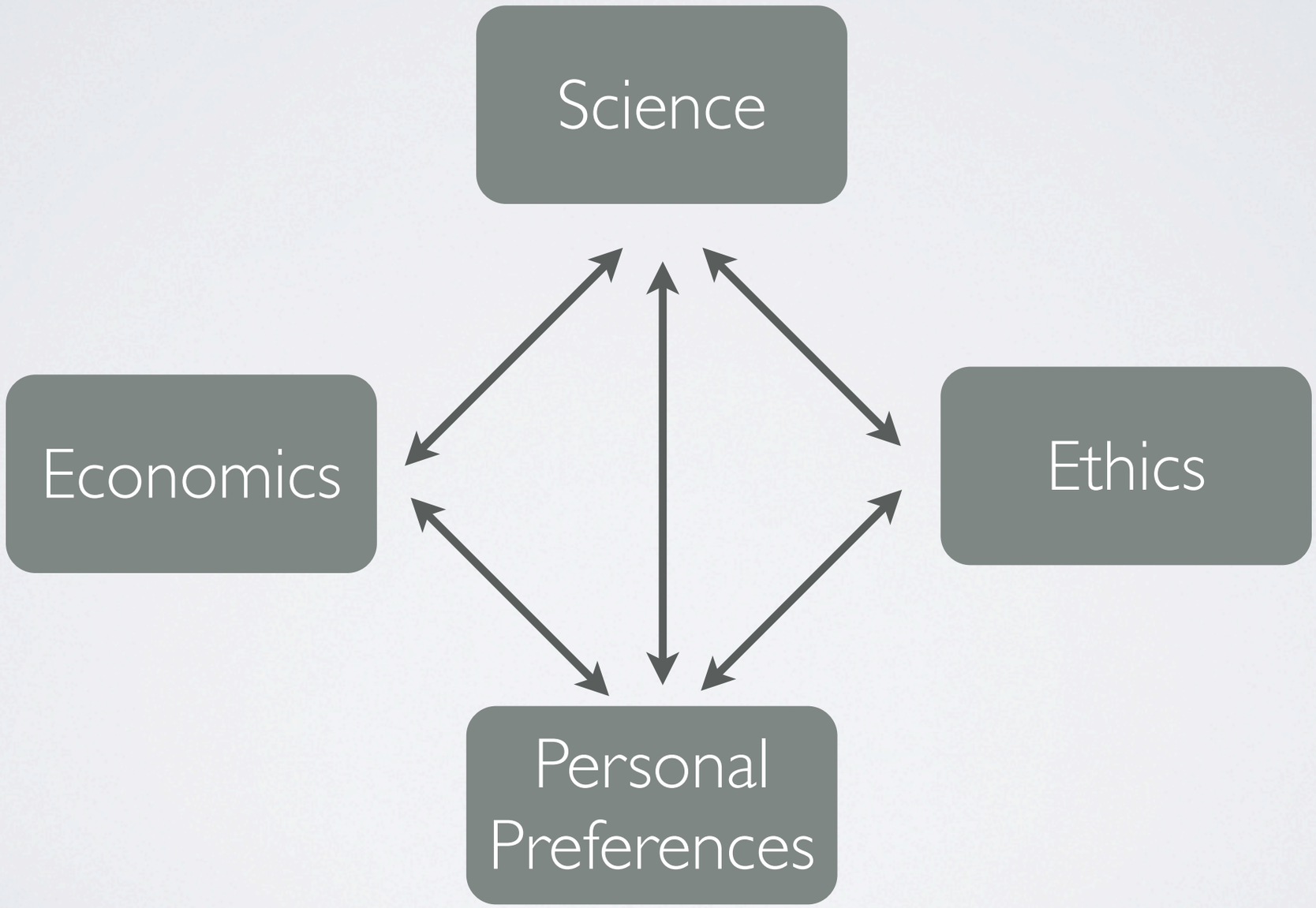
- Cons
  - Not actually a good game: Very thin in content and play.
  - Manipulative: Zynga employs behavioral psychologists to develop and capitalize on compulsions.

POSSIBILITIES

- Games for learning can support:
  - relational and strategic thinking about elements of a simulated system
  - analogical reasoning about related experiences
  - socialization around systems dynamics. (DeVane, Durga, & Squire, 2010).
- Differential in-game outcomes can support classroom conversation about content and motivate further student investigation (Squire & Barab, 2004).

AN IDEA

GAME AS COMPLEX PARTICIPATORY SIMULATION FOR LEARNING ABOUT GMO



A SOCIAL GMO

- What about a better FarmVille?
  - Learners would still be farmers, and:
    - Need to stay in business despite difficult environment and economy.
    - Be able to buy and "research" new GMOs and plant those... but have to reason around risk.
    - Have consequences on neighbors.
- Couple in-game activity to in-class experiences (e.g., doing wet labs should allow access to otherwise locked game features).

IDEA: START SIMPLE

Buy Seeds. Plant. Harvest. Sell. Profit.

IDEA
BLIGHTS, DROUGHTS, & PLAGUES

- Gradually, the game world will increase the number of environmental pressures on farmers.
  - e.g., an insect infestation could lower production and threaten farmers' livelihoods.
- Players could spend $ on GMO seeds. This costs more, has some risk.
  - Or spend $ researching their own GMO strains. More cost up-front. Lower cost long-term if successful.
  - Or do small volume organic farming.

GMO SAFETY

- The safety of GMO foods is highly contested. Risks include:
  - Toxicity.
  - Allergy.
  - Environmental hazards: inter-breeding, anti-bacterial/anti-herbicidal resistance.

- Chapter 3 urges readers to investigate the controversy online.
  - This is surprisingly hard to do.

GAME AS ANCHOR FOR DISCUSSION

- Potential GMO risks can be modeled in a game play.
  - e.g., Players can research & grow GMOs, but humans can be sickened by their crops
    - Players' would be charged for negative consequences
    - They must decide whether to do human safety testing on their GMO strains.
      - It's costly and non-mandatory (~ like in the USA), but decreases player risk.
    - Should they?
- Different scenarios can lead to different player choices "working". These could be excellent grounding for classroom discussion.

DURING DESIGN TIME

You may design a game that uses these dynamics (or others) to teach about GMOs.