Understanding Game Play: Maps for Educators

Ruben R. Puentedura, Ph.D.

Some Definitions

Formal Definition of **Play** (Salen & Zimmerman)

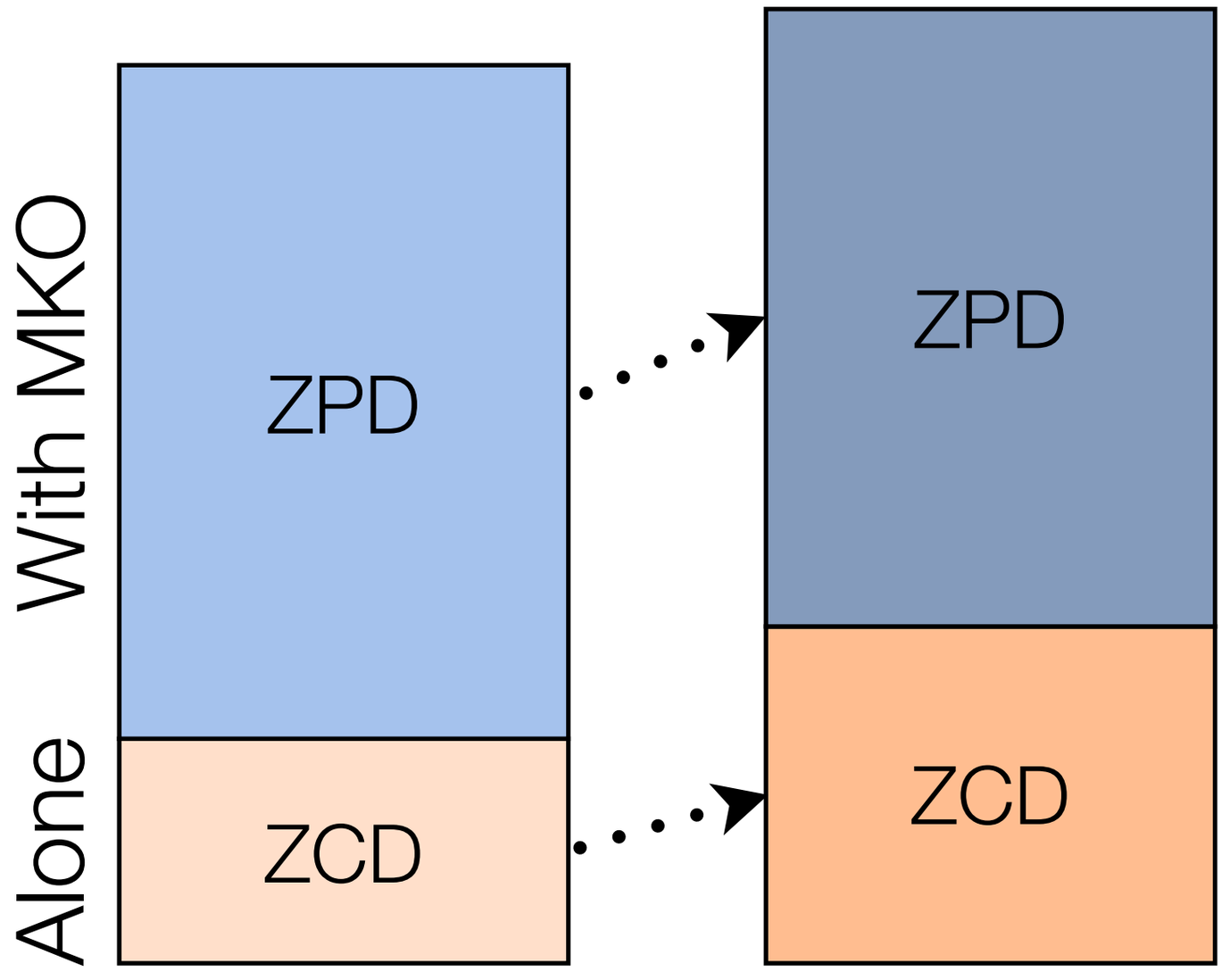
“Play is free movement within a more rigid structure.”

Formal Definition of **Game** (Salen & Zimmerman)

"A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."

Semi-formal Definition of **Sandbox** (Puentedura)

"A sandbox is the result of relaxing one or more of the definitional aspects of a game."


With MKO
Alone
ZPD
ZCD
ZPD
ZCD

Genres and Learning

Narrative

IF

Graphic Adv.

Action/Adv.

RPGs

MMOGs

ARGs

Board

Traditional

Puzzle

Other

Narrative

Other

Simulation

Action

Sims

RTS

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Simulation

Shmups

Platformers

FPS

Fighting

Sports

Vehicle

Rhythm

Action

A Game Genre iOS Sampler

- **Narrative Games:**
  - Interactive Fiction: *Frotz*
  - Graphic Adventure Games: *Myst*; *The Secret of Monkey Island: Special Edition*
  - Action/Adventure Games: *Across Age*; *James Cameron's Avatar*
  - Role-Playing Games: *Vay*; *Puzzle Quest Chapter 1*
  - Massively Multiplayer Online Games: *Pocket Legends*; *Outer Empires*
- **Simulation Games:**
  - Sims: *Virtual City*; *The Sims 3 World Adventures*
  - Real-Time Strategy Games: *Warfare Incorporated*; *The Settlers*
  - Military Turn-Based Strategy Games: *Highborn*; *UniWar*
  - World Turn-Based Strategy Games: *Civilization Revolution*
- **Action Games:**
  - Shoot 'Em Ups: *Platypus - Squishy Shoot-em-up*; *Space Invaders Infinity Gene*
  - Platformers: *Giana Sisters*; *:Shift:*
  - First-Person Shooters: *N.O.V.A. - Near Orbit Vanguard Alliance*; *Archetype*
  - Fighting Games: *Blades of Fury*; *Street Fighter II* (included in *Capcom Arcade*)
  - Sports Games: *X2 Soccer 2010*; *Baseball Superstars 2010*
  - Vehicle Games: *Real Racing*; *Jet Car Stunts*
  - Rhythm Games: *DanceDanceRevolution S (US)*; *Thumpies*
- **Other Games:**
  - Puzzle Games: *Zen Bound 2 Universal*; *Lumines - Touch Fusion*
  - Traditional Games: *Shredder Chess*; *SmartGo Pro*
  - Board Games: *Reiner Knizia's Samurai*; *Monopoly*

Active Learning

Gamers Learn From:

1. Doing and reflecting critically

Symbolic Systems

2. Appreciating good design and its principles

3. Seeing interrelations within and across symbolic systems

4. Mastering game symbolic systems

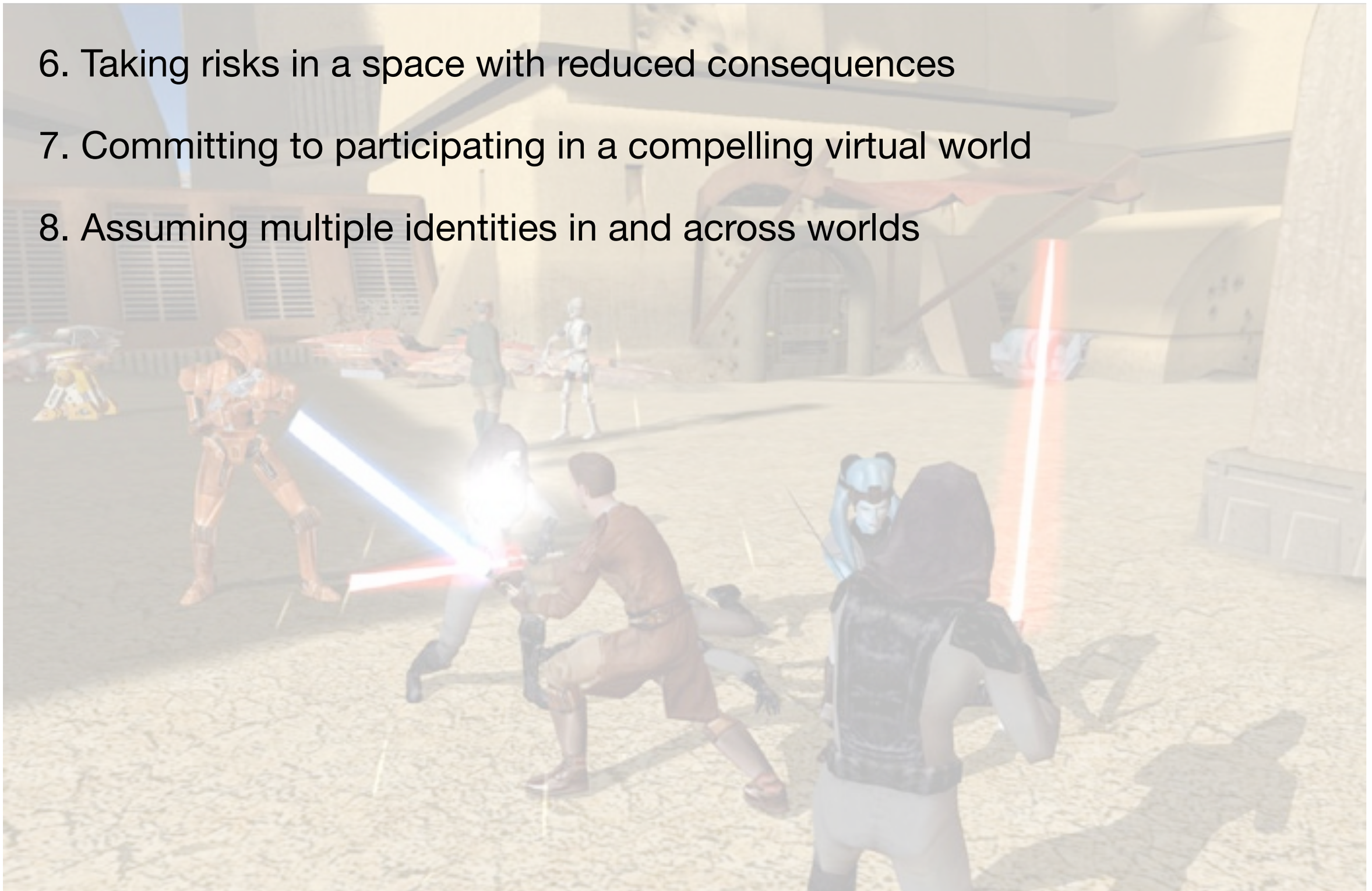
5. Relating the game world to other worlds

Worlds and Identities

6. Taking risks in a space with reduced consequences

7. Committing to participating in a compelling virtual world

8. Assuming multiple identities in and across worlds



Development of Capabilities

9. Observing the evolution of their own capabilities

10. Getting more out than they put in

11. Being rewarded for achievement at every level of expertise

12. Extensive practice in a rewarding context

13. Learning new skills at each level of expertise

14. Operating at the outer edge of their capabilities at each level of expertise

Experiential Learning

15. Interacting experimentally with the game world

16. Finding multiple approaches to a solution

17. Discovering meaning from experience

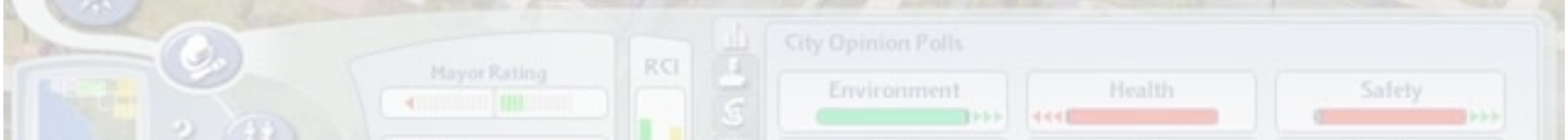
18. Understanding texts experientially and contextually

19. Understanding the interconnections among texts that define them as a family

20. Constructing meaning from the intersection of multiple media

21. Understanding how information and knowledge are stored in the game environment

22. Leveraging intuitive and tacit knowledge



Developing Skills

23. Practicing in simplified game subdomains

24. Tackling later problems via generalizations of earlier ones

25. Seeing early on concentrated samples of generalizable skill sets

26. Acquiring basic skills that apply to a range of games

27. Receiving information on-demand and just-in-time

28. Experimenting with only a minimum of explicit instruction

29. Transferring, modifying, and adapting earlier learning to later problems

Cultural Models

30. Reflecting safely about their cultural models and assumptions about the world

31. Reflecting safely about their cultural models and assumptions about their learning processes

32. Reflecting safely about their cultural models and assumptions about the workings of a symbolic domain

33. Searching for knowledge in all aspects of the game, in themselves, and in their interaction with the game

Community

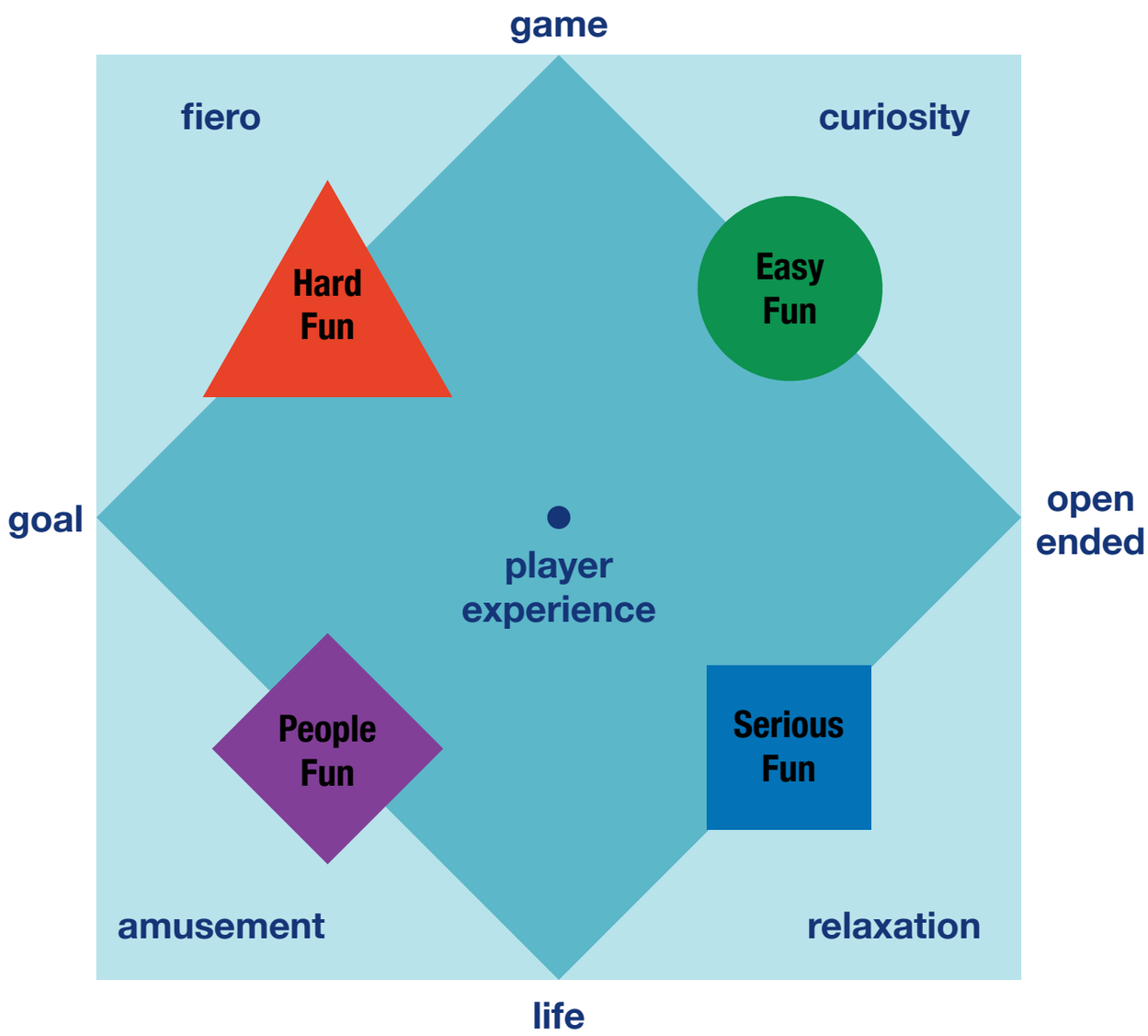
34. Sharing their knowledge with other players

35. Forming a distinct community via shared interests in the gaming world

36. Teaching others and modifying the game experience

Games and Fun

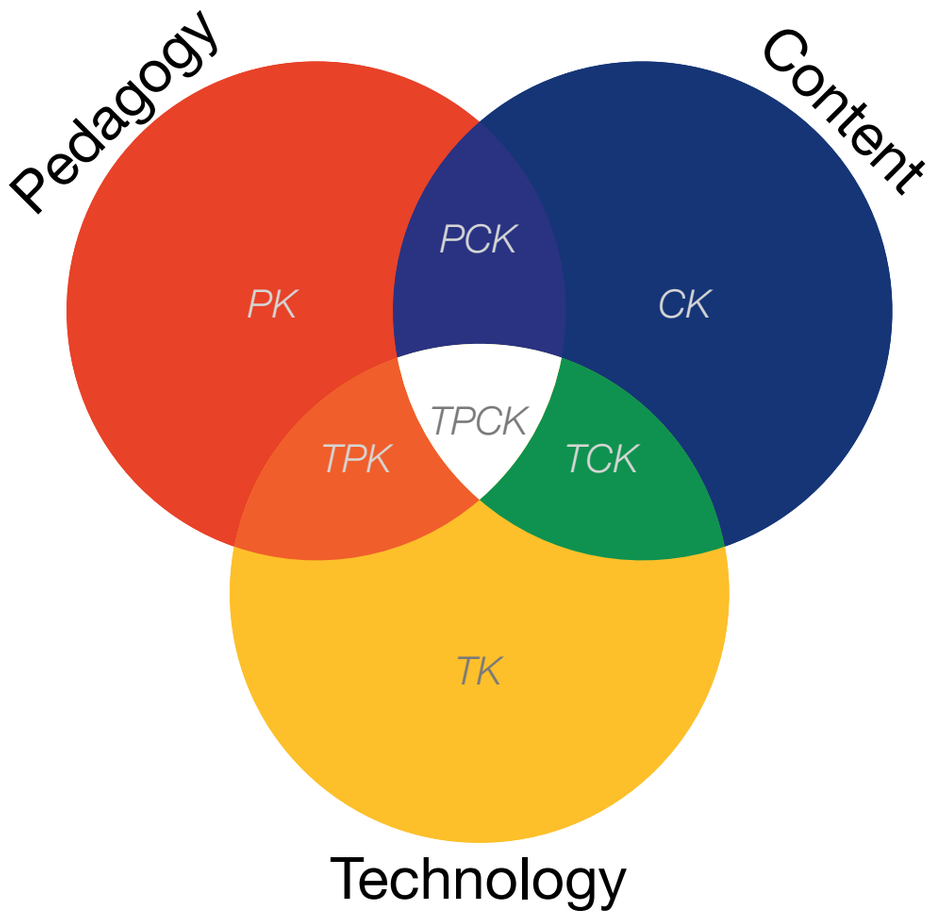
Four Keys to Emotion in Games (Lazzaro)

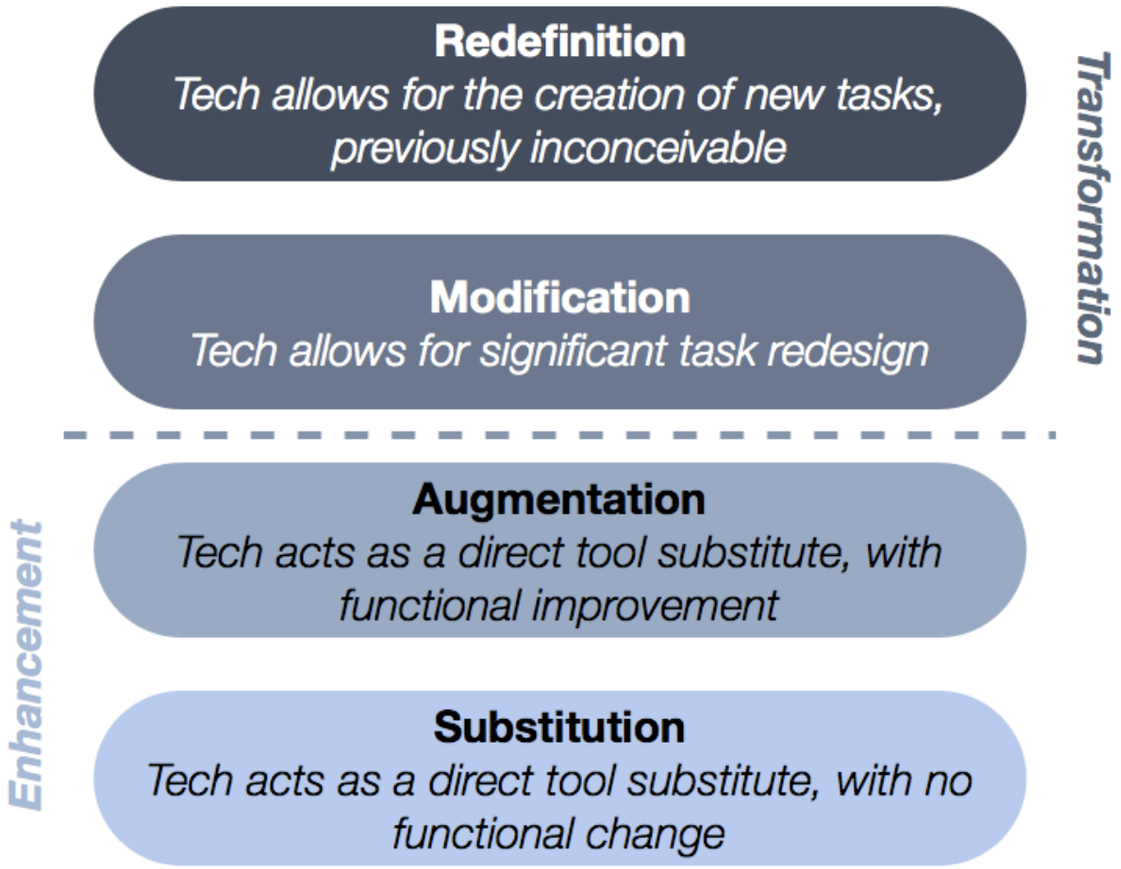


The Four Keys

- **Hard Fun**
  - Players like the opportunities for challenge, strategy and problem solving
  - Generates emotions, experiences of Frustration and Fiero
- **Easy Fun**
  - Players enjoy intrigue and curiosity, becoming immersed in games that absorb their complete attention or take them on an exciting adventure
  - Generates emotions, experiences of Wonder, Awe, Curiosity, and Mystery
- **Serious Fun**
  - Players enjoy the internal experiences in reaction to the game's visceral, behavioral, cognitive, and social properties
  - Generates emotions, experiences of Excitement, Relaxation
- **People Fun**
  - Players use games as mechanisms for social experiences of competition, teamwork, and opportunities for social bonding and personal recognition
  - Generates emotions, experiences of Amusement, Schadenfreude, Naches

TPCK + SAMR: A Game Design Perspective


Pedagogy
Content
PK
PCK
CK
TPCK
TPK
TCK
TK
Technology


Redefinition
Tech allows for the creation of new tasks, previously inconceivable
Modification
Tech allows for significant task redesign
Transformation
Augmentation
Tech acts as a direct tool substitute, with functional improvement
Substitution
Tech acts as a direct tool substitute, with no functional change
Enhancement

Interactive Fiction

Role-playing Games

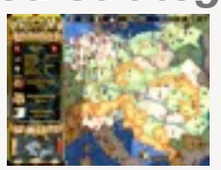
MMOGs

ARGs

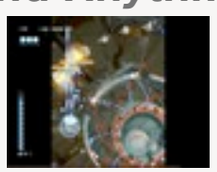
Sims

Real-Time Strategy Games

Turn-based Strategy Games



Twitch and Rhythm Games



Games

Commercial → **Critical Gaming**

- Provide domain-specific analytic and problem-solving approaches
- Enhance skill transfer to related tasks or domains
- Enhance general skills or cognitive processes

Educational → **Instructor-Created**

Educational → **Student-Created**

- Provide domain-specific content
- Provide domain-specific analytic and problem-solving approaches
- Enhance skill transfer to related tasks or domains
- Enhance general skills or cognitive processes
- Develop specific social structures
- Improve participant motivation

Particularly Interesting Categories

- Interactive Fiction
  - Narrative structure analysis
- Role-playing Games
  - Dramatic structures, narrative building support, derived media creation
- MMOGs
  - Narrative building support, derived media creation, Social Sciences research
- ARGs
  - Narrative building support, media literacy
- Sims
  - Systems modeling, statistical analysis, research methodologies
- Real-Time Strategy Games
  - Modeling, decision optimization
- Turn-based World Strategy Games
  - Historical assumptions and causality analysis
- Twitch Games
  - Dexterity skills, spatial perception

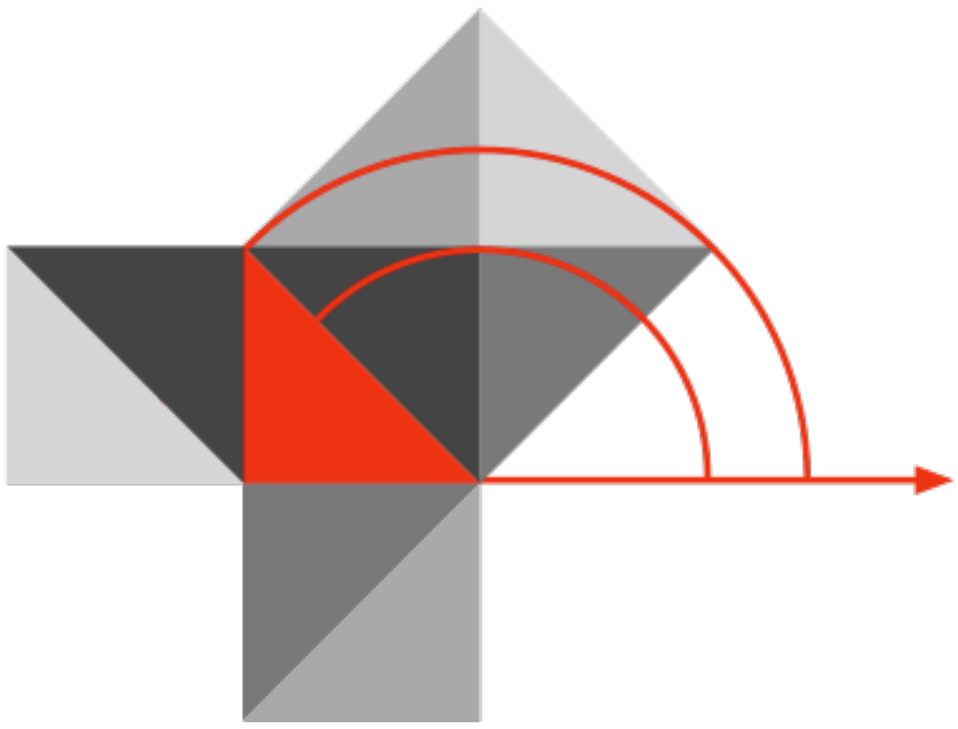
TPCK As Game Design Process - An Introduction

- CK:
  - Select the core content elements/reasons you want to make into a game;
  - Boil them down to essentials.
- PCK <-> PK:
  - Which genre is a good match for your content and intent?
  - What general learning goals are you looking to achieve?
  - What will make your game fun?
- TPK:
  - What key game elements will factor into your design?
  - How will they interact with your goals?
  - How will you use them for formative/summative assessment?
- TK:
  - Which toolkit will you use?
- TCK:
  - What exemplars exist in your chosen game genre/content area?
- TPCK:
  - What research exists in applying games in your subject area?

SAMR as Game Design Process - Some Examples

- Substitution:
  - Games that reiterate traditionally taught points (note: not via disguised multiple choice)
  - Games that exercise procedural mechanics in weakly related settings
- Augmentation:
  - Games that exercise procedural mechanics in strongly related settings
  - Games that provide for student discovery of semi-explicit rulesets
- Modification:
  - Games that allow for exploration of non-explicit underlying systems and rulesets
  - Games that allow for construction of social superstructures and activities on the game
- Redefinition:
  - Games that allow for development of previously unexplored student capabilities
  - Games that allow for exploration of previously inaccessible knowledge domains

Hippasus



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