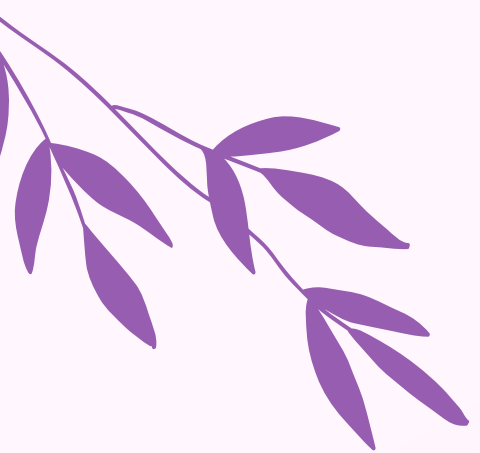




Understanding how games shape learning

The Psychology of Game-Based Learning

Presentation by Alan Mattiassi, PhD



Why Do Games Teach?

Most frequent answer: because games are **engaging**.

Game psychology answer: playing **evolved** to support **learning**.

The real question is: which psychological mechanisms make playing games such an **effective** learning environment?



Panksepp – Play as Primary Process

Burghardt – Play as Adaptation

Play as an Evolutionary Learning System

Play is found across animal species suggesting an **adaptive function** as a universal mechanism for development.

Through **low-risk experimentation** and behavioral rehearsal, organisms acquire skills via immediate feedback — all within a safe environment. Play is nature's own simulator for learning.



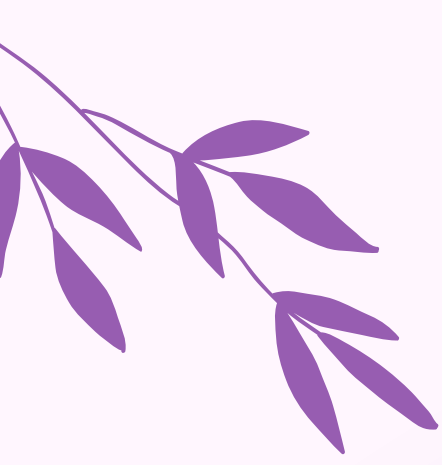
Learning Through Exposure



Games **repeatedly expose** players to concepts, systems, and environments.

Repeated interaction with a game environment supports **familiarity** and **memorization**.

However, exposure alone does **not** guarantee **understanding**.



Learning Through Experience

Games allow players to learn through action and **consequences**.

Feedback transforms decisions into learning opportunities.

Players do not simply learn about systems; they learn from **operating within** them with **agency**.

Dewey – Learning by Doing

Kolb – Experiential Learning





Learning Through Metaphors

Games represent reality through simplified systems, enabling learners to **explore causal structures** without real-world consequences. Examples like pandemic simulations and sustainability models make complex dynamics tangible.

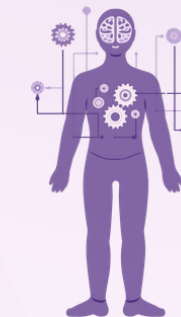
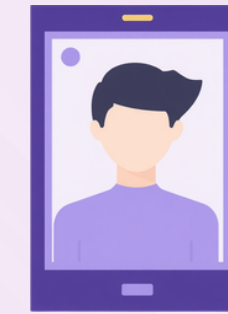
By **abstracting** key mechanisms, games support **knowledge transfer** beyond the game context. Learners internalize underlying principles — not just surface rules — making insights applicable to real situations.

A Psychological Theory of Gamefulness

Playing games is a **distinctive** cognitive mode.

Literature on play, learning, cognition and game studies suggests that cognition is **organized** during game play through four key processes:

- regulated symbolic framing
- altered role perspective
- goal-oriented performance
- metacognitive executive monitoring





Designing Learning Into Games

Learning must arise from player **actions**.

The "game + quiz" format fails because it treats learning as an add-on rather than an integral part of play. When knowledge is tested outside the game world, it breaks immersion, the **altered role perspective** and reduces engagement.

Effective educational games embed learning objectives directly into gameplay mechanics. Success **requires understanding** — players must grasp concepts to progress.



Designing Learning Devices

Games teach through systems, exploration, inductive reasoning, analogies, procedural rhetoric.

Games can **generate** desired behaviors and experiences.

Curricular content can be **embedded** in mechanics or in the narrative layer.



Bogost – Procedural Rethoric

Designing Games Into Learning



A common **misconception** is that learning outcomes are entirely produced by the game itself.

Games are often most effective when embedded within broader learning journeys that include preparation, facilitation, reflection, and **debriefing**.

The game creates the experience. Learners must be helped to **interpret** what happened, abstract it, connect it to relevant concepts, and transfer insights **beyond** the game context.

Players Are Different

Different players seek different experiences in games.

Motivations shape engagement and learning outcomes.

The same game **looks different** to different learners – thus it may teach differently. Debriefing helps.



Killer



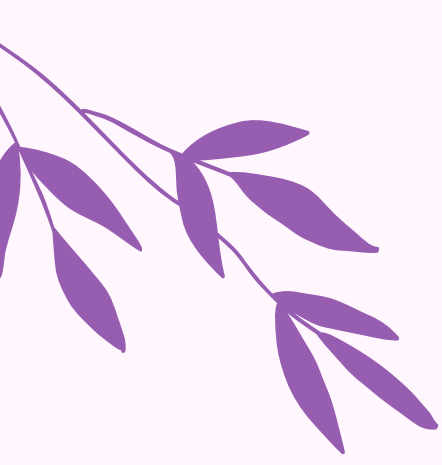
Achiever



Socializer



Explorer



Why Research Findings Are Often Inconsistent

Games vary.

Players vary.

Contexts vary.



A decorative graphic of a purple branch with several elongated, pointed leaves, extending from the top right towards the bottom left.

A vibrant, abstract illustration of a woman's silhouette. The silhouette is filled with a dark blue, starry space theme. Inside the head area, there's a bright yellow and orange gradient. The body is filled with a dark blue background, dotted with white stars, a small yellow planet with a ring, a small blue planet with a ring, and a small white geometric shape. The overall style is modern and artistic, with a focus on celestial motifs.

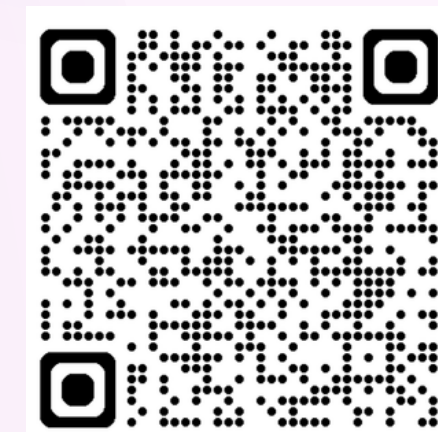
The important question is: **what** works, for **whom**, under which **conditions** and for which **outcomes**?

Thank you



You can find me on ~all social media platforms,
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This is my Game Psychology YouTube
channel (italian only, at this time):



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