

How Are Games Educational?

*Learning Theories
Embodied in Games*

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Are Games Educational?

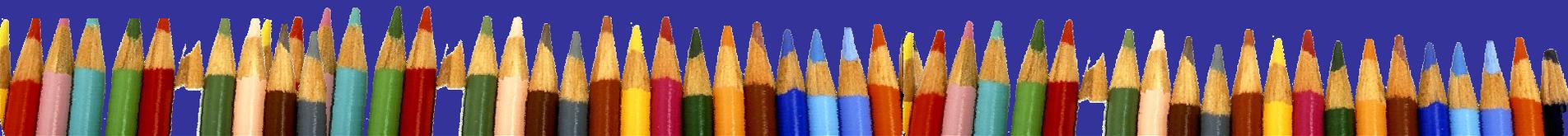
- Preaching to the converted.
- Already accept that games teach.
- Working on:
 - What do they teach?
 - How do we use games to teach (for learning)?
 - How to design games that teach (for learning)?



How are games educational?

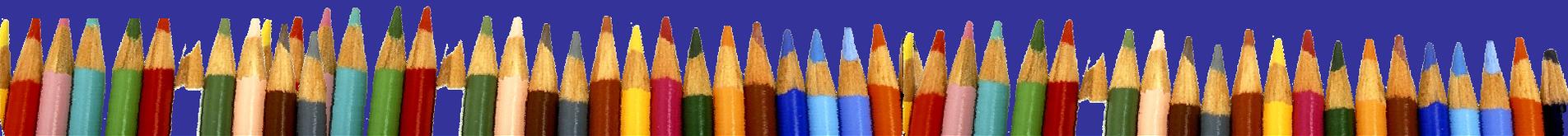
- Interest is high but so is reluctance in formal education.
- Need to change attitudes.
- How?

Howard Garder's 7 Levers of Change...



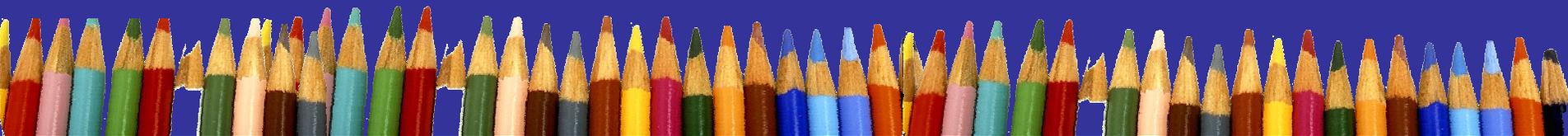
Changing Attitudes (about games for ed):

1. **Rational Reasoning:** Logically outline the pros and cons of the use of games for learning.
2. **Research:** Present data and relevant cases to support the argument.
3. **Resonance:** Create connections between desirable facets of education and those elements already embodied in games.
4. **Representational Redescription:** Make your point in many different ways.
5. **Resources and Rewards:** Use rewards as incentives to convince someone to adopt your view; make it easy to agree.
6. **Real World Events:** Use events from society at large to make your point.
7. **Resistances:** Understand the factors that cause people to reject your view. Such insights can make it easier for you to change their minds.



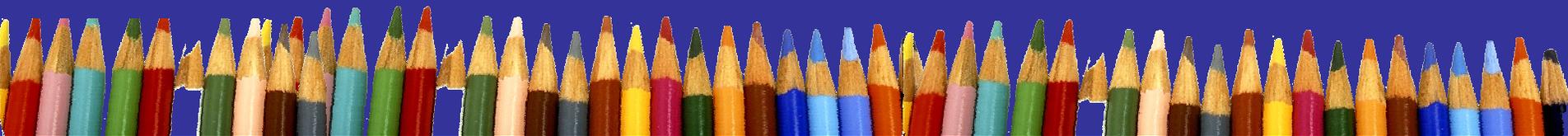
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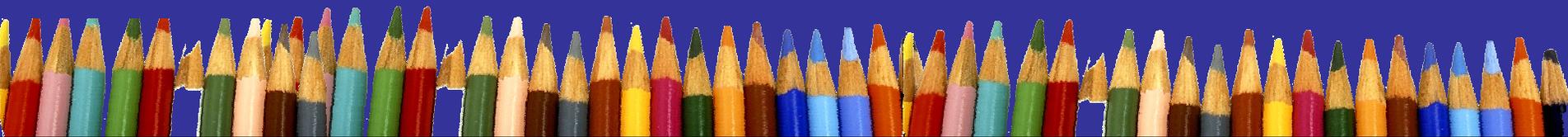
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Creating Resonance through Learning Theories

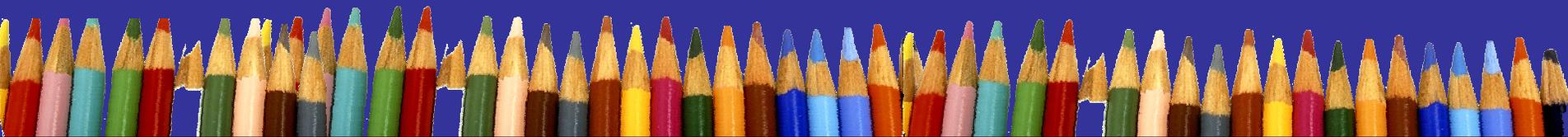
Gagné's Nine Events
&
Gardner's Multiple Intelligences

Why these two?



Gagné's Nine Events & Gardner's Multiple Intelligences

Well-known.
Respected.
Accepted.

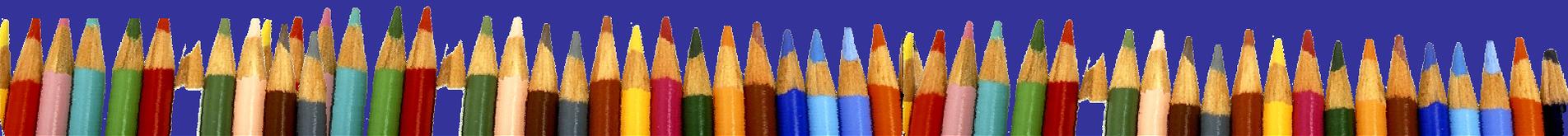


Gagné's Five Categories of Learning

1. Verbal information (written and oral)
2. Intellectual skills (using concepts / skills to solve problems)
3. Cognitive strategies (finding novel solutions to problems, acquiring skills & knowledge, practice & perseverance)
4. Motor skills (fine motor skills, at least)
5. Attitudes (moral, ethical)

Form the basis for the "Nine Events" – as each category requires a different instructional approach...

Which is where games come in....

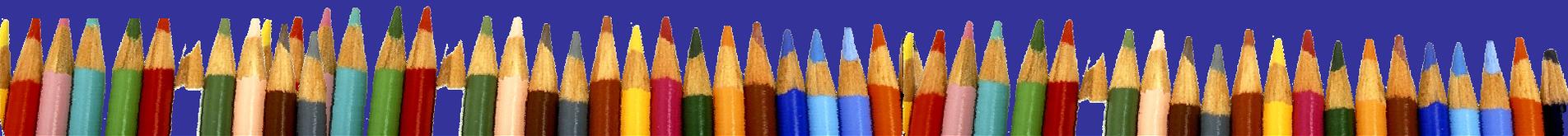


Gagné on Games?

Gagné's conditions and events are well accepted as pedagogically sound.

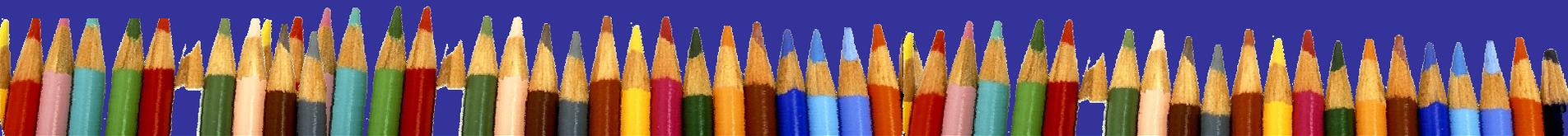
(K-12, at least)

"Good" games possess the necessary conditions for learning...



Gagné's Nine Game Events

1. **Gaining attention** (reception) attract-mode; intro sequence; back-story
2. **Informing learners of the objective** (expectancy) goals of the game, primary & secondary quests, missions, etc.
3. **Stimulating recall of prior learning** (retrieval) – back-story, intro sequence, prompting in-game: explicit, and implicit.
4. **Presenting the stimulus** (selective perception) – showing the player the goal – image of required article; target destination, score
5. **Providing learning guidance** (semantic encoding) – hints, prompting, tutoring
6. **Eliciting performance** (responding) – This is, of course, the essential component of interactivity – without this, there really *is* no game.
7. **Providing feedback** (reinforcement) – Feedback is provided in many ways, including scores; displays; queries; and verbal feedback.
8. **Assessing performance** (retrieval) – feedback, scores, stats
9. **Enhancing retention and transfer** (generalization) – moving through levels; genres



Gagné on Games

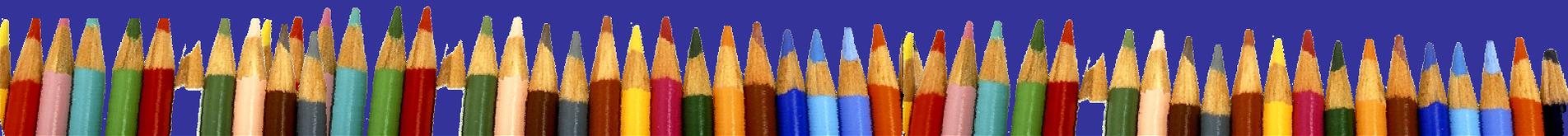
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(K-12, at least)

"Good" games possess the necessary conditions for learning and facilitate the required events.

"Good" games embody sound pedagogy.

Q.E.D.



Gardner on Games?

Gardner's concept of Multiple Intelligences is well accepted as sound pedagogy (K-12, at least).

"Good" games address multiple modes of learning...



Gardner's Multiple Intelligences

1. **Linguistic:** written and spoken elements – often read-a-long
2. **Musical:** Virtually all games include sound to enhance play – there are sound-effects, both diegetic and non-diegetic, gameplay feedback
3. **Logical-mathematical:** Strategy is one of the key elements in play – Puzzles, management games, Zoo Tycoon, even Pikmin requires counting and arithmetic.
4. **Spatial:** Games are of course highly visual, colourful, 2- or 3-D environment, views (1st-, 3rd person)
5. **Kinesthetic:** DDR, Donkey Konga, etc. Also 'traditional' games – fine motor; some whole-body
6. **Intrapersonal:** light on reflection, but high on strategy, also ethical dilemmas
7. **Interpersonal:** multi-player, MMOG, NPCs
8. **Naturalistic:** Games with naturalistic themes Zoo Tycoon, geography, classification (race, class, etc.), Pikmin



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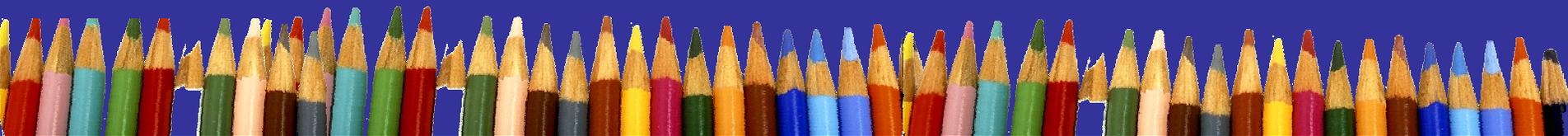
*"Good" games demonstrate sound pedagogy.
Q.E.D.
Twice.*



Games Contain Sound Pedagogy.

Resonance: Create connections between desirable facets of education and those elements already embodied in games.

Identifying which aspects of games connect with specific accepted and desirable facets of education builds bridges that may facilitate acceptance.



Thank You.

