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# USING GAMES IN EDUCATION PART I

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**SPRING 2011**



# COMPUTER AND VIDEO GAMES

- Video games are such a popular and influential medium for a combination of many factors.
- Primarily, however, video games elicit powerful emotional reactions in their players, such as fear, power, aggression, wonder, or joy.
- Video game designers create these emotions by a balancing a number of game components, such as character traits, game rewards, obstacles, game narrative, competition with other humans, and opportunities for collaboration with other players.
- Understanding the dynamics behind these design considerations might be useful for instructional technologists who design interactive digital learning environments.

# GAMES IN EDUCATION

- Computer and video games are a maturing medium and industry and have caught the attention of scholars across a variety of disciplines.
- Traditionally, computer and video games have been ignored by educators.
- When educators have discussed games, they have focused on the social consequences of game play, ignoring important educational potentials of gaming.
- However, contemporary developments in gaming, particularly interactive stories, digital authoring tools, and collaborative worlds, suggest powerful new opportunities for educational media.

# GAMES IN EDUCATION

- Further, video game playing occurs in rich socio-cultural contexts, bringing friends and family together, serving as an outlet for adolescents, and providing the “raw material” for youth culture.
- Finally, video game research reveals many patterns in how humans interact with technology that become increasingly important to instructional technologists as they become designers of digital environments.
- Through studying video games, instructional technologists can better understand the impact of technology on individuals and communities, how to support digital environments by situating them in rich social contexts.

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# ADVANTAGES OF MEANINGFUL LEARNING

- Facilitates the acquisition of new knowledge.
- Relates new information with existing information, thus creating a positive learning environment.
- Provides active learning, which depends on a student's degree of assimilation.

# CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Player controls how much and when he/she plays.	Groups of students learn at one pace, and are given very little freedom to manage the content and pacing of their learning.
Students are actively engaged in quick and varied activity.	Students passively absorb information in routine activities, such as lecture.
Players play and practice until they master the game; taking as much time as they need. (Achievement constant)	Students must all go at the same pace, regardless of achievement. (Time constant)

# CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING (CONT.)

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Players have feeling of mastering the environment, becoming more powerful, knowledgeable and skillful in the environment.	Students memorize knowledge from teachers for pencil and paper tests, rarely applying it in any dynamic context.
Players work together, sharing tips and trading secrets.	Students perform in isolation, and cannot use one another as resources.

# CLASSIC VIDEO GAME VS. TRADITIONAL LEARNING (CONT.)

VIDEO/COMPUTER GAME	TRADITIONAL LEARNING
Each player competes against his/her ability to master the game, to reach new goals. Every player can reach a state of “mastery” over the game.	Students are graded numerically, and encouraged to compete against one another.
Games are played for the intrinsic reward of playing them, for the emotional state they produce.	Schools are structured around extrinsic rewards, such as good grades or a fear of failure (flunking).



# EVALUATING EDUCATIONAL GAMES

- To choose an educational game, teachers must take into consideration the following:
  - Know students' previous knowledge related to the topic under discussion.
  - Play the game to ensure that:
    - The material in the game is presented in a logical sequence (e.g. presentation).
    - The game is engaging to students (e.g. gameplay, graphics, sounds, lasting appeal).
    - The user interface is easy to use (e.g. gameplay).
    - The documentation and/or online tutorial are understandable for students of the appropriate level (presentation).

# GROUP DYNAMIC

- ❑ Rate each of the following games on a scale of 1 (worst) to 5 (best) based on the following categories:
  - Presentation (10%)
  - Graphics (20%)
  - Sound (10%)
  - Gameplay (15%)
  - Educational Value (25%)
  - Lasting Appeal (20%)
- ❑ Each person will select the highest and lowest rated game using the given weights.
- ❑ Each participant will give his or her opinion about each game (strengths and weaknesses). (10 minutes)

# FREE EDUCATIONAL GAMES

## ■ Chemistry

- *EleMental* (<http://www.hagames.com/elemental.aspx>)
  - A tetris-style middle-school game for learning about the chemical elements (**Play Online**).
  - The game was the runner up in the first Liemandt Foundation Hidden Agenda contest.
- *MeCHeM* (<http://www.hagames.com/mechem.aspx>)
  - A game for middle school students learning chemistry and the properties of elements (**Play Online**).
  - Players select elements and strategies to equip their mechs with armor, batteries, capacitors and weapons, and then battle the Mechs to see which is the stronger.
  - Winner of the Liemandt Foundation's first "Hidden Agenda" content in 2004.

# FREE EDUCATIONAL GAMES



EleMental



MeCHEM

# FREE EDUCATIONAL GAMES

## ■ Math

❑ *AlgebrArcade* (<http://www.hagames.com/algebra.aspx>)

- Beat the game – learn equations!  
The most fun you'll ever have with algebra (**Play Online**).

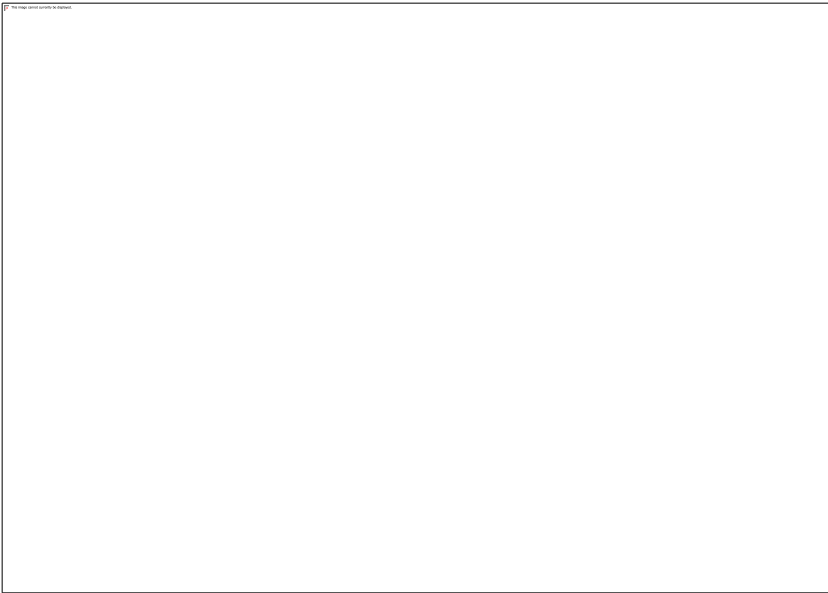


# FREE EDUCATIONAL GAMES

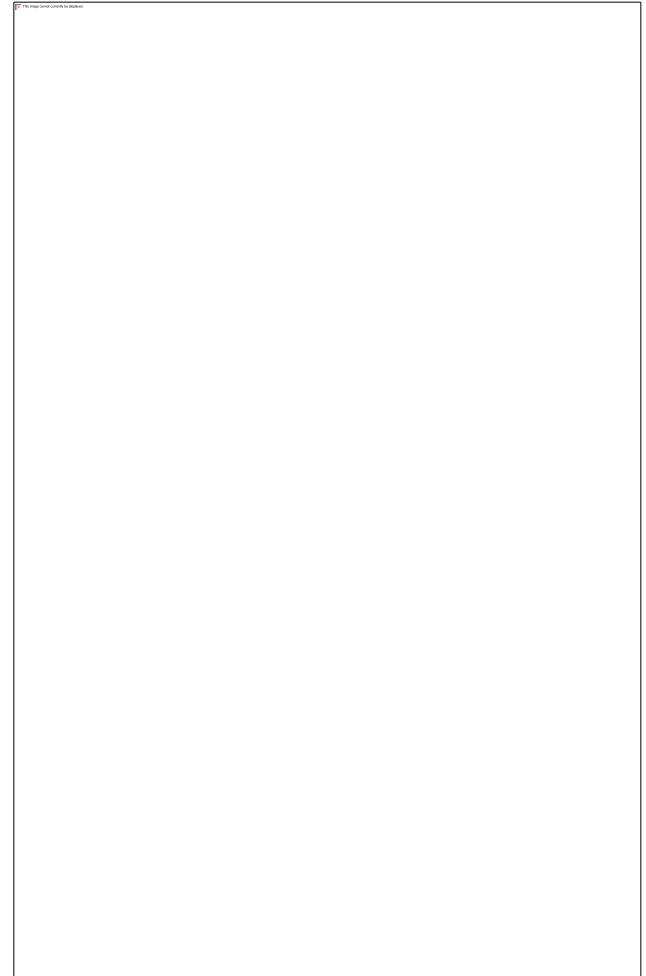
## ■ Physics

- ❑ *Fantastic Contraption*(<http://fantasticcontraption.com/>)
  - The goal of fantastic contraption is to build “contraptions” that will go from point A to point B. Once the contraption is built, the user can test it to see if it achieves its goal.
- ❑ *Assembler* ([http://www.physicsgames.net/game/Assembler\\_3.html](http://www.physicsgames.net/game/Assembler_3.html))
  - The goal of assembler is to arrange the shapes in a way that certain shapes (key shapes) are in their shape zones. User must manipulate the key shapes and filter shapes to do this.
- ❑ *Waste of Space* (<http://www.hagames.com/wasteofspace.aspx>)
  - A middle-school physics game about the laws of motion in a vacuum.
  - Winner of the Liemandt Foundation's second Hidden Agenda Conference (**Play Online**).

# FREE EDUCATIONAL GAMES



**Fantastic  
Contraption**



**Waste of Space**

# FREE EDUCATIONAL GAMES

## ■ Vocabulary

### ❑ *Chicktionary*

(<http://club.live.com/Pages/Games/GamePlay.aspx?game=Chicktionary&mode=play>)

- Rise above the roost in this bird of a word showdown, now available in a special winter edition.
- Let your inner dictionary fly and unscramble the letters to form every possible word combination.

### ❑ *Word Slugger*

([http://club.live.com/Pages/Games/GamePlay.aspx?game=Word\\_Slugger&mode=play](http://club.live.com/Pages/Games/GamePlay.aspx?game=Word_Slugger&mode=play))

- Step up to the plate, slugger.
- Knock base hits and balls out of the park when you create words from the jumble.
- So take a few warm up swings and dig in. An incomplete puzzle will get you benched!



# FREE EDUCATIONAL GAMES



Chicktionary



Word Slugger

# FREE EDUCATIONAL GAMES

## ■ Vocabulary

### □ *Word Duel*

([http://club.live.com/Pages/Games/GamePlay.aspx?game=Word\\_Duel&mode=play](http://club.live.com/Pages/Games/GamePlay.aspx?game=Word_Duel&mode=play))

- Your goal is to round up a ranch full of letters and make more words than your opponent.
- You've got seven rounds to show you're the biggest, baddest, Word Dueler in the West.

### □ *Spelling Bee*

□ ([http://club.live.com/Pages/Games/GamePlay.aspx?game=Spelling\\_Bee&mode=play](http://club.live.com/Pages/Games/GamePlay.aspx?game=Spelling_Bee&mode=play))

- Buzz around this word jumble long enough and the results will be sweet.
- Fill in every word on the honeycomb and move to the next round.
- Careful: with each missing word you'll feel the sting!

# FREE EDUCATIONAL GAMES

## ■ Riddles, Trivia and Observation

### □ *MCF Prime Suspects*

([http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=MCF%C2%AE%3a\\_Prime\\_Suspects&mode=play](http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=MCF%C2%AE%3a_Prime_Suspects&mode=play))

- The Queen's Hope Diamond was stolen; you're the only hope for finding it.
- Complex illustrations hold many clues to the case.
- Select a map location to search and reveal each clue to solve the mystery.

### □ *Hidden Expedition: Titanic*

([http://club.live.com/Pages/Games/GamePlay.aspx?game=Hidden\\_Expedition%3a\\_Titanic%u2122&mode=play](http://club.live.com/Pages/Games/GamePlay.aspx?game=Hidden_Expedition%3a_Titanic%u2122&mode=play))

- As part of the Hidden Expedition Adventure League, it's your job to explore the wreckage of this once-majestic ship and collect antique artifacts for the Titanic Museum.

# FREE EDUCATIONAL GAMES

## ❑ *Clink*

(<http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=Clink&mode=play>)

- It's the game name, and the sound of success.
- Ponder clues and enter responses from a word list in a vertical tower.
- "Clink" away by using words from above and below in your new answers.

## ❑ *Dingbats*

(<http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=Dingbats&mode=play>)

- Select up to ten consonants to pair with hidden vowels.
- All three puzzles relate to each other and a single topic shown at the top.

# FREE EDUCATIONAL GAMES

## ■ Trivia and Observation

### □ *Crosswire*

(<http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=Crosswire&mode=play>)

- Trivia smarts and your good guesses keep the wires untangled. Match facts correctly and ascend to the tricky HighWire round.
- Once there, beware of phony answers that will knock you down.

### □ *Travel*

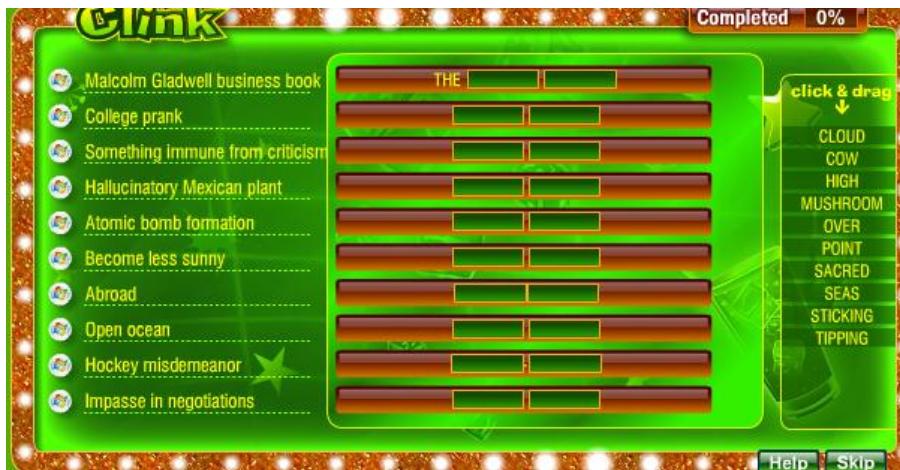
### *Tracks*

([http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=Travel\\_Tracks&mode=play](http://www.clubbing.com/Pages/Games/GamePlay.aspx?game=Travel_Tracks&mode=play))

- Match challenging clues with photographs of famous sites, cities and landmarks from around the United States.
- Pack your bags for a voyage of national knowledge!



# FREE EDUCATIONAL GAMES



**Clink**



**Hidden Expedition**

# FREE EDUCATIONAL GAMES

## ■ Brain Exercises

### □ *Memory Matrix*

(<http://www.lumosity.com/brain-games/memory-games/memory-matrix>)

- This game helps you develop spatial recall.
- When a pattern appears on the screen, repeat the pattern by clicking on the correct tiles.

### □ *Speed Match* (<http://www.lumosity.com/brain-games/speed-games/speed-match>)

- Feeling like your reaction time could use some improvement? Race against the clock and put your reaction speed to the test.
- This game helps develop your information processing skills.

# FREE EDUCATIONAL GAMES

## ■ Science Games

### □ *Laser Challenge Game*

([http://nobelprize.org/educational\\_games/physics/laser/challenge.html](http://nobelprize.org/educational_games/physics/laser/challenge.html))

- Professor Photon has invented the super laser, and you have to arrange a laser party to celebrate!
- Your mission in this game is to collect points, CDs and snacks. Collect a star and answer its laser question correctly, and you'll receive bonus points.
- But watch out for the slackers and the snack crackers who will try to steal your party goodies.
- At the end of each level, you'll have to perform a laser task, such as recognizing appliances that contain lasers and repairing faulty eyesight.



# FREE EDUCATIONAL GAMES

## ❑ *Blood Typing Game*

([http://nobelprize.org/educational\\_games/medicine/landsteiner/landsteiner.html](http://nobelprize.org/educational_games/medicine/landsteiner/landsteiner.html))

- The Blood Typing educational game and related reading are based on the 1930 Nobel Prize in Physiology or Medicine, which was awarded for the discovery of human blood groups made in 1901.

## ❑ *Immune System Defender Game* ([http://nobelprize.org/educational\\_games/medicine/immunity/game/index.html](http://nobelprize.org/educational_games/medicine/immunity/game/index.html))

- In this game, you are a trainee soldier of the Immune System Defense Forces, defending a human against bacterial infection.

# GROUP DYNAMIC

- ❑ The entire group will be divided into two sub groups: A and B.
- ❑ Each group will come up with a consensus about the highest and lowest scoring game.
- ❑ Each group member will talk about a single game, but he or she will talk about the **group's** stand about that particular game. Each member can talk only once (10 minutes)
- ❑ Sub group A will support the importance of all computer educational games and sub group B will remark the disadvantages and problems of these games (10 minutes).