

Serious Games

Hauptseminar "E-Learning – Sommersemester 2008

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Outline

1. Definition
2. Games in Society
3. Types of Serious Games
 - 3.1 Learning Games
 - 3.2 Military Games
 - 3.3 Games in Health Care
 - 3.4 Persuasive Games

1. Definition

2. Games in Society

3. Types of Serious Games

3.1 Learning Games

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3.3 Games in Health Care

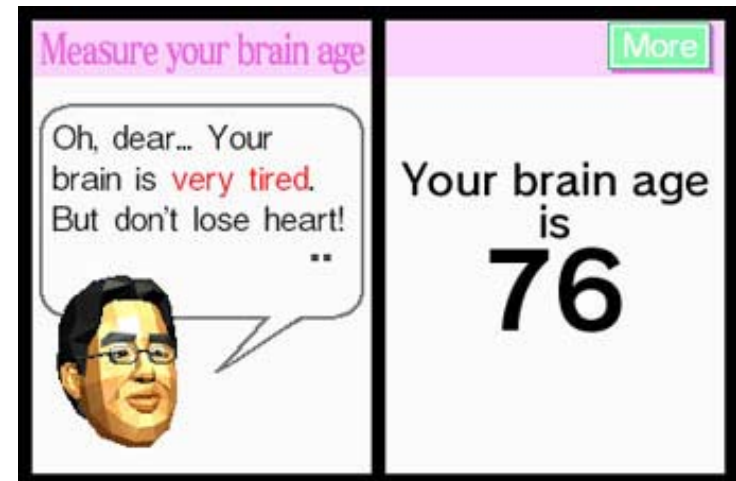
3.4 Persuasive Games

Definition

- Term „Serious Game“ is not easy to define
- Simple Definition:
„Serious games are games that use the artistic medium of games to deliver a message, teach a lesson, or provide an experience.“
(Michael and Chen 2006)



America's Army
(Source: Modeling Virtual Environment
and Simulation Institute)



Dr. Kawashima's Brain Training
(Source: Nintendo)

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Game Impact Theory

- Game industry made a turnover of over ten billion dollars in 2007
- Games will be used by more and more industries because of
- Five core forces (Roger Smith, 2007):
 - Cost advantage of hardware platforms
 - Sophistication of software applications
 - Social acceptance of game tools
 - Successes in other industries
 - Innovative experiments in the adopting industry

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History

- 1980s: personal computers first used in schools
- 90s: multimedia aspects of PCs grew
- Educational software very successful
- Little time to use games in schools => main targets: homes, parents
- 2000: internet started to be very successful => “edutainment”
- Now game developers work together with teachers to design games which can be used in the classroom

Learning Effect

- Schoolwork and play clearly separated
- Learning content integrated into a game => motivation increases
- Games bring together players cooperatively and competitively
- Structure of Learning in games is different:
 - Learning by Doing
 - Learning process has a high contingent of trial and error
 - Just learned knowledge can be demonstrated immediately
- Are students able to learn as much with video games as with traditional learning?

Learning Effect (cont.)

- Study by Wee Ling Wong et al.
- “Metalloman” (learn about biological structures by navigating through the human body)
- Main Questions:
 - Can an interactive media format provide better learning experience?
 - Is an enriched multimedia format better than interactive hypertext format?
- Four Conditions:

	High Media Richness	Moderate Media Richness	Low Media Richness
Interactive	Game	Hypertext	
Non-Interactive	Replay		Text

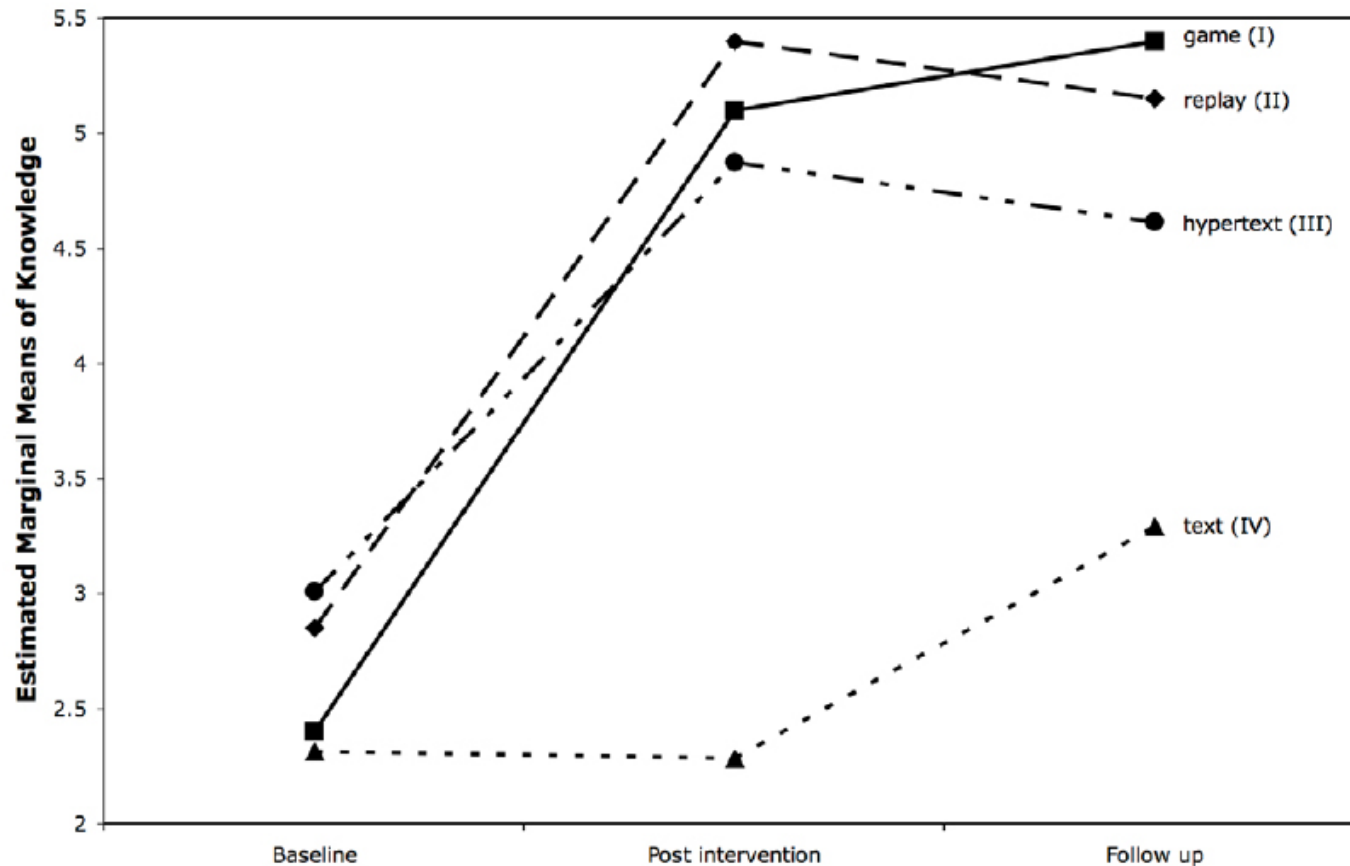


Metalloman
(Wong et al., 2007)

Learning Effect (cont.)

Results:

- Game highest effect on knowledge gain, text lowest
- Replay had similar learning effect as the game => interactivity important?



Design of an Educational Game

(Michael and Chen, 2006; Stapleton, 2004)

- Game should not have video sequences/cut scenes which interrupt the gameplay
- Teacher should have the possibility to start the game at every point which is useful for the day's lesson
- Educative content should be integrated properly into the gameplay
- Usually budget is not as big as the budget for normal games
- Is a game really the best solution to support a certain field of learning?

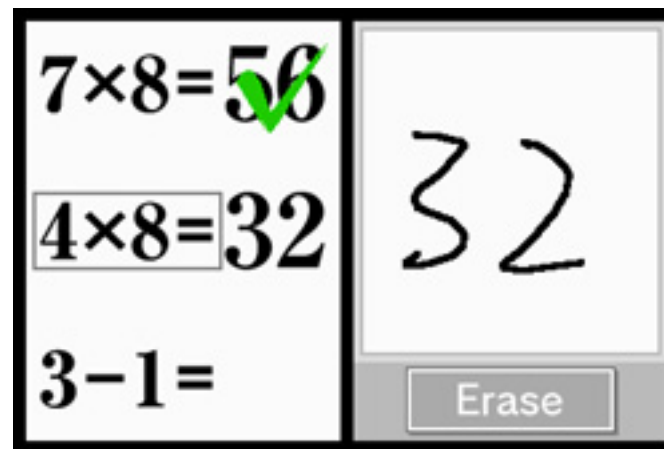
Examples



Power Politics III (Source: Kellogg Creek Software)



Quest Atlantis (Barab et al. 2005)



Dr. Kawashima's Brain Training

(Source: Nintendo)

Problems Caused by Insufficient Design

Examples (Jantke, 2006):

- “Physikus”:
learning section is clearly separated from the game
- “Brand im Hafen”:
there is no learning section at all
- “Genius Unternehmen Physik”:
learning part feels like a punishment
- “Genius Task Force Biologie”:
learning part is not necessary



“Genius Unternehmen Physik” (Jantke, 2006)

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History

- First war games: “Chaturanga”, “Wei Hei”, “Chess”
- Modern war games since the 17th century (e.g. “Kriegsspiel” 19th century)
- Computer technology allowed games to get more complex
- 1980s: SIMNET project
 - goal: develop all major simulation systems as networked devices
 - designed for specific task training
 - simulations of actual battlespaces
- 1998: “Spearhead” - first attempt to transfer the SIMNET experience onto a desktop computer
- Possibility to move simulators to a PC presents high cost savings

Benefits for the Military

(Michael and Chen, 2006)

- Player's multi tasking ability improves
- Players learn to stay calm and controlled in chaotic circumstances
- Multiplayer games help to develop team skills
- First Person Shooters enhance ability of identifying friend from foe
- Practice of target prioritization
- Willingness to take aggressive action increases

Examples



America's Army

(Source: Modeling Virtual Environment and Simulation Institute)



Tactical Iraqi (Source: Alelo Inc.)



Falcon 4.0 (Source: MirrorSoft)

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Exertion Games

- “Exertainment” - combination of video games, fitness and medicine
- making physical exercise more attractive by adding elements of video games
- Examples:



Dance Dance Revolution

(Source: Health Foods Blog)



Table Tennis for Three

(Mueller and Gibbs, 2007)

Games in Therapy

- Treatment of phobias
- Patients are confronted with models of their fears
- Controlled but realistic environment
- Virtual Reality Medical Center (VRMC):
 - 5000 Therapy sessions with computer simulations
 - success rate of over 92% (Dr. Mark Wiederhold, President of VRMC)
- Games also used to distract patients during certain procedures

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Games as a Persuasive Technology

- goal: transport a political, religious or cultural message
- user is put right into the action
- player is not a passive observer
- => fewer distance to the message
- effectiveness?

Examples

“Howard Dean for Iowa” (Bogost, 2007)

- target group: Dean sympathizers
- should motivate them to engage in campaign activities
- two parts of gameplay: strategy part, three mini games



(Bogost, 2007)

- informal analysis of online responses: game was able to increase interest
- game failed to distinguish Dean from any other political candidate
- no information about Dean's goal or political program

Examples (cont.)



September 12th

(Source: www.newsgaming.com)



Peacemaker

(Source: ImpactGames)

Examples (cont.)



Velvet Strike

(Source: www.opensorcery.net/velvet-strike/)



dead-in-iraq

(Source: <http://www.delappe.net/>)



Conclusion

- Use of video games in serious industries
- Learning Games:
 - Combination of education and entertainment
 - Effectiveness?
- Military Games:
 - Simulations to train soldiers
 - Motivate civilians to join the army
- Games in Health Care:
 - Exertion Games
 - Games in Therapy
- Persuasive Games
 - Deliver a message

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