Incorporating Computer Gaming Technology in Education
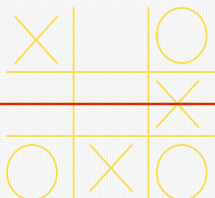
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Scheme of Presentation

- Strategy Games for Cognitive Skills
- History of Video/Computer Games
- Computer Games in Education
- Computer Games for Education in Pakistan
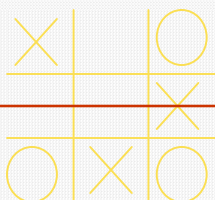- Misconceptions and Unrealistic Expectations
- Conclusion

Spot the Difference: Brachiosaurus Eating Leaves

Can you spot the four differences?
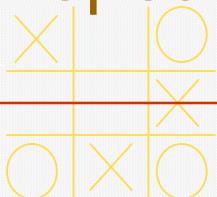
Leg missing, woman missing, two trees missing

Spot the Difference cont...

- Helped develop cognitive skills and memory
- Also,
  - We learned that Brachiosaurus was a herbivore (eating tree leaves in the picture)
- Benefits
  - Visual aid for memory (picture available)
  - Interactive nature of game
  - Ability to go at one's own pace
  - Repeat as needed

Strategy Games for Cognitive Skills

- Disciplines according to vizier Hasan bin Sahl (d. 850)
  1. Chess
  2. Knowledge of music
  3. Fight with lance
  4. Horsemanship
  5. Poetry
  6. Play Arch
  7. Knowledge of arithmetic
  8. Knowledge of genealogy
  9. Knowledge of history
  10. Storytelling

- Disciplines to teach according to Petrus Alphonsi (d. 1110)
  1. Equitare (horsemanship)
  2. Natare (swimming)
  3. Sagitare (play arch)
  4. Cestibus certare (pelota play)
  5. Aucupare (hunting bird)
  6. Scacis ludere (play chess)
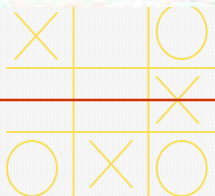 7. Versificare (write in verse)

Chess as Game and Education

c. 13th Century

Chess as Game and Education cont...

- Officers in Muslim armies known to play chess regularly

- Historian of the First Crusade, Fouché de Chartres writes that during the blockade of Antioch (1097-1098) Peter the Hermit found the Turkish General Karbuga playing Chess when he met with him to negotiate.
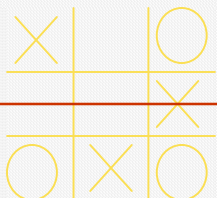

Two knights playing chess, one Christian and the other Muslim
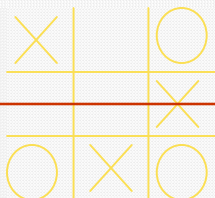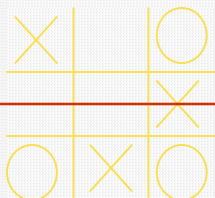
Games (but with Video/Computer)

Video/Computer Games

- Playing video games involves many skills that relate to learning

- Players need to have certain knowledge which requires them to acquire/learn it first
  - The better they learn the better is their play

- Game are designed to be customizable and adaptable in difficulty from novice to expert
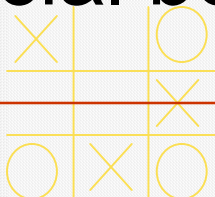
Computer Games for Edutainment

- Offer better opportunities for critical learning and problem solving

- Allow the player to practice, experiment and make mistakes (repeatedly) without any real consequences

- All learning is situated and grounded in simulation game's context

- Networked simulation games provide a form of peer learning and even understanding social behaviors
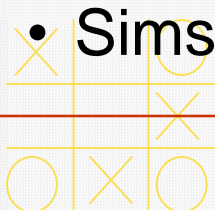
Computer Games for Edutainment cont...

- Computer games for educating and training can be divided into following categories:
  - Economics and Management Simulation
    - SimCity, RollerCoaster Tycoon
  - War Simulation
    - Age of Empire 3
  - Combat Simulation
    - Bradley Trainer, America's Army
  - Role Playing Games
  - Character Managing Games
    - Sims 2, NeoPets

Computer Games for Edutainment cont…
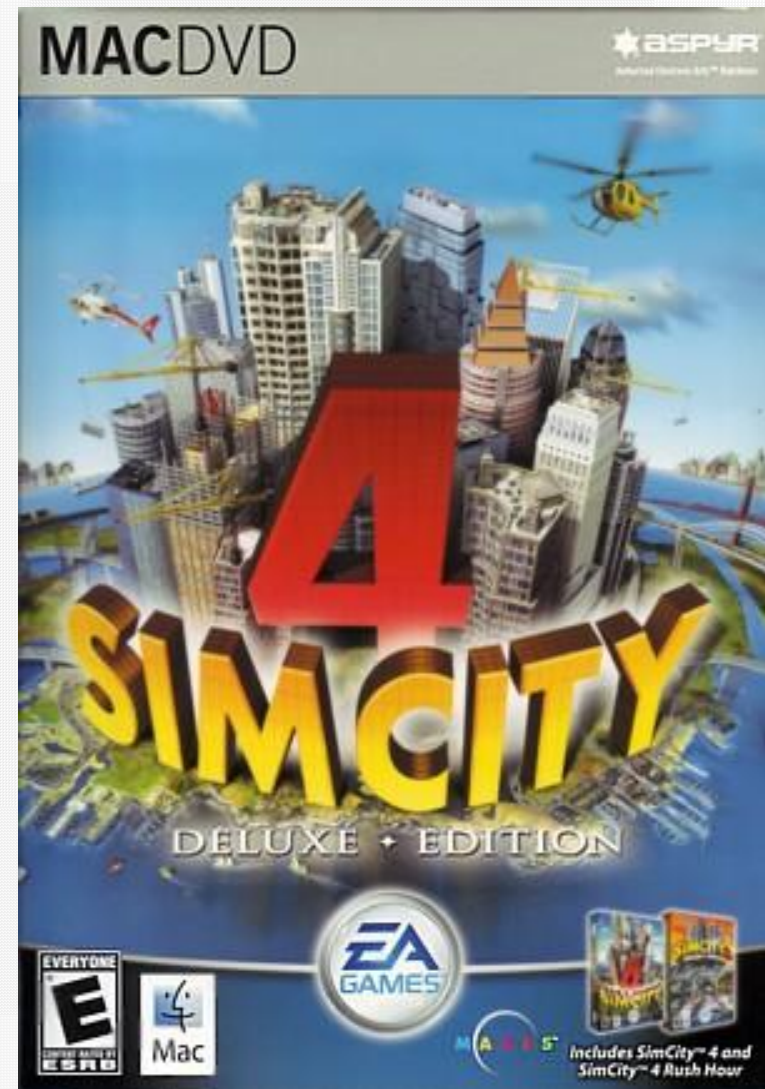
Computer Games for Edutainment cont…

- ## SimCity 4000

  – Players learn how to plan for a city and then manage its economy

  – Efficient in teaching managerial skills, developing visionary skills and practically showing importance of long term planning

Main Research Institutes

- Main organizations or projects in the area of edutainment include:
  - British Educational and Communications and Technology Agency (Becta)
  - Games-to-Teach Project of MIT and Microsoft
  - Research work at Wisconsin Madison University
  - Nesta Future Lab program of UK
  - The Making Games Project
  - Digital Games Research Association (Digra)
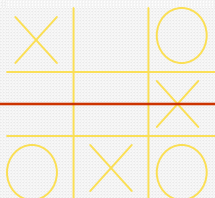 - Games in Education Study by TEEM.
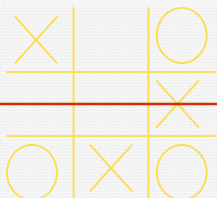
Computer Games for Education in Pakistan

- Use of simulation games in Pakistan's education and training institutions to enhance:
  - Memory
  - Analytical Skills
  - Information Absorption
  - Listening skills
  - Technical skills
  - Managerial skills
 - Foresight
  - Planning

Computer Games for Education in Pakistan cont...

- Can be used for both educating at student level and training at professional level

- Different strategies required at both levels

- At school level the objectives are:
  - Development of Cognitive Skills
  - Assimilation of Information

- At professional level the objectives are:
 - Development of analytical, listening, technical, and managerial skills
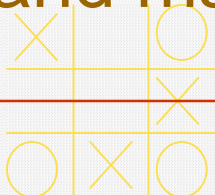
Computer Games for Education in Pakistan cont…

- Development of research team or a research project
- Creation of methodologies for course development incorporating computer games
  - The methodology should encompass goals and approaches for: purchase or development; usage; and evaluation
- Development of customized computer games
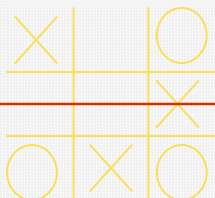- A pilot project
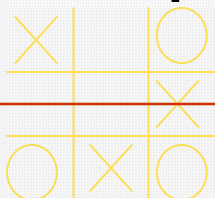
Computer Games for Education in Pakistan cont…

- At school level
  - Mathematics
  - History
  - Geography
  - Physics

- At university level
  - Engineering sciences
  - Medical sciences

Misconceptions and Unrealistic Expectations

- Misconceptions
  - Games are a waste of time and students will learn nothing
  - A teacher who learns the basics of computer is ready to put this technology to optimum use
  - Giving each student equal time to play games would achieve the goal
  - Making games a part of course would be enough
  - The impact of games can be gauged by increasing test scores of students

- Unrealistic Expectations
  - Once introduced the games will turn every player (trainee) into an "Einstein"
  - More games will result in better output
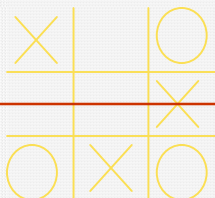 - It will be overnight transformation

Conclusion

- "I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks." (Thomas Edison, 1922)

- Technology is not the cure
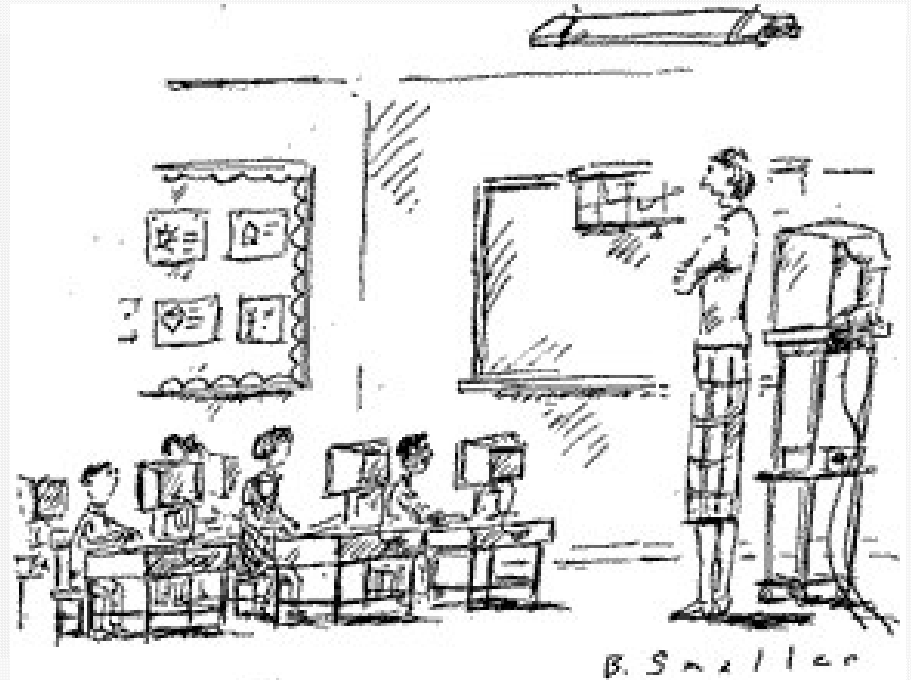 - It is a part of the cure

Thank you

"Keep your eyes on your own screen"