




# Video Game Based Learning: A Review of Research

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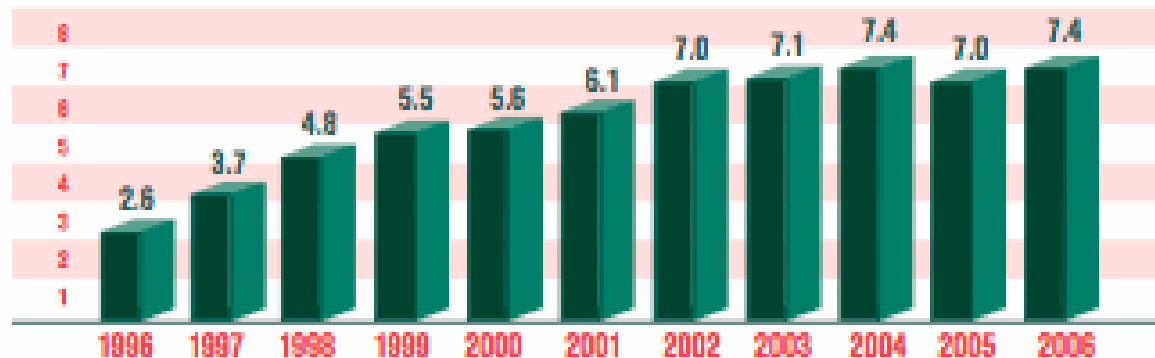
# Outline

- Importance of considering video games as a tool to promote learning
  - Review of literature on the outcomes of using games for learning
  - Conclusions
  - Limitations
  - Future research
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# A Digital Culture of Gamers

- Integration of digital technology and culture  
(Subrahmanyam, Kraut, Greenfield, & Gross, 2000)

**U.S. COMPUTER AND VIDEO GAME DOLLAR SALES GROWTH**  
DOLLARS IN BILLIONS



Source: The NPD Group / Point-of-Sale Information

# Sociocultural Learning Theory

- Vygotsky
  - Learning is active
  - Learning is social

(Gauvain, 2001)

The video game is the context in which active and social learning occurs.

(Prensky, 2006)

# Student Perceptions of Game Based Learning

- Video games are highly motivating (Seonju, 2002)
- Video games increase levels of concentration (Rosas et al., 2003)
- Video game based learning is approached with a positive attitude (Vogel et al., 2006)

# Outcomes of Game Based Learning

- **Math, Reading, & Spelling** (Rosas et al., 2003)
- **English Language Acquisition** (Ngu & Rethinasamy, 2006; Yip & Kwan, 2006)
- **Motor Movements in Students with ADHD** (Zinno et al., 2001)
- **AET and Math Proficiency** (Mautone, DuPaul, & Jitendra, 2005; Ota & DuPaul, 2002)
- **Skill Transfer** (Fery & Ponserre, 2001)

# Math, Reading, & Spelling

- Rosas et al. (2003)
  - Compared video games to traditional teaching methods on math, reading, and spelling
  - $n = 1274$  1st and 2nd grade students
  - Natural setting
  - Pre-test/Post-test
  - NO significant differences between experimental and control groups

# English Language Acquisition

- Ngu & Rethinasamy (2006)
  - Compared Computer Assisted Language Learner (CALL) to traditional English language instruction
  - $n = 30$ ,  $M$  age = 13, from Malaysia
  - Natural setting
  - Pre-test/Post-test
  - Both experimental and control showed improvement
    - Control group demonstrated greater improvement

# English Vocabulary Learning

- Yip & Kwan (2006)
  - Compared online English vocabulary instruction to face-to-face instruction
  - $n = 100$  freshman-engineering students from Hong Kong University of Science and Technology
  - Pre-test, Learning, Post-test, Surveys, Interviews
  - Students who learned via online games outperformed students who learned via face-to-face instruction
    - Students reported words taught in context were easier to remember

# Motor Movements in Students with ADHD

- Zinno et al. (2001)
  - Compared motor movements in boys with and without ADHD
  - n = 79 diagnosed, n = 67 no diagnosis
  - *Crash Bandicoot* and *The Simpson's*
  - Facial and body movements recorded
  - NO significant differences in motor movements
    - Video games may reduce hyperactive symptoms

# AET and Math Proficiency

- Ota & DuPaul (2002)
  - Compared Math Blaster to traditional instruction
  - $n = 3$  male, Caucasian, 4th, 5th, and 6th grade students with ADHD
  - All 3 boys:
    - Increased active-engaged time
    - Decreased off-task behavior
    - Increased the number of digits correct

# AET and Math Proficiency

- Mautone, DuPaul, & Jitendra (2005)
  - Examined the affects of Math Blaster on math proficiency
  - $n = 3$  males, a 4th grade African American student, and 2nd and 3rd grade Caucasian students
  - All three boys increased active-engaged time and math fluency

# Golfing Skill Transfer

- Fery & Ponserre (2001)
  - Examined the effectiveness of skill transfer from a golf video game to a real-world golf setting
  - $n = 62$  right handed males with no prior golf experience
  - Pre-test, Training, Post-test
  - Virtual putting group outperformed the control group in post-test real-world putting

# Conclusions

- Video games can have a positive influence on learning outcomes
- Motivation, motivation, motivation
- Video games can make learning contextual

# Limitations

- Limited empirical evidence indicating video games are a better tool for learning than current methods of teaching
- Limited research on the benefits of playing strategy, sports, adventure, and action games
- Limited research on the availability of video games to underprivileged populations
- Use of self-report measures as the sole source of data

# Directions for Future Research

- The active and social context of video game play
- The role of video games in the classroom...if any
- The ability of video games to help students meet AYP
- Defining the characteristics of advanced gaming products that promote higher cognitive processing

# Directions for Future Research

- The most effective strategies for choosing and combining video games into various educational contexts
- Sound assessment methodology
- The connection between playing video games and specific learning objectives

# Directions for Future Research

- The use of video games with special needs populations
- The effects learning through a video game have on skill and knowledge transfer
- Finally, longitudinal studies



Thank you for listening!

Questions

