




Video Game Based Learning: A Review of Research

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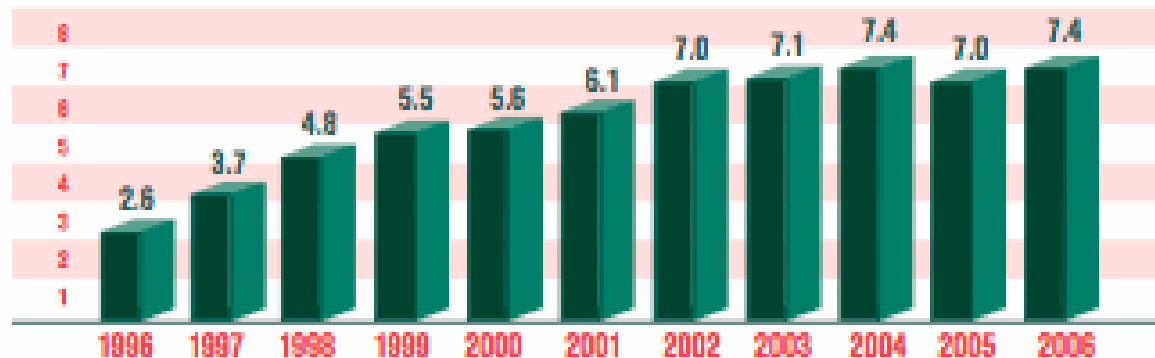
Outline

- 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

