Evidence-based Practices in the Design of Interactive Multimedia for Learners with Cognitive Learning Disabilities

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Introduction

● Clark (1983) says it’s the design, not media, which influences learning.
● Kozma (1991) claims the constructivist properties of media may benefit some students.
● This study extrapolates design principles from studies which show positive benefit with use of interactive multimedia for students with cognitive disabilities.
Evidence-Based Practice: Signaling

- Key words were highlighted as the story was read. Children displayed increased word identification over time.
- Per Mayer’s (2002) multimedia designs for learning, signaling tells learners that something is important.
Evidence-Based Practice: Personalization

- Deliyannis and Simpsiri (2008) taught MAKATON method to children with communication difficulties using interactive multimedia.
- Devices were personalized to speak child’s name and display same-gender actor as the child.
Evidence-Based Practice: Dual Channel Use

- Abtahi (2012): Children with dyslexia used interactive multimedia learning objects (IMLO) to improve math skills.
- Children felt IMLO assisted them in learning the topic. They were motivated to use IMLO.
- This along with other studies demonstrates Mayer’s (2002, 2005) principle of Dual Channel Use.
Evidence-Based Practice: Collaborative Learning Environment

- Marino, Gotch, Israel, Vasquez, Basham, and Becht (2013): Studied use of interactive video games for students with dyslexia as part of universal design for learning (UDL) middle school science curriculum.
- Gameplay was most effective as learning tool when played with peers.
- Collaborative discourse was effective as a debrief to gameplay.
- Students felt would have been more effective assessment than paper tests.
Evidence-Based Practice: Self-Paced Instruction

- Schelling and Rao (2013): Used interactive multimedia to improve self-advocacy skills of secondary students with intellectual disabilities.
- Students used Self-Advocacy Compact Disc (SACD) at their own pace to complete training. Built-in quizzes check for learner comprehension.
- This and other studies demonstrate effective use of self-paced instruction, which can be paced based on the learner’s skill and performance.
Evidence-Based Practice: Integrated Assessment

- Lopez-Basterretxe, Mendez-Zorrilla, and Garcia-Zapirain (2014): used interactive games to help students with Down’s syndrome learn money management skills.
- Game results were reported back to psychologists and specialists working with the students.
- Assessments built in to the multimedia; results reported back to the instructors. Can personalize instruction based on strengths and weaknesses.
Evidence-Based Practice: UDL

- Book chapter by Kinney and Kinney (2003): Discuss using interactive multimedia and UDL to meet the needs of all learners, especially those with disabilities.

- Many studies utilized UDL (CAST, 2011):
  - Alternatives for auditory or visually presented information
  - Customizable displays
  - Built-in support
  - Options for learners with limited physical ability
  - Return to the main menu at any point of game play
  - Options for self-regulation
  - Intrinsically motivating
  - Sustained the learners’ interest through built-in rewards
Discussion

● Benefits of multimedia instruction include:
  ○ individualized instruction
  ○ self-paced anytime anywhere instruction
  ○ instructor’s time freed to provide more direct, one-on-one instruction

● Most effective practices include those consistent with Mayer’s (2002, 2005) theory of multimedia learning:
  ○ dual channel use,
  ○ signaling,
  ○ personalization

● A collaborative learning environment
● Self-paced instruction
● Formative assessment tools
● UDL
Questions? Insights?

Post them to the Discussion forum
References


