Optimizing student learning of clinical standardized assessment using integrated instructional technologies

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Materials

• Disclaimer
• andrewpersch.com
• Mediasite
• Not a dream within a dream
• Screen recording about screen recording
Learning Objectives

1. Identify limitations of instruction in clinical standardized assessment using traditional methods.
2. Describe common challenges experienced when integrating multiple instructional technologies.
3. Explain the benefits of instruction in clinical standardized assessment using integrated technologies.

• Case-based application of instructional technologies
1. Identify limitations of instruction in clinical standardized assessment using traditional methods.

- Within the rehabilitation professions, clinical standardized assessment is traditionally taught using a combination of:
  - Reading
  - Lecture
  - Demonstration
  - Hands-on practice

- Bloom’s Taxonomy
Clinical Standardized Assessment

• “Read Chapter 6 in the book for class on Tuesday”
• Include:
  • Specific start points, basal ceiling rules, instructions and criteria for items
• Raw scores are translated into standard scores
• These standard scores are used to:
  • Qualify children for services
  • To get a baseline score to begin services
  • To measure progress
  • To explain to parents, physicians, & teachers what the performance issues are
About the Peabody

• Revised in 2000, Folio & Fewell
• Primary developmental motor scale, widely used by OT and PT
• Designed to test children from birth through 5 years
• Norm-Referenced test (normative sample = 2,003)
Components of the Peabody

• Examiner’s Manual (blue book)
• Examiner Record Booklet
• Guide to item administration (yellow book)
  • Hundreds of items!!
• Test Manipulatives
  • Blocks, beads, scissors, etc.
  • Worksheets (can be copied)
• Motor activities (red book, not used by OTs)
• $435
Guide to Item Administration

• Available in 416
• Each item’s description includes:
  1. Age at which 50% of the children in the normative sample mastered that item
  2. Position the child should be in when the item is administered
  3. The stimulus for presenting the item
  4. The procedure used to test the item
  5. The criterion used to score the item
  6. The illustration of a child performing the item
Item Administration
Example

**Item 18: Grasping Pellets**

- **Age:** 11 months
- **Position:** Sitting
- **Stimulus:** 2 food pellets
- **Procedure:** Sit at a table with the child sitting on your lap facing the table. Place 2 food pellets on the table within the child’s reach. Say, “Get all the food.”
- **Criteria:**
  - **2:** Child grasps 1 or 2 pellets with pad of thumb and pad of index finger, with hand, wrist, and arm off table.
  - **1:** Child grasps 1 or 2 pellets with pad of thumb and pad of index finger, with arm on table.
  - **0:** Child grasps pellet using grasp other than thumb and pad of index finger.
Traditional methods?

• Have we accomplished?
  • Reading
  • Lecture
  • Demonstration
  • Hands-on practice

• Innovation in medical and health sciences education is lacking.
Limitations Traditional Methods (LO#1)

• “The last substantive reform in medical student education followed the Flexner Report, which was written in 1910” (Prober & Heath, 2012).
  • Decrease the number of medical schools and poorly trained physicians
  • Increase the prerequisites to enter medical school
  • Train MDs to practice in a scientific manner and engage in research
  • Give medical schools control of clinical instruction in hospitals
  • Strengthen state regulation of medical licensure (Wikipedia)
• Based on the expectation that students come to class prepared
• Amount of information has increased dramatically
• Must make better use of students’ time
Blended Learning Strategies

• Multi-modal presentation
  • Must meet the needs of individual learners (i.e., differentiation)
• “Stickier” (increase comprehensibility and memorability)
  • Unexpected content enhances memorability
  • Case-based, problem-based, and team-based learning underscores applications
  • Stories that elicit emotion
• Self-paced
• Mastery-based
• Flipped classroom
  • Passive listeners -> active learners
  • Engage content digitally (e.g., reading, lecture, demonstration)
  • Content in context (i.e., application)
Benefits of Flipping the Classroom and Integrating Instructional Technologies (LO#3)

• Increased attendance

• Increased use of class time for higher order learning activities such as:
  • Demonstration (i.e., analyze, select, infer, contrast)
  • Hand-on practice (i.e., prepare, hypothesize, discriminate, produce)

• “the Department of Education has concluded that ‘on average, students in online learning conditions performed modestly better than those receiving face-to-face instruction,’ with larger effects if the online learning was combined with face-to-face instruction.” (Prober & Heath, 2012).
• [https://youtu.be/DJChYu_lGw0](https://youtu.be/DJChYu_lGw0)

• 9:45-13:15
Anyone? Anyone?
Video-Based Observation

Voice-Over Explanation

Video Screen Recording
Video-Based Observation

• Open, distance, and flipped classroom learning
• Useful for (Mishra, 2001)
  • Practical, simulated, and real life activities
  • Capture hazardous and costly experiments for presentation and for repeated use
• Costly to produce (Tooth, 2000)
  • Time
  • Money
  • Resources
• Costs-savings realized as video resources are re-used (Jung, 2005)
• “The decision of ODL practitioners to use video-based instructional materials to teach practical skills in spite of the relatively high cost will to a large extent depend on the assurance of their guaranteed instructional effectiveness” (Donkor, 2010)
• More empirical data is needed
Example Applications: Video-Based Observations

Records an expert clinician administering a specific standardized assessment

- Patient History
- Occupational Profile
- Range of Motion
- Manual Muscle Testing
- Heart Rate
- Blood Pressure
- Transfers
- Interviewing
- Standardized Assessments
- Cranial Nerves
- Respiratory Rate
- Edema
- Skin Integrity
- Balance
- Ambulation
- Motor Function
Voice-Over Explanation

• aka Video Modeling (VM)
• Video Modeling + other instructional techniques results in increased fidelity (e.g., assessment, intervention).
• Adding voiceover to video
  • Introduce the topic
  • Share what you are seeing
  • Explain how you are interpreting what you see
  • Gold Standard Scoring
How to capture audio for video

• Watch the video yourself
• These shortcuts will help
  • L – Play forward
  • LL – Play forward at double speed
  • LLL – Play forward faster
  • K – Pause
  • J – Play backwards
  • JJ – Play backwards at double speed
  • JJJ – Play backwards faster
  • K and L – Step forward one frame
  • K and J – Step backward one frame

• Take notes
  • Video timeline
  • Observations
  • Explanations
  • Interpretations
  • Scores

• Record your audio using available resources
  • Most phones
  • Digital audio recorder
Video Screen Recording

• Turn your notifications off!
• What do you want to record?
• What are you showing on your screen?
• How are you going to organize screens?
• Are you doing this live (i.e., synchronously) or are you going to record and edit at a later time (i.e., asynchronously)?
• How comfortable are you with using video editing software?
Screen Recording Software

• Camtasia ($200)
• Adobe Captivate ($799)
• Screenhunter ($Free)
• Snagit ($Free Trial; then $49)
• Quicktime
• Free Screen Video Capture ($Free)
• Koyote Soft Free Screen to Video ($Free)
• Many more options
Drawing Software

• SmoothDraw3 ($Free)
• Windows Paint ($Free)
• Pencil ($Free)
• GIMP ($Free)
• Autodesk Sketchbook Pro ($59)
• Adobe Photoshop ($699)
• Many more options
Hardware = Graphics Tablet

- Wacom Intuos Art Medium ($200)
- iPad + Stylus + Graphics app ($$)
- iPad Pro ($$$)
- Use your mouse
Common challenges (LO#2)

- Inter-app compatibility
- Hardware drivers
- Processing speed
- Notifications
- Resources
  - Time
  - Money
- Computers crash
- Dry runs are essential
Data

• Most students appreciate multiple methods of presentation
  • "Debrief videos on Carmen to let us know what we got wrong & why; for example, the Peabody video posted that goes through the assessment”

• Students split RE: when to provide additional resources
  • Before vs. after class
  • “Video lectures are not as helpful, or quizzes based on videos, but it is helpful to see a lecture in person & reinforce with a video.”

• Voiceover essential to help students contextualize what they are seeing