THAT MOMENT YOU TURN DOWN THE RADIO
SO YOU CAN SEE BETTER
Research Musings

If cognitive neuroscience is showing us how our brains interact with information...

...and PowerPoint presentations are a method to share information...
How can I apply cognitive neuroscience to my presentations...

...so people remember the information?
Definitions

Multimedia Learning Theory:

Cognitive Neuroscience:

Cognitive Load:
Definitions

Multimedia Learning Theory: Industry-standard best practices for the design and delivery of training using multimedia

Cognitive Neuroscience:

Cognitive Load:
Definitions

Multimedia Learning Theory:
Industry-standard best practices for the design and delivery of training using multimedia

Cognitive Neuroscience:
Overlap between the study of brain function and the study of cognition

Cognitive Load:
Definitions

Multimedia Learning Theory: Industry-standard best practices for the design and delivery of training using multimedia

Cognitive Neuroscience: Overlap between the study of brain function and the study of cognition

Cognitive Load: The ease or difficulty of learning something new

Intrinsic Load (how heavy the “load” really is)

Extraneous Load (extra stuff just making lifting the load even harder)

Germeane Load (how “strong” you are)
Neuroimaging Methods

PET, MRI, and fMRI Systems

EEG and Wireless EEG
Multimedia Learning Theories

Redundancy Principle:
Words as both text and audio (orated) can hurt learning.

Modality Principle:
Learning improves with oration AND relevant visuals.

Signaling Principle:
Images and cues presented consistently help learning.

Coherence Principle:
Adding interesting, but irrelevant, material can reduce learning.
Multimedia Learning Theory #1

Redundancy Principle:
Words as both text and audio (orated) can hurt learning.
Dual Channel Theory

Oration

Text on the slide
Dual Channel Theory

Oration

Text on the slide

WARNING! WARNING!
COGNITIVE OVERLOAD!
Multimedia Learning Theory #1

Redundancy Principle (2001):
Words as both text and audio (orated) can hurt learning

Global Webpages Served to Mobile Phones
- The left bar chart below provides details on the share of webpages that are served to mobile phones from 2009 to 2014.
- The right stacked bar chart examines which mobile browser platforms were the most commonly used in 2014. Mobile share of traffic is growing rapidly from just 0.7% in 2009 to 28.9% share in 2014.
- Note that the absolute increase of webpages being served is not considered in these charts, as only percent values are displayed.
- Roughly 70% of websites viewed on mobile phones in 2014 were viewed on Apple Safari or Android Webkit.
Multimedia Learning Theory #2

Modality Principle:
Learning improves with oration AND relevant visuals.
Dual Channel Theory

Oration

Relevant Visual
Refresh Our Memory...about Memory

- Sensory Input
  - Sensory Register
    - .5 to 3 sec.
  - Attention
    - 3 sec. to 1 min.
    - 5 +/- 2 Theory
- Encoding
  - Information Lost
- Long-Term Memory
  - Fades over time

Rehearsal & Practice
Multimedia Learning Theory #2

Modality Principle (2009):
Learning improves with oration AND *relevant* visuals.
Multimedia Learning Theory #3

Signaling Principle:
Images and cues presented consistently help learning.
Neuroimaging and Sensory Memory

[Diagram of a brain with different sections highlighted: Auditory in blue, Vision in yellow, and Spatial Sense in red.]
Neuroimaging and Sensory Memory

Temporal Lobe - AUDITORY
Neuroimaging and Sensory Memory

Spatial Sense

Temporal Lobe - AUDITORY

Parietal Lobe (Spatial)
Neuroimaging and Sensory Memory

Auditory

Vision

Spatial Sense

Temporal Lobe - AUDITORY

Occipital Lobe is the part that controls your vision.

WARNING! WARNING! COGNITIVE OVERLOAD!
Neuroimaging and Sensory Memory

- Frontal Lobe
- Parietal Lobe (Spatial Sense)
- Occipital Lobe (Vision)
- Temporal Lobe (Auditory)
- Cerebellum
Multimedia Learning Theory #3

Signaling Principle (2009):
Images and cues presented consistently help learning.
Multimedia Learning Theory #4

Coherence Principle:
Adding interesting, but irrelevant, material can reduce learning.
Robin is your facilitator today.
Robin has a son named Aidan.
Robin has a Master’s in ID&T.
Robin works at Booz Allen Hamilton.
Robin has three dogs.
Robin paddle boards in the summer.
Robin is a Project Manager.
Robin loves mid-century modern furniture.
Robin’s brother is a robotics engineer.
Robin’s mother is a retired school teacher.
Robin’s father is a retired videographer.
Robin is a member of DAR.
Robin has a PMP.
Robin is a vegetarian.
Robin’s happy place is on the beach.
Robin grows her own vegetables.
Robin has a CPLP.
Multimedia Learning Theory #4

Coherence Principle:
Adding interesting, but irrelevant, material can reduce learning.
THAT MOMENT YOU TURN DOWN THE RADIO

Is because of cognitive load!

SO YOU CAN SEE BETTER
Questions?
Resources:


Resources:


Resources:


