Reducing Extraneous Processing

- Modality Principle
- Coherence Principle
- Contiguity Principle
- Signaling Principle

Extraneous Processing (60 min.)
- Working in groups of 4-5, prepare a presentation of one of the extraneous load-reducing principles:
  - Define the principle and list research supporting it,
  - Describe the cognitive processes on which the principle is based (use CL Theory to describe how cognitive load is affected),
  - Find an example of an application or violation of the principle online,
  - Prepare a 5-min talk in which you demonstrate either the application or violation of the principle by your own materials.

Groups
- 1. modality, 2. coherence, 3. contiguity, 4. signaling
Modality Principle

Definition
For animations, narration is more effective than on-screen text if it is essential for understanding.

Rationale: Off-load information from visual to auditory channel.

Research Support
- Mayer & Moreno, 1998; Moreno & Mayer, 1999; Moreno, Mayer, Jackson, & Lester, 2001; Brünken, Plass, & Leutner, 2002; Brünken, Plass, & Leutner, 2004 (review: Low & Sweller, 2005)

Example
WISE-MD Modules for Surgery Education (NYU) – http://wise-md.med.nyu.edu

Coherence Principle

Definition
Exclude rather than include extraneous material in a multimedia presentation.

Research Support

Example
Contiguity Principle

Definition

Corresponding information should be presented near one another in time (temporal) and space (spatial contiguity).

Research Support

Mayer, 1989; Sweller et al., 1990; Chandler & Sweller, 1991; Mayer et al., 1995; Tindall-Ford et al., 1997; Moreno & Mayer, 1999 (Review: Mayer, 2005)

Example

Virtual Knee Surgery Site – http://edheads.org/activities/knee/

Signaling Principle

Definition

Add cues to highlight the organization of the essential material.

Research Support


Example

3D Brain Anatomy (PBS) – http://www.pbs.org/wnet/brain/3d/

Reducing Extraneous Processing

Class Activity

Reducing extraneous processing in your project

- Working in your project groups, discuss how you can apply extraneous load-reducing principles to your project:
  - Find an example of an application or violation of the principle in your materials.
  - Discuss and document how you addressed this issue and reduced extraneous processing through your design.