



Multimedia Learning Principles

Principle	Description	How to Address	Cognitive Load Effect
Coherence	People learn better when you exclude extraneous material.	<ul style="list-style-type: none"> • Include only graphics, text, and narration that support learning goals. • Don't use background music. • Use simple visuals. 	Reduces extraneous load
Signaling	People learn better when you use cues that highlight the organization of the essential material.	<ul style="list-style-type: none"> • Use arrows, highlighting, and other signals to draw attention to important information. • Include a slide that indicates the organization of your presentation and refer back to it when you advance to a new section. 	
Redundancy	People learn better from graphics and narration than from some graphics, narration, and printed text.	<ul style="list-style-type: none"> • When delivering a narrated presentation, use either graphics or text, but not both. • Minimize the use of text during a narrated presentation. 	
Spatial Contiguity	People learn better when you present corresponding words and pictures near rather than far from each other on the page or screen.	<ul style="list-style-type: none"> • Place text in close proximity with the graphics it refers to. • Provide feedback close to the questions or answers it refers to. • Present directions on the same screen as an activity. • Have people read any text before beginning an animated graphic. 	
Temporal Contiguity	People learn better when you present corresponding words and pictures simultaneously rather than successively.	<ul style="list-style-type: none"> • Time narration appropriately to play along with animations. 	
Segmenting	People learn better when you present a multimedia message in user-paced segments rather than as a continuous unit.	<ul style="list-style-type: none"> • Allow users to control the pace of the lesson. • Break down long segments of material into smaller pieces. 	Manages intrinsic load
Pre-training	People learn more deeply from a multimedia message when they know the names and characteristics of the main concepts.	<ul style="list-style-type: none"> • Define key terms (such as names, definitions, locations, and characteristics) before beginning a process-based presentation, either in a separate presentation, handout, or similar material. 	



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		<ul style="list-style-type: none"> • Ensure people know how to use a tool (such as Excel) before asking them to perform learning activities within it. 	
Modality	People learn more deeply from pictures and spoken words than from pictures and printed words.	<ul style="list-style-type: none"> • During a narrated presentation with graphics, avoid using on-screen text, unless it: <ul style="list-style-type: none"> ○ Lists key steps ○ Provides directions ○ Provides references ○ Presents important information to non-native English speakers 	
Multimedia	People learn better from words and pictures than from words alone.	<ul style="list-style-type: none"> • Include images to illustrate key points. • Ensure that all images enhance or clarify meaning. • Favor static images over animations (with some exceptions). 	Optimizes germane load
Personalization	People learn better from multimedia presentations when you use conversational language (rather than formal).	<ul style="list-style-type: none"> • Use contractions. • Use first and second person (“I,” “you,” “we,” “our,” etc.). • If using a script, try to sound extemporaneous. • Use polite speech (“please,” “you might like to,” “let’s,” etc.). 	
Voice	People learn better when narration is spoken in a human voice rather than in a machine voice.	<ul style="list-style-type: none"> • Include narration that’s performed by a human rather than a computer. 	
Image	People do not necessarily learn better when the speaker’s image is on the screen.	<ul style="list-style-type: none"> • Avoid including a video of yourself during an asynchronous multimedia presentation containing pictures and words. • Consider including your face when: <ul style="list-style-type: none"> ○ There are no words or pictures. ○ You wish to establish instructor or social presence. 	

Adapted from Mayer, R. E. (2009). *Multimedia learning* (2nd ed.). Cambridge, England: Cambridge University Press.



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