

Twelve Principles of Multimedia Design (Mayer, 2009)

1. People learn better when extraneous words, pictures, and sounds are excluded rather than included. (*Coherence*)
2. People learn better when cues that highlight the organization of the essential material are added. (*Signaling*)
3. People learn better from graphics and narration than from graphics, narration, and on-screen text. (*Redundancy*)
4. People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen. (*Spatial Contiguity*)
5. People learn better when corresponding words and pictures are presented simultaneously rather than successively. (*Temporal Contiguity*)
6. People learn better when a multimedia lesson is presented in user-paced segments rather than as a continuous unit. (*Segmenting*)
7. People learn better from a multimedia lesson when they know the names and characteristics of the main concepts. (*Pre-training*)
8. People learn better from graphics and narration than from animation and on-screen text (*Modality*)
9. People learn better from words and pictures than from words alone. (*Multimedia*)
10. People learn better from multimedia lessons when words are in conversational style rather than formal style. (*Personalization*)
11. People learn better when the narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice. (*Voice*)
12. People do not necessarily learn better from a multimedia lesson when the speaker's image is added to the screen. (*Image*)

Mayer, R. E. (2009). *Multi-media Learning*. New York: Cambridge University Press.