14 Principles of Multimedia Learning – eLearningExpert

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Recently I came across this work from Koichi Sato at the University of Nebraska–Lincoln. I found it so clear and helpful that I asked him if I could work it into a blog and I'm happy to say he agreed. I took the liberty to add a few things, but don't want to take any of the credit!

Richard Mayer's Cognitive Theory of Multimedia Learning is based on a number of assumptions, namely that there are two separate channels - auditory and visual - for processing information (Paivio, 1990); there is limited channel capacity (Sweller, 1988), and that learning is an active process of filtering, selecting, organizing, and integrating information (Baddeley & Hitch, 1974).

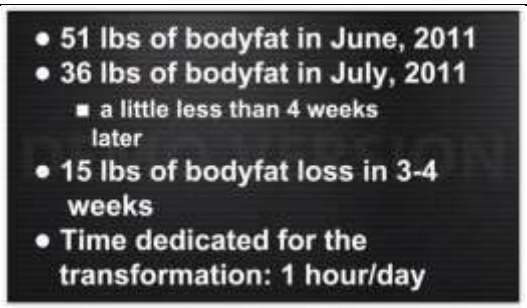
Based upon these three assumptions, there have been 14 principles developed governing the good (and poor) use of multimedia. Here they are:

1. **Multimedia Principle:**
   People learn better when texts and pictures are presented together rather than from words alone.

Good	Bad
	• 51 lbs of bodyfat in June, 2011 • 36 lbs of bodyfat in July, 2011 ▪ a little less than 4 weeks later • 15 lbs of bodyfat loss in 3-4 weeks • Time dedicated for the transformation: 1 hour/day

2. Modality Principle:

People learn better when images/texts or labelled images are presented as narration rather than reading a lengthy on-screen texts.

Good	Bad
	
	

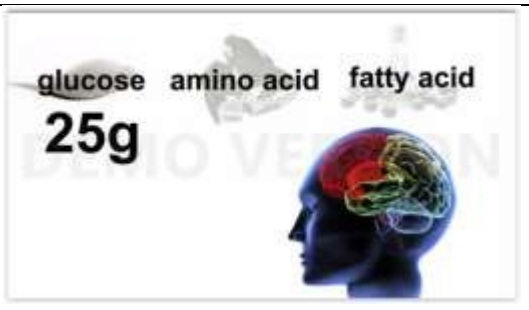
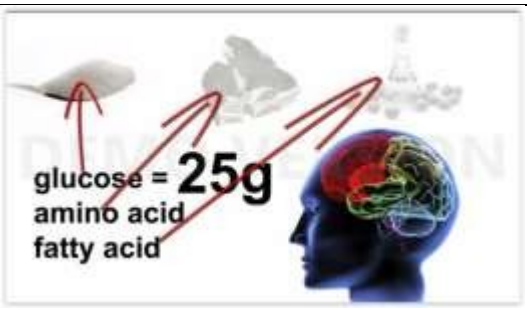
3. Redundancy Principle:

People learn better when images or labelled images are presented as narration rather than as both narration and on screen text.

Good	Bad
	

4. Spatial Contiguity Principle:

People learn better when corresponding text and pictures/animations are presented near rather than far from each other in time or on the screen.

Good	Bad
	

5. **Temporal Contiguity Principle:**
People learn better when corresponding narration and images/animations are presented simultaneously rather than successively.

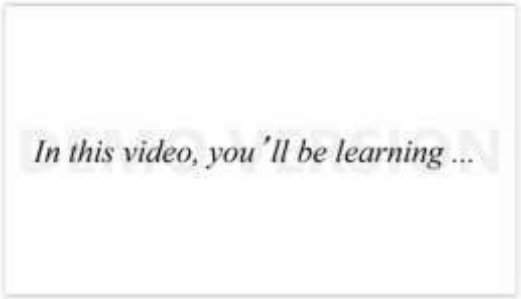
Good	Bad
	

6. **Coherence Principle:**
People learn better when extraneous narration, sounds, images, and videos are excluded rather than included.

Good	Bad
	

7. **Interactivity Principle:**
People learn better when audience are allowed to control the pace of the presentation rather than continuous presentation.

8. **Signaling Principle:**
People learn better when the presentation include word/voice signals that cue the presentation organization rather than without signals .

Good	Bad
	No Signals

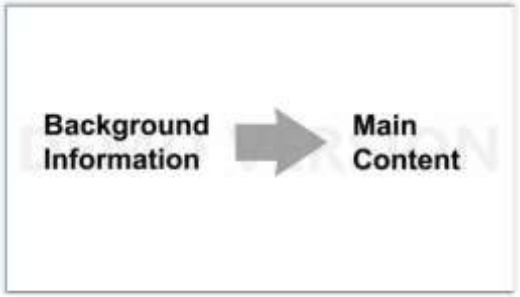
9. Segmenting Principle:

People learn better when a multimedia lesson is presented in learner-paced segments rather than as a continuous lesson.

Good	Bad
	No Control

10. Pre-training principle:

People learn better from a multimedia lesson when they receive pre-training on each component of the lesson (terms and characteristics of the main concept) rather than without any pre-training.

Good	Bad
	No pre-training

11. Personalization Principle:

People learn better when texts are presented in conversational style rather than in formal style.

Good	Bad
• He checked up on how much money he lost. • She made up for het low mark with an extra test. • Things like rent and food got more expensive.	• He investigated his income loss • She compensated her poor grades through a repeat examination. • The cost of living increased significantly.

12. Voice Principle:

People learn better when words are spoken in a standard-accented human voice rather than in a machine voice or in foreign-accented human voice.

Good	Bad
	

13. Image Principle:

People do not necessarily learn better or probably undesirable to have a multimedia lesson which include the speaker's image on the same screen.

Good	Bad	
No narrator		

14. Individual Differences Principle:

Design effects are more effective for low-knowledge learners rather than for high- knowledge learners regarding the relationship between texts, images, animations or sound in a multimedia presentation.

Baddeley, A., & Hitch, G. (1974). Working memory. In G.H. Bower (Ed.), *The psychology of learning and motivation: Advances in research and theory* (Vol. 8, pp. 47–89). New York, NY: Academic Press.

Paivio, A. (1990). *Mental representations: A dual coding approach*. New York, NY: Oxford University Press.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science, 12*, 257-285.