

Multimedia Design Goals

Assessment of Tools for Synchronous Learning

Keep it Simple

Reduce Extraneous Processing

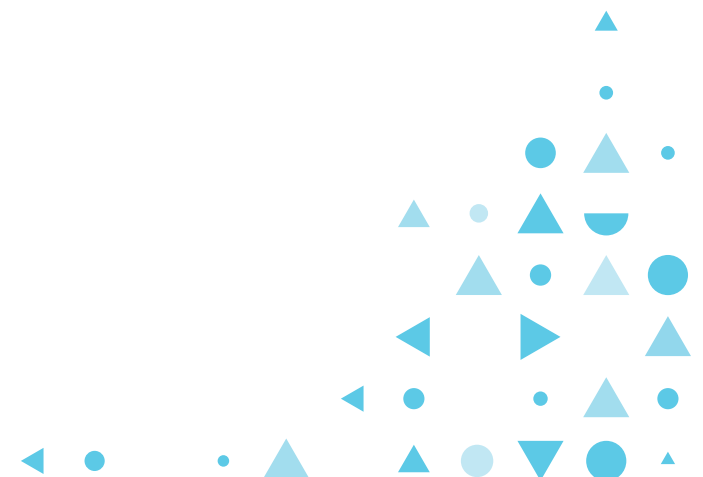
PRINCIPLE	LEARNING EFFECT	DO
Coherence Principle	People learn better when extraneous words, pictures and sounds are excluded.	Avoid the Las Vegas approach! Resist the temptation to “spice up” your video with music, images or effects that are not directly relevant to the topic as this can divert learners’ attention and make learning more difficult.
Signaling Principle	People learn better when cues that highlight the organization of the essential material are added.	Using cues such as highlighting – pointers, drawing circles around relevant image parts all serve to help focus learners’ attention.
Redundancy Principle	People learn better from graphics and narration than from graphics, narration, and printed text.	If you have graphics and narration – adding words may stress cognitive load.
Contiguity Principle	People learn better when corresponding words and pictures are presented near to each other and simultaneously.	Ensure that all images are relevant and any text labels or descriptors are located next to the part of the image they represent and on the same screen rather than a new window.
Segmenting Principle	People learn better from short, user paced sections than from continuous units.	<ul style="list-style-type: none"> Encountered issue upon logging in Requires desktop application



Keep it Short

Manage Essential Processing

PRINCIPLE	LEARNING EFFECT	DO
Segmenting Principle	People learn better from short, user paced sections than from continuous units.	Break multimedia lessons into small chunks and provide opportunities for users to stop, reflect, address questions and resume when ready.
Pre-training Principle	People learn better from multimedia when they know the names and characteristics of the main concepts.	Introduce key terms and definitions to learners before introducing the main theory or concept
Modality Principle	People learn better from graphics and narration than from graphics and text.	Narration is preferable to written text when graphics or graphic animations are used.
Learner Control Principle	People learn better when they can control the pace at which new information is presented.	Incorporate opportunities to stop, start and replay animations, reflect on questions, assess understanding and resume when ready.



Keep it Real

Foster Generative Processing

PRINCIPLE	LEARNING EFFECT	DO
Personalization Principle	People learn more deeply from conversational style than formal style.	Use first and second person rather than third person when narrating.
Voice Principle	People learn more deeply from a human voice rather than a machine generated voice.	Use your own voice whenever possible to create a connection with your learners.
Self-explanation Principle	People learn better when they are encouraged to generate their own explanations during learning.	Learners can produce learning resources for their peers on a theme or topic. Peer rating on the quality of explanation informs instructor.
Worked Example Principle	People learn better when worked examples are given in initial skill training.	Provide a worked example, partial example to be completed or problems with hints to scaffold learning.
Dialogue	Dialogue incorporated in video with images or demonstrations results in better learning gains than without dialogue – especially in novice learners.	Incorporate questions, possible answers, explanations from real people into the video.
Surfacing Misconceptions**	Learning improves when misconceptions are addressed directly using dialogue and incorporating them into the lesson.	Pre-tests may involve surfacing what learners know about a concept and exploring some of those pre-conceptions in the teaching of the topic.



References

Clark, R. C., & Mayer, R. E. (2011). E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning. San Fransisco, CA: Pfeiffer. <http://dx.doi.org/10.1002/9781118255971>

Documentation:Design Principles for Multimedia. (2018, September 6). Retrieved July 20, 2020, from https://wiki.ubc.ca/Documentation:Design_Principles_for_Multimedia

Hasler, B.S., Kersten, B. and Sweller, J. (2007), Learner control, cognitive load and instructional animation. Appl. Cognit. Psychol., 21: 713-729. doi:10.1002/acp.1345

Mayer, R. E. (2005). Cognitive Theory of Multimedia Learning. In R. E. Mayer (Ed.), The Cambridge handbook of multimedia learning (p. 31–48). Cambridge University Press. <https://doi.org/10.1017/CBO9780511816819.004>.

Mayer, R. E. (2009). Multimedia learning (2nd ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511811678>

Young, M. & Muller, J. (2013). On the powers of powerful knowledge. Rev Educ, 1: 229-250. doi:10.1002/rev3.3017

