Instructional Multimedia

> *People learn more deeply from words and graphics than from words alone. This assertion can be called the multimedia principle, and it forms the basis for using multimedia instruction—that is, instruction containing words (such as spoken text or printed text) and graphics (such as illustrations, charts, photos, animation, or video) that is intended to foster learning*
>
> *- Mayer, Multimedia Learning*

When planning for the curation or creation of multimedia, an online instructor should consider the auditory, visual, and interactive ways that students will receive, process, and engage with the content and how the media will help learners transfer and apply their learning. Instructional multimedia includes all materials that an instructor may create or use to facilitate this learning in an online or digital format. Instructional multimedia includes, but is not limited to digital texts, slide presentations, audio clips, videos, graphics, and images.

When designing multimedia for learning, there are several key principles that maximize learning opportunities while minimizing cognitive load.

Effective Instructional Multimedia

Principles and Tips

1. **Segmenting Principle:** People learn better when a multimedia lesson is presented in user-paced segments rather than as a continuous unit.

   - Chunk information into smaller, more digestible units

   - Record shorter, focused videos that allow users to manage the flow of information

   - Create chapters or markers indicating sections in the video, document, or digital media

2. **Signaling Principle:** People learn better when cues that highlight the organization of the essential material are added.

   - Highlight important information with visual cues

   - Organize the hierarchy of information on the screen

   - Explain the purpose and context of the information presented

- ○ Use guiding questions

3. **Personalization Principle:** People learn better from multimedia lessons when words are in a conversational style rather than a formal style.

   - ○ Encourage connection to the information by speaking in a conversational tone

   - ○ Speak with enthusiasm and energy

   - ○ Make the content relevant to the students in the current class

4. **Coherence Principle:** People learn better when extraneous words, pictures, and sounds are excluded rather than included.

   - ○ Avoid busy images and lots of text that distract the learner from the content at hand

   - ○ Remove distracting sounds and unnecessary background music

5. **Spatial Contiguity Principle:** People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.

   - ○ Present relevant information in close proximity to one another, which prevents the extraneous processing of gaps.

These five principles are part of Meyer's Cognitive Theory of Multimedia Learning, describing the ways in which learners receive, process, and transfer information through auditory and visual channels. Effective multimedia for learning can be optimized when learners can truly focus on the content at hand without extraneous overload. Amaka and Goeman (2017) also identify these considerations when designing and choosing media for online learning: "interactivity, navigability, (a)synchronicity, flexibility, media richness, ease of use, individualization, mobility, proximity and responsiveness." In essence, taking a student-centered approach to designing multimedia for learning involves consideration for the various attributes of media as well as designing for optimal multimedia learning.

References

Amaka, I.H., Goeman, K. (2017). Selecting media for effective learning in online and blended courses: A review study. Journal of Educational Multimedia and Hypermedia, 26(1), 29-59.

Brame, C.J. (2015). Effective educational videos. Retrieved from http://cft.vanderbilt.edu/guides-sub-pages/effective-educational-videos/

Ibrahim M., Antonenko PD, Greenwood CM, and Wheeler D (2012). Effects of segmenting, signaling, and weeding on learning from educational video. Learning, Media and Technology, 37, 220-235.

Mayer, R. E. (2014). Research-based principles for designing multimedia instruction. Retrieved from https://hilt.harvard.edu/wp-content/uploads/2018/08/HILT_SpeakerSeries_Mayer_background_reading.pdf

Mayer, R. E. (2009). Multimedia learning (2nd ed). New York: Cambridge University Press.