

Archive of Learning Design Instructional Guides

Select Appropriate Media

Page Content

[The Best Choice](#) [Rationale](#) [Basic Information](#) [References](#) [Links](#) [Home](#)

The Best Choice according to the experts

Using multimedia and other technology tools can add great value to a course. Not only can multimedia explain many concepts better than text alone, but it can also be valuable for learners with different learner styles.

However, it is important to select the appropriate medium (or combinations of medium). Even text has its benefits as a medium.

Benefits of Selected Media

Based on [Najjar \(1998\)](#)

Medium	Suggested Uses
Text	• Skilled readers can process text more quickly than the same amount of information in audio • Better than audio for processing verbal information into long-term memory • Distinguishes visually similar options • May be better than audio for non-native speakers • Ideal for verbal learners • Not ideal for conveying non-verbal information
Image	• Best displays complex spatial relationships (e.g. maps, diagrams, objects) • Ideal way to visualize other complex relations (e.g. graphs, charts) • Not ideal for abstract concepts (e.g.

	"freedom") • May increase interest and add information to text, but could also be distracting (image should match content) • Ideal for visual learners and students with certain types of learning disabilities.
Animation	• Best way to processes or motion over time. • Effective way to display three dimensional relations. • Audio channel can be added
Audio (includes podcasting)	• Ideal for audio learners or those with time to listen, but not read (e.g. driving a car) • Can present verbal informatino iadditional channel along with an image • Good for small chunks of verbal information in short-term memory • Ideal for audio learners • May be better than text for weaker readers • Non-verbal audio (e.g. sound samples) can also be used in some situations
Video	• Create compelling narratives • Interview experts/participants • Able to record one-time events or special guest speakers • Able to display situations too dangerous to replicate in person • Able to visit locations too expensive for students to visit • Ideal to demonstrate personal interactions or human reactions to unusual situations • Combine visual and audio channels
Interactive Modules (learner interacts with content)	• Learners can experiment with different settings and see the effects immediately • Includes "kinesthetic" (motion) channel and more "active" thinking • Unfortunately, they may be expensive and time-consuming to produce.

Additional Tips

1. Place images and text/audio as closely together as possible so students can process both at the same time.
2. If you include audio with visuals, make sure audio does not compete with visual information.
3. Plan for [accessibility accommodations](#) for different learners.
 - a. Text descriptions for images, videos, animations
 - b. Text transcriptions for audio and video material
4. As with learning objectives, use of multimedia should be consistent in presentation and assessment

Rationale

Najjar, 1998 – "Although opinions differ, limited evidence suggests that some media are better than others at communicating certain kinds of information."

Mayer & Moreno , 2003 – "The human information-processing system consists of two separate channels—an auditory/verbal channel for processing auditory input and verbal representations and a visual/pictorial channel for processing visual input and pictorial representations...each channel in the human information-processing system has limited capacity—only a limited amount of cognitive processing can take place in the verbal channel at any one time, and only a limited amount of cognitive processing can take place in the visual channel at any one time."

Basic Information

Dual Channel Processing

Many specialists in multimedia learning (Paivio 1986, Najjar 1998, Mayer & Moreno 2003, etc.) believe that students can process information in two channels

- Visual channel
- Auditory channel

The benefit to dual encoding is that students can process audio and visual information simultaneously **as long as the the information does not conflict.**

Verbal vs. Other Content

Learning specialists distinguish at least two types of content

- **verbal** (words) - information encoded as a set of words.
- **non-verbal** (images, music, motion) - information not in word format

Verbal Content

Traditionally, instructors and many **learning theorists assume most academic content is verbal** and therefore present and assess content verbally. Examples of verbal content include

- Names of key categories (e.g. types of 'wugs')
- Definition of important terms
- Names of key events, phenomena, researchers
- Interpretation of findings (e.g. I know the picture is a "wug" because....)
- Explanation of research data (e.g. "The figures show that wug usage is increasing because....")
- Parsing what other researchers have written (e.g. "Smith claims that wugs....")

However, the **presentation of "verbal" information can be enhanced with other media** such as visuals for labels or charts displaying the relations of different categories to each other.

Non-Verbal Content

It is important to remember that some content can be stored and learned non-verbally. For this information, use of images/audio/animation combined with verbal information can be very effective. These include:

- Locations on a map (visual) combined with place names (verbal)
- How to work electronic equipment (kinesthetic). However online instructions are usually verbal (hopefully with some visuals).
- Structure of a wug (visual) combined with labels on a diagram (verbal)
- Sound of a broken wug (audio) combined with a diagnosis (verbal)

References

Mayer, Richard E. (2005) *The Cambridge Handbook of Multimedia Learning* Cambridge: Cambridge University Press.

Mayer, Richard E. and Moreno, Roxanna (2003) "Nine Ways to Reduce Cognitive Load in Multimedia Learning" in *Educational Psychologist* 38(1): 43-52. Accessed Jan 15, 2007 from http://www.leaonline.com/doi/pdf/10.1207/S15326985EP3801_6

Najjar, Lawrence. J. (1998). Principles of educational multimedia user interface design. *Human Factors* 41(2), 311-323. Accessed Jan 15, 2007 from <http://www.informatikdidaktik.de/HyFISCH/Multimedia/Learning/MMDesignNajjar.htm>

Paivio, Allan. (1986) *Mental representations: A dual-coding approach*. New York: Oxford University.

Shank, P. (2006,2007) *The Value of Multimedia In Learning*. Accessed Jan 15, 2007 from

<http://www.adobe.com/designcenter/thinktank/valuemedia/>

Additional Links

- [Adobe Design Center Value of Multimedia in Learning](#)
- [TIPS Dual Coding Theory](#)

The Pennsylvania State University ©2003-2014

This site maintained by [Teaching and Learning with Technology](#), a unit of [Information Technology Services](#)

Last revised: November 14, 2014.