

00:00

Hi. Welcome to Mayer's Principles of Multimedia Design. My name is Christopher Karachristos and I am an instructional designer for Hellenic Open University. In this video we will discuss Mayer's Principles of Multimedia Design, which are guidelines for the designers of multimedia and eLearning in the presentation of textual, graphical, video and audio information for optimal learning. By the end of this video, you will be able to determine the main principles for designing effective eLearning content and which of them are appropriate to apply in the development of any educational content. Researcher Richard Mayer wrote a book called Multimedia Learning where he explains his research on how best to structure multimedia learning experiences to maximize learner comprehension. According to his theory, people learn more deeply from words and graphics than words alone. In this direction, multimedia principles help to integrate words and graphics in effective pieces of learning content.

00:55

The Multimedia principle suggests that the eLearning content or application must include a combination of text and graphics rather than just text in order to be effective for the learner. The term text may include either written texts or audio texts. The term graphics may include static images, as well as dynamic graphics, such as animations and videos. This combination of text and graphics can often communicate more effectively than just text alone by presenting concepts and principles as a visual schema. The theoretical rationale behind that is, when words are only being used, learners can build mental schemas only with verbal mental shapes. On the other side, when text and images or video are presented in combination, learners can construct verbal and visual mental shapes and connections between them.

01:42

The Redundancy principle states that that learners can learn better just with animation and narration than from on-screen text, graphics, and narration. On-screen text may be distracting when audio and graphics are also used. Learners can be distracted by the redundancy of focusing and refocusing between the text and narrations when graphics are presented with text, and that text is read verbatim by a narrator. It is less distracting for a narrator not to read the on-screen text word for-word.

02:10

The Coherence principle advises designers to avoid the use of unnecessary words, sounds, or graphics. Superfluous or irrelevant text, sound, and graphics will require unnecessary processing and use of cognitive resources. This principle can be broken into three complementary rules. The first rule states that eLearning is improved when irrelevant words

and pictures are excluded from the content. The second rule states that learning is improved when irrelevant sounds and music are excluded from the content. Finally, the third rule states that eLearning is improved when unneeded words and symbols are eliminated from the educational content.

02:49

Creating digital educational materials requires the use of many different multimedia elements in the same frame. During the design, one of the main goals is the correct placement and connection of these elements so that the relationship between them is immediately perceived and understood by the learners. Key elements to consider when designing the material are the Spatial Contiguity principle, and the Temporal Contiguity principle. The Spatial Contiguity principle advises developers of content to put text and graphics related together, near each other in instructional message designs. The classic example of text on one page of a book and the figure being described by that text on a different page of that book causes unnecessary extraneous processing. The Temporal Contiguity principle advocates synchronizing audio and video in presentations. Presenting audio before video or video before audio, or video and audio that are not in sync confuses and distracts learners.

03:45

The Signaling principle states that essential content can be highlighted to draw the learner's attention to it. The key point is that the attention is directed to critical aspects of the learning content. Signaling can be used to cue learners to important content and can be highlighted text, the use of bold or italics, or visuals of an instructor pointing to specific content on a whiteboard. Signaling leads to better learning and ensures that students appreciate the learning material better.

04:12

The Segmenting principle states that a continuous complex information should instead be broken down into shorter more manageable chunks. Complex content for eLearning can be simplified by breaking that complexity down into easier components. The detailed term that is commonly used with the segmenting of information is breaking everything down into bite-size segments. This principle is widely used in information that we consume every day. For example, books are segmented into chapters, chapters are segmented into sections and so on. This way learners can understand the essence of the smaller units more easily and the working memory will not be overloaded. This helps learners to process information at a comfortable pace for them.

04:53

The Pretraining principle suggests that key, unfamiliar terminology, and definitions be given and discussed before an instructional unit. Learners can be prepared for learning by presenting them key concepts and definitions. People learn more deeply from an educational resource when they know the definitions, the names, and characteristics of the main concepts. Evidence suggests pretraining can help improve knowledge transfer and retention. Content developers often implement the Pretraining Principle in conjunction with the Segmenting Principle, to produce separate, but related educational components.

05:26

The Modality principle suggests the use of audio rather than on-screen text during video, animations, or presentations. People learn more deeply from pictures and spoken words than from pictures and printed words. Presenting on-screen text with graphics only utilizes the visual processing capabilities of learners while using graphics with narration is more efficient as it utilizes both the learner's visual and auditory processing capabilities. The goal of this principle is not to overload the learner by using only one cognitive pathway such as visual presentation. Instead, words should be presented as speech rather than onscreen text. This allows the learner to focus on the visual graphics and listen to the explanation to increase understanding and knowledge transfer.

06:08

The Personalization principle advocates the use of an informal and more conversational tone when narrating visuals as opposed to a formal, academic tone. A friendly narrative tone fosters social presence which enhances motivation for learning. The theoretical rationale is that when learners feel that the educator is speaking to them in an informal tone, they are more likely to feel more convenient and therefore will try harder to make sense of what the content is about. In addition, this theory suggests the use of On-Screen Coaches to promote learning and increase learner engagement. On-screen Coaches are characters, real or animated, that guide the learning process by providing hints, worked examples, demonstrations, and explanations to learners.