

Cognitive Processing for Design of Multimedia External Representation

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Multimedia resources can be categorized into technology, representation and sensory areas. Technology refers to devices which display resources; representation, to formats of external representation; and sensory, to sensory modalities through which resource data are received. In terms of representation, effectiveness is measured as a function of developing user understanding, and requires the integration of new messages from multimedia resources and current understanding. This involves different cognitive processes including: Selecting, organizing and integrating. To successfully acquire new understanding, users need to select relevant multimedia messages presented in materials, then organize and integrate the selected messages. The design of external representations determines the level of engagement in different kinds of cognitive processing. We investigated design methods for multimedia external representations to maximize cognitive capacity and to more effectively engage cognitive processing. The data collected allowed us to define optimal design characteristics, which have useful practical implications for educational technology designers and educators, and can inform efforts to improve the design of digital multimedia materials. These characteristics may also assist multimedia designers to develop more intuitive and approachable interfaces that help users accept messages more effectively.

Multimedia design is the art of integrating multiple forms of media. It is used in video games, information kiosks, websites and many other interactive applications. Careers in multimedia design can be found in a growing number of industries, from Madison Avenue advertising agencies to Hollywood production companies. For information about potential degree programs and career opportunities in multimedia design, read on.

Multimedia design requires both creative and technical skills to integrate two or more types of media. It is probably most prevalent on the Internet, where you might encounter a web page that uses a combination of audio, animation and text. The advertising and marketing industries have jumped on this trend of using multiple forms of media to reach wider audiences. Industries such as video gaming and education are also taking advantage of innovations in multimedia design.

Multimedia may be broadly divided into linear and non-linear categories. Linear active content progresses often without any navigational control for the viewer such as a cinema presentation. Non-linear uses interactivity to control progress as with a video game or self-paced computer based training. Hypermedia is an example of non-linear content.

Multimedia presentations can be live or recorded. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

Major Characteristics of Multimedia

Multimedia presentations may be viewed by person on stage, projected, transmitted, or played locally with a media player. A broadcast may be a live or recorded multimedia presentation. Broadcasts and recordings can be either analog or digital electronic media technology. Digital online multimedia may be downloaded or streamed. Streaming multimedia may be live or on-demand.

Multimedia games and simulations may be used in a physical environment with special effects, with multiple users in an online network, or locally with an offline computer, game system, or simulator.

The various formats of technological or digital multimedia may be intended to enhance the users' experience, for example to make it easier and faster to convey information. Or in entertainment or art, to transcend everyday experience.

Enhanced levels of interactivity are made possible by combining multiple forms of media content. Online multimedia is increasingly becoming object-oriented and data-driven, enabling applications with collaborative end-user innovation and personalization on multiple forms of content over time. Examples of these range from multiple forms of content on Web sites like photo galleries with both images (pictures) and title (text) user-updated, to simulations whose co-efficients, events, illustrations, animations or videos are modifiable, allowing the multimedia "experience" to be altered without reprogramming. In addition to seeing and hearing, Haptic technology enables virtual objects to be felt. Emerging technology involving illusions of taste and smell may also enhance the multimedia experience.

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