

M.ed 4TH sem. Course no: S.C.5.

Unit: 3: Multimedia: Concept & Principles.

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TOPIC

Multimedia: Concept & Principles of using multimedia in classroom Teaching

LEARNING OBJECTIVS

After going through this topic, student will be able to understand following about Multimedia:

1. Concept of Multimedia.
2. Principles of using multimedia in classroom teaching.

KEY WORD: Multimedia.

What is multimedia learning?

Multimedia learning can be defined as a form of computer-aided instruction that uses two modalities concurrently. This means learning through the combined use of visuals (through pictures, animations, text, and videos) and audio (through narrated voiceover).

Since the 1970's, the science has been well established that visual elements such as images are far more effective for

learning compared to text alone. Fast forward to the modern digital age, and we all experience multimedia learning every single day – through YouTube videos, eLearning courses, PowerPoint decks, free online MOOCs. The list goes on and on.

Concept of Multimedia:

Multimedia is content that uses a combination of different content forms such as text, audio, images, animations, video and interactive content. Multimedia contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material.

Multimedia can be recorded and played, displayed, interacted with or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance.

Multimedia devices are electronic media devices used to store and experience multimedia content. When we talk about principles of using multimedia in classroom we find a name that is Dr. Rich Mayer.

Principles of Multimedia:

Dr. Rich Mayer is a prominent researcher of how people learn from text and graphics – or multimedia. 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. Today, we're going to cover the basics of his twelve Principles of Multimedia Learning.

1. Coherence Principle:

First up is the Coherence Principle, which states that humans learn best when extraneous, distracting material is not included. Simply said, cut out the extras. Use only the information that the learner needs. And most often, that means simple text and simple visuals that relate directly to the learning topic. Remove all the fluff.

How to use the Coherence Principle:

You can use the Coherence Principle as you're planning your visual elements. Ask yourself, "Is this image 100% necessary to help with comprehension? Or could you find a better one? Does this message use simple enough language so the audience will understand? Maybe I could trim down a few words."

The Coherence Principle is also quite helpful when you're editing your training video or eLearning course. As you re-watch the experience, make sure to watch with a critical "Coherence Principle" eye. Determine how you can reduce, simplify, and clarify.

2. Signaling Principle :

Next up is the Signaling Principle, which essentially means that **humans learn best when they are shown exactly what to pay attention to on the screen.** If there is a ton of information on the screen, how is the learner supposed to know what is the

most important part? People learn better when cues that highlight the organization of the essential material are added.

How to use the Signaling Principle:

As a learning developer, this is where you can utilize the signaling principle by thoughtfully using features such as highlighting important words and using animated arrows to point out significant information. Another way you can use the signaling principle is by having slides or scenes that separate learning sections. This is a quick and easy way to signal to the learner that we're moving on to the next topic.

3. Redundancy Principle :

Next up? The Redundancy Principle. This principle suggests that **humans learn best with narration and graphics, as opposed to narration, graphics, and text.** The theory here is that if you already have narration and graphics, then the text on top is just redundant information. And this can be overwhelming for a learner.

People learn better from graphics and narration than from graphics, narration and on-screen text. And when words are presented as narration rather narration and on-screen text.

How to use the Redundancy Principle:

You can use this principle for videos or eLearning courses that have narrated audio. Try to only include graphics or text, but not both together. Or if they are together, make the text minimal. Personally, from a learning perspective, I enjoy reading text on screen so I what I suggest whenever possible is to include closed

captioning that can be optionally turned on and off. This can't be done in all cases, but I definitely suggest that whenever possible.

4. Spatial Contiguity Principle :

The Spatial Contiguity Principle is about the actual space in between your text and visuals on the screen, stating that **humans learn best when relevant text and visuals are physically close together.**

People learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.

How to use the Spatial Contiguity Principle:

This one makes sense intuitively. You should keep all related text and graphics physically close together in your frame. This makes it much easier for learners to process the information, using less energy to decipher meaning. This principle is pretty straight forward. Make it easy for your audience to know where to look for information.



5. Temporal Contiguity Principle:

The Temporal Contiguity Principle states that **humans learn best when corresponding words and visuals are presented together, instead of in consecutive order.**

People learn better when corresponding words and pictures are presented simultaneously rather than successively.

How to use the Temporal Contiguity Principle:

If you're introducing a new process, the animation (or visual) should be occurring at the same time as the voiceover audio. This is preferred to having the voiceover audio play first, and then watching a visual after. You can use this by making sure your voiceover audio is always timed well with your visuals or animations.

6. Segmenting Principle:

Next is the Segmenting Principle which states that humans learn best when information is presented in segments, rather than one long continuous stream. Mayer found that when learners can control the pace of their learning, they performed better on recall tests.

People learn better from a multimedia lesson is presented in learner controlled segments rather than as continuous unit.

How to use the Segmenting Principle:



You can use this principle by providing learners with more control over their learning. This is done by adding next buttons or allowing the speed which a video plays.



This principle also suggests that learning is broken up into smaller, bite-sized chunks. Make sure that no one lesson, slide, or video has too much information packed in it.

7. Pre-training Principle:

The Pre-training Principle states that humans learn more efficiently if they already know some of the basics. This often means understanding basic definitions, terms, or concepts before beginning the learning experience.

And this makes intuitive sense. If a learner starts an eLearning course knowing about the topic, they can easily become overwhelmed once complex visuals and definitions start being thrown their way. A bit of pre-training before starting the course really would have helped.

People learn better from a multimedia lesson when students know names and behaviors of system components.

How to use the Pre-Training Principle:

You can use this principle by creating an introductory “guide” or “cheat sheet” for learners to use throughout the course. Or you can create an entire lesson up front dedicated to understanding the basics, before the learner moves into the actual course.

8. Modality Principle:

The Modality Principle states that humans learn best from visuals and spoken words than from visuals and printed words. This doesn't mean that you should never use text on screen; it simply means that if there are visuals and too much text, learners will be overwhelmed

People learn better when words are presented as narration rather than as on-screen text.

How to use the Modality Principle:

Try to limit the amount of text you use on screen overall. Rely more on visuals, unless you need to define key terms, list steps, or provide directions.

9. Multimedia Principle:

The Multimedia Principle states that humans learn best from words and pictures than just words alone. This principle is sort of the foundation of all Mayer's principles, that images and words are more effective than words alone.

People learn better from words and pictures than from words alone.

How to use the Multimedia Principle:

You can use this principle by being very thoughtful about the images you select. Remember that these images need to enhance or clarify the information.

10. Personalization Principle:

The Personalization Principle says that humans learn best from a more informal, conversational voice than an overly formal voice. Having a more casual voice actually improves the learning experience.

People learn better from multimedia lessons when words are in conversational style rather than formal style.

How to use the Personalization Principle:

You can use this by keeping your language simple and casual. Try to avoid overly professional sounding text, or long, complex words. It also helps to use the first person (you, I, we, our). This is where it helps to consider your audience demographics and try to match the tone of your voiceover to enhance personalization.

11. Voice Principle:

The Voice Principle states that humans learn best from a human voice than a computer voice. While Ram and Shyam are getting pretty close, there is no substitution for a human voice. It's important to note that the studies are still rather preliminary for the Voice Principle. But even so, it makes sense to use a human for your voiceover.

How to use the Voice Principle:

You can use this principle by recording your own professional narration, or hiring a professional to create an audio voiceover. Make sure your audio is high quality by using a professional microphone and mastering in audio editing software.

People learn better when the narration in multimedia lessons is spoken in a friendly human voice rather than a machine voice.

12. Image Principle:

The Image Principle states that humans do not necessarily learn better from a talking head video. Talking head videos are incredibly common in eLearning courses and MOOCs. The research on this one is also still in its early phases, so take this principle with a grain of salt.

The thinking here is that if there is important information to be learned, relevant visuals on the screen will be more effective than showing a talking head of an instructor.

People do not necessarily learn better from a multimedia lesson when the speaker's image is added to the screen.

How to use the Image Principle:

Instead of having a talking head of the instructor, use relevant animations and visuals that help reinforce the audio voiceover. Note that talking heads can provide some value for the instructor by building credibility and trust. This is especially useful to establish at the beginning of your learning experience. Just try to limit your use of talking heads as your video or course dives deeper into the learning content.

Conclusion:

In this era of information technology, the use of multimedia in the classroom of schools has become very essential. But how do we use this multimedia? Dr. Richard Mayer solved this problem, and while he was assigning importance to the subject, set some principles for it. Their principles are proving very useful in the field of education, especially in the use of multimedia. All their principles are such that learning is given priority at its center.

That is, multimedia in education should be designed in such a way that people can learn things very comfortably. In this way, no unnecessary cliches should be accommodated in multimedia and it should be balanced and well-planned.

Self check:

1. What do you understand by multimedia?
2. Who is Dr. Richard Mayer?
3. How to use the Personalization Principle?
4. Why these theories are very important in modern education system?

5. How to use the Modality Principle?

Thank you..!

REFERENCES

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Note:

Contact individually for Hindi explanation, if required; on Zoom Video communications.

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