c-vid-project

# Flipped Classroom

## Cognitive architecture and information processing

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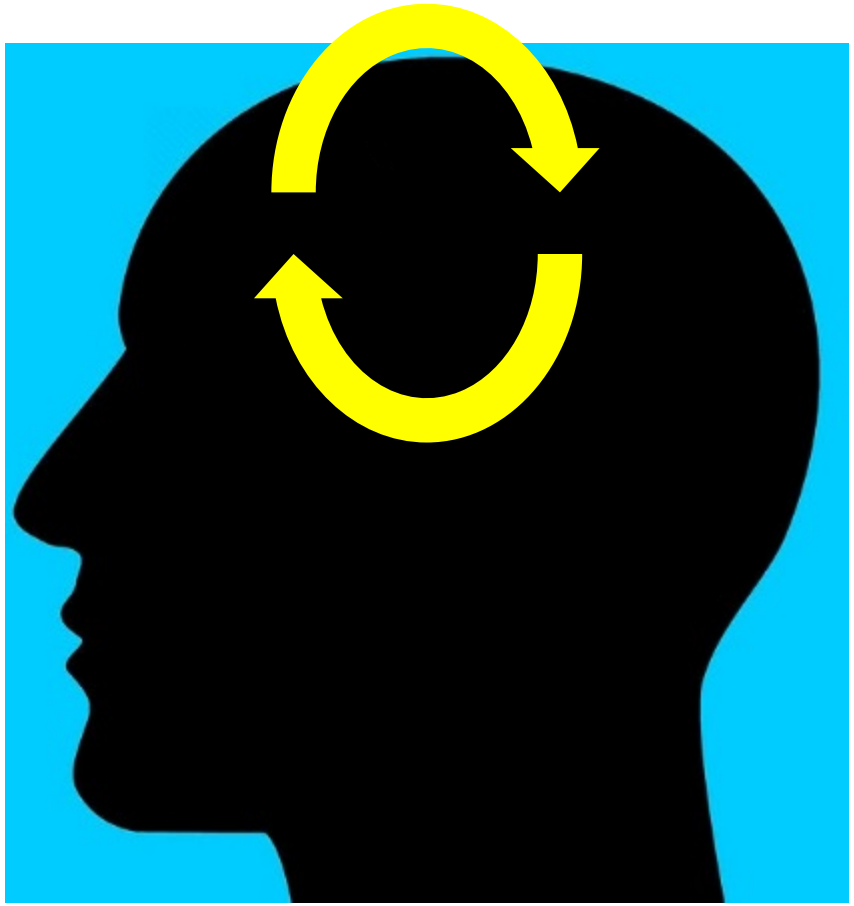
# Cognitive theories: memory



Working memory has a limited duration and capacity

- Time span: in the range of seconds
- Memory span: "The Magical Number Seven, Plus or Minus Two".

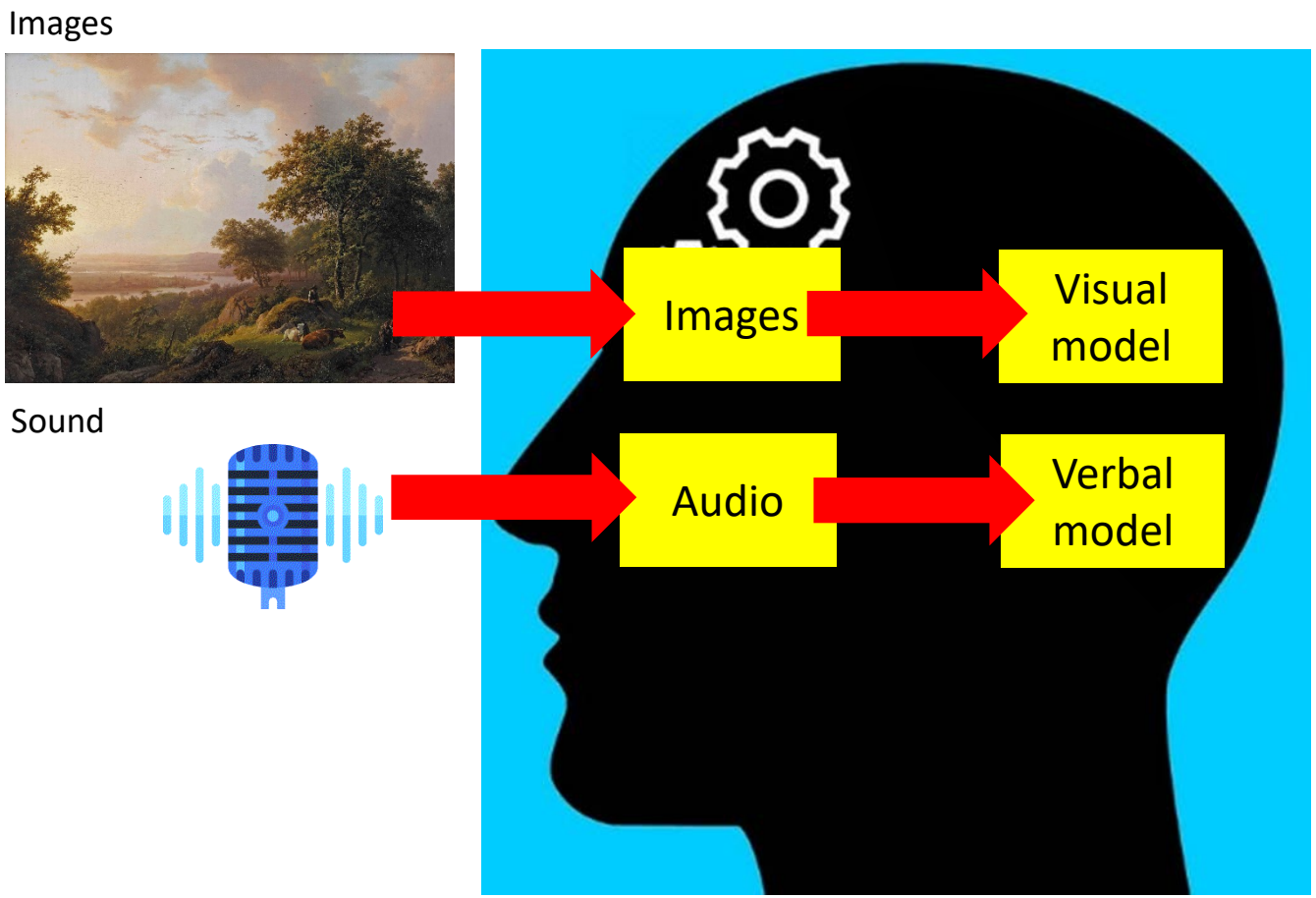
Long-term memory has 'unlimited' duration and capacity

- Memories fade however when no refreshment takes place

Connection:

- Synaptic consolidation: engrams or memory traces are fixed in long-term memory
- ‚Retrieval', the recall of memories in the working memory is necessary for the application of knowledge.

# Cognitive theories: multimedia learning

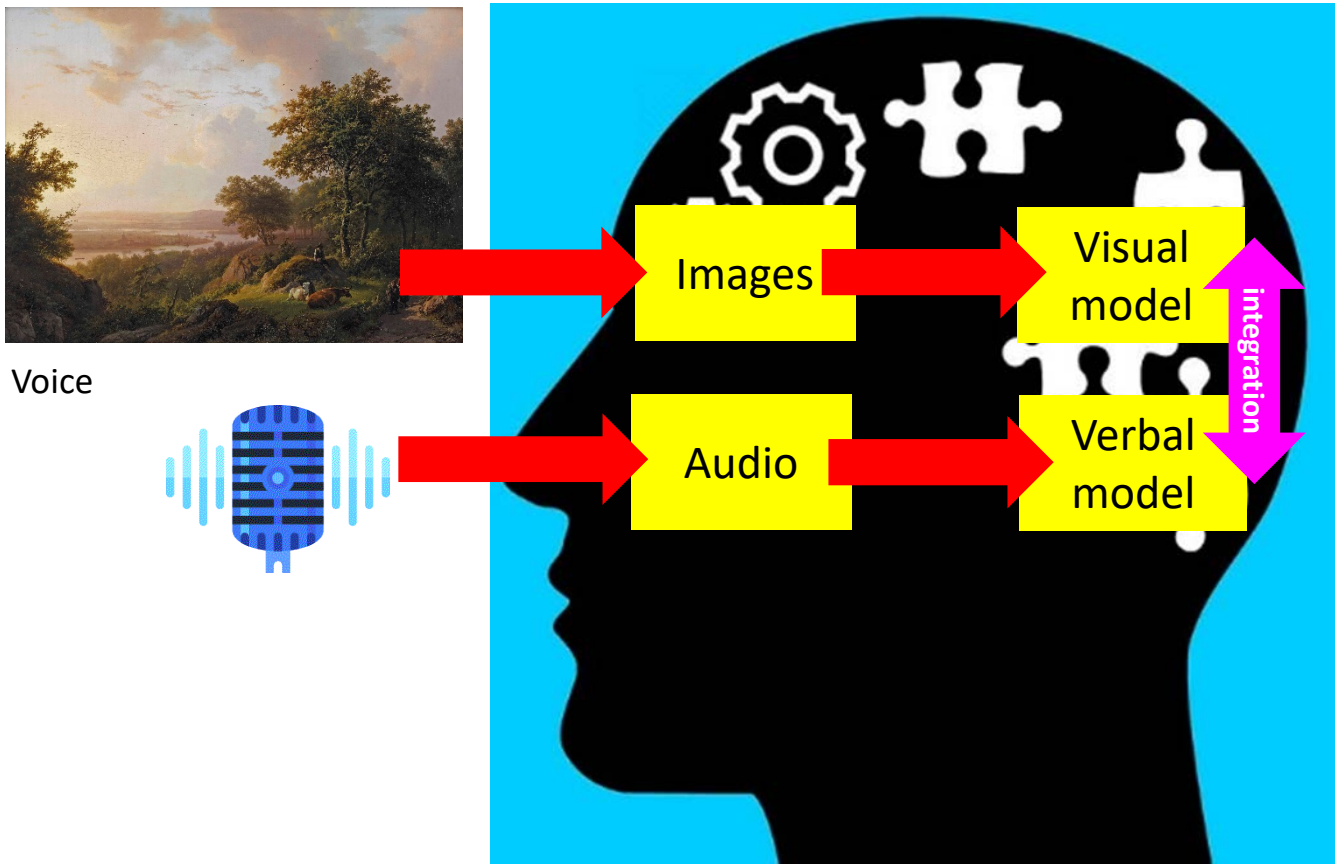



## Multimedia information processing

- Dual channels: visual and auditory information are processed in separate systems
- Each channel has a limited capacity

# Cognitive theories: multimedia learning

Images




## Processing is an active process

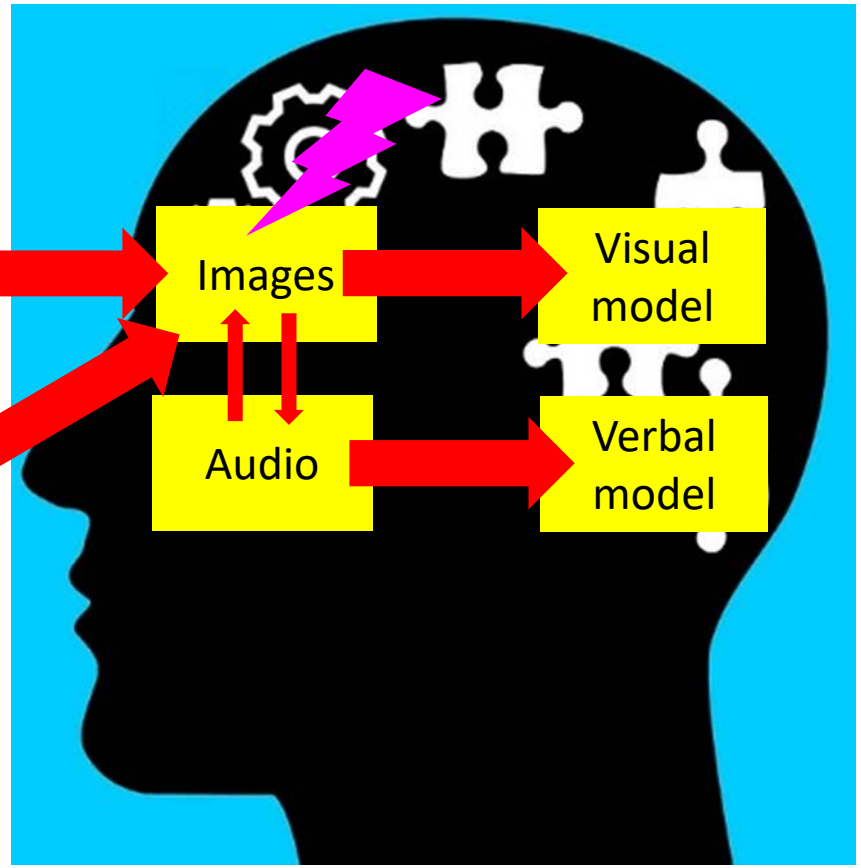
- Selection and organisation of incoming images and words
- Integration of pictorial and verbal representation with the help of prior knowledge

# Cognitive Overload

Image

Words

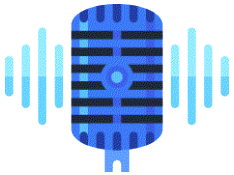
*Text Text Text Text Text Text Text*
*Text Text Text Text Text Text Text*
*Text Text Text Text Text Text Text*
*Text Text Text Text Text Text Text*
*Text Text Text Text Text Text Text*
*Text Text Text Text Text*

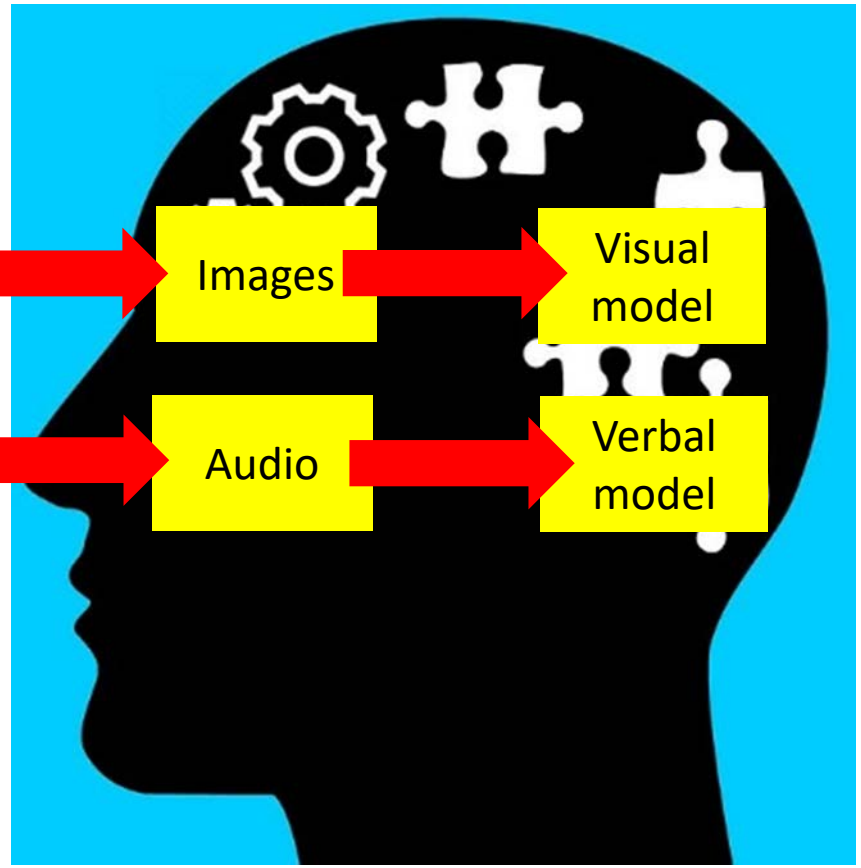


# Cognitive Load

Images

Voice-over





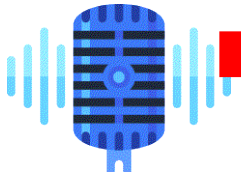

## Reduce load by:

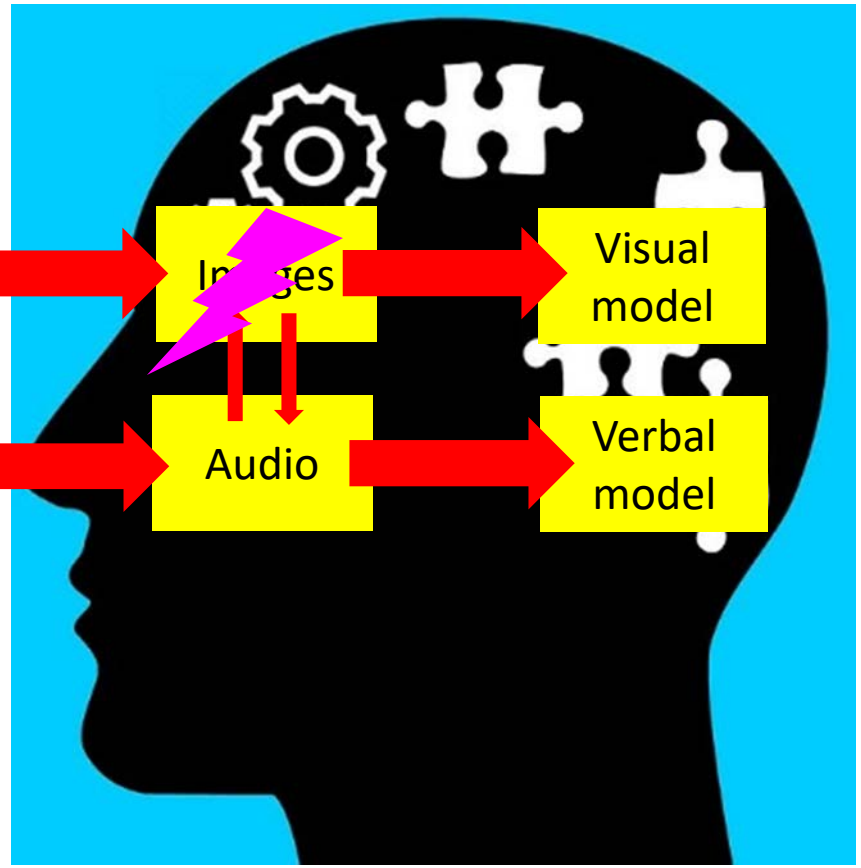
- ‘Off-Loading’: distribute info over both channels (modality effect)

# Cognitive Overload

Video with wealth of information

Voice-over

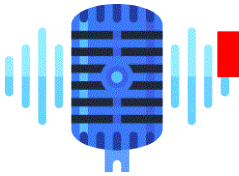


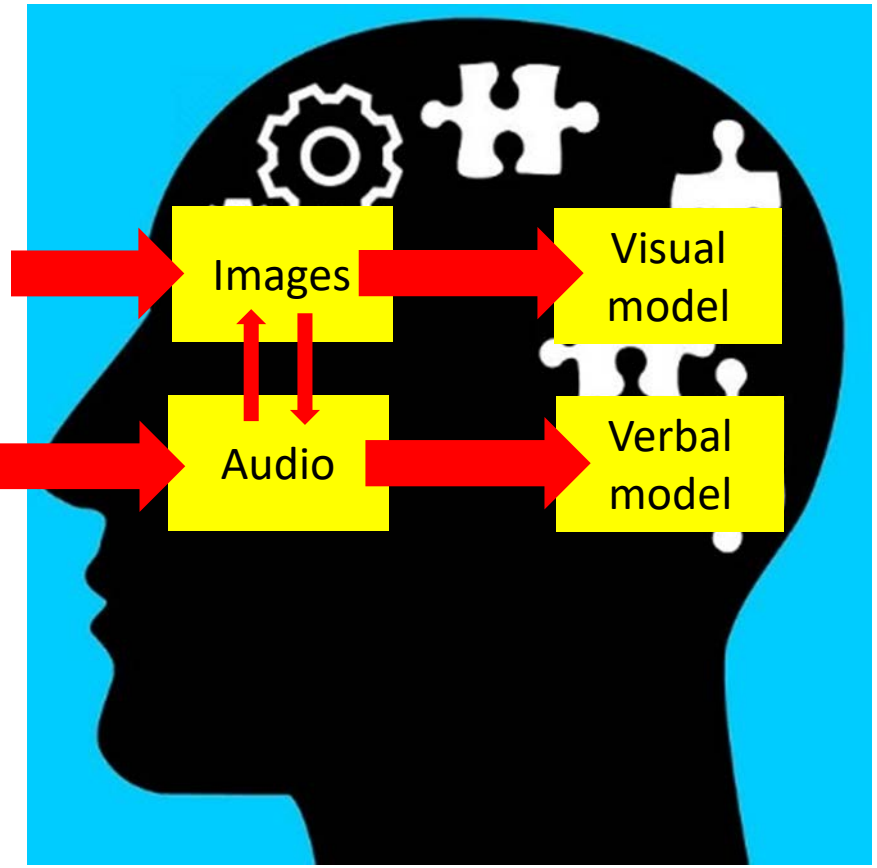


# Cognitive Load

Video with wealth of information


Voice-over





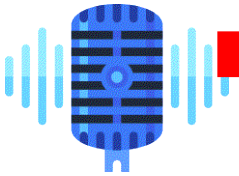

## Reduce load by:

- ‘Segmenting’: short video segments, indexing, playback control
- ‘Signaling’: Emphasise important information with text (keywords), symbols (arrows) or change of colour or contrast.

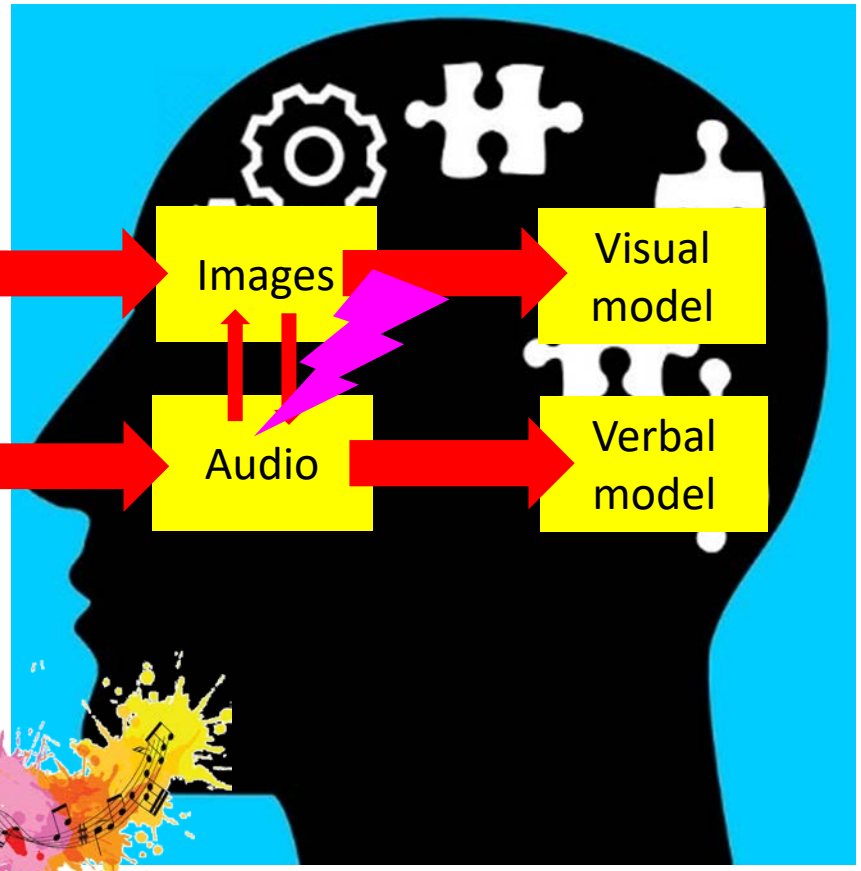
# Cognitive Overload

Video with wealth of information

Voice-over



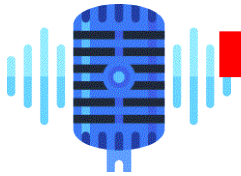
Background music

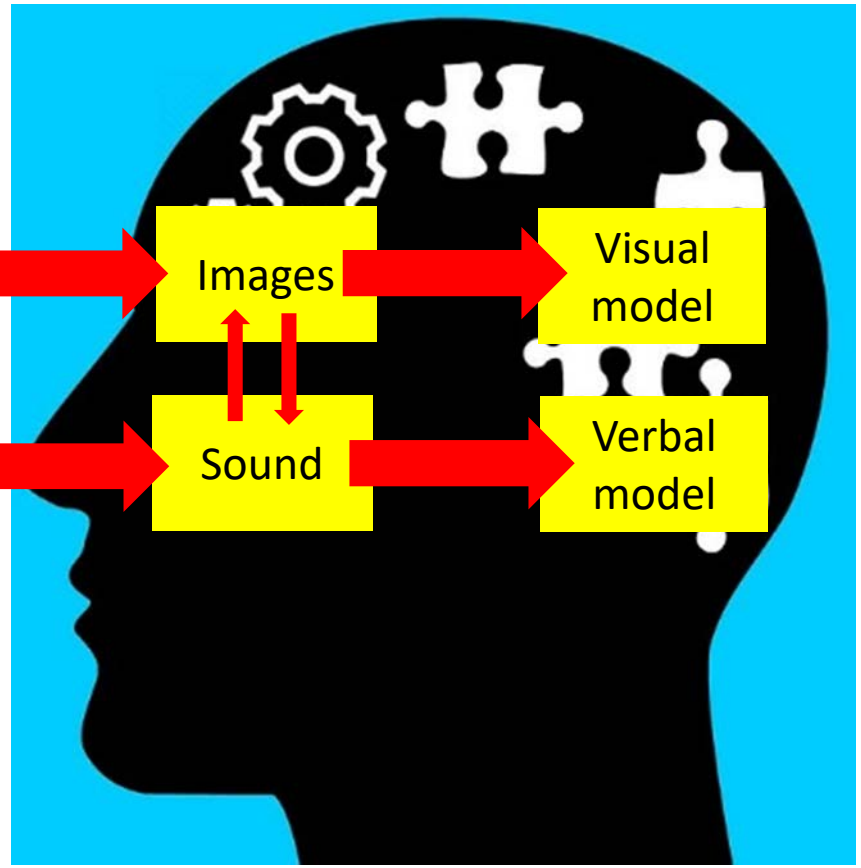


# Cognitive Load

Video with wealth of information

Voice-over






## Reduce load by:

- ‘Weeding’: leave unnecessary information out, adapt information precisely to the user group

# Literatur


- Mayer, R. E., & Moreno, R. (2003). Nine ways to reduce cognitive load in multimedia learning. *Educational Psychologist, 38*(1), 43-52.