



6. Guidelines and principles

The design and use of teaching/learning videos should be based on established didactic principles in order to maximise their effectiveness. In the previous section (5. Didactic integration of teaching/learning videos) we have already dealt with some didactic concepts. The following principles follow on from these and specify them further.

Many of these principles are based on the work of Richard Mayer and Logan Fiorella. They provide guidance for creating educational and engaging videos.

Multimedia principle

The multimedia principle states that learners learn better when information is presented through a combination of images and words, rather than text or spoken words alone. This method promotes the formation of links in the working memory and supports a deeper understanding of the learning material.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Coherence principle

According to the coherence principle, unnecessary decorative elements should be avoided as they can distract learners' cognitive resources and take them away from the essentials. This also applies to the image principle, which warns that a static image of the presenter placed next to the slides can be distracting, as no gestures or facial expressions are visible.

[But beware: this doesn't mean that it doesn't matter what something looks like. A standardized design brings consistency, so in the best-case scenario you should adapt the design of your video to the other course materials].

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Signalling principle

The signalling principle emphasises the importance of highlighting and emphasis to support the learning process. Visual or verbal signals can help learners to better recognise important information and understand contexts more clearly.

(Mayer & Fiorella, 2021)

(Krause, 2024a)



Redundancy principle

According to the redundancy principle, the simultaneous occurrence of written and spoken text (\approx reading aloud a visible or readable text) can impair learning. Identical information across different channels can cause cognitive overload and make it more difficult to process the information.

You should avoid simply reading out what is written in a video. It is extremely tiring for learners to follow such a video over a longer period of time.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Continuity principle

The contiguity principle recommends placing related elements such as text and graphics close together. This prevents loss of orientation and facilitates understanding by making the relationship between the information clearly and directly recognisable.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Segmentation principle

The segmentation principle suggests dividing complex content into smaller, comprehensible units. This step-by-step presentation makes it easier to process and structure the information.

This principle is based on chunking, a concept from cognitive psychology. It describes how the human brain organises and stores information. The principle of chunking states that information can be better processed and remembered if it is divided into smaller, meaningful units (so-called "chunks"). This process facilitates the work of the working memory and promotes the long-term retention of information.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

(Urhahne et al., 2019)



Preparation principle

Learners should be familiar with basic terms and concepts in advance so that they are not overwhelmed when complex relationships are explained. A good video introduces all the relevant elements and players before any detailed explanations follow.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Modalitäts-Prinzip

The modality principle states that verbal explanations of graphics or animations are more effective than written text. This avoids the need to switch back and forth between text and images and allows learners to concentrate more on the visual information.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Personalisation principle

A colloquial and target group-specific style can facilitate learning. A personalised approach and the appearance of a real or virtual teacher create a human connection and make the content more accessible and relevant for learners. Machine-generated/inauthentic voices, on the other hand, tend to be off-putting and make learning more difficult.

(Mayer & Fiorella, 2021)

(Krause, 2024a)

Immersion principle

Immersive media can provide deep insights into complex issues, but some abstraction through 2D or 3D representations can also be useful. It is important to balance immersive visualisation with the necessary abstraction to achieve the best learning outcomes.

(Mayer & Fiorella, 2021)

(Krause, 2024a)



Activity principle

Active learning methods, such as direct exercises and tasks after each section, promote the understanding and application of what has been learnt. Interactive videos, such as H5P videos, provide immediate feedback and reinforcement of the learning material.

(H5P videos are interactive videos created using H5P technology. H5P stands for "HTML5 Package" and is an open source framework that makes it possible to integrate interactive content directly into websites. H5P videos can be provided with interactive elements such as quiz questions, multiple choice questions, cloze texts, drag-and-drop tasks and more. This extends the traditional video format and makes learning more dynamic and engaging).

(Mayer & Fiorella, 2021)

(Krause, 2024a)

(H5P Group, 2013)

Sources:

Mayer, R. & Fiorella, L. (2021). The Cambridge Handbook of Multimedia Learning. In *Cambridge University Press eBooks* (3. Aufl.). Cambridge University Press. <https://doi.org/10.1017/9781108894333>

Krause, N. (2024a). Was sind Lehr- und Lernvideos? Teil I: Charakteristika und Didaktik. twillo. Retrieved on 11. Juni 2024, from <https://www.twillo.de/oer/web/was-sind-lehr-und-lernvideos-teil-i-charakteristika-und-didaktik/>

Urhahne, D., Dresel, M. & Fischer, F. (2019). Psychologie für den Lehrberuf. In Springer eBooks. <https://doi.org/10.1007/978-3-662-55754-9>

H5P Group. (2013). Interactive video. H5P. Retrieved on 13. Juni 2024, from <https://h5p.org/interactive-video>