Alternatives to presence teaching

How to produce instructional videos yourself

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Are you wondering how you can provide your students with teaching contents in the form of instructional videos? In this manual we will give you an overview of various tools that will allow you to produce instructional videos on your own.

Important preliminary remark: Instructional videos are particularly suitable for making your knowledge and expertise available to your students, for addressing students directly, for stimulating reflection and for motivating them. As various studies have shown, the technical quality of a video is not so crucial for learning success; for teaching purposes it does not have to be a high quality production. What is more important is the smart choice of intended learning outcomes (and by that the contents of your lecture), a clear structure, the clarity of your explanations and the length of the video. In your teaching strategy we recommend that you supplement videos with additional learning materials (e.g. a book chapter or a script) and link them with specific work assignments (e.g. tasks). Please find more detailed suggestions and ideas for such teaching formats in our manual: Asynchrone und Synchrone Online-Lehre im Sommersemester 2020.

In this manual you will find the following information:

- Basic recommendations for instructional videos
- How to Record PowerPoint presentation
- How to create simple animations yourself
- How to simulate a blackboard presentation on the tablet
- How to produces screencast
- How to digitize sketches and drawings
- How to record yourself on a whiteboard or a flipchart
- How to record in an empty lecture hall
- Preliminary hardware tips for video production at home using a mobile phone
- Advanced hardware tips for various settings

On the following pages we have mapped out a few scenarios and formats that can help you to digitise your lecture. Please note that these are templates - you can develop them by adapting, combining or adding your own formats and ideas..

We will continue to adapt this manual to new developments; you will always find the latest version on our website at https://www.prolehre.tum.de/aktuelles/coronavirus . Please contact us if you need individual counseling concerning the production of videos or your teaching in general!

# Basic recommendations for instructional videos

Please note the following basic preliminary remarks when producing your videos:

- **Use already existing material**. Before you produce your own teaching videos, check whether you can use existing videos of yourself or of colleagues from other universities. There are already so many high-quality videos availible that you can access. We are currently compiling a list for this in the [forum](#).

- **Instructional videos should be short, ideally not longer than 8 minutes**. Please do not record your full lecture hall performance 1:1. Instead, partition your inputs into smaller blocks of ideally 8 minutes. This will increase the likelihood that your students will actually watch the video in its entirety and not randomly jump back and forth in the video or fly over it at triple speed.

- **Decide whether an instructional vidoe or an alternative learning material is more appropriate.** Think carefully about what content you want to offer as video ("nuggets") and what content you want to make available in other forms in moodle, such as book chapters, podcasts, slide collections or scripts.

- **Instructional videos are more effective if you design them in form of a dialogue.** Introduce yourself briefly in your video and describe at the beginning of the video what exactly the students will learn in this video. Make use of (reflexive) questings on the theories to engage students to actively think for themselves. Or include slides with questions and ask students to pause and think about them at specific times in the lecture. On one of the foolling slide you can then give answers or further explanations and then continue with your lecture.

- **Always take a test shot.** Watch and listen to it before you record the whole lecture. Do you speak slowly and clearly (enough)? Check the cropping: either "[golden section](#)" or center of the picture, nothing in between. Shoot the subject rather from slightly above; never film from below! Is the lens clean? Is the video format correct (HD, 4K, slow motion)?

- **When filming, already think about the later cut.** Always let the camera run for a few seconds before you start or stop the actual recording. You will need this time later during editing to fade in and out.

- **Warm up your talking.** Talk about how you feel, what you have experienced, tell a joke or describe what you will do after the shoot. - Of course you will cut this material later! Remember – the camera is your friend.

- **The sound quality is just as important as the video quality.** With an external microphone, your presentations will sound much better and more professional (and are also easier to cut, by the way).

- **Different file formats are no longer an obstacle.** If one of the programs cannot work with your files, you can convert videos into other formats with free tools, such as [HandBrake](#).

- **The TUM bought Camtasia for you.** Camtasia is a professional, powerful, yet easy-to-use tool for recording and editing videos. For example, it allows you to simultaneously record yourself (e.g., via webcam), the contents of your screen, or other devices (e.g., formulas on a tablet). Until we have clarified how the 600 licenses are distributed at the university, you can download a [free trial version here](#).
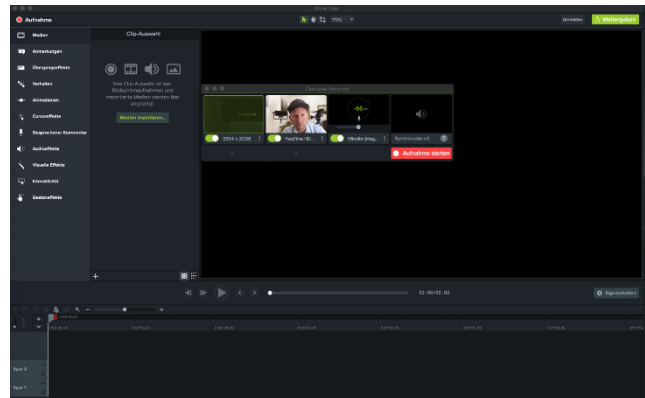
- **Upload your video to a dedicated video server.** Do not upload your video directly into moodle as a file. Instead, upload your video (preferably as mp4) to the Wowza streaming server of the Leibniz Rechenzentrum: [Video upload via form](#). Select the option for streaming formats in this form. You will then receive a mail with a link to integrate the video into moodle (use the first of the three links in the mail). Alternatively, you can use YouTube as a high performance video server (in case Wowza should fail). Click on "Share" there to get a link to your video.

- **Link your video in Moodle**. You can then link your video in Moodle. Optionally, you can include a screenshot of your video as an anchor to your video link. When the students click on it, they will land on the websites of the data center or YouTube and can play the video there.

- **Or embed your video directly into moodle.** If you want your students to play the video within Moodle, you can embed the video within iframe. To do this, go to the source code within a moodle text page using the </> button and paste the code <iframe scr="XXX" width="600" height="400"></iframe>, where XXX is the link to your video. In order not to affect the loading time of your course page, distribute the videos on different text pages if possible.

- **Video files in moodle.** If you do upload a video directly to moodle as a file ("Create Material: File"), tell your students that they cannot watch these videos directly in Moodle, but must download the file first (in Windows: right click and then "save as").

- **Every video should have a short accompanying text.** Especially if your video is longer than a few minutes, create a table of contents in text form (e.g. "1:34 - Basics of Procedure") in the video description (in Moodle or YouTube).

How to Record PowerPoint presentation

To do this, simply go through your slides in presentation mode and explain them. PowerPoint records the slides, your voice and mouse/pen movements and creates a video file from them.

Sample video	(Link to sample video will follow)
Scenarios	Slide presentation with voice from the off
Image	Slides, mouse movements, drawings on the slides
Sound	Voice of the lecturer
Software	**Name** Microsoft PowerPoint **System** Windows, Mac, Android **Costs** Free for members of the TUM family
Hardware	Computer with microphone External microphone (optional)
First steps	In PowerPoint, select "record a slide show" in the "slide show" tab. You can now run your presentation with all its annotations and record your presentation while doing so. Afterwards you can export your presentation as a movie file (detailed instructions at Support Office).
Tips	▪ For videos, a 16:9 video format is better than the 4:3 format ▪ When animations are running, audio is not recorded. Do not speak when showing animations. ▪ Subsequent cutting and editing of the video is unfortunately not possible in PowerPoint!

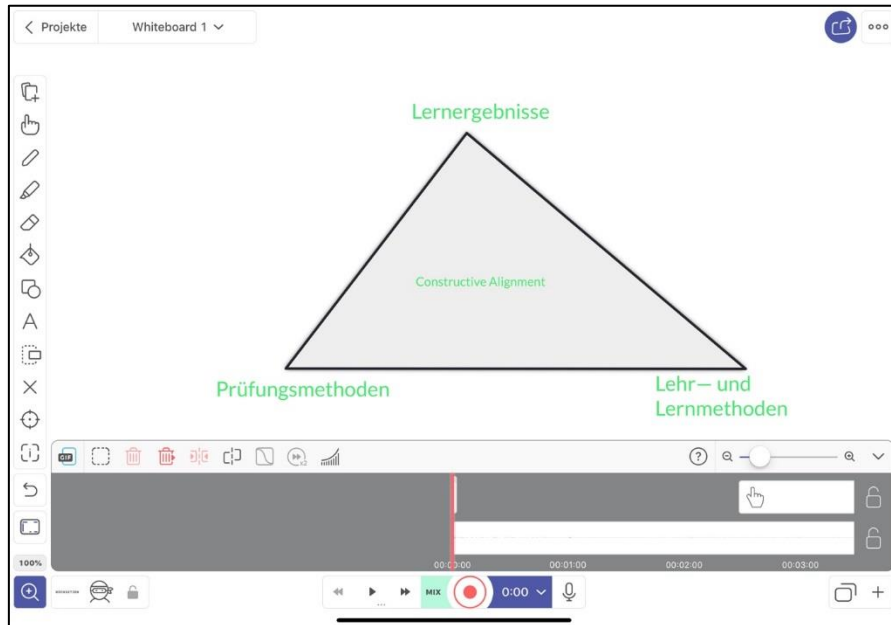# How to create simple animations yourself

Special tools (fee-based, but cheap) are similar to PowerPoint, but are specially designed to create explanatory videos. You can use them to create animated slides, write a text (and optionally record it) - and then create a video file from it.

Sample scenario	https://www.international.tum.de/visitingresearchers/
Scenarios	Slide presentation with animations and optionally voice from the off
Image	Comic-like animation of your script, text overlays
Sound	Music and your voice from the off (optionally)
Software	**Name** Animaker, MySimpleShow, Powtoon, Vyond
	System Webbasiert
	Costs Fee-based, but cheap for educational institutions
Hardware	Computer Internal or external microphone (optionally)
First steps	All programs work similar to PowerPoint. In each scene (slide) objects and texts can be animinated with start and end points by drag-and-drop.
Tips	▪ In terms of functionality, all programs listed are very similar, but the animations of the characters vary. Note: Not all complex processes should/can be represented by such animations.
	▪ Always ask yourself if the animations provide an added value for the content (instead of posing a distraction from it)
	▪ We advise against the text-to-speech features of these programs. It is better to record your text by yourself.

How to simulate a blackboard presentation on the tablet

Use your tablet as a whiteboard/tablet and record your blackboard presentation on the tablet.

Sampole	https://www.youtube.com/watch?v=xf0hNwV_fFA
Scenario	Blackboard lecture with voice from the off
Image	Slides, mouse movements, texts and drawings on the slides and sketches
Sound	Voice of the lecturer
Software	**Name** Explain Everything **System** web-based **Costs** For educational institutions up to 3 projects for free; otherwise between 3-9 Euro per month.
Hardware	Tablet/computer with touch screen and microphone External microphone (optionally, recommended) Pen (recommended)
First steps	Create a new project with the plus symbol. Start the recording with the record button. Speak your text while recording. Or mute the microphone and record your blackboard writing first to discuss this "animation" in a second step.
Tips	▪ You do not necessarily need a pen, but working with such a device is generally more comfortable.

How to record yourself on a whiteboard or a flipchart

You can also simply film yourself at home or in the office while you draw, develop or explain something on a flipchart or a blackboard.


Sample	https://www.youtube.com/watch?time_continue=27&v=kOrlFwyZn7s
Scenarios	▪ Lecture with visualization on flipchart or blackboard ▪ Addressing students directly (like a newsreader) ▪ Live demonstrations of activities and procedures
Application	You are in the spotlight while using a flipchart, pinboard, whiteboard or blackboard. You can act almost like in a lecture - of course without direct feedback by the students. As a lecturer, you enjoy your natural speaking position while standing, where your breathing is unimpeded (in comparison to a sitting position). This format is more personal than a slideshow or PowerPoint video.
Image	Lecturer in a room
Sound	Voice of the lecturer

Software	**Name**	Camtasia
	System	Windows, Mac
	Costs	The TUM has acquired licences
	Alternatives	iMovie (Mac), Davinci Resolve (Windows, Mac, Linux)

Hardware	Computer with microphone and webcam External microphone (recommended) External video camera with tripod (recommended)
First Steps	Position your phone in landscape mode on a tripod (tripod or gooseneck). Record your voice with a clip microphone or a field recorder. Ensure that the room has sufficient light (no backlighting through a window) and if necessary provide additional light sources to avoid shadows. If possible, shoot in a room with a carpet to avoid reverberation. Look directly into the camera and do not read the text from a piece of paper next to the camera. Play the audio file live from the microphone on the computer. Download the video file from the mobile phone to the computer after shooting. Then load the video and audio files into the editing program and synchronize them. Then do the cutting.

Tips

- Create a script before shooting. It will save you a lot of time on the set.
- Make your presentation lively and entertaining. Include a few personal anecdotes from your research.
- You will find a hardware setting for this at the end of this document.
- If you clap your hands at the beginning of the shoot, you will have an anchor in the audio and video file that helps you synchronize the picture and sound.

How to record in an empty lecture hall
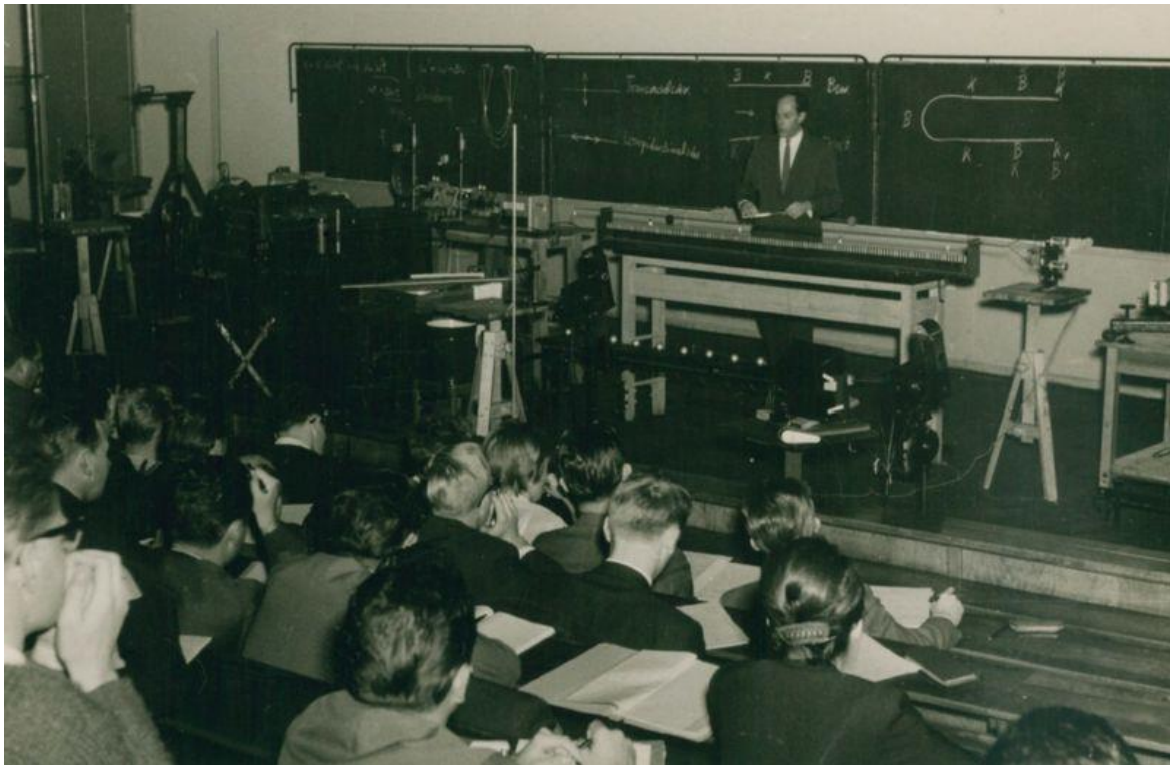
(source: https://de.m.wikipedia.org/wiki/Datei:Günther_Haufe_Vorlesung_2.jpg)

In some cases you may not be able to record a video at home, e.g. for an experimental presentation. In such cases, you can apply to the crisis management team for a special permit to enter the building and then conduct your experiments in an empty lecture hall.

If it is one of the 12 recording auditoriums, you can apply to ProLehre for a free full-service recording.

If it is a different lecture hall, you can apply to ProLehre for a full-service recording for which a fee is charged. Please contact Constantin von Thielmann and his team to clarify the exact Corona-crisis special conditions. -- Or you can record yourself (preferably supported by a member of staff) as described in the scenario "How to record yourself on a whiteboard or a flipchart".
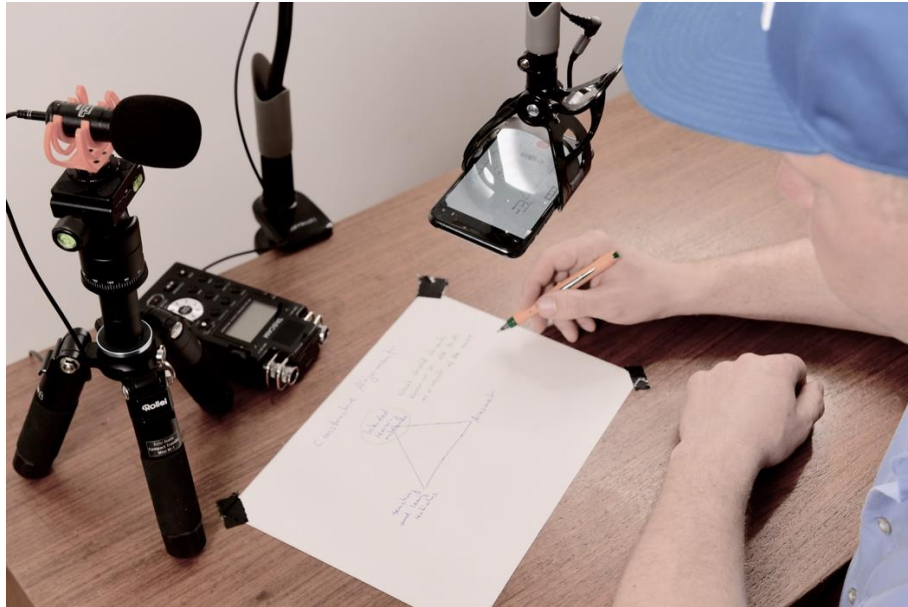
How to produce a screencast

Screencasts are one of the most popular methods of video teaching. You work on the computer with documents and programs of your choice and speak; a software records the computer screen and your voice and creates a video file from it. Optionally, you can also film yourself, so that the video shows your face as well as the computer screen.
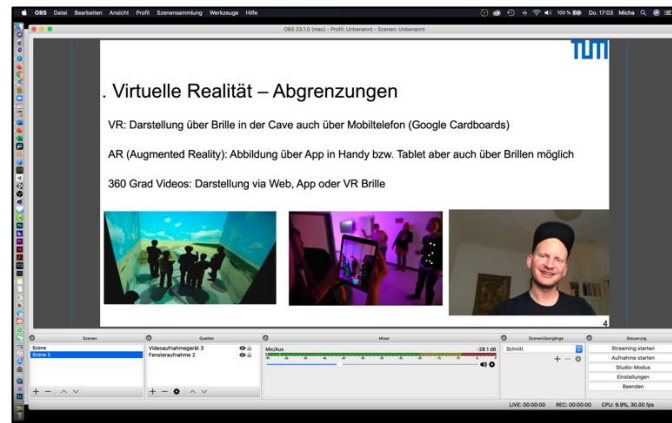
Sample	https://www.youtube.com/watch?v=Yx-qn6Griq4
Scenarios	▪ Lecture with PowerPoint/prezi and your face ▪ Perform and comment on solutions of exercise or similar ▪ Create instructions, comment on the operation of an interface
Image	Computer screen (full or partial/window) Your face (optionally)
Sound	Voice of the lecturer
Software	**Name** Camtasia **System** Windows, Mac **Costs** The TUM has acquired licences **Alternatives** eLecta Screen Recorder (Win)
Hardware	Computer with microphone and webcam External microphone (optionally but recommended) External video camera
First steps	Start the software: Select the screen and/or the camera and/or the audio signal you want to record. Then record yourself, your screen and your sound. If necessary, cut the video later in an editing program.

How to digitize sketches and drawings

Use your mobile phone/ tablet to digitize sketches and drawings.

Sample	https://youtu.be/XQNQDv3mL3I
Scenarios	Blackboard writing with voice from the off
Image	Drawing on a paper
Sound	Voice of the lecturer

Software	**Name**	Camtasia (for video editing)
	System	Windows, Mac
	Costs	The TUM has acquired licences
	Alternatives	KineMaster (Android)

Hardware	Mobile Phone
	Tripod or improvised solutions
	External microphone (optionally, but recommended)
First steps	Draw/write your blackboard writings on a piece of paper. You can record the drawing/writing from above with a gooseneck holder or with a tripod over the left shoulder (for left-handed people: the right one).

Tips
- Switch the mobile device to airplane mode
- If necessary, fix your paper with Sellotape (Tesafilm)
- Avoid shadows caused by indirect light (use lamps to illuminate the white ceiling so that the light is reflected from above or when working on the window with semi-transparent curtains)
- For complex sketches without simultaneous audio recording, the timer function can be helpful
- If necessary, fix the autofocus and white balance using Open Camera or ProCam7

- Record your text later using the dictation machine function, an external microphone or a field recorder and insert the audio file in an editing program on the computer under the video track
- A short direct speech and farewell establish a personal connection. To record the audio signal in consistant quality, record with a field recorder, clap before the take to be able to synchronize the audio later. Do not move the Field Recorder.

Preliminary hardware tips for video production at home using a mobile

If you want to record yourself at home with your mobile phone, or if your computer does not have a built-in camera or if you want to record sketches, you don't need much. This is a simple but sufficient setting for recording yourself at home with your phone:

Examples:

Most current **mobile phones** already provide high-resolution video recording capabilities and are completely sufficient for this purpose. But you can of course also buy a camera or camcorder.

Canon XA-40: 1.500 €

You only need a gooseneck or **tripod** to fix your mobile phone. That way you can either record yourself or film a sheet of paper on which you make drawings.

Lamicall gooseneck: 15€

Alternatively: Rollei Compact Traveller: 80€

Ensure good illumination. In our setting we have used a ring light.

If you want/have to work with natural light, software can help to keep exposure, focus and colors constant. Free software is for example Opencamera (Android) or Procam7 (iOs).

Ringleuchte mit Handyhalterung und Stativ von Neewer: 75€

More important than the light is often the audio quality. Here in the picture we have a **field recorder** clamped in a gooseneck. But a much cheaper clip microphone could also suffice.

Field Recorder by Zoom or Tascam: from 100€

Alternatively: Rode NT1 Bundle: 180€

Alternatively Blusmart Microphone: 15€

Advanced hardware tips for various settings

1. Simple setting: Foil and self-recording with laptop and microphone

Image:	Laptop with integrated webcam
Sound:	Clip-on microphone or Mpow Headset or iCE Microphone

2. Advanced setting: self-recording or document recording of sketches with mobile phone/tablet

Image:	Mobile phone
Mounting:	Tripod Hama Flex Pro oder Rollei Mini
Sound:	Clip-on microphone by Saramonic (if applicable. Adapter for the iPhone) or Field Recorder by Tascam or Zoom
Lighting:	Ringlight Neewer (Tripod and mounting for lighting and mobile phone integrated)

3. Setting: Self-recording with camcorder, cable microphone and greenscreen

Image:	Camcorder Sony Alpha 6000 – Samyang 12mm Weitwinkel-Objektiv
Recording:	CaptureCard with Elgato Cam Link 4K
Greenscreen:	Elgato, telescopic
Microphone:	Rode USB-NT1

4. Setting: Self-recording in motion with mobile phone

Image:	Mobile phone
Mouting:	Tripod witht Follow Focus-Funktion (requires software) e..g. DJI OSMO 3 (Gimbal function) or Getpivo
Sound:	Radio microphone Sennheiser ew 112p G4 B-Band (626 – 668 Mhz) or Field Recorder

5. Semi-professional setting with DSLR or MicroFour Third camera

Image:	Panasonic Camcorder HC-X2000E 4K Camcoder (Camcorder), DSLR misc.: Canon, Nikon or Sony, Micro Four Third: Pannasoinc GH5
Mounting:	Coman DX16
Sound:	Rode NTG 4 or Videomic Pro+

A camcorder or mobile phone usually focuses the picture automatically (without depth of field). A DSLR or Micro-Four-Third camera allows you to work with blur, which may sound appealing from a cinematic point of view, but usually requires another person to keep the protagonist in focus. A Follow Focus solution (using an intelligent tripod and software) solves this problem with a mobile phone. Similarly, you can also use a surveillance camera (PTZ camera) for this.