Shooting a lab film

Laboratory film can be applied to different educational settings. For example to prepare experiments or as part of safety instructions. Laboratory films may also display otherwise dangerous, expensive or experiments with limited accessibility (e.g. for larger audiences).

Caution: Safety instructions must be conducted on premise. Supplemental online training is permitted, though. The use of hazardous substances requires particular caution.
Please consult the information provided by SDU, Stabsstelle Sicherheitstechnische Dienste und Umweltschutz (German):

- Unterweisungen (German)
- SDU Merkblätter und Formulare (German)

Concept phase

Before you start your recordings:

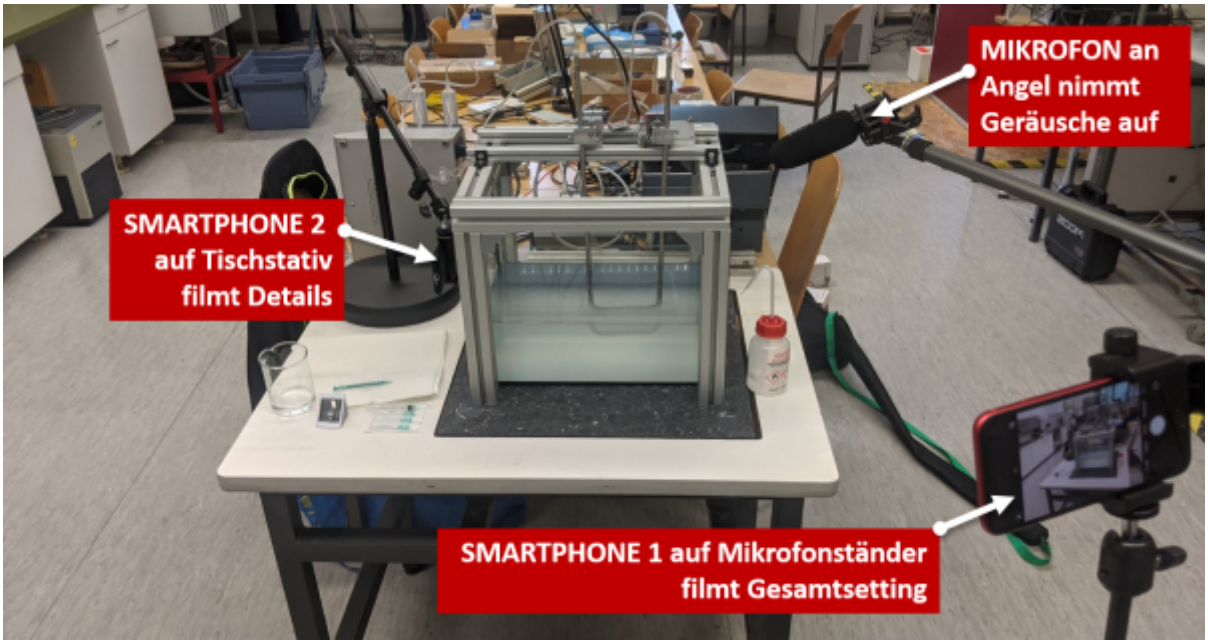
- What role does the video play in your curriculum?
- What are its limitations?
- How can you time the production on premise?
- What can or must be displayed online?

It is crucuial that a laboratory video should not be a stand-alone but embedded in your curriculum. Optimally, you link it to other learning activities such as

- a test ensuing the film screening
- ask students to list questions concerning the film content
- additional calculations in relation to the experiment on display

Recording and production tips

Laboratory videos can often be produced with a low number of camera angles and therefore needs to be prepared well. Example of a simple camera setup:



Recommendations based on our experience:

Establishing Shot: An introductory sequence facilitates your viewers' orientation. If you aim to display details in a close camera shot (e.g. a probe disruption), please introduce this sequence with an establishing shot that introduces the experiment setup. Students can follow your film's argument more easily if you portray an overview first.

Two perspectives: If you produce a video with two cameras, you have a wider range of options in postproduction. Follow the 180-degree rule if you portray more than one person. If you produce an over the shoulder shot (OTS) to show how someone conducts an experiment, setup the second camera on your side of the experiment. Otherwise your material may cause rather strange changes of perspective in postproduction.

Fill material: Remember to record audio and visual content to be used in postproduction such as static images, shots of locations or interviewees as well as so-called *atmo: atmospheric sounds* (these are sound bites that capture a location's atmosphere and background noise). This content is valuable in postproduction and audio design.

Zoom or pan: Too much movement on screen may take away the focus of your viewers and causes an unprofessional look and feel. If you intend to focus on a detail you just jump to this detail by editing in a close-up shot in postproduction. This is called a *standard cut* or *hard cut* and is a common film technique that is quite pleasing to the human eye and flow of attention. You can also jump directly from an establishing shot to a close-up or walk up to the matter on display. We recommend the use of a Gimbal for handheld shots.

Tripod: You should always stabilize your camera, preferably with a tripod. Stabilize handheld shots by leaning on a wall and support the camera with both hands. Keep your ellbows close to your body. Support your arms by leaning or laying down on a stable surface.

Landscape format: This may seem trivial but always shoot your laboratory films in a landscape format if you shoot with a smartphone.

Postproduction is key: Keep postproduction in mind. Filmmakers often joke they will *fix it in post*. While minor mistakes can indeed easily be fixed in post, this is not true with regard to most mistakes by less experienced filmmakers. It is therefore crucial to avoid major mistakes and/or time-consuming

efforts to repair them in postproduction. Shoot clips multiple times instead so that you have more choices in postproduction.

Filming with a smartphone

A smartphone can be suitable for laboratory film production. Have a look at your phone settings as the following two settings will be of relevance (the information may be located differently on your phone, this depends on your software and provider):

1. **Focus**: Most apps allow to turn off auto focus (AF) by pushing on the center focus point. Choose manual focus or static focus instead.
2. **Exposure**: Turn off auto exposure (AE) to allow for manual exposure. This prevents sudden changes in light and darkness.

Camera apps may provide a broader range of settings and may be necessary to attach an external microphone. There are various apps available. We gathered good experience with the following apps:

- OpenCamera: free-of-charge App (Android)
- filmicPro: professional, paid App (Android, iOS)

Audio settings

You may want to consider these two basic audio setups:

1. **Voice recordings**: If your shoot includes that people talk, you may need a suitable microphone (directional/shotgun microphone, clip-on microphones,...). We are happy to advise on a suitable choice.
2. **Voice over** (including ambience sound): This audio can be produced independently. Please consider our advice on recording podcasts.

Borrow equipment

You plan on shooting a laboratory film? We can provide you with equipment and advice:

- Smartphone mounts and tripods
- Low-key camcorders
- Mikrophones: Lavalier (Rode Smart Lav+), Shotgun (Rode VideoMic NTG) + mount
- Gimbal
- DJI Osmo Mobile (2 oder 3)

Please briefly outline your project and contact us via e-mail: medienkompetenz@zewk.tu-berlin.de.

Editing and sharing content

To edit and share material we recommend Camtasia. You can test the software free-of-charge:

- Free trial (30 days, win and Mac download options)

If you like to work with Camtasia, we can provide you with a free license: Please contact us via e-mail.

Once the software is installed, please have a look at these **quickstart tutorials on recording and editing**:

- Record, Edit, Share (5:39 min)
- Video Editing Basics (4:25 min)

Subsequently, connect the microphone (USB), the webcam (USB) and optionally the graphics pad (HDMI and USB). For written content we recommend to apply OneNote as a backdrop.

Following a recording, it is common to trim the clip to remove sections at the start and end of the timeline. Furthermore, Camtasia enables users to enhance material with animations, time lapses (to abbreviate the display of writing processes), highlighting the cursor and much more. Please consider these additional tutorials.

After postproduction you need to export your data for sharing:

- Export&Share (4:10 min)

We recommend the export of videos in mp4-format and full HD resolution (1920×1080). You can share your laboratory film with students in an ISIS/moodle course thereafter, upload it to webspace provided to your faculty (German) or share it on social media channels such as Youtube. Please remember to always double-check current copyright and data protection guidelines.

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