

Digital Biology Education

Remote learning and homeschooling with ZEISS Labscope



Seeing beyond

The closure of schools and universities in Germany and around the world has brought about a re-evaluation of digital teaching and learning possibilities. In many places, teaching content was provided via the Internet, tablets, smartphones, and PCs, while online platforms enabled teachers and learners to communicate. ZEISS supports digital biology lessons involving microscopes with the Labscope imaging app.

Specialist apps support remote learning

Digital transformation is progressing and the Internet has become a rich source of information. Apps are now part of everyday life: they simplify various tasks and are an indispensable tool, particularly for the growing generation of digital natives. Digital media are also becoming increasingly important in teaching. Projectors, laptops, tablets, and smartboards are already being used in many schools. However, additional equipment is required for remote learning. Specialist apps can facilitate learning and make a valuable contribution to education.

Online biology lessons with the Labscope imaging app from ZEISS

Practical exercises make online lessons varied and lively. The ZEISS Labscope imaging app supports practical work with the microscope. Teachers establish a connection between their PC and the microscope so that the microscopic image is visible on the PC or laptop screen. Using Skype, Zoom, Microsoft Teams, or other platforms, this screen can be shared with pupils so that they too can see the microscope image. The pointer function in the ZEISS Labscope imaging app supports remote learning by drawing attention to important points in the sample shown and directing the learners' attention to the selected areas.

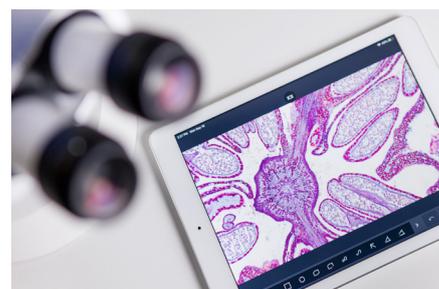


Figure 2 With ZEISS Labscope, annotations and measurements can be integrated into the image acquisition.

Labscope also allows microscope images to be recorded and sent to learners via e-mail or online tools. This makes it possible to create and send short videos.

Once the pupils have received the image, they can use the drawing function to produce a digitally supported hand drawing of the sample. Hand drawings still play an important role in the learning process. They help refine precise observation skills and aid pupils in assimilating what they have seen. Such a drawing might show, for example, how cells and their compartments are constructed in detail. Working independently allows learners to deepen the knowledge they have gained on the relevant topic – in this case, cell theory.

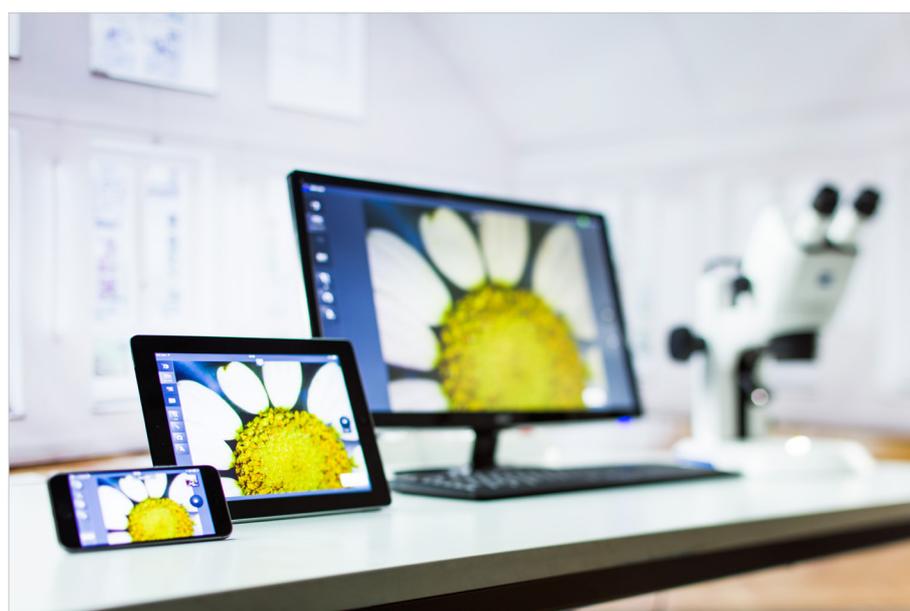


Figure 1 The image seen under the microscope can be transferred to digital media.

What's more, Labscope allows users to make annotations. Labels and descriptions in different colors and sizes can be added to the microscopic image, for example to provide the names of individual cell compartments and describe their function. There are also other markup tools that allow learners to work directly in the image, for example by taking size measurements or marking interesting areas of the image using arrows. Once the microscopic image has been annotated by the student, it can be integrated into a report template and sent back to the teacher for assessment.

Infrastructure and equipment

ZEISS supports digital biology lessons using the microscope with the Labscope app. A Windows PC or laptop is recommended for remote learning.

The ZEISS Labscope app for biology lessons can be downloaded free of charge here:

www.zeiss.com/labscope

The ZEISS Labscope app for iOS is also available from the App Store. It can be used on iPads and iPhones. MacBooks are not supported. Install the app on your PC and then connect to your microscope. You can use the the microscope camera's USB port or connect the microscope camera and your PC to the same Wi-Fi network.

The ZEISS Labscope app works with the following microscopes:

ZEISS Primostar 3 HD and ZEISS Stemi 305 cam: these microscopes are equipped with integrated, Wi-Fi-compatible cameras and are designed for long-term use and durability.

ZEISS Stemi 305 cam (491903-0005-000) is a compact stereo microscope with a 5:1 zoom and integrated LED illumination. Stemi 305 can be used to view three-dimensional images of entire plant and animal organisms. Stemi 305 is also available as Stemi 305 cam with integrated camera. There is also the option of adapting cameras to the microscope.



ZEISS Stemi 305 cam



ZEISS Primostar 3 HD

ZEISS Primostar 3 HD (415501-0071-000) with its integrated 8.3 MPx HD Wi-Fi-camera is the package of choice for digital classrooms. This camera offers versatile interfaces such as HDMI, Ethernet and USB-C 3.0. Primostar 3 HD is used to view samples on microscope slides with cover glasses, such as stained tissue sections like onion skins, in brightfield.

In addition, the Labscope app works with ZEISS ERc 5s cameras (426540-9901-000) as well as Axiocam 208 color (426570-9000-000) and Axiocam 202 mono (426570-9010-000) as soon as they have been adapted to your microscope.

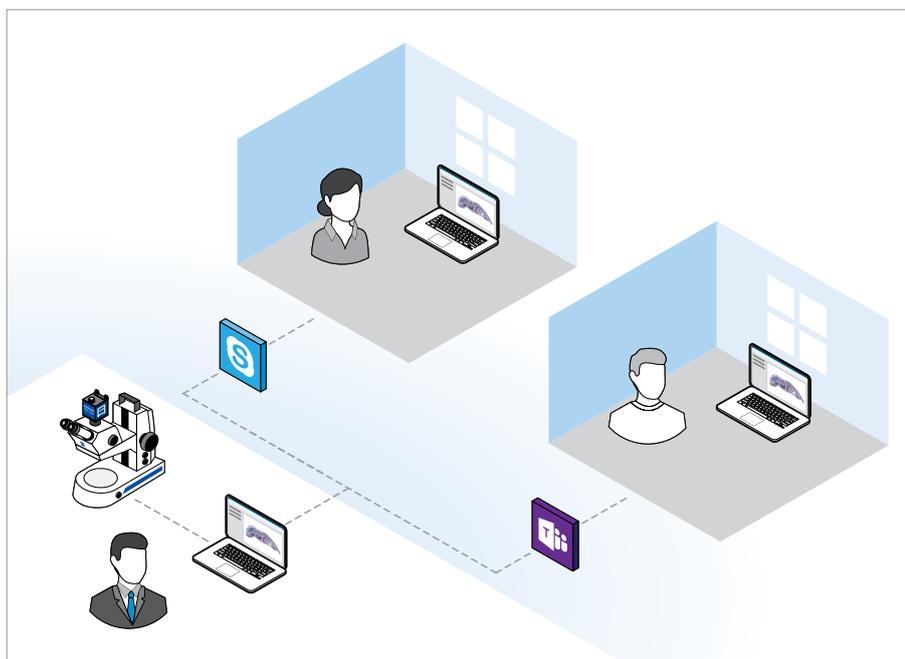


Figure 3 Microscope network setup for remote learning



Download Labscope for Windows
Runs on Windows 7 (64-bit) and 10 (64-bit)



Download Labscope for iOS



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