



ZEISS Labscope

Create Your Own Digital Classroom



We make it visible.

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Teaching is the art of passing knowledge of the few on to the many. For this you need a good overview of all the learners, a deep insight into the individuals, and the option of networking them all together. A digital classroom with connected microscopes is a valuable tool in teaching today. It enables endless opportunities to create hands-on, customizable learning experiences and build deep understanding in the classroom. Students learn easily from each other and experience learning successes in a playful way. Connected microscopes offer an interactive, digital platform which increases attention and motivation, and also gives freedom to the teacher.



Figure 1 The classical way of teaching: students as passive observers.

Requirements

During the education of professions such as medical assistant, dental technician and assistant of veterinary medicine, larger groups of students are required to spend several days per week in a microscopic lab. Learning time is always limited and the course leader often needs to set-up and dismantle the systems in shortest time. The microscopes must be robust and easy-to-use. A digital classroom is a major benefit to course leaders – it allows them to use microscopes that are connected to each other, and digital



Figure 2 Involving the students supports active learning.

tools to support and enhance teaching and learning. The images and videos can be shared directly with students. This allows open discussion and the explanation of the visible components. Fast acquisition, taking notes and annotating, saving and sharing the results are necessary. Direct access to each student's microscopic live image for the course leader makes the classroom more interactive. Students, as well as course leaders, should be inspired and have fun.

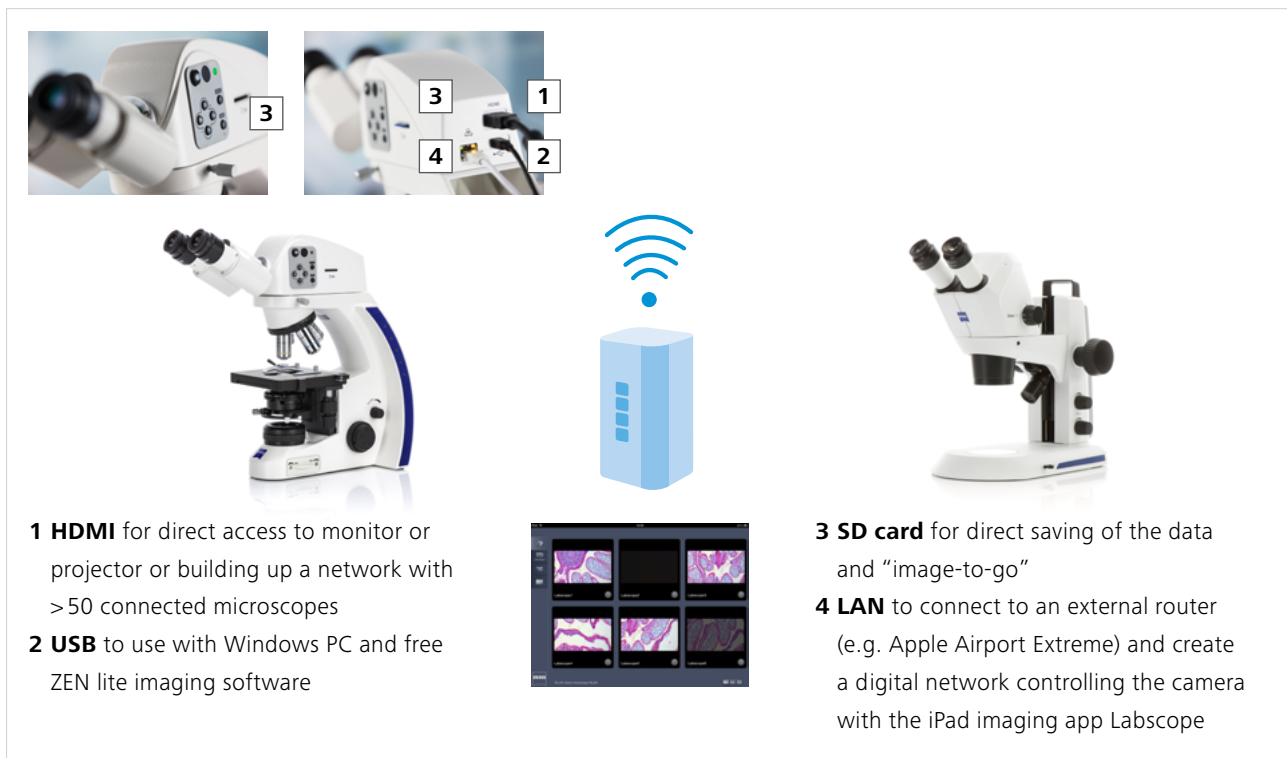


Figure 3 Use the interfaces of ZEISS Primo Star.



Figure 4 Display the live images of all connected microscopes with ZEISS Labscope

ZEISS iPad Imaging App Labscope

With an iPad and the Labscope Imaging App you can transform your ZEISS microscope and camera into a Wi-Fi-enabled imaging system. Labscope allows you to display all the live images from the connected microscopes [Fig. 4]. You can move freely around the classroom and still see through all of the eyepieces. Select any student's image with just one click and transfer to the screens on the main display to show the

class. Discuss working methods and details with individual students and the others can see what is going on. You can allow your students to work independently and document their results. Snap images and record videos of your microscopic samples more easily than ever. You can measure distances and create annotations. You can save your images in the ZEN compatible .czi file format, which includes all metadata and a separate annotation layer, or select the .jpg format to save space. Check the reports immediately online, or later on your PC. You can put images and videos into the network and allow your students to do mobile work on them with an iPad and record their results. Simply share with anyone, anywhere via email, social media or cloud services. It doesn't matter whether a small course is to be held quickly on a mobile basis or if a large classroom is to be permanently networked, the digital classroom from ZEISS adapts to your needs.

Downloading Labscope is fast and easy from the Apple App Store – and it's 100% free. Introducing iPad Apps and Wi-Fi capabilities to a digital classroom enables students to learn in an environment that is part of their daily business and state-of-the-art.



Figure 5 ZEISS Primo Star HDcam with integrated camera: the right microscope for educators and students alike.

Building up a digital classroom with ZEISS Primo Star HDcam and ZEISS Stemi 305 cam

Primo Star HDcam [Fig. 5] and Stemi 305 cam [Fig. 6] are your microscopes particularly suited to educational settings. As classroom microscopes they are designed for long-term use and extreme durability.

Stemi 305 cam is your compact and easy-to-use stereo microscope with a 5:1 zoom for educational tasks. The fast, color Wi-Fi camera and WLAN router are already integrated into the microscope body. In "Access point" mode each Stemi 305 cam creates its own WLAN: up to six iPads can connect directly to the integrated camera and display its live image using the iPad imaging app Labscope. To create a high quality digital classroom, enable "Add to existing WLAN" mode and connect several Stemi 305 cams to the same digital network. Create your own virtual classroom by using Labscope, the iPad imaging app, to stream live images



Figure 6 ZEISS Stemi 305 cam: the router is integrated in the microscope.

from several microscopes to all connected iPads. It's easy to share, compare and discuss the work of all the students on your own wireless network.

Primo Star HDcam is easy to setup and the built-in carrying handle lets you move the microscope safely. This upright microscope delivers everything that matters in an educational setting. Consider the advantages of having the camera integrated into the tube and a number of interface options. You can connect microscopes in your classroom to each other, using Labscope, the iPad imaging app from ZEISS: students will spend their time learning, not fiddling with technology. With Primo Star HDcam you have the ability to view stained tissue sections in brightfield [Fig. 7] as well as unstained cells in phase contrast [Fig. 8]. Phase contrast is essential in biological sciences. It makes the finest unstained specimen such as cells visible by distinguishing between structures that are of very similar transparency.

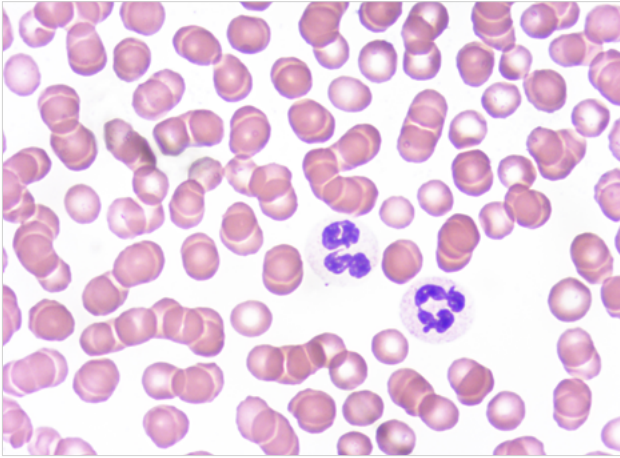


Figure 7 Blood with granulocyte, acquired with ZEISS Primo Star, transmitted light, brightfield, courtesy of G. Spengler-Schulz, Alexander-Fleming-School, Stuttgart.



Figure 8 Aphid, acquired with ZEISS Stemi 305, reflected light, brightfield

Conclusion

The digitization of society is progressing rapidly. The internet is constantly available, social networks and countless apps are already part of a student's daily routine. Networking will also impact on school education and future teaching methods. The enthusiasm of young people for science and technology drives their success. With ZEISS Primo Star HDcam and ZEISS Stemi 305 cam in conjunction with the iPad imaging app Labscope, ZEISS has adjusted to the developments in recent years. Give your students the full experience of mutual learning with brilliant images.



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