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Dual Handheld and Video Otoscope

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Veterinary students often rely on handheld otoscopes to examine animal ear canals, yet there is currently no way for instructors and students to view the same field of view at the same time. This lack of simultaneous observation can slow feedback during training, as instructors must rely on student descriptions rather than a live, shared image. By integrating a wireless live-view camera into a traditional handheld otoscope design, the new Dual Handheld and Video Otoscope bridges this gap and can greatly enhance the effectiveness of veterinary education.

Existing solutions diverge in two primary directions. Traditional optical handheld otoscopes maintain a familiar feel but only allow one user to see inside the ear at a time. Video otoscopes enable real-time image capture, yet none have the ability to share this digital image during examinations. The Dual Handheld and Video Otoscope combines both methods: a beam splitter directs the same image to the lens for direct viewing and to a wireless digital microscope for live streaming. This setup ensures that students receive hands-on practice with an otoscope that closely resembles a conventional model, while instructors and classmates observe the procedure as it happens on a nearby monitor.

The new Dual Handheld and Video Otoscope merges the best of both approaches. At its core is a beam splitter that projects the same image to a built-in wireless digital microscope and a standard optical eyepiece. This setup preserves the familiar handheld form so students can practice as if they were using a traditional device, while instructors and peers can simultaneously view the live footage from a nearby screen or mobile device. To address illumination of the ear canal an optical fiber redirects bright light to the tip of the speculum, significantly exceeding the brightness of both standard and previous prototype otoscopes. Color calibration tests revealed high accuracy in reproducing critical hues, such as red and magenta, making the captured images reliable for instructional use, while brightness testing confirmed more than a 100 percent improvement over older models and is fully adjustable to user preference.In addition, the device is compatible with standard specula, allowing the otoscope to accommodate a wide range of animal sizes and ear geometries, from small cats to large dogs and even larger animals.

Veterinary institutions represent a promising market, as instructors can enhance training quality and reduce repeated handling of live animals. The total cost of materials remains comparatively low, under $300 for a fully assembled unit, which is attainable for teaching laboratories and small clinics alike . Because the camera is wireless, the prototype is easily transported between exam rooms or lecture halls, and the modular 3D-printed casing can be disassembled for cleaning or repairs.

Ultimately, this innovative otoscope meets the educational needs for real-time feedback, addresses core usability concerns, and provides a brighter and more accurate view. By combining traditional handheld operation with live video capabilities, veterinary educators can guide students more effectively, improving both learner confidence and animal well-being. This design closes the gap between handheld and video-based otoscopy and sets a higher standard for comprehensive veterinary training worldwide.