



CREATE
SHARE
INSPIRE.

Education Systems with PowerLab

Complete solutions for teaching health science



Bring active learning to your lab, classroom, or online course with our easy-to-use software platforms, interactive content, and hardware.

Our customizable education systems provide all the experiments, hardware, software, and lessons you need to teach and create a stimulating learning environment that guides your students to connect theory and practice.

Students can record and analyze their own biological signals, deepening their understanding of scientific concepts - from introductory to advanced studies.

A typical education system consists of:

- PowerLab multi-purpose data acquisition hardware
- An expansive range of transducers and accessories suitable for experiments
- Learning software including self-guided exercises with blended learning options

Creating a custom education system is easy:



+



PowerLab

+



Active learning software
and multimedia content

High performance data acquisition

Education kits and transducers

Highlights

- Increases engagement and improves pass rates*
- Enables flexible teaching
- Fully-customizable experimental protocols
- Reliable, easy-to-use systems with powerful hardware and blended learning software
- Complete tools for cardiovascular, respiratory, and psychophysiology teaching labs - plus more
- Build your own lab with cost-effective kits for specialty areas

*Hogarth, K., (Sept. 2017).
*Immersive Learning in
Nursing Education.*

Courses and Content

Anatomy • Animal Physiology • Biology • Chemistry • Exercise Physiology
Human Physiology • Medicine • Neuroscience • Nursing • Pharmacology
Psychophysiology • Veterinary Physiology

ADINSTRUMENTS

Flexible, Multi-Purpose Education Kits

Choose from a range of education kits to suit your specific teaching requirements and budget. Created with focus and flexibility in mind, our education kits have been designed to align with the latest Lt and Lt LabStation lessons and content, ensuring that you have everything you need for your teaching labs.

All Education Kits can be matched with your choice of software, lessons, and PowerLab.



PTK30

Human Physiology Kit

Suitable for investigating and recording a number of physiology laboratory lessons on human subjects. Capable of performing experiments including but not limited to respiratory rate, grip force, blood pressure, heart sounds, reaction timing, and reflexes requiring mechanical stimulation.

Recommended:

Lt: Medicine, Nursing, Lt or Lt LabStation: Human Physiology, PowerLab 26T or 15T

Kit contains:

- Respiratory Belt Transducer
- Grip Force Transducer (DIN)
- Cardio Microphone
- Sphygmomanometer with 3 Cuffs
- Push Button Switch
- Dry Earth Strap
- Tendon Hammer



PTK14

Exercise Physiology Kit

Suitable for conducting respiratory gas analysis and metabolic measurements in student laboratories investigating the effects of exercise. Capable of recording respiratory variables and determining metabolic rate of human subjects.

Recommended:

Lt or Lt LabStation: Exercise Physiology, PowerLab 26T

Kit contains:

- Gas Analyzer
- Respiratory Flow Head
- Spirometer
- Face Mask Kit (Small and Medium mask)
- Flow Head Adapter
- Tubing Adapter
- Breathing Tube
- Gas Mixing Chamber
- Desiccant Cartridge
- Metabolic Module (Win & Mac)



PTK17

Reflex Kit

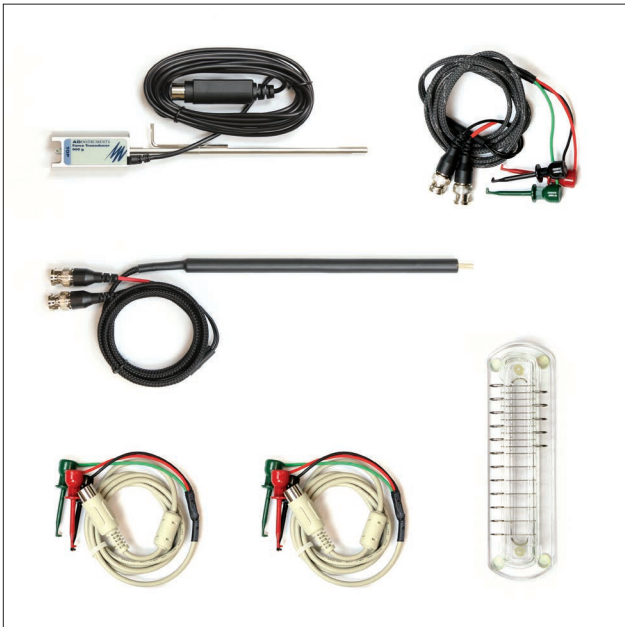
Suitable for recording reflex actions as a result of mechanical or electrical stimulation. Used for human tendon jerk, reflex, and nerve stimulation experiments.

Recommended:

Lt or Lt LabStation: Human Physiology, PowerLab 26T or 15T

Kit contains:

- Tendon Hammer
- Recording Bar Electrode
- Goniometer
- Stimulating Rod with Cable



PTK11

Nerve and Muscle Kit

Suitable for conducting experiments using isolated animal nerve, skeletal, smooth and cardiac muscle preparations. Capable of performing experiments including but not limited to earthworm action potentials, and contractile force of smooth and cardiac muscle.

Recommended:

Lt or Lt LabStation: Animal Physiology, PowerLab 26T or 15T

Kit contains:

- Teaching Force Transducer (0-500 g)
- Animal Nerve Stimulating Electrode
- Nerve Chamber
- Stimulator Cable
- Differential Pod Input Cables (2)



PTK19

Nerve and Muscle Kit II

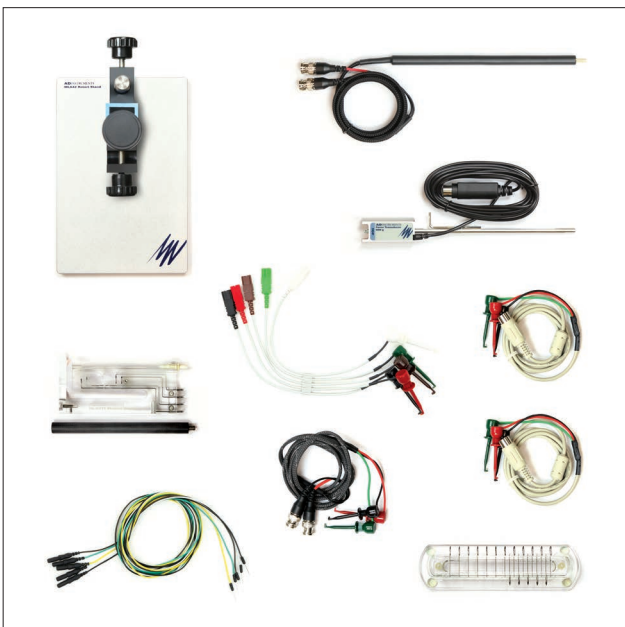
Suitable for conducting experiments using isolated non-human animal nerve, skeletal, smooth and cardiac muscle preparations. Capable of performing experiments including but not limited to earthworm action potentials, contractile force of smooth, cardiac, and skeletal muscle, stimulation and drug influences on sciatic-gastrocnemius neuromuscular junction, as well as compound and extracellular actions potentials of insect sensory and ventral nerves.

Recommended:

Lt or Lt LabStation: Animal Physiology, PowerLab 26T or 15T

Kit contains:

- | | |
|---------------------------------------|--------------------------|
| • Teaching Force Transducer (0-500 g) | • Nerve Chamber |
| • Animal Nerve Stimulating Electrode | • Stimulator Cable |
| • Differential Pod Input Cables (2) | • Muscle Holder |
| • Shielded Lead Wires (Alligator) | • Manipulator with Stand |



PTK29

Nerve and Muscle Kit III

Suitable for conducting experiments using isolated non-human animal nerve, skeletal, smooth and cardiac muscle preparations. Capable of performing experiments including but not limited to earthworm action potentials, contractile force of smooth, cardiac, and skeletal muscle, stimulation and drug influences on sciatic-gastrocnemius neuromuscular junction, as well as compound and extracellular actions potentials of insect sensory and ventral nerves.

Recommended:

Lt or Lt LabStation: Animal Physiology, PowerLab 26T or 15T

Kit contains:

- | | |
|--|--------------------------|
| • Teaching Force Transducer (0-500 g) | • Nerve Chamber |
| • Animal Nerve Stimulating Electrode | • Stimulator Cable |
| • Differential Pod Input Cables (2) | • Muscle Holder |
| • Needle Electrodes (5) 29 gauge | • Manipulator with Stand |
| • Shielded Lead Wires (5 Micro-Hooks, 25 cm) | |



PTK32

Education Psychophysiology Kit

Suitable for measuring Psychophysiological responses in humans. Capable of performing experiments including but not limited to EEG, blood pressure, electrodermal response, skin temperature (0°C to 50°C), ventilation rate, and directional specific light intensity.

Recommended:

Lt LabStation: Exercise Physiology, PowerLab 26T

Kit contains:

- EEG Flat Electrodes
- GSR Amp
- Finger Electrodes
- Thermistor Pod
- Skin Temperature Probe (2m)
- Respiratory Belt Transducer
- Light Meter and Probe
- Sphygmomanometer



PTK12

Electrodermal Activity Kit

Suitable for galvanic skin response and skin temperature recordings in human subjects. Capable of performing psychophysiology-related experiments but not limited to the Stroop effect, biofeedback, electrodermal response, and classical conditioning.

Recommended:

Lt or Lt LabStation: Human Physiology, PowerLab 26T

Kit contains:

- GSR Amp
- Finger Electrodes
- Thermistor Pod
- Skin Temperature Probe (2 m)



PTK15

EOG Kit

Suitable for recording horizontal and vertical eye movement and position. Ideal for conducting experiments investigating slow-tracking, saccades and more.

Recommended:

Lt or Lt LabStation: Human Physiology, PowerLab 26T or 15T

Kit contains:

- EOG Pod
- Shielded Lead Wires
- Disposable ECG Electrodes (100)



PTK31

Skin Temperature Kit

Suitable for recording continuous skin temperature on human subjects for biological measurements of temperature in the range of 0°C to 50°C.

Recommended:

Lt: Medicine, Nursing,
Lt or Lt LabStation: Human Physiology, PowerLab 26T or 15T

Kit contains:

- Thermistor Pod
- Skin Temperature Probe



PTK39

Animal Physiology Kit

Suitable for conducting experiments using isolated non-human animal nerve, skeletal, smooth, and cardiac muscle preparations. Capable of performing experiments including but not limited to earthworm action potentials, contractile force of smooth, cardiac, and skeletal muscle, stimulation, and drug influences on sciatic-gastrocnemius neuromuscular junction, as well as compound and extracellular actions potentials of insect sensory and ventral nerves.

Recommended:

Lt or Lt LabStation: Animal Physiology, PowerLab 26T or 15T

Kit contains:

- Teaching Force Transducers: (0-50 g), (0-500 g)
- Animal Nerve Stimulating Electrode
- Nerve Chamber (no cables)
- Shielded Lead Wires (5 Micro-Hooks, 25 cm)
- Stimulator Cable (BNC to Micro-Hooks, 1.5 m)
- Differential Pod Input Cable (DIN to Micro-Hooks, 1.5 m)
- Muscle Holder
- Manipulator and Stand



PTK38 (China, India, Southeast Asia only)

Animal Teaching Kit

Suitable for conducting a variety of non-human animal physiology related experiments. Capable of performing experiments including but not limited to muscle contractile force, blood pressure, spirometry, and extracellular neuronal signals. The *Animal Physiology Kit* replaces this kit in other regions.

Recommended:

Lt or Lt LabStation: Animal Physiology PowerLab 26T or 15T

Kit contains:

- Bridge Pod
- Spirometer Pod
- Headstage EX
- BP Transducer/Cable Kit
- Teaching Force Transducer (0-50 g)
- Respiratory Flow Head (10 L)
- Stimulator Cable (BNC to Alligator clip)
- Stimulator Cable (4mm shrouded to Alligator clip, 2 m)
- Shielded Lead Wires (5 Alligator Clip, 1 m)
- Differential Pod Input Cable (2)
- Din to Audio Adapter Cable



PTK22

Basic Pharmacology Kit

The PTK22 Basic Pharmacology Kit is ideal for student laboratories conducting isolated tissue and pharmacological experiments. The kit includes the 25 mL ML514 ADI Teaching Organ Bath (Single Chamber) and a MLTF050/ST Teaching Force Transducer (0-50 g). A compatible heated water recirculator is required (purchased separately), such as the MLA212-V.

Recommended:

Lt or Lt LabStation: Pharmacology, PowerLab 26T or 15T

Kit contains:

- 25 mL ML514 ADI Teaching Organ Bath (Single Chamber)
- MLTF050/ST Teaching Force Transducer (0-50g)



PTK23-D

Advanced Pharmacology Kit

The Advanced Pharmacology Kit is ideal for student laboratories conducting isolated tissue and pharmacological experiments while maintaining high-quality glassware. The dual heating system delivers improved temperature maintenance. The Radnoti STB Hot Plate Universal and Radnoti Circulation Pump can both run on 115V or 220V. This kit also includes a MLTF050/ST Teaching Force Transducer (0-50g).

Recommended:

Lt or Lt LabStation: Pharmacology, PowerLab 26T or 15T

Kit contains:

- Radnoti Student Tissue Bath (Dual Heating)
 - 25 mL Radnoti Single Tissue Organ Bath Chamber
 - Glass Tissue Hook for tissue strip samples
 - Glass "L" and Triangle Supports for tissue ring samples (<20 mm length)
- Radnoti Transducer Positioner
- Dual heating temperature maintenance system
- Teaching Force Transducer (0-50 g)

The kit can be modified into the Isolated Heart Kit with additional purchase of the PTK23-PTK28 Conversion Pack (Dual Heating).



PTK25

Wireless Heart Rate Kit

Suitable as an economical choice for teaching applications that require wireless measurement of heart rate from moving subjects. Can be used alone or in conjunction with other equipment to synchronize with recordings such as ECG, HRV and spirometry.

Recommended:

Lt or Lt LabStation: Human Physiology, Exercise Physiology, PowerLab 26T or 15T

Kit contains:

- Polar Receiver Interface Cable (3 m)
- Polar Transmitter w/Chest Straps



PTK28-D

Isolated Heart Kit (Dual Heating)

Suitable for measuring the isometric force from a small, isolated perfused (Langendorff) heart. Ideal for conducting pharmacological investigations using the Langendorff technique on an isolated small animal heart (mice, rat, guinea pig, or rabbit).

Recommended:

Lt or Lt LabStation: Pharmacology, PowerLab 26T or 15T

Kit contains:

- Radnoti Student Heart System:
 - Student Heart Chamber (100 mL)
 - Aortic Cannula Tip (22 Gauge) for mouse hearts
 - Aortic Cannula Tip (14 Gauge) for rat/guinea pig hearts
 - Aortic Cannula Tip (Glass, 3.0 mm) for rabbit hearts
 - Heating Coil (10 mL) with Bubble Trap (5 mL)
 - Dual heating temperature maintenance system
- Teaching Force Transducer (0-50 g)
- Manipulator



MLA415

Biopotential Accessories Kit I

Suitable for preparing skin for biopotential measurements such as EEG, EOG, EMG and ECG. Provides consumable products for biopotential and nerve recordings on human subjects.

Recommended:

Lt: Medicine, Nursing,
Lt or Lt LabStation: Human Physiology,
PowerLab 26T or 15T

Kit contains:

- Disposable ECG Electrodes (1000)
- Electrode Cream (3)
- Abrasive Gel (3)
- Alcohol Swabs (1000)
- Electrode Paste (3)



MLA416

Biopotential Accessory Kit II

Suitable for preparing skin for biopotential measurements such as EEG, EOG, EMG and ECG. Provides consumable products for biopotential and nerve recordings on human subjects.

Recommended:

Lt: Medicine, Nursing
Lt or Lt LabStation: Human Physiology
PowerLab 26T or 15T

Kit contains:

- Disposable ECG Electrodes (1000)
- Electrode Paste (3)
- Alcohol Swabs (1000)
- Abrasive Gel (3)



PTK10

Human Respiratory Kit

Suitable for performing respiratory experiments on human subjects. Capable of recording inhalation and exhalation parameters such as minute ventilation and tidal volume, as well as PIF, PEF, FVC and FEV1.

Recommended:

Lt: Medicine, Nursing,
Lt or Lt LabStation: Human Physiology,
PowerLab 26T or 15T

Kit contains:

- Spirometer Pod
- Respiratory Flow Head
- Disposable Respiratory Kit (5)
- Clean Bore Tubing
- Flow Head Adapter



PTK34

Neuroscience Kit

Suitable for conducting extracellular or intracellular recordings in neuroscience teaching laboratories. Capable of performing experiments including but not limited to intracellular and extracellular muscle and nerve recordings, stimulation evoked synaptic responses (EPSP), and electroretinograms of *Drosophila*, snail, and crayfish models.

Recommended:

Lt or Lt LabStation: Neuroscience, PowerLab 26T or 15T

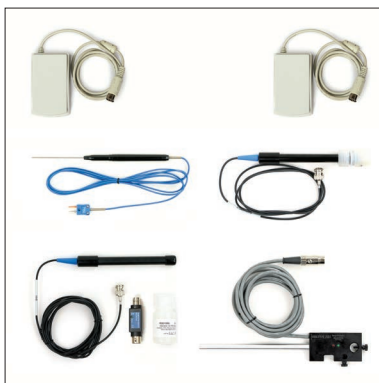
Kit contains:

- AC/DC Differential Amplifier (with headstage)
- Intracellular amplifier
- Nerve Chamber
- Alga Chamber

A PowerLab and LabChart software is required (additional Modules suggested).

Upgrade options include:

- Audio Monitor
- Analog Stimulus Isolator.



PTK18

Biochemistry Kit

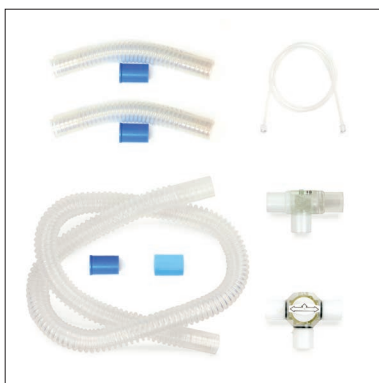
Suitable for investigating basic principles of animal and plant biology and biochemistry. Ideal for experiments related to buffering, ion dissociation, titration, photosynthesis, and cellular respiration.

Recommended:

Lt or Lt LabStation: Biochemistry, PowerLab 26T or 15T

Kit contains:

- pH Pod
- pH Electrode
- Galvanic Oxygen Electrode (SMRT)
- T-type Pod
- General Purpose T-type Thermocouple
- Reflective Drop Counter



PTK20

Exercise Breathing Kit

Suitable for collecting expired air from the Exercise Physiology Experiments. Capable of collecting expired air for recording respiratory variables and determining metabolic rate.

Recommended:

Lt or Lt LabStation: Human Physiology, Exercise Physiology, PowerLab 26T or 15T

Kit contains:

- 3-way directional manual stopcock
- Tubing to connect Douglas bag
- Tubing Adapter
- K-valve (low resistance, non-rebreathing, 2-way)
- Flow Head Adapter
- Clean-bore Tubing with tubing adapter (2)
- Clean-bore Tubing with tubing adapter



MLA242

Exercise Breathing Consumables

Suitable for collecting expired air from human subjects. One consumable kit per PowerLab setup is recommended.

Recommended:

Lt or Lt LabStation: Human Physiology, PowerLab 26T or 15T

Kit contains:

- Flow Head Adapter (20)
- Modified Tubing Adapter (20)
- One-way valve mouthpieces (20)
- Douglas Bags (20)
- End cap (20)

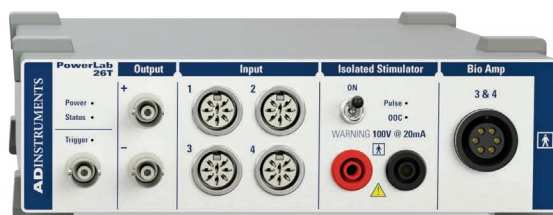
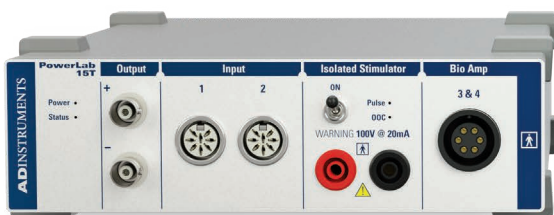


PowerLab

High-performance
data acquisition
for your life science
classroom experiments

PowerLab is the ideal data acquisition (DAQ) solution for life science classroom experiments. PowerLab supports engaging, hands-on learning with simple set-up and good quality data.

Simple to set up, PowerLab connects directly to Windows and Apple computers via USB port and is designed to handle repeated and heavy use by students while maintaining data accuracy and reliability. The T Series PowerLab is an economically-priced, high-quality DAQ unit with built-in, fully isolated, two-channel bio amplifier, isolated stimulator, separate non-isolated analog inputs, and a differential-mode analog output.



PL15T02

PowerLab 15T



Entry-level integrated data recording featuring a dual Bio Amp, an isolated stimulator and 2 analog inputs. Independent ADCs for each channel to keep data perfectly in sync.

“PowerLab simply WORKS. It never crashes or has to be rebooted, and is 100% reliable.”

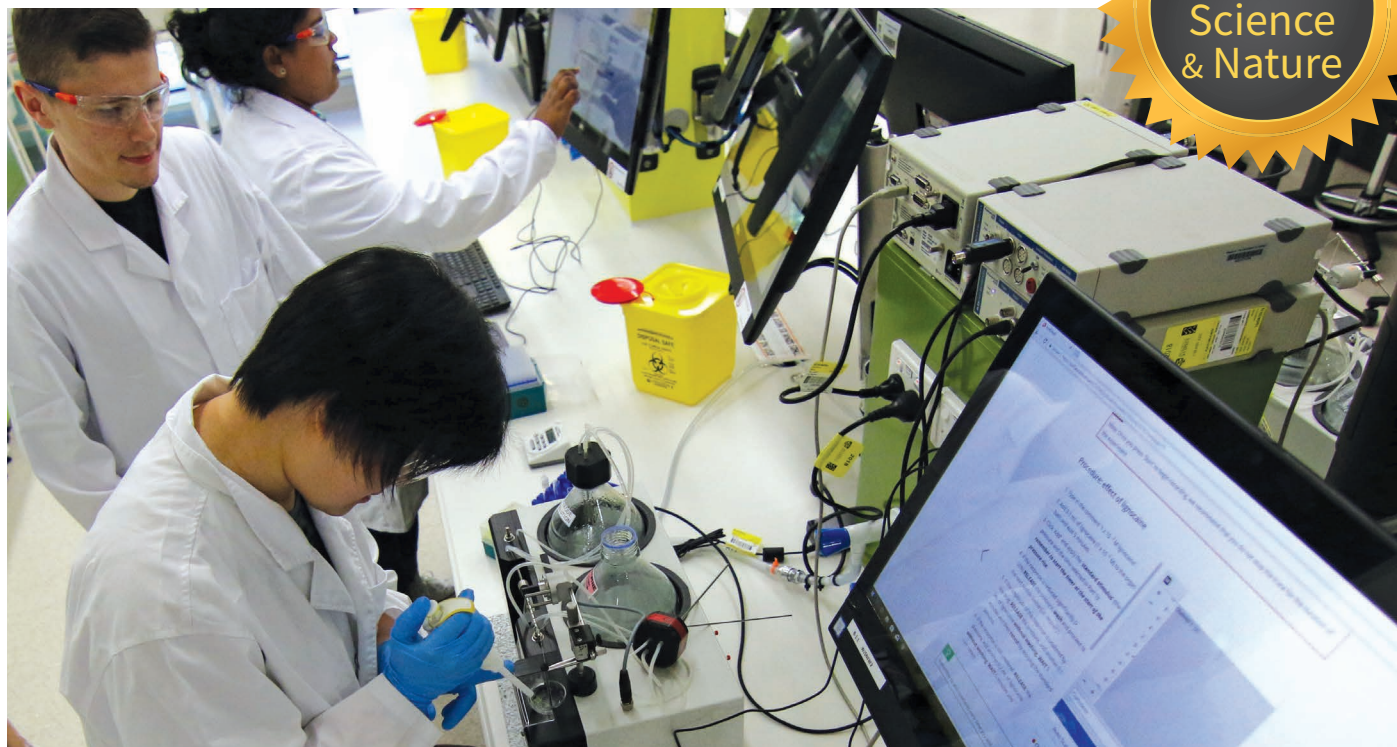
Dr. Giovanni Casotti,
Professor of Biology, West Chester University, USA

PL26T04

PowerLab 26T



Integrated data recording featuring a dual Bio Amp, an isolated stimulator, trigger input, 4 analog inputs, 8 digital inputs and 8 digital outputs. Independent ADCs for each channel to keep data perfectly in sync.



Lt is an online learning platform that engages students with real data, inside and outside the lab.



Do you teach science?

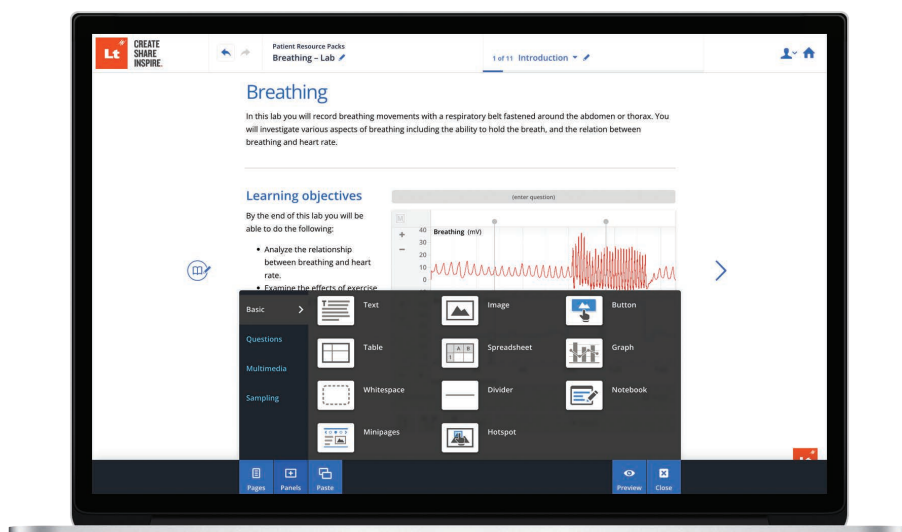
Lt may be exactly what's missing from your current educational framework:

- Content** Lt has over **900** interactive and fully-customizable lessons and labs for life sciences, nursing, medicine, and chemistry.
- Software** Create, customize, and deliver your own cloud-based, interactive content that students can access anywhere, anytime.
- Hardware** Students can record and analyze real physiological signals in Lt using PowerLab or plug-and-play Lt Sensors, to reinforce theory through experimentation.

Building media-rich lessons is simple. Drag-and-drop a range of content types to create interactive exercises, including multiple choice questions, short form written answers and image annotation.

-  Improved efficiency
-  Increased student engagement
-  Improved results in theory and clinical practice
-  Increased student pass rates*

*Results of using Lt at the Otago Polytechnic School of Nursing, 2017



Share content and workload with your fellow educators and teaching assistants. Set varying levels of access to allow others to review and add content, or publish revisions online. Lt's cloud-based platform means students can learn on almost any device that connects to the internet. Whether they use iOS or Android, tablet, mobile, or laptop, lessons will be resized to suit.

We've matched professionally-designed lessons with the right lab equipment to provide a true-to-life, practical learning experience for your students.

Each media-rich lesson is designed to maximize engagement and suit diverse learning styles, with a strong focus on student outcomes. Use our lessons off-the-shelf or tailor any lesson to suit your curriculum and your teaching preferences. Lessons can be grouped, and ordered per your course needs.

Content collections:

- Anatomy
- Animal Physiology
- Biology
- Chemistry
- Exercise Physiology
- Human Physiology
- Medicine
- Neuroscience
- Nursing
- Pharmacology
- Psychophysiology
- Veterinary Physiology

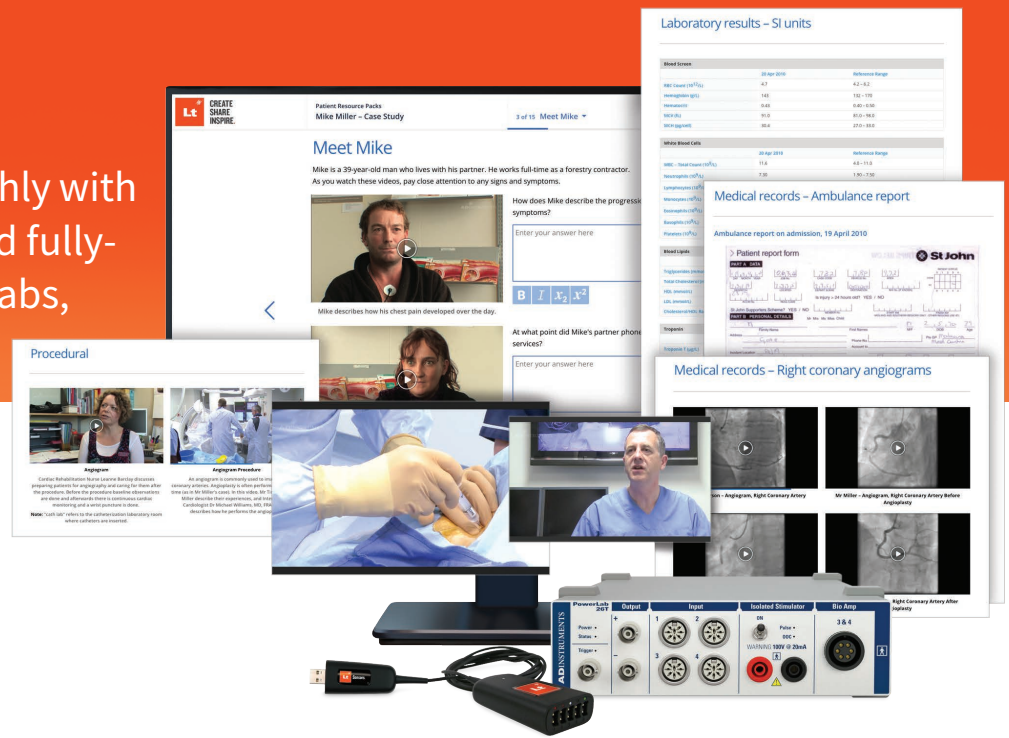
"I've had a great experience using Lt... I can't envision using any other program."

Dr. Bridget Ford,
Assistant Professor,
Department of Biology,
The University of the
Incarnate Word, Texas.

Run your course smoothly with over **900** interactive and fully-customizable lessons, labs, and pre-lab preps.

"Lt has enabled us to achieve better academic standards and more satisfied students."

- **Dr Michael Morris**,
Senior Lecturer: Physiology,
University of Sydney, Australia



Lt Patient Resource Packs

Prepare your students for clinical practice with video and data from real patient cases. Lt hosts **31 patient packs**, each containing resources based around a real patient's experience. This means you can provide students with an authentic learning experience without creating expensive and time-intensive cases yourself.

What's in a Patient Pack?

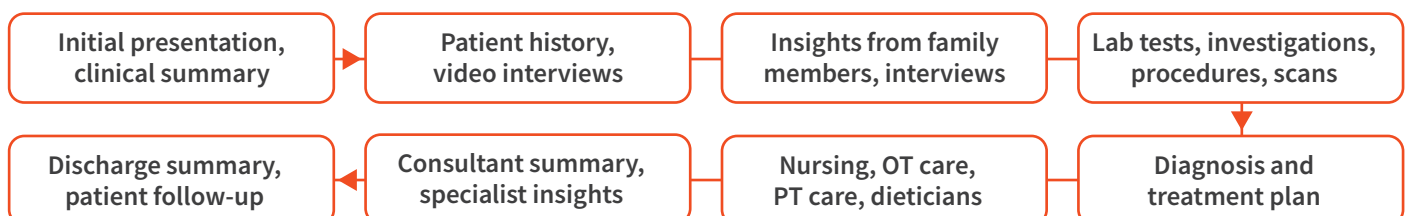
Each patient's medical story is different, so each case has different content to use in your teaching. A typical patient pack can include:

- A short clinical summary (similar to a medical letter) and a chronological clinical summary
- Video interviews with patients and relatives as well as health care professionals (Consultant, Nurse, OT, PT, Specialized Technicians and Dieticians). Each video includes subtitles and a captioned summary
- Lab test results: SI and non-SI units
- Video of clinical examinations and medical procedures, including subtitles and captions
- Specialized investigations such as chest X-rays, ECGs, MRI, and CT scans
- A discharge summary
- Suggested teaching topics

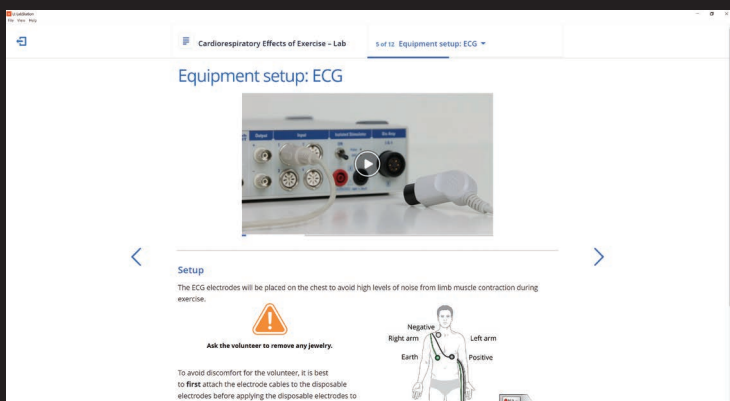
Combine different patient resources and incorporate your own content to:

- Teach pathophysiology
- Alternate teaching cases across years
- Illustrate a scientific concept, such as how to read an MRI
- Compare different presenting symptoms for the same condition
- Follow a patient's story through your curriculum, building the case's complexity, or examining different aspects of a patient's condition
- Provide supplementary cases for students to expand and consolidate their learning

Typical patient journey



Lt LabStation is a laboratory-based learning platform that allows you to run labs without headaches



Do you need to teach offline? Lt LabStation may be exactly what's missing from your current educational framework:

Lt LabStation is a powerful ecosystem of integrated lessons, software, and hardware, delivering high-quality life science laboratory education.

Lt LabStation provides you with 150+ fully-customizable lessons on topics relevant to life science research, such as neuroscience, pharmacology, and psychophysiology. Educators can access, create, and edit their lessons online from anywhere in the world, then export their lessons so students can work offline in the lab.

PowerLab hardware seamlessly interfaces with Lt LabStation lessons to facilitate high-quality learning in your lab space.

Content collections:

- Animal Physiology
- Biology
- Exercise Physiology
- Human Physiology
- Neuroscience
- Pharmacology
- Psychophysiology

"Lt LabStation is great - our students don't need to make a profile or sign in, and labs aren't dependent on an internet connection."

Charles Crawford, Teaching Assistant,
Human Performance Laboratory,
The University of Texas at Austin, USA



Create and edit lessons online anywhere



Over 150 ready-to-teach, high-quality labs



Real-time data recording and analysis



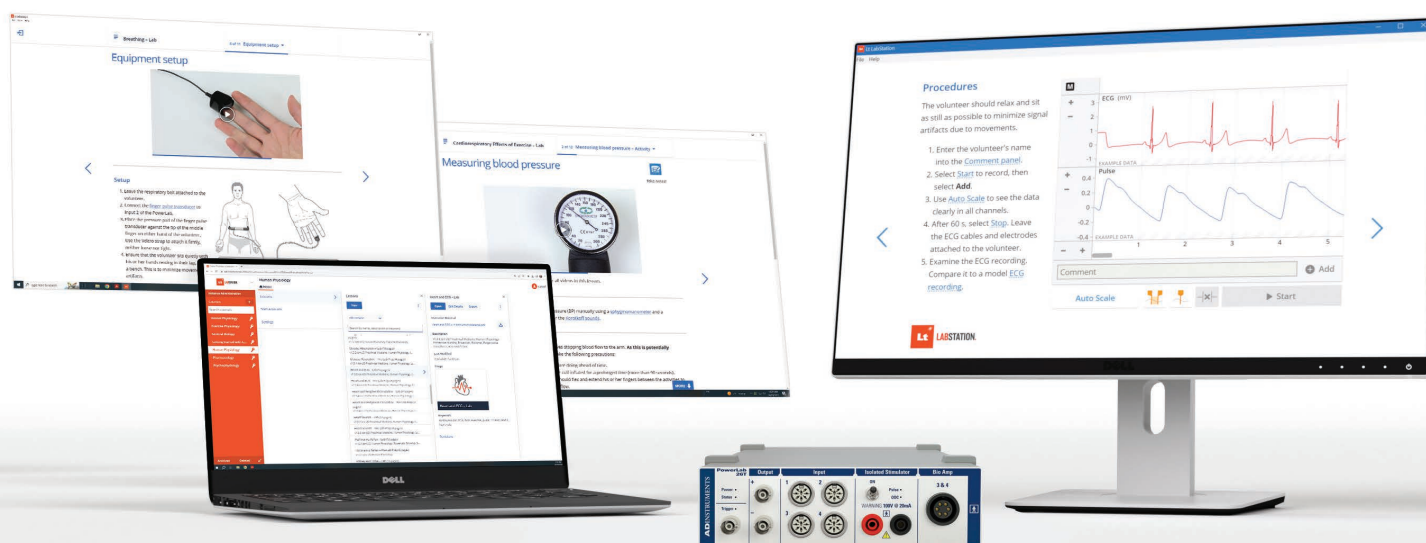
Improved efficiency in the lab



Increased student engagement

30-DAY FREE TRIAL

Sign up today for a free trial to experience Lt LabStation:
adstruments.com/try-ltlabstation



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