



We-LAB

Modular Portable Science Lab

Build your science lab the easy way – with We-Lab!

We-LAB is an easy and affordable way to give students the essential tools to run science experiments straight into their classroom using everyday devices such as smartphones and tablets. The main idea is to move from a traditional way of conceiving the laboratory with its expensive equipment – which most often cannot be even operated by the students – to an interactive, experience-oriented approach.

We-Lab is a modular and portable science laboratory. Its heart is a Raspberry-Pi based unit managing two operational modules, a photometer and a microscope. The whole device is driven via Wi-Fi with an Android smartphone or tablet and can be powered by a wall socket or a portable power bank.

The photometer is an optical LED tool meant to run biochemical analysis on a liquid matrix while the microscope lets the students capture high resolution images or videos of any sample and view them straight on their devices.

We-Lab is a modular device – it means it will grow up along with the new upcoming operational modules.

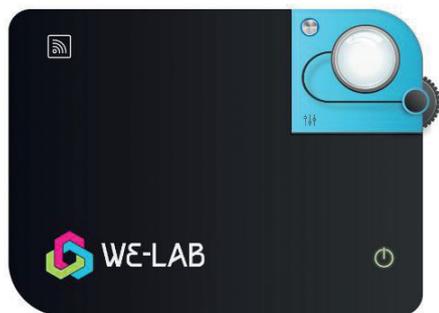
The Android application has a user-friendly interface and leads the user

all the way through the experiment driving the hardware from the student's smartphone or tablet. Some experiments are already loaded as presets on the application, while others will be downloadable as soon as they'll be available. Moreover, thanks to We-Lab students will be able to run their own experiments using the "composer" – a powerful yet easy software tool ready for creating new protocols and analysis methods. And it doesn't require any programming skill!! The We-Lab kit is provided with a set of useful accessories, too.

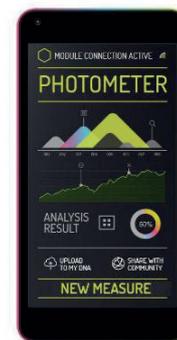
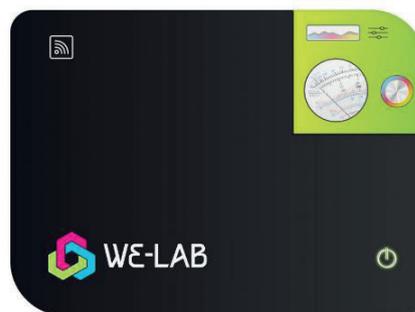
Once the experiment is over the school, a classroom or a single group of students can share the output data on the We-Lab web portal in order to inspire the collaborative work which is the basis of any scientific community or to set up challenges between groups and classes as a way to arouse a positive competitiveness.

Thanks to We-Lab students have the chance to practice what they have learnt right from scratch. This is a great way to encourage curiosity and creativity in a casual and dynamic way. Furthermore, We-Lab urges the students to practice a physical approach to the experiments that will help them in any kind of laboratory and practical science class while giving them an all-rounded set of logical skills.

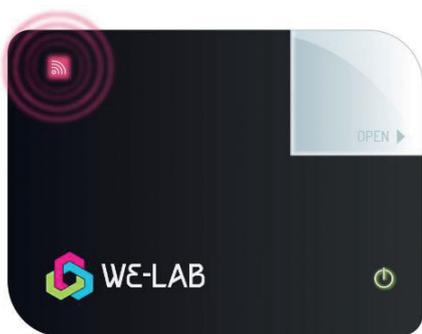
Microscope



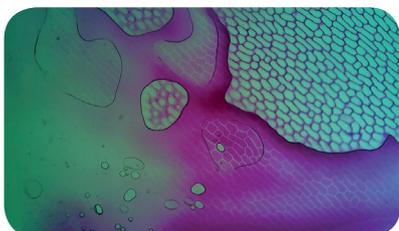
Fotometer



Tablet & Smartphone App



Web sharing portal



The main idea is to move from a traditional way of conceiving the laboratory with its expensive equipment to a simple but powerful approach that gives to anyone the possibility to learn and create science in an interactive, experience-oriented approach. We-Lab is the modular and portable analysis laboratory designed for students of all levels, science enthusiasts and makers to approach the world of science with innovative and technological methods and tools.

It's composed by a Raspberry-Pi based unit that manages two different operational modules: a photometer and a microscope. The photometer is a LED-technology based tool for biochemical analysis on a liquid matrix, while the microscope lets the students capture high resolution images or videos of any sample di-

rectly on their devices. The device is controlled via Wi-Fi using an Android dedicated App and the system can be powered by a wall socket or a portable power bank. The software App has a user-friendly interface and guides the user through the whole experience; some experiments are already uploaded, and new ones will be downloadable as soon as they'll be available.

Moreover, thanks to the powerful "Lego" style software, every user will be able to create new protocols and analysis methods without any programming skill! The user can finally share the experience through the We-Lab web portal, a scientific community that aims to connect different schools/institutes and spread the scientific knowledge.

We-Lab is a modular portable laboratory with a Raspberry-Pi heart capable of sending data and images via WiFi to an app for tablets and smartphones. We-Lab is a microscope able to visualize the biological samples cells in FullHD, directly on the students' smartphones. We-Lab is a photometer able to perform accurate chemical-physical analyzes on liquid samples using the three RGB wavelengths. We-Lab is a portal through which the results of the research carried out in class can be shared and compared with other institutions.

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| Master-Pi Module | Processor | 1.2GHz, 64-bit, quad-core ARMv8 CPU |
| | Connectivity | 811.2n WLAN, Bluetooth 4.1 |
| | Ports | USB, HDMI, Jack Audio 3.5mm, Ethernet |
| | Sensor | OmniVision OV5647, 5Mpx |
| | Operating System | Linux |
| | Power supply | 5V, 2.4A |
| | Size | 10.50x8 cm (with modules connected) |
| Fotometer Module | Weight | 200-300 g (variable, depending on the connected module) |
| | Source | Flora RGB Smart Neopixel V.2 (Adafruit Ind.) |
| Microscope Module | Wavelength | 465nm, 523nm, 628nm |
| | Lens 1 | TW Optics ME002, magnifying 120X |
| | Lens 2 | Opto5 lente PCX, FL 10mm, magnifying 15X |
| Mobile device App | Source | White LED, Nichia NSPWF50DS |
| | Compatibility | Android (iOS coming soon) |



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