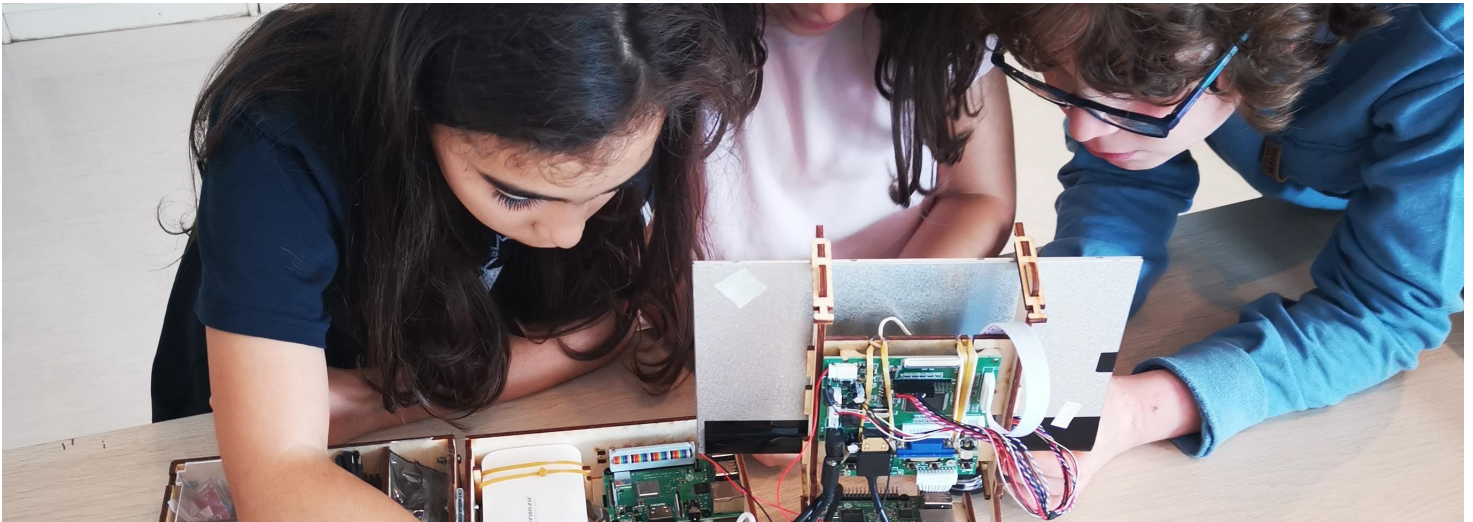


# PhysicsKIT 4STEM

Newsletter 2 - November 2021



## The project

The Erasmus+ project PhysicsKIT4STEM aims to foster the interest of children aged 11-15 in science. PhysicsKIT4STEM specifically addresses the issue of gender imbalance in STEM classrooms and aims to encourage young girls to get involved in science and engineering subjects. The project provides teachers with a hands-on approach to teach physics through DIY kits, electronics and programming, powered by a Raspberry Pi computer.

## One year later

One year after its beginning, the project PhysicsKIT4STEM was able to respect the workplan and the objectives that we set despite the Covid-19 pandemic and its consequences on the education system. We developed the curriculum content and the 5 modules that were designed to promote STEM education among youngsters, especially young girls, to promote gender equality. Two mobilities set in Athens were the opportunity to present the content of the project : the learning activity with educators and the transnational partners meeting. This newsletter is focusing on these meetings and present the modules content.

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## Learning Activity in Athens

AKNOW (Asserted Knowledge) hosted the LLTA meeting for the PhysicsKIT4STEM for 3 consecutive days in its headquarters in Athens, Greece. The partners involved in the project (ECAM, PISTES, AKNOW, ATERMON, SCHOLE and EMPHASYS) participated in the event both physically and virtually. On the first day on the 5th of October, the partners received a general presentation concerning the main areas of the project such as:

- 1) Update on the finalised and ongoing tasks, goals of the project and important deliverables
- 2) Discussion about goals of the LLTA (proposal), adaptation to the current situation and advancement of the project
- 3) Introduction to the outputs participants will be using during the 3-days training event.

They received their PhysicsKit educational backpack and also the Guide for Assembly and Configuration, where there was a review of the visual guide depicting the steps needed for assembling and configuring the PhysicsKIT and its components for teachers/pupils to be able to build it in the classroom. Later on the partners were trained on how to assemble the PhysicsKIT and electronics kits using the guide. They were also introduced to the Raspberry Pi and how to use the GPIO by connecting a series of sensors to the

Raspberry using a breadboard. For the next two days, the PhysicsKit was reviewed in the classroom with sensors, electronic components and peripherals to teach physics and perform experiments. Following they reviewed and completed all the glossary of terms, keywords and expressions that are used in physics, electronics, programming, physical computing, but also in developing and building constructs.

Everyone was very interested in the project outcomes and shared their valuable feedback with the rest of the partners. What followed the theoretical part, was a display of each partner's electronic kits and how they can be used in the context of the teaching process to enhance understanding of physics concepts, demonstrate programming constructs, and comprehend physics subjects. Every partner presented one module and covered the four main topics which were:

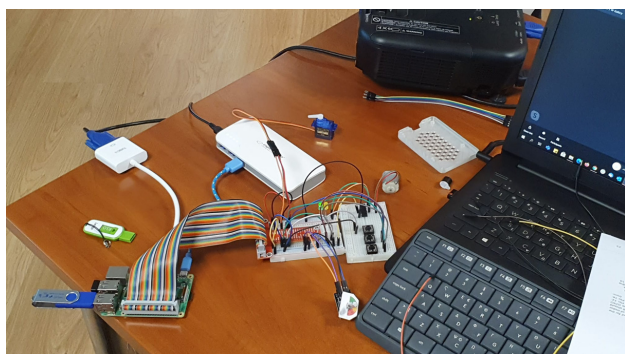
- Primary content overview
- Lesson plans
- Learning outcomes
- Experiments

On the last day of the LLTA meeting all partners were delighted with the main outcomes of the project and how the process is evolving. They really enjoyed sunny Athens and its beautiful corners under the Acropolis and promised to renew their appointment very soon.

# The modules

## Forces and motion

Motion and forces are everywhere in our world. From a chair we pull to sit down, to a bridge that stands still and from a ball we kick and flies into the air, to Earth itself as a planet. This module offers an introduction to two fundamental principles of physics. These principles have defined the subject of physics which, without them, we would not be able to understand life itself.



## Conservation of energy and momentum

This module proposes an introduction to the concepts of conservation of energy and momentum. Energy is, like the principles and concepts presented in this curriculum, very important when it comes to the knowledge of our universe.

## Electricity and magnetism

In this module, the students will be able to correctly use the vocabulary and terms used in electricity and understand the basic laws and properly apply the formulas to study an electrical system.

## Waves

In this module, the students will learn about waves and the differences between its types. Also, the theory of how waves travel and behave when traveling through different mediums will be explored. The learning material will cover wave equations, longitudinal waves, transverse waves, as well as their properties, similarities and differences.



## Gravity

Students will understand gravity as a force that we cannot see and that pulls things towards the object's center. They will recognize that this force can pull through big distances and that it has an effect on every object that has a mass, including our planet. They will also realize that the gravitational pull is as much stronger as an object that has a greater mass or as closest to each other as two objects are.

