



# Astronomy and space for primary

## school children: an interdisciplinary approach

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## Giannitsochori Primary School



### Abstract

The Giannitsochori Primary School is an example of how the Learning from the Extremes project offers opportunities for remote schools to upgrade their digital footprint. More specifically, the action plan proposed by the school and selected for funding had to do with the development of a holistic & curricular approach to modern physics in the primary school entitled: 'Astronomy and Space for primary school children: an interdisciplinary approach'. The interdisciplinary nature of the project was a key reason for its selection, as the list of fields related to Astronomy is not limited to Science. Indicatively, some of our actions were: stargazing with a robotic telescope, solar observation and related hands-on experiments, familiarizing students with the daily use of technological equipment in the classrooms, getting acquainted with virtual reality with vr glasses and a tour inside a zero-gravity space station, getting to know the constellations visible from our country and making a homemade projector (STEAM activity), astronomy and art - study of Vincent Van Gogh's painting "Starry Night" and its reproduction by the children. One of the key objectives of the project was also to open the school to the local community and other stakeholders. This goal has been achieved to a large extent, as many of the activities were open to the public. Our vision is to make our school a reference point for the study of astronomy and a meeting point and a fruitful dialogue between astrophysicists and astronomers.  
**Keywords:** astronomy: interactive learning: openness, digital literacy: STEAM.

### Description

The implementation of the programme and the effective use of the new equipment, in order to achieve the best possible result for the students, was a challenge for the teachers of our school. It was necessary to familiarise themselves with the equipment very quickly so that they could use it immediately. This required teachers to attend seminars and a lot of staff time to familiarise themselves with it. However, by putting the focus on the students and the need to provide them with as much stimulation as possible, everything became much easier. Also, this was the trigger for many collaborations, such as with the Union of Greek Physicists and the local astronomical society "VEGAS". However, most important of all is the spirit of cooperation and teamwork that was created between them within the project. Finally, the use of the equipment was an opportunity for self-improvement of the teachers through training and reflection, which contributed to their holistic professional development.

Through the activities within the project and by using the equipment on a daily basis, pedagogically innovative aspects of the project were developed, such as the opportunities for building scientific knowledge in the themes not only of astronomy but also of STEAM in general: science, technology, engineering, arts and mathematics. At the same time, multiple experiences were created to cultivate 21st century skills such as problem solving, critical thinking, collaboration and creativity. At the same time, rich opportunities for social interactions and hands-on experience were provided, as well as opportunities to develop students' emotional intelligence through the cultivation of empathy.

All 34 students (6-12 years old) of the school participated in the programme. The objectives that were initially planned and eventually achieved were related to astronomy issues, as well as to the development of cooperation skills and digital literacy. Thus, students were introduced to astronomy, the main constellations, the importance of the sun in our solar system, the movements of the earth, the phases of the moon and the evergreen constellations. In addition, they understood the connection between astronomy and art and Greek mythology. They were also able to work in teams to solve problems, respecting different opinions, and thus developed skills of collaboration, critical thinking and creativity.

### Feel

Students in a school located far from a large urban centre have fewer opportunities for multiple stimuli. However, realizing the change in pedagogical methods of teaching, the development of New Technologies and the demands of the 21st century, we wanted to demonstrate that all these technological means can be used to benefit students. Through engagement with the Astronomy Programme, students can develop their 21st century skills and become familiar with equipment they will use in the future, as well as habits they will use as future active citizens.

### Imagine

Equipping the school with cutting-edge equipment gives students the opportunity to study astronomy in a multifaceted way and to complete a set of activities. By completing these, the students were informed on astronomy topics, but also developed problem-solving skills, respect for diversity, Critical Thinking, Creativity, Collaboration, Life skills such as Communication, Flexibility, Leadership and Initiative. In terms of their relationship with technological equipment, students acquired Digital Literacy, Technological Literacy and Media Literacy skills and thus accessed knowledge, communicated their interests through the internet and interacted with others in a digital world.

### Create

During the course of the project the students completed a series of activities which are interlinked:

1. "The Sun as the main source of energy in our solar system": observing the sun through the telescope and conducting experiments under the guidance of Mr. Elias Kalogeros -member of the Union of Greek Physicists- in order for the students to understand the importance of the role of the sun in our solar system and the alternation of seasons, day and night.
2. "The phases of the Moon": Study of the phases of the Moon through hands-on games and watching videos. Observation of the Moon's motion in relation to the motion of the Earth, and how this affects the way the Moon is seen from Earth.
3. "Getting to know constellations and creating an improvised constellation projector (STEAM activity)": Getting to know the evergreen constellations and the connection of their names with Greek mythology. Completing the activity through the construction of the constellations in different ways and building a makeshift projector with simple materials.
4. "Become an astronaut": After the students were informed about the Solar System, it was time to tour the interior of a zero-gravity space station through the use of virtual reality (VR) glasses.

### Share

All the students' activities were posted on the school's blog, but also on the LFE portal. As for the students' crafts, they were posted in the school, so that anyone visiting the school could see them. Finally, another activity "Stargazing astrophotography" was held, during which stargazing was done through a robotic telescope and was open to the community.



### Link on the portal

- <https://www.schoolofthefuture.eu/index.php/el/osos/osos-project/astroparatirisi-astrofotografisi>
- <https://www.schoolofthefuture.eu/index.php/el/osos/osos-project/gnorizo-toys-asterismoys>
- <https://www.schoolofthefuture.eu/index.php/el/osos/osos-project/i-enastri-nyhta-toy-binsent-ban-gkogk>
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