ESA Education programme

Inspiring and Engaging the next generation !

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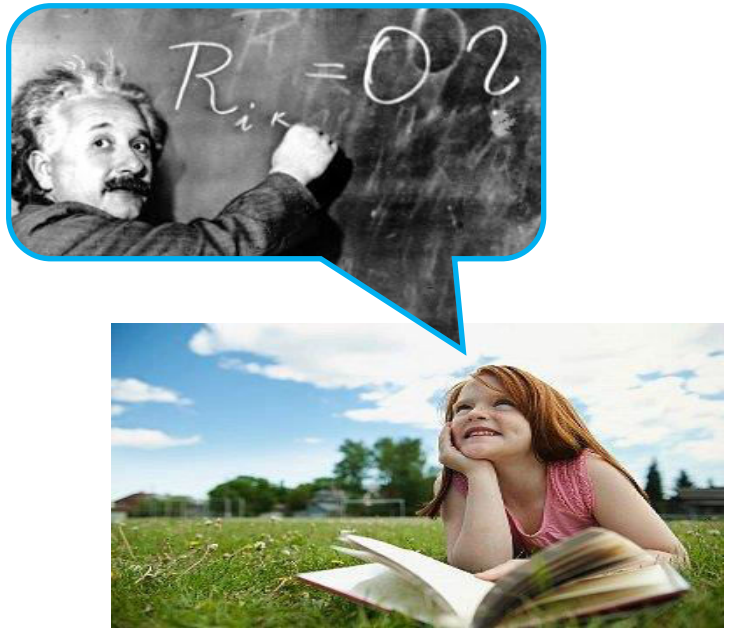
UN/Austria symposium, 5 September 2017, Graz, Austria

An old, wise idea !

ESA's founding fathers understood that whenever you are able to advance mankind's understanding, you have the duty to share it and make it available to all

…and so Education is included in the ESA Convention



STEM Education: a priority now!

ESA and Europe share:

- the **concern** on the decrease of interest in STEM-related careers and still low performance in these subjects compared to others

- the **view** that this trend could be reversed by introducing new methods in science teaching on a large scale in Europe
  (Rocard Report, 2008)

- the **objective** of:
  - enhancing scientific literacy and competences, promoting the ***skills of future responsible innovators/researchers*** as well as of ***science-active citizens who are skilled in scientific reasoning and transversal competences***
  - starting from an early age

ESA's strength and added value

- Space is a **unique motivational context** for the study of STEM subjects → innovative learning environment

- ESA is a source of **unique and multidisciplinary scientific knowledge** – it can play a unique role to both transmit this knowledge and the way it is acquired

- ESA provides **access to space data, facilities, experts**

- ESA has an international **collaborative dimension** by definition, where scientific knowledge is produced by creativity, skills, motivation, partnership and dialogue beyond frontiers

ESA education objectives

1. **Motivate, engage and enable young people to enhance their literacy & competence in sciences and technology (STEM disciplines)**

2. **Inspire and enable young people to consider pursuing a career in the STEM field, in the space domain in particular**

3. **Contribute to increase youngsters' awareness of the importance of space research, exploration and applications in modern society and economy**

Targets & challenges

Wide target: 4-28 years old

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Primary																				
				Lower secondary																
								Upper secondary												
												Tertiary								

Challenges in ESA Member States

- More than 80 million school-age pupils, 7 million teachers
- 22 Member States
- 15+ languages
- Different lower education systems and curricula
- Lack of interest in STEM, girls in particular
- Shortage of specialized workforce in the space sector

ESA Education Programme - A diversified approach

School pupils & teachers

Space is the context

Formal education, right into the schools, with teacher training and resources to support the curriculum in an innovative way (*ESERO*)

Hands-on: learning to think, learning to do, as classroom project or extracurricular activity

Informal education, learning while having fun

Universities

Space is the subject

Hands-on:

- Satellite projects
- Scientific instrumentation and experimentation
- Technology demonstration experiments

+

Academic support:

- Courses, schools and workshops
- Participation to conferences
- Lectures and seminars of ESA experts

primary and secondary school education

→ SPARKING INTEREST, NURTURING SKILLS

Supporting Formal Education

European Space Education Resource Office

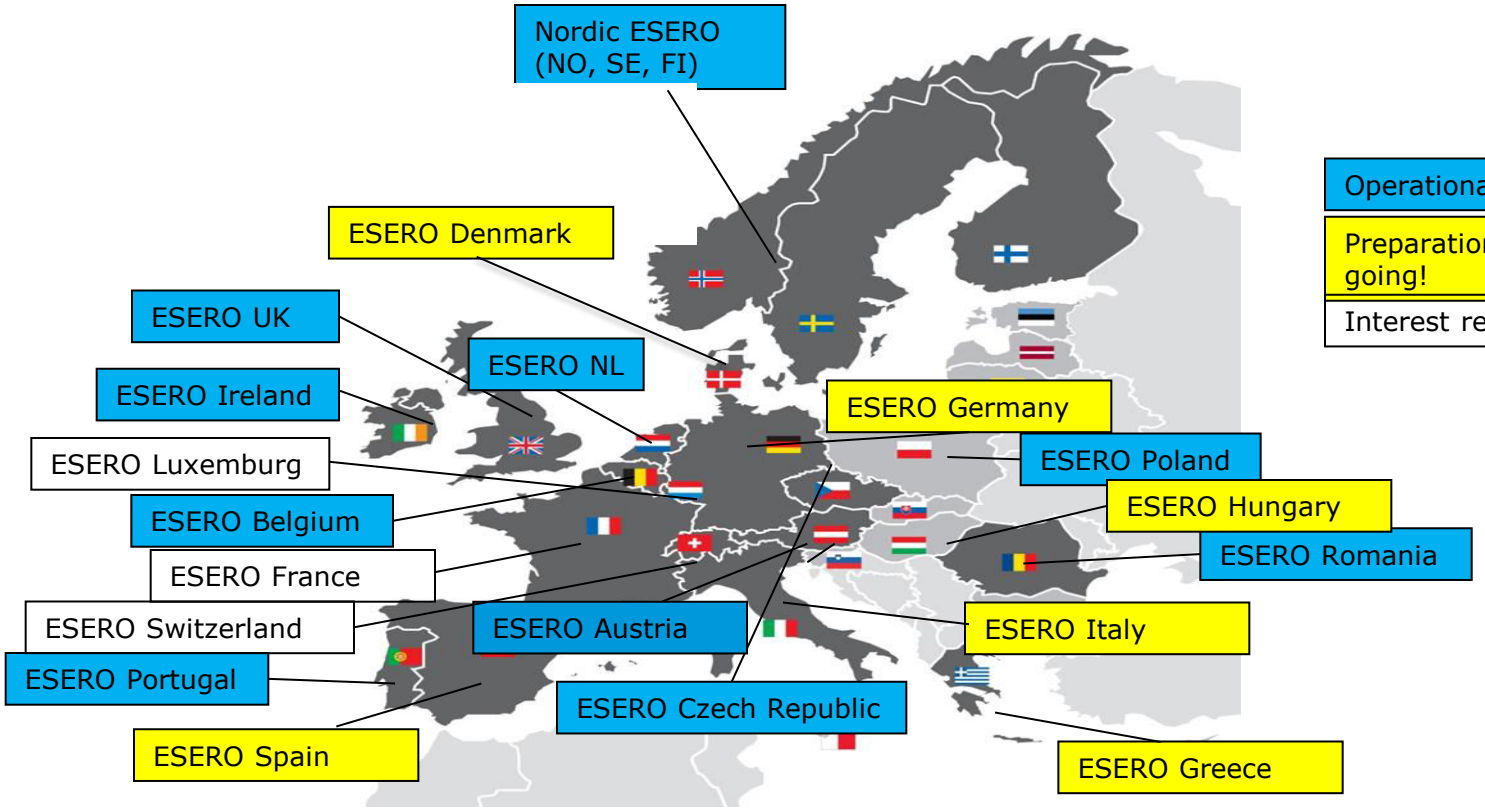
- Recognition of the **diversity of ESA Member States** in regards to Education – 15+ different languages and even more education systems
- **An approach to support education focusing on the needs and national priorities**
- Largest project of ESA Primary & Secondary activities
- Project started in 2006 with pilot in the Netherlands (NEMO)

"The ESERO concept": Bringing space to the classroom

- Targeting the teachers/educators community;
- Supporting primary & secondary STEM education at national level **using space as a theme and building on ESA unique set of activities and resources**;

- Focus on the priorities of each country - **delivery tailored to the needs of different national school systems and curricula**. ESA supervision and advise assures coherence and expert review.
- **Co-funded by ESA and national funding bodies** (partnerships with Educational Institutions with demonstrated expertise and outstanding reputation);
- **Enabling new synergies and collaborations** within existing national educational stakeholders, space industry and networks (**formal & informal**).

ESERO status

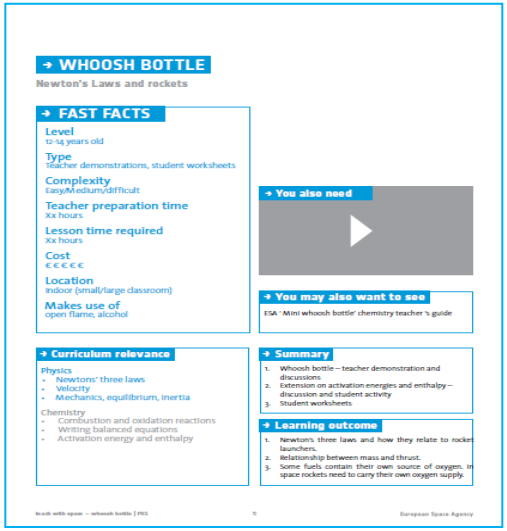


ESERO activities

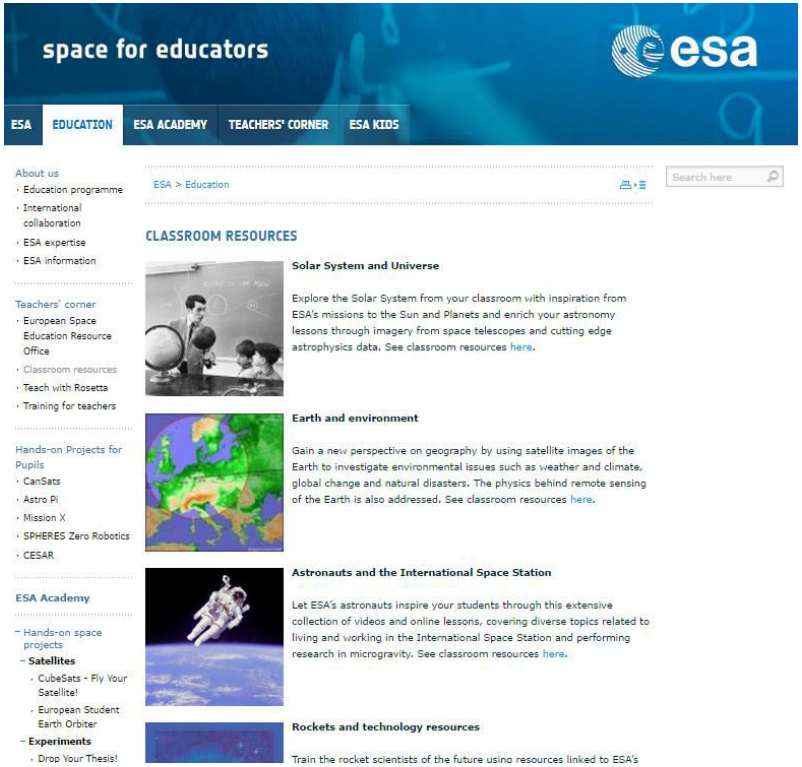
- Training opportunities for primary & secondary school teachers (formal and informal training)
- Adapting ESA teaching resources to the specific curricula and languages
- Producing new teaching resources with national experts
- Awareness and promotion activities
- Link between national education communities and ESA
- Exchange of resources, ideas and expertise within the ESERO network

ESA classroom resources

teach with space

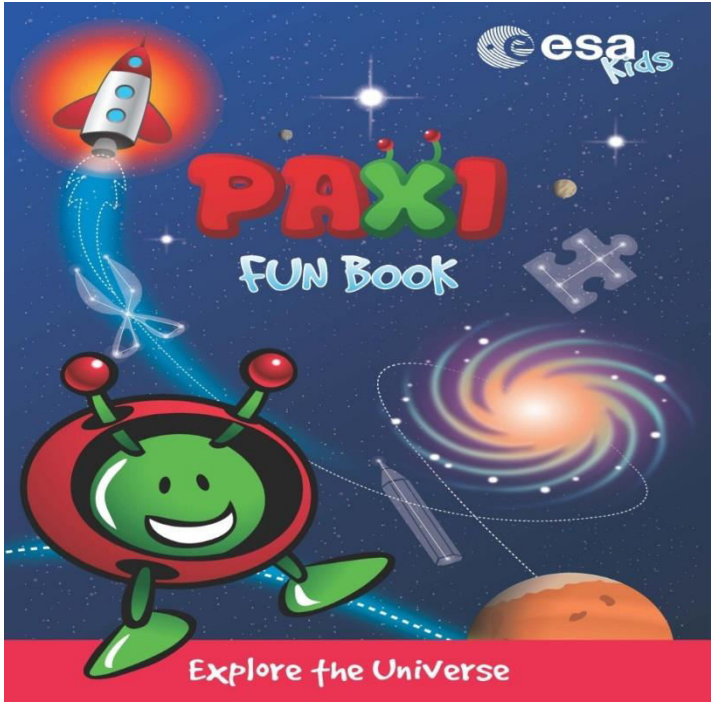


Web pages accessible to all !



Juniors: learn with fun!

ESAkids: the most visited ESA web site – in 6 languages



Example: Teach with Rosetta

Rosetta - primary school level
- Lessons
- Colour, cut and build

Rosetta - secondary school level
- Lessons
- Build a Rosetta Model

More about Rosetta
- Where are Rosetta and the comet now
- Rosetta spacecraft in 3D
- Philae's descent
- Frequently asked questions
- Rosetta images
- Rosetta videos
- Rosetta timeline

More about comets
- Anatomy of a comet
- From harbingers of doom to celestial wanderers
- Testing gravity: How comets helped to prove Newton right
- On the origin of comets
- Triumphs of the space age: Rendezvous with a comet

PAXI ANIMATIONS

Meet Paxi, ESA's education mascot. Join his incredible adventure to the edge of our Solar System and learn about the amazing Rosetta mission to comet 67P/Churyumov-Gerasimenko.

Who is Paxi?

Access the video

Meet Paxi, ESA's Education mascot: where he comes from, what he likes about space travel, who his friends are...

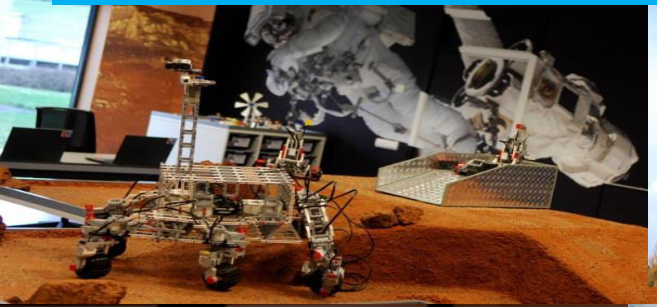
This video, targeted at children aged between 6 and 12, introduces Paxi, a little alien that comes from planet Ally-O, who has come to Earth to meet new friends and take kids on an adventurous trip of space exploration. It is the first of a series of animations in which Paxi, ESA's Education mascot, touches on different aspects of the Solar System, the Universe, the secrets of planet Earth, and much more.

Videos also available in Czech, Danish, Dutch, Finnish, French, German, Italian, Norwegian, Polish, Portuguese, Romanian, Spanish and Swedish.

Related links
Lessons

Once upon a time...

Using space as the context to teach and to learn



ESA Education Programme – *2016 statistics*

School pupils & teachers

Space is the context

ESA collaboration with ESEROs and national and European institutional partners:

- 50,000+ primary/secondary teachers supported,
- Potentially reaching 1 M students.

Education web portal

- 807 489 pages views
- 647 553 unique visitors

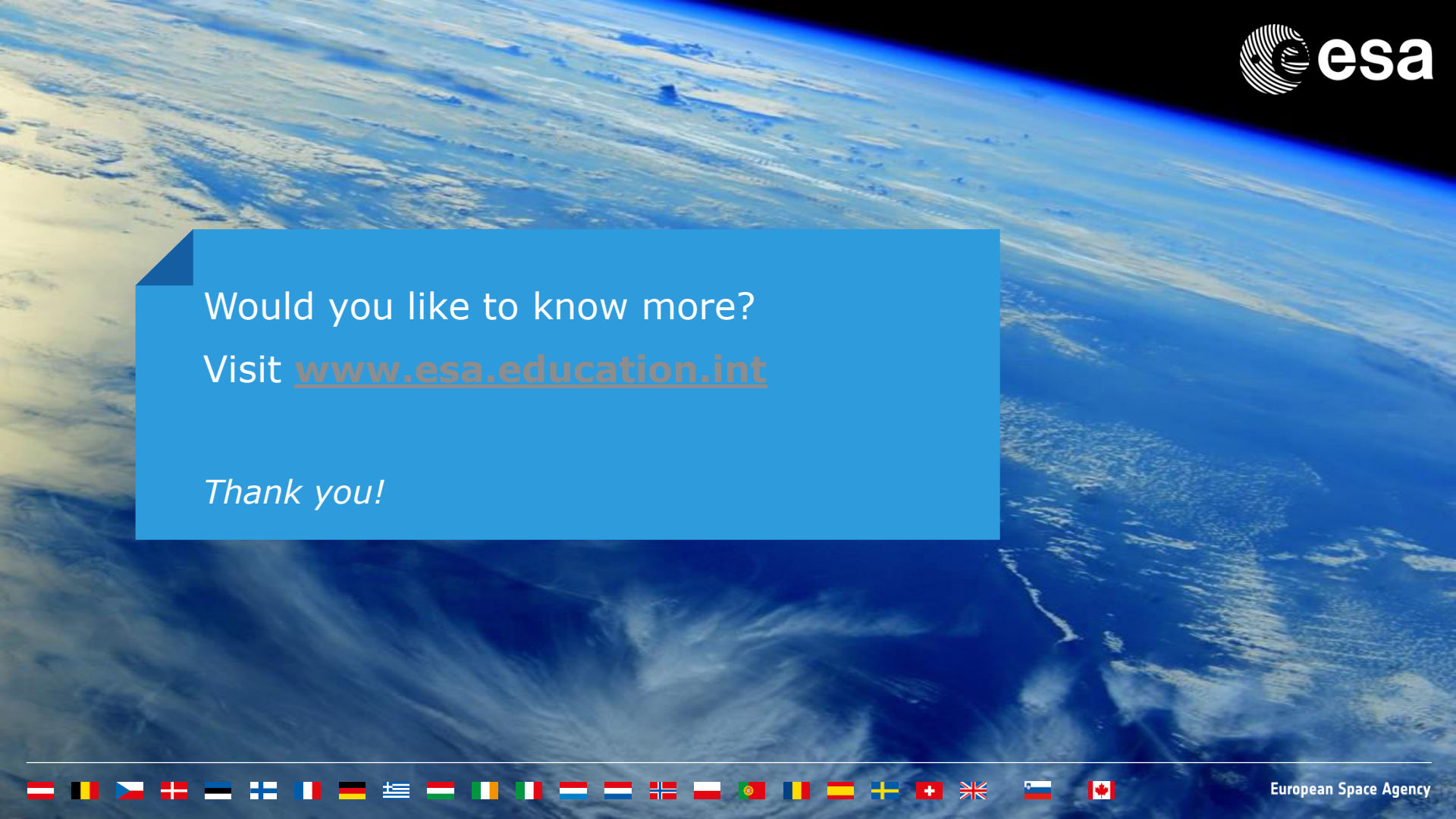
ESA kids-Paxi web portal

- 8 100 683 pages views
- 1 752 536 unique visitors

Universities

Space is the subject

- At least 1,500 university students benefitted from the direct transfer of ESA expertise through the ESA Academy hands-on and training opportunities,
- 10,000 benefitted from e-learning opportunities offered by D/EOP


Would you like to know more?
Visit www.esa.education.int
Thank you!