Fostering a young, creative and inclusive Space Community

EEPG annual meeting, Frankfurt, 15 October 2019
Leiden Observatory

Oldest University Observatory in the World

Two broad research clusters:

- Galaxies and the structures in which they are embedded
- Exoplanets, star and planet formation
- Societal relevance
Leiden Education: spaceEU DNA

- **2011 – 2014 FP7 EU UNIVERSE AWARENESS (EU–UNAWE)**
  - Make young European children aware of the Universe
  - Introduce them to STEM
  - Stimulate European and global citizenship

  - Attract young people into space science and technology careers
  - Provide links between European cutting-edge research and children
  - Develop and disseminate peer-reviewed educational resources
  - Developed resources for primary and secondary schools, and science museums.
spaceEU is here to...

• Inspire all students to pursue STEAM (science, technology, engineering, arts, maths) & space related careers
• Implement a variety of space outreach and educational programmes across Europe
• Advocate for space education and outreach & lay the groundwork for a possible establishment of a Knowledge and Innovation Community (KIC) in the field of space
Consortium

Main Parties

Third Parties

Universiteit Leiden
CIência Viva
ecsite
ELLINOGERMANIKI AGOGI
European Schoolnet
SCIENCE GALLERY
Trinity College Dublin
ARS ELECTRONICA

New Space Foundation
PARQUE de las CIENCIAS ANDALUCÍA - GRANADA
Universum Bremen
spaceEU Target Groups

With a focus on reaching girls, underserved and minority communities
SPACE EU ENGAGEMENT PROGRAMME
Exhibition “Step into Space”

- Developed by Ars Electronica
- Three thematic modules
  - Space sciences in our daily life
  - Climate change
  - Space Exploration
- Open-Source
Activities for youth & general public

- Space in the classroom: meet the space sector
- Space4youth sessions: peer-to-peer learning
- Open Space Lab: hands-on activities
- Citizen space debate
- Space Unconference
- Space Café
Educators Professional development

- Co-Creation workshops with Teachers Training Institutes
- Yearly summer school
- Localized teacher professional development opportunities across Europe
- Massive Open Online Course (MOOC) on the incorporation of space science in the classroom
Working with Online Influencers

• Work with social media influencers in partner countries
  • Trips to space related sites
  • Outreach to non-science related influencers
• Potential reach of hundreds of thousands of young people
spaceEU Impact Assessment

• To assess the impact on participants of activities
• Two papers to be published in open access, peer-reviewed journals
• Impact Evaluation Toolkit for researchers and practitioners
spaceEU Advocacy

• Advocacy actions with policy-makers at the national and European levels

• Laying the groundwork for a future Knowledge and Innovation Community (KIC) in space field

• Working with textbook and content publishers promoting more space science in textbooks
SPACE IN THE CLASSROOM
Relevance of space

“Space (life, wonder, openness) is the most popular subject (for girls and boys)”

Elster et al., 2010, Relevance of Science Education (ROSE study)
Appeal of space

Sky is accessible to everyone
Astronomical images are spectacularly beautiful
Excitement around space exploration and adventure
Life in outer space
Interdisciplinary

Space is a gateway to:

• Other natural sciences & research
• Technology & digital skills
• Arts, culture & humanities
Why more space in the classroom?

• Appealing subject attracts a wide range of students
• Gateway to other sciences, technology, humanities and arts
• Cultural aspect of astronomy and link to global citizenship
• Connection to daily lives
• Opportunity for inquiry-based learning
Space Education Resources

- Multiple EU funded pan-European projects since 2006
- European Space Agency’s ESEROs, Scientix, astroEDU, more on national levels and for specific topics
- Lesson plans, experiments, videos, careers, inclusive education
- All developed together with educators and space scientists

Abundance of unique and high quality resources
Universe Awareness

Astronomy and space as a tool to excite young children about STEM, e.g. Universe in a Box educational kit.
Universe Awareness: Space Scoop

- Press releases from NASA, ESA, ESO, EUMETSAT
- Targeted to age 12-18
- As learning tool
  - Content-specific learning of recent developments, definitions of common scientific terms
  - Language learning (e.g. used in Cambridge IGCSE English)
Space Awareness

- Activities are reviewed and tested
- Full lesson plans for different educational levels
Space Awareness: Careers

• Variety of career possibilities in the space sector

• Includes interviews, teaching materials and webinars
astroEDU

• Submitted activities go through official peer-review process
• 1st Prize Scientix award
ESA Teaching with Space

• Primary and secondary education
• European Space Education Resources Office (ESERO) network
• Teacher guide and student worksheets with practical activities
Scientix

Online repository of European STEM education projects, their results and developed resources
Curriculum Analysis

- Space Awareness in 2016
- Primary and secondary education
- Belgium, Bulgaria, the Czech Republic, France, Germany, the Netherlands, Northern Ireland, Spain, and South Africa
Astronomy literacy

What should a student know about astronomy by the end of secondary school?
Big Ideas

1. Astronomy is one of the oldest sciences in human history
2. Astronomical phenomena can be experienced in our daily lives
3. The night sky is rich and dynamic
4. Astronomy is a science that studies celestial objects and phenomena in the Universe
5. Astronomy benefits from and stimulates technology development
6. Cosmology is the science of exploring the Universe as a whole
7. We all live on a small planet within the Solar System
8. We are all made of stardust
9. There are hundreds of billions of galaxies in the Universe
10. We may not be alone in the Universe
11. We must preserve Earth, our only home in the Universe
Catalogue booklet

- Curated selection of activities from different sources
- Categorised by level and curriculum subject
In summary

• High quality and open-access resources

• Interdisciplinary nature of space sciences
  • Fits within the curriculum
  • Gateway to other sciences

• Unique and exciting topics with connection to arts
  • Attract a wide range of students to science

• International collaboration and deep cultural roots
Potential formats

Space resources in formal education

• Incorporated directly in educational textbooks
• As supplemental (online) materials
• Or in which way it works for you!
We are here to help

We can tailor resources to your specific needs:

- Translations
- Adaptations of content
- Adaptations of format
- For different age group
Thank you!

contact

willebrands@strw.leidenuniv.nl
http://space-eu.org
@spaceEUorg

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