ESERO Project

Information Day – For a future ESERO Sweden

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ESERO approach

- Targeting teachers to reach students
- Accredited STEM teacher training
- Large scale reach in the country promoting collaboration rather than competition for higher geographical coverage and expertise offer
- Innovative STEM didactics (e.g. inquiry, project-based learning, learning by design, etc.), contributing to change teaching practices
- Building partnerships and collaborations with relevant national entities
ESERO impact on school education

- **Space context motivational and inspirational** for teachers and students

- **STEM curriculum focus**: Offer used to accomplish the yearly curriculum/learning objectives

- Students at the centre of the learning process (from *passive* to *active* learning), so increasing the classroom interest, engagement and attainment

- Development of students’ **transversal skills and competences** – such as team work, critical thinking and communication, which are also part of today’s national curricula

- Use of state-of-the-art scientific results, data and facilities - **bridging the gap between theoretical science taught at school and the real practice of science**

- Increased awareness and understanding of **STEM-related jobs and careers**, especially in the space sector

- **Cross-curricular approach**, whenever possible (through school projects)
Benefits from the ESERO network

- regular exchange of information with ESA
- regular ESERO workshops hosted by ESA (twice a year)
- cross-ESERO/ESA thematic working groups on specific deliverables
- cross fertilisation
- exchange of best practices, know-how, expertise, classroom materials
- access to European level activities
ESERO deliverables / Statement of Work

Task 1 - ESERO Management

- Definition of an annual activity plan
- Management of related manpower
- Development and maintaining relations and cooperation with relevant space and education stakeholders
- Monitoring of education trends and curriculum developments; when applicable, contribution to evolution of national STEM curriculum
- Participation in meetings with ESA and the ESERO network - ESERO Steering Committee set-up
- **Deliverables:** reports (twice a year) and yearly activity plans
ESERO deliverables / Statement of Work

Task 2 - Teacher Training

- Pre-service and in-service STEM teacher training
- Training modules based on space-related classroom resources
- Officially accredited CPD whenever possible
- Presentation and promotion of ESA/ESERO/partners classroom materials
- Short/long teacher training courses for primary and secondary school teachers
- Online and Face-to-face (also MOOCs): combination to become permanent feature of ESERO offer
ESERO MOOC on Climate – recent example

Teaching Climate Change

Learn how to teach climate change to students aged 11-14 years old and engage them with the ESA Climate Detectives project.

Duration: 2 weeks
Weekly study: 2 hours
Try this course for free
ESERO deliverables

Task 3 – Classroom resources and activities

- translation and adaptation of existing ones (in particular ESA/ESEROs existing resources)
- development of new innovative space-related STEM teaching and learning resources
- through ESA/ESERO working groups work on the production of joint resources
- user friendly access to classroom resources (to widest possible number of teachers)
- organisation of national school projects and challenges on space related projects with a curricular basis
- Supporting participation in ESA European school challenges (Astro Pi, Mission X, Moon Camp, Climate Detectives and CanSat)
Didactics materials / Classroom resources

Different formats and supporting tools

- Online platforms
- Teacher guides
- Student exercises
- Experimental kits
- Apps
- videos
- ESA image & space data libraries; infographics
An over-arching portfolio of didactics material and activities
Lesmateriaal
Van planeten tot raketten en satellieten. ESERO heeft meer dan 150 lessen over aansprekende onderwerpen binnen ruimtevaart en sterrenkunde.

De atmosfeer van Mars
Wat zou er gebeuren als je op Mars vanaf een onderwater onderzoekszwemmer zouden onderzoeken? In deze les komt het belangrijkst voor de menselijke studie.
Po 7, 8

Satellieten en Aardobservatie
Hoe werken satellieten werken? Een modulair programma om de satellieten te leren kennen.
Vwo 5, 6

Organised by school year, curriculum topic etc.
Benefiting from actual space activities and news, as much as possible
ESERO activities / Statement of Work

Task 4 – Awareness-raising activities

- Identification of opportunities to **promote the ESERO offer towards teachers and education stakeholders**, for example through **teacher conferences**, science fairs, space weeks etc., educational events, ...

- Organisation of **dedicated ESERO Teacher conferences** - opportunity for teachers to:
  - meet space professionals (inspirational talks)
  - Learn about ESERO classroom resources and activities
  - increase awareness about ESA, the national space sector & careers

- Participation to and/or organisation of space careers events

- **ESERO project website and social media**
**ESERO activities / Statement of Work**

**Task 5 – Engagement with space industry and academia**

- Collaborations with national industry and academia regarding role modelling/career and knowledge sharing, with a special focus on real practice of science.

- "ESERO - Space goes to School": ESERO facilitates lectures of experts from space industry and academia in schools.

- Opportunities to seek in-kind or in cash support by national space industry and/or academia for ad-hoc activities, such as school projects (e.g. Cansat mentoring, expert consulting, Cansat launch opportunities, etc.).

- Collaborate with industry and academia to get support in the development of classroom materials and kits, concerning scientific/technical expertise and know how, and real practice of science.
Space careers: ESERO Ireland and ESERO Portugal dedicated sections
Funding ESERO Sweden project

Funding: \( \leq 50\% \) ESA (cash) + \( \geq 50\% \) from Space Agency + National Funding partners (cash and/or in-kind)
The overall (ESA + national) funding goes to the ESERO leading organization, which then redistributes it to the other operational partners clearly identified in the approved proposal to ESA.
**Different models across ESEROs**

**ESERO Germany:** The consortium is led by the Geomatics Research Group of the Ruhr-University of Bochum and further includes the Remote Sensing Research Group of University of Bonn (UoB); the Zeiss Planetarium Bochum; the Bochum Observatory; the Hausdorff Centre for Mathematics (UoB); the Physics Institute (UoB); the Argelander-Institute of Astronomy (UoB); the Institute of Physics Education at Cologne University; and zdi.NRW. ESERO Germany is co-funded by ESA and the members of the consortium, and managed in collaboration with DLR.

**ESERO Spain:** Based in Science Centre Parque de las Ciencias, Granada, ESERO Spain is funded nationally by the Parque de las Ciencias Consortium, the Andalucía Education Council of Junta de Andalucía, as well as partners in other Spanish regions, such as: Xunta de Galicia, Department d’Ensenyament Generalitat de Catalunya, Centro Astronomico Aragonês, Comunidad de Madrid, Generalitat Valenciana, and many others.

**ESERO UK:** Based at the National STEM Learning Centre in York, it is operated by STEM Learning Ltd. Besides ESA, key funding partners include the Department for Education in England (DfE), Science and Technologies Facilities Council (STFC) and the UK Space Agency (UKSA).

**ESERO Netherlands:** Based at the Nemo Science Learning Centre in Amsterdam, it is co-funded by ESA and the Netherlands Space Office (NSO).
Conclusion: Key ESERO Pillars

**Task 2:** Primary & secondary school-level teacher training (pre-service and in-service)

**Task 3:**
- Curricular didactics materials/classroom resources (lessons, experimental kits, etc) for national and European community
- Coordination of school projects

**Task 5:** Collaboration with industry and academia involved in space-related activities for: mentoring, support school activities, role modelling and careers

**Task 1:** Management / project coordination

**Task 4:** Promotion of all offer
Thank you!

https://www.esa.int/Education

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