

OPEN SCIENCE SCHOOLING



Guidance for Partners

WwEU February 2021

“Encourage “open schooling” where schools, in cooperation with other stakeholders, become an agent of community well-being; families are encouraged to become real partners in school life and activities; professionals from enterprise, civil and wider society are actively involved in bringing real-life projects into the classroom.”

**COMMISSION 2015, SCIENCE EDUCATION FOR RESPONSIBLE
CITIZENSHIP**

State of the art

Students in secondary school develop resistance towards science learning and science careers.

The Commission considers this one of the most important challenges to innovation and economic growth in EU.

Up to date research and key global stakeholders, such as the OECD and the EU Commission, jointly agree that the disengagement in science takes place in secondary school and typically when the students are from 12 to 15 years old, indicating that science resistance is strongly linked to the development of the students identify and personality.

The Commission calls for the development of new science learning didactics, based on an Open Schooling approach, in which science learning processes are strongly linked to the students' participation in real-life science challenges in society and to participation in real research and innovation circles.

Open science schooling (OSS) is fundamentally different from modernisation of science education: it is based on student teams' long-term engagement in real-life science challenges in the community, the science missions; the learning happens through such engagement and through the insertion of science knowledge on demand along the missions.

The OSS methodology is the first systematic methodology to fundamentally change science education for young students.

Open Science Schooling

The core message from the Commission's Science Learning Innovation Agenda is clear: *science learning in schools needs dramatic change and fundamental re-thinking to appeal to the young generations.*

The OSS is based on the top 10 recommendations for innovative science learning and engagement:

1. re-engagement strategies going far beyond instruction and classroom
2. re-engagement strategies that link strongly to the 21st century lifestyles and identities of young people in their teenage period
3. innovation of science learning not for but with the young people (the very important co-design and co-creation aspects)
4. innovation that links science learning to cross-sector collaboration with relevant private and public players in the near or wider community
5. collaboration with those community players to bring real-life and real-time cases into the science learning process
6. science learning in integrated mixed realities (social and virtual)
7. science learning through international collaboration
8. science learning innovation strongly linked to what is important for society and the new young generations in 21st century Europe
9. science learning offering young people active explorative roles in the form of science detectives, science journalists, science adventurers, etc.
10. science learning that fosters interest in innovating, change and taking entrepreneurial action

Open Science Schooling and Climate Change

OSS engages the students deeply in interesting and important science activities in their community.

This is where climate change comes in and opens up a giant door to students' re-engagement in science.

OSS Climate change prevention is not about theory, but about taking urgent action at all levels and learning through this engagement. It allows to work in teams and to identify climate challenges in the community.

Through collaboration with community and climate change resources the students will be able to work in their designed missions: action-based.

Science education becomes relevant, personal, attractive, emotional and incredible exciting for the students, allowing them to integrate new science images in the forming of their identities.

Project innovation

Climate change based open science schooling is expected to be able to create new science images that science learning and a life in science become more integratable into the girls' identity because it breaks away from the basic parameters of traditional science instruction, it goes far beyond superficial "modernizations" - and in a radical way links strongly to very many teenage girls' values and preferences.

This is so, because this science learning strategy does not merely link to one or two of the typical female preferences, but to almost all of them; and the combination of these preferences is what makes the strategy powerful and promising:

- ✓ girls are typically much more interested in climate change prevention than other science topics: the project uses climate change prevention as a platform for engaging and re-engaging young girls' students in science learning, allowing them to leave the traditional theoretical science instruction and work with **REAL-LIFE** science and people.
- ✓ **MISSIONS** will allow them to immerse and link climate change to human, social, health and cultural factors
- ✓ engages schools and students in practical science collaboration with resources in the **COMMUNITY**, including research, science, innovation and social resources and stakeholders

- ✓ offers practical approaches to all major scientific fields and encourages **CROSS-SUBJECT** learning
- ✓ offers students with different **LEARNING STYLES** a variety of practice-oriented work forms very different from traditional theoretical and laboratory-based science teaching, also benefitting less academic learners
- ✓ strongly links science to social, political and cultural life and to society's call for responsible science
- ✓ offers powerful collective and individual missions and demands local and global action and accomplishment
- ✓ the student girls will design their missions, based on open exploration of what climate change prevention might mean for themselves, their families, their children and community. Prevention is personal, local and global at the same time, offering very many levels of learning and taking action, including the students' lives and emotions
- ✓ provides students with the opportunity and resources to develop a different **IMAGE** of what science is and what science could be for them, linking in much more narrative ways to the identity and personality of the students.
- ✓ Students girls will create their **OWN STORY-TELLING** from the missions to create their voices.

