



TOWARDS A EUROPEAN LEADERSHIP IN
OPEN SCIENCE SCHOOLING

A STRATEGIC APPROACH TO MAKING OPEN SCIENCE SCHOOLING A REALITY

A Working with Europe working paper to support the creation of a long-term open science schooling strategy based on Erasmus+ and Horizon grants - and based on the Open Science Schooling project

WWEU draft October 2018

Photos by WWEU from the Open Science Schooling and the ScienceGirls projects



Open schooling and collaboration on science education

Science with and for Society

SwafS-01-2018-2019

Deadline: 02 April 2019
2nd stage Deadline: 07 November 2019

<http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/swafs-01-2018-2019.html>

CALL

SPECIFIC CHALLENGE

At the moment, Europe faces a shortfall in science-knowledgeable people at all levels of society. This is a good time to expand opportunities for science learning, in formal, non-formal and informal settings.

Evidence shows that European citizens, young and old, appreciate the importance of science and want to be more informed, and that citizens want more science education. Over 40% believe science and technological innovation can have a positive impact on the environment, health and medical care, and basic infrastructure in the future.

Therefore, collaboration between formal, non-formal and informal science education providers, enterprises and civil society should be enhanced to ensure relevant and meaningful engagement of all societal actors with science and increase the uptake of science studies, citizen science initiatives and science-based careers, employability and competitiveness.

SCOPE

The proposed action targets the creation of new partnerships in local communities to foster improved science education for all citizens.

This action aims to support a range of activities based on collaboration between formal, non-formal and informal science education providers, enterprises and civil society in order to integrate the concept of open schooling, including all educational levels, in science education.

"Open schooling" where schools, in cooperation with other stakeholders, become an agent of community well-being shall be promoted; families should be encouraged to become real partners in school life and activities; professionals from enterprises and civil and wider society should actively be involved in bringing real-life projects to the classroom.

Relevant policy makers should also be involved, to encourage policy buy-in and the mainstreaming of good practices and insights into policies, and hence sustainability and impact beyond the lifetime of funding.

Partnerships that foster expertise, networking, sharing and applying science and technology research findings across different enterprises (e.g. start-ups, SMEs, larger corporations) should be promoted. Gender, socio-economic and geographical differences should be considered.

The Commission considers that proposals requesting a contribution from the EU of the order of € 1.50 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

EXPECTED IMPACT

It is expected that in the short term the development of partnerships between schools, local communities, Civil Society Organisations, universities and industry should contribute to a more scientifically interested and literate society and students with a better awareness of and interest in scientific careers.

In the medium term the activities should provide citizens and future researchers with the tools and skills to make informed decisions and choices and in the long-term this action should contribute towards the ERA objectives of increasing the numbers of scientists and researchers in Europe.

FIRST KEY POINTS TO CONSIDER

→ An overall conclusion of the interpretation of the Call would be that the driving of the open science schooling seems in the discourse of the Call to go from education to community; if this is true, it must be clearly reflected in the project concept and in the configuration of the consortium

→ As a CSA format, projects are expected to create practical results in the participating communities; CSA projects are not research projects and this must be reflected in the project consortium;

→ The Call is somewhat inconsistent and almost self-contradictory (the focus shifts all the time between “school” and “community”); as always the Call is over-ambitious and abstract and miles away from the European reality; therefore a lot of work is needed to define individual project proposals

→ The Call is extremely open, except about the composition of the partnerships: “everybody must be there”; a key challenge will be to meet the demanding partnership requirements, and to define: what kind of partners should be in the project consortium and what kind of partners in the local open schools collaboration and what might be the relation between these two “partnerships”? In fact, the project partnership must be strongly justified by the project’s plan to build up the local science collaboration;

→ Gender does not seem to be a high priority in this Call; the focus is more on community and school; gender might on the other hand be used as a competitive parameter: to give a proposal a strong and perhaps even unique identity

→ It is indicated that “schools” should be the drivers of such new community collaboration; the question is what “schools” means; science learning providers, yes, but at what level? It is extremely important to identify the most relevant drivers of the new science collaboration, as this might have consequences for the composition of the project consortium (the drivers and co-drivers in each country should be there, of course)

→ As a coordination action the consortium is obliged to include a reasonable number of member states, such as at least 5-6 member states from different European regions; open science schooling practice must take place in all partner countries

→ An application and a project concept must very carefully balance between “networking activity” and “science engagement activity”: the new *local eco-systems of science engagement* (perhaps a useful expression in the application) should be built up through science engagement, not through a series of network meetings;

→ The project concept must have a very clear idea about HOW to develop the local science collaboration, based on citizens’ engagement, not on top-down declarations; the dynamics of the development of the local science collaboration must be spelled out in the application at both stages, as those dynamics govern the most important project methodologies;

→ We consider the proposed level of funding to be quite on the low side, and we would definitely recommend submitting proposals at the level of 2 million euro

→ Our proposal might enjoy the privilege of being able to refer to the very strong Erasmus+ project, the Open Science Schooling project; lessons learned from this project might be of very high value to the Horizon application, also because the Commission invites “more collaboration

between Erasmus+ and Horizon”; the Erasmus+ project(s) could be presented as a first-step-experience leading to the Horizon project! With a little bit of luck, the Erasmus+ project reference might make a difference in the scoring;

→ The application might also refer to formal collaboration with a range of new Erasmus+ open science schooling projects to be launched in 2019 and 2012, exploring important dimensions in open science schooling and strategically aiming to build a 2020 Erasmus+ Knowledge Alliance

→ If the Horizon project wishes to include a gender perspective, the proposal should also refer to the very strong Erasmus+ project ScienceGirls 2016-18; reference might also be made to the iYouth and iCAP projects experimenting with open schooling to create innovation interest and capacity among secondary school students; 2 of these projects have created policy papers pointing directly towards the Horizon open schooling Call;

RECOMMENDATIONS FOR KEY ELEMENTS IN THE FIRST STAGE CONCEPT

We recommend including in the first stage concept the following key building bricks.

The first stage concept should include a highly qualified reflection on what the other proposals will not be able to!

⇒ A crystal clear logical relation between the project partnership and the community partnerships to build up along the project: what are the roles of the project partners in this process? And why are they able to drive open science schooling in the community?

⇒ A clear methodology for how to build the local open science schooling in practice, including definitions of drivers, co-drivers and collaborators: which are the engines that will drive the development of the new local eco-systems of science engagement?

⇒ A clear methodology for building the open science collaboration on citizens’ engagement, not on top-down alibi-initiatives: not *for* citizens, but *with* citizens (as recommended by the Commission)

⇒ A clear approach to how the collaboration between the participating countries will improve the project results, and how such collaboration should form part of the local science engagement

⇒ A crystal clear idea about the various roles in the new local science learning collaboration

⇒ A strong approach to what would motivate students and citizens to engage!! Because, without this authentic engagement, the local science collaboration is... empty;

⇒ A powerful reference to the lessons learned from several super-relevant Erasmus+ projects and to how those lessons learned will be exploited in the Horizon project, in particular referring powerfully to Open Science Schooling

⇒ A very strong first indication of how the new local science collaboration will be sustainable once the European funding ends

EUROPEAN REFERENCE RESOURCES

The following selection of European science learning resources might be useful in support of an application. The selection might be supplemented by gender-specific resources.

Working with Europe has created a 20 pages citation paper with the best citations from these resources - to be used in applications about science learning.

The list can be updated as needed.

Attract Project - Full Report - 2012

EU Commission 2007 - Science education NOW

Europe needs more scientists - 2004

Finnish Lessons 2.0 - Pasi Sahlberg

OECD 2008 Increasing students' interest

OECD 2013 Sparking Innovation in STEM education

Open Innovation - Commission 2016

Science education Critical reflections

Science Education for Responsible Citizenship

Science education for the 21 century - 2007

Science Education in Europe - Commission 2011

Science with and for society - Commission

Scientix - the European Science Education community

Students interest in science OECD

UNESCO SCIENCE REPORT Towards 2030

How students see science and technology

Narrative in communication science 2008

Osborne - Attitudes towards science - 2004

PISA and real life challenges

Research on young people's perception

ROSE project Key findings

ROSE project Questionnaire

Science education and Identity

Science interest in different cultures

Sjöberg PISA critique

Understanding Student Participation in Science and Technology - 2015

Young people, science and technology

OPEN SCIENCE SCHOOLING STRATEGY ILLUSTRATED

Erasmus+ Open Science
Schooling

4 2019 Erasmus+
applications based on
Open Science Schooling
and resulting in 2 new
grants

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2 independent
Horizon Open Science
Schooling CSA
1st round
resulting in 1 CSA grant

2 independent
Horizon Open Science
Schooling CSA
2nd round
resulting in 1 CSA grant

**Erasmus+ 2020
Knowledge Alliance**

**European leadership in
Open Science Schooling**

FIRST CHALLENGES



Lead partners should be able to offer strategic not punctual commitment; the lead partner organisation should support the strategic initiative



Lead partners might consider establishing an open science schooling driver team to control and facilitate the implementation of the strategy; driver team partners are not automatically the producers of applications



OSS lead partners should mobilise in total 3-4 high level open science schooling partners (from different countries) for the new Erasmus+ and Horizon initiatives



A first key step would be to define the concepts of the new Erasmus+ and Horizon CSA initiatives and agree on who will be responsible for the application production



Early in this process a simple online platform might be set up in support of the collaboration (such as for example a simple BaseCamp)

Working with Europe offers to be responsible for the full production of 2 of the Erasmus+ 2019 applications and 2 of the 2020 Erasmus+ applications. The condition is, of course, that other lead partners will take responsibility for the production of the other applications.



CREATING THE CONCEPTS

Examples of possible concepts for the new Erasmus+ and the Horizon CSA initiatives (for inspiration)



Erasmus+ 2019 and 2020



Family based open science schooling



Open science schooling integrated in school curricula



Evaluation and assessment of open science schooling



Eco-systems of open science schooling



Open science schooling teacher training programme



New technologies and social networks in open science schooling



The school as driver of open science schooling



Open science schooling as inclusive learning

Horizon CSA 2019



Education as driver of open science communities



Student-driven open science collaboration



Critical science communities must be driven by female citizens!



Science at the heart of the community



Understanding science through community engagement



We discuss science at breakfast!



Schools as drivers of community science



Critical science is community science

[Please bear in mind that these examples are simply ideas to open up the concept field]

