

Open Schooling

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1. Objective

This document aims to present the concept of Open Schooling and the Service Package to Support Schools, and it is organized in four sections.

The first section presents the rationale that led to the definition of Open Schooling. In the second section it is described the proposed model for Open Schooling and in the third section the suggestions provided constitute the Service Package to Support Schools. The fourth and last section is dedicated to the references list.

2. Rationale for Open Schooling Concept

Open Schooling is a concept that has been promoted by the European Union since 2015 (EU, 2015) and that refers to schools that

(...) in cooperation with other stakeholders, become agents 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. (EU, 2015, p.10)

This concept is aligned with the assurance of a continuum learning of science between formal and informal contexts (Sotiriou et al., 2017; Sotiriou et al., 2021) by ensuring the engagement of diverse members of the society with science. This enhances, for example, the understanding and acceptance of scientific knowledge, as well as the uptake of scientific careers. As such, students are encouraged to contact with real science and scientists in order to better understand how science works in real life. This may lead to an increase of motivation and interest of students in scientific and technological areas, thus contributing to reverse the declining trend of students who intend to follow these areas.

Additionally, the concept of Open Schooling places the schools in a pivotal role as agents of well-being in consequence of the development of projects that aim to solve problems and needs of the local communities (Bogner & Sotiriou, 2023). In this sense, Open Schooling stems from the need to ensure the preparation of individuals and communities to adapt and respond, in an informed manner, to the increasingly complex societal challenges they face (UNESCO, 2015).

Schools, in this perspective, should then be seen as spaces of collaboration, exploration and innovation where not only students, but also teachers, collaborate in the search for new knowledge and constantly develop new skills, together with their students, thus creating a motivating, engaging and meaningful teaching-learning environment. In addition, they should

extend to the community through the involvement of families, community groups, local businesses, universities, etc.

More specifically, Open Schooling (Bogner & Sotiriou, 2023):

- i) is an agent of community well-being, in the sense that it develops projects to finding solutions to the needs or interests of local communities;
- ii) promotes partnerships that enable the construction of specialized knowledge, the creation of networks of work and sharing, and the application of the results of the developed projects;
- iii) promotes collaboration between actors of formal and non-formal education (e.g., museums, science centers, research centers, community centers, etc.), which enhances the relevant and significant involvement of all stakeholders and allows the understanding of how science is applied in real-life situations;
- iv) promotes the involvement of families through the construction of the notion of scientific capital in the family environment of students;
- v) encourages science teaching less focused on competitiveness, also contributing to greater student interest and participation.

There are several initiatives to promote Open Schooling, namely at the European level. An example of this is the Open School for Open Societies (OSOS) (<http://www.openschools.eu>) whose development resulted in the proposal of an implementation model for Open Schooling in Europe (Sotiriou et al., 2020).

According to this model it is fundamental:

- i) to provide unique professional development experiences for school members that may include international professional development activities;
- ii) to establish partnerships with organizations, policy makers and communities that help improve the relevance of what is taught and learned in schools;
- iii) to expand students' horizons and increase their aspirations, which may include engaging with other schools, even international ones;
- iv) to improve the teaching-learning process through innovative practices;
- v) to improve the status of the school through collaborations with national and international partners and schools, which demonstrates its potential to be a reference in the educational landscape.

Also, within the scope of this project (Sotiriou et al., 2020), it is suggested that schools, teachers and students develop their projects in four distinct phases: Feel, Imagine, Create, and Share (Table 1):

Table 1- OSOS Model for Open Schooling.

Phase	Description
Feel	Students identify the problems or challenges of their local communities. Students select topics that may affect their communities in the future. Students observe, discuss ideas, and devise a plan of action, based on scientific evidence.
Imagine	Students imagine and develop innovative solutions. At this stage students contact external partners, who provide them with support and/or solutions to their ideas.
Create	Students implement their projects and interact with external partners to communicate their projects to them.
Share	Students share their projects, results, stories with the local community, including other schools and media.

As part of another project, Meaningful Open Schooling Connects Schools To Communities (MOST) (<https://icse.eu/international-projects/most/>), the consortium of teams that compose it has established a roadmap similar to that already described for the OSOS project, but which explicitly includes an evaluation phase. Thus, it is suggested that the project development process in an Open Schooling include five phases: Invite, Co-Create, Act, Share, and Evaluate, which results in the acronym Increase. The description of each of these phases is summarized in Table 2.

Table 2- MOST Model for Open Schooling

Phase	Description
Invite	Students and/or teachers invite partners who can contribute to the project they intend to develop.
Co-Create	Students and partners collaboratively develop the research project.
Act	Students put their project into practice, according to the decisions made previously.
Share	Students share their projects, as well as the results obtained, with community members. This sharing is done, for example, through the media and social networks.
Evaluate	Evaluation of the success of the project developed. For this evaluation, students take into account the questions formulated in the Co-Creation phase.

3. Proposed Model for Open Schooling

3.1 Description of the model

Based on the proposals elaborated in these two projects, we propose that the process for the promotion of an Open School include the phases illustrated in Figure 1.

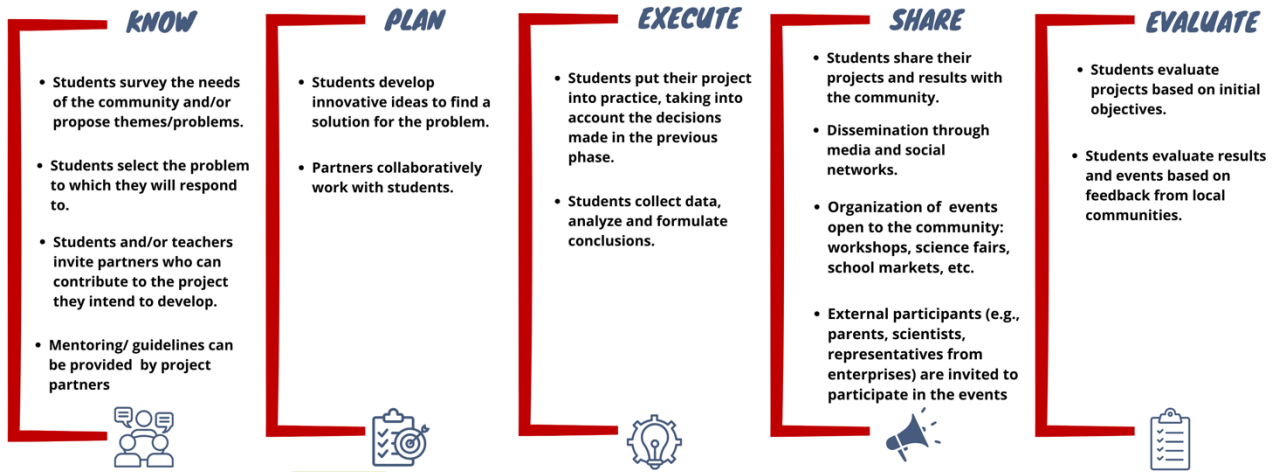


Figure 1- Proposed model for Open Schooling.

Phase 1: Know- this phase aims to sensitize students to authentic local problems. Students can prepare a survey to the community, disseminate it, and request the collaboration of the local community. Alternatively, students can choose a problem in their class, or at school. It is intended that students scrutinize, discuss problems, and analyze them to select the one to which they will find an answer or solution. At this stage, it is important to establish contacts with partners who can help in resolving the problem. Depending on the problem in question, they can contact universities, companies, local authorities, etc.

Phase 2: Plan- students should develop an innovative action plan, considering the objectives of their project: students must discuss ideas and action plans, which should be structured together with the partners involved.

Phase 3: Execute- students put their projects into practice, considering the outlined plan. This implies data collection, analysis, and formulation of conclusions, which aim to help in the solution to the problem.

Phase 4: Share- students should present their projects, results, and conclusions to the community. This sharing can be done in various ways: media and social networks, organization of dissemination events such as science fairs, workshops, presentations, etc. This sharing phase aims not only to disseminate per se the results obtained by students, but also to promote the scientific literacy of the adult population, thus contributing to a continuum of lifelong learning.

Phase 5: Evaluate (Optional)- students should evaluate their work, not only in terms of the developed project (what went well, what went wrong, what have they learned), but also how that project had (or did not) impact on the community, in solving the initial problem.

3.2 Organization and target group

Schools run open schooling activities in their communities, supported by mentors (provided by project partners) and guidelines. Open schooling activities can be for example workshops, longer projects (like the upcycling challenge) or school markets on a certain topic, e. g. healthy food, to which schools invite external participants (e.g., parents, scientists, representatives from enterprises).

A summarized view of Open Schooling is presented in Table 3.

Table 3- Summary of the relevant characteristics of Open Schooling.

Characteristic	Description
Type of activity	Interdisciplinary projects on the three project topics (Green Deal, Digitalization and Health)
Duration	Long term (several days, weeks, months, years)
People involved	5-8 participants from school community: students, teachers, external stakeholders, parents, community members.
Initiation and choice of the topic	The whole project group.
Aim of the activity	Supposed to work scientifically on real-life problems in their own community/school.
Connection between lighthouse activities and Open Schooling	Lighthouse activities can be the kickoff for an Open Schooling activity. Can encourage and inspire Open Schooling to run a project that evolves around the same topic.

Additionally, in the Annex (Table A), lighthouse activities and Open Schooling are compared.

More details on lighthouse activities can be found in the corresponding document (WP2/ Lighthouse Activities).

4. Service Package to Support Schools

The purpose of this section is to present a set of suggestions (Service Package) that will help schools implement Open Schooling. In this sense, two sets of measures are presented: one to win schools and another to support them in the preparation and implementation of Open Schooling.

4.1 How to win schools

With the aim of win schools, the following approaches are suggested:

- i) Personal contacts/ Use existing networks: the contacts/networks previously established with schools are an added value for their involvement in Open Schooling activities.

- ii) Teachers' training and workshops: the provision of teacher training is usually a great incentive for schools to participate in activities, particularly when teachers are required to undergo training for career progression.
- iii) Invitations: new schools outside the network can be invited to experience the lighthouse activities or to attend science fairs.
- iv) Advertisement: flyers, advertisements in specific groups (societies, teachers' groups in social media, etc.) can be an effective way to attract more participant schools. Advertisement can be made as support package in terms of staff and knowledge.
- v) Competitions: contests can be created and announced in order to stimulate and involve several schools in Open Schooling activities. Financial prizes may be considered for the winners. For example, sponsors can get involved and offer more specific materials for schools could be raised.

4.2 How to support schools

Schools involved in Open Schooling can be supported in several ways:

- i) Resources- schools can be supported by means of model activities and projects and/or materials.
- ii) Mentoring- this involves close contact (in person or by mail/videoconference) with university members. This allows discussion, feedback, and suggestions of improvement of the proposed Open Schooling projects.
- iii) Visits- visits to appropriate institutions can be suggested and provided.
- iv) Contacts- university members can provide some contacts with professionals (e.g., scientists) that can perform lectures on specific themes and/or contribute to the school project with their expertise.
- v) Dissemination- schools projects can be publicized by university members. Students can also publish their data, with the help of university members.

5. References

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6. Annex

Table A- Summary and comparison of the relevant characteristics of lighthouse activities and Open Schooling.

Characteristic	Lighthouse activities	Open Schooling
Type of activity	Interdisciplinary workshops on the three project topics (Green Deal, Digitalization and Health).	Interdisciplinary projects on the three project topics (Green Deal, Digitalization and Health).
Duration	Short term (several hours)	Long term (several days, weeks, months, years)
People involved	10-15 participants from the whole community: all age groups, also possible to address to people who might be skeptical about science, senior citizens, girls, families, etc.	5-8 participants from school community: students, teachers, external stakeholders, parents, community members.
Initiation and choice of the topic	External stakeholders and universities who offer the activity.	The whole project group.
Aim of the activity	Supposed to convey fun of science, but also help to understand it.	Supposed to work scientifically on real-life problems in their own community/school.
Connection between lighthouse activities and Open Schooling	Lighthouse activities can be the kickoff for an Open Schooling activity. Can encourage and inspire Open Schooling to run a project that evolves around the same topic.	