DETAILED WORK PROGRAMME

The key players in the work programme are:

THE SECONDARY SCHOOL/THE SCHOOL TEAM
- management representation + lead science teachers + student team captains

THE STUDENT TEAMS
- 2 teams per 5 schools, each involving around 5 students between 14 and 16, or alternatively between 12 and 16, of age, in total 50 students in the project

THE ECO-SYSTEMS OF OPEN SCIENCE SCHOOLING/THE COMMUNITY SCIENCE RESOURCE TEAM
- relevant science and community resources brought together to form a permanent eco-system of open science schooling to support and enable the students new form of science learning, driven by the school teams.

SCENARIO 1

CONSENSUS

TIMING

2 months – project months 1-2

OBJECTIVE

In the first scenario the project will focus on the creation of strong consensus among practice partners, school teams and student teams.

Strong consensus will be created to create a common platform of understanding of:
- what is open science schooling?
- what are eco-systems of open science schooling?
- how students learn through engaging in those eco-systems?
- how to test the eco-systems through the student teams' science missions
- what is a science mission?
- how to approach and engage science and community collaborators?

The consensus creation will be guided by initial guidance material produced by the project.

KEY ACTIVITIES

Planning a good kick-off

Local discussions in the 5 school teams and in the 10 student teams in preparation of the kick-off – and supported by the project's initial guidance material

Planning of the school teams eco-system empowerment mobility

Creating simple strategies for the 5 school teams to start driving the new eco-systems of open science schooling

Creating high quality and attractive guidance to potential science and community collaborators

TRANSNATIONAL

Partner meeting 1 – month 3 - ONLINE

Objectives

Creating strong consensus and capacity among the key players, based on the local discussions
Interaction with the local school team, student teams and key collaborators – to the extent possible
Detailed planning of scenario 2

Discussing in detail the initial guidance provided

Participation

Knowledge partners – 2 professionals
Practice partners – project manager + school team lead + 2 student team captain
Quality assurance partner – 2 professionals

PROCESS OUTCOMES

The process outcomes have 4 purposes:
- creating evidence from a scenario
- creating support tools for the project participants
- continuously feeding into the project's website
- contributing to the project's raw material base on which the final outcomes can be created

01
Introduction to Eco-systems of open science schooling - Schools

02
Introduction to Eco-systems of open science schooling – Student teams

03
Introduction to Eco-systems of open science schooling – Eco-system science collaborators

04
How can the school teams create and drive new eco-systems of science collaboration in the community?

05
How to prepare for the science missions?

06
Design and organisation of the School team eco-system empowerment mobility

SPECIAL CHALLENGES

Strong focus on creating consensus on project objectives and work methods

SCENARIO 2

ECO-SYSTEMS OF OPEN SCIENCE SCHOOLING

TIMING

4 months – project months 3-6

OBJECTIVE

The school teams will drive these scenarios.

They will, in collaboration with the student teams, analyse the various communities, science resources and create an "open science schooling resource map".

The overall aim of the scenarios is to create the first versions of the local/regional eco-systems of open science schooling through intense dialogues with relevant community and science resources.

Such potential community and science resources might for example be:
- the local government and relevant departments
- science centers
- companies deeply involved in research and innovation
- various entrepreneurial hubs engaged in science
- civil organisations engaged in local or global (critical) science activities
- higher educations doing science research
- and similar

Each of the school teams will create the basic versions of the new eco-systems of open science schooling by inviting and engaging a team of the most relevant general science and community resources.

At the end of the 4 months, the first basic eco-systems are ready to work with the student teams science missions.

KEY ACTIVITIES

Key activities in the practice communities are:
- building the relevant general science resources map
- creating very attractive invitations to relevant community and science resources
- organising an open workshop for interested community and science resources, co-driven by the student teams
- establishing a first science learning eco-system team as a result of the workshop
- individual dialogues with the team resources: what's in it for you?
- adding new resources to the team, if relevant and needed
- organising a final eco-system team workshop to prepare scenario 3 and the first round of student teams science missions
- documenting the process with high quality and sharing with the other practice communities
- preparing the school teams' empowerment mobility and evaluation the mobility in the local school teams

TRANSNATIONAL

SCHOOL TEAM ECO-SYSTEM EMPOWERMENT MOBILITY
3 days school teams empowerment event
Probably ONLINE

Objectives
Empower the school teams to create the first version of the eco-systems of open science schooling

Key topics during the mobility

- what is open science schooling in practice?
- what is a "student team science mission" and how can the science teacher guide the students?
- how to guide the students to work with science resources in the community?
- how can the schools start building up the local eco-systems of open science schooling?
- how can the science teachers motivate the students to use their global social and gaming network in the science missions?

Participation
School management representative from practice partners
Two lead science teachers from practice partners
1 project manager from practice partners
2 professionals from the coordinator
2 professionals from knowledge partners
2 professionals from the quality assurance partner

The mobility will include a mini partner meeting session for project professionals.

PROCESS OUTCOMES

The process outcomes have 4 purposes:
- creating evidence from a scenario
- creating support tools for the project participants
- continuously feeding into the project's website
- contributing to the project's raw material base on which the final outcomes can be created

07
The stepwise creation of the local/regional eco-systems of open science schooling – guidance for school teams and student teams

08
The results of the school teams' creation of eco-systems of open science schooling in 5 European communities – the 3 perspectives

09
Results of the school teams' empowerment mobility

10
Inspiration for the student teams to work in the first round science missions

11
How to document and tell the stories from the science missions?

SPECIAL CHALLENGES

Focus on, demonstrate and document how the creation of the eco-system works from the 3 different perspectives.
First knowledge creation from this scenario is important.

SCENARIO 3

ECO-SYSTEMS TESTING - SCIENCE MISSIONS 1

TIMING

6 months – project months 7-12

OBJECTIVE

Scenario 3 will provide the first testing of how the student teams can learn science through open science schooling supported by the eco-systems of open science schooling in the practice communities.
The scenario is student driven, with support from the school teams.

This will happen through the creation of science missions for the 10 student teams in the practice countries.

In this first round testing the student teams will focus the science missions on the local/regional (physical) community, combined with various science communities if possible.

The ultimate objective of the first round of eco-system testing is to create considerable first practical experience about how the students' open schooling is supported by the emerging eco-systems of science collaboration.
The experience will be heavily documented with a variety of media and the documentation will feed into the project's knowledge creation.

The results of the knowledge creation will be discussed in the project in scenario 4 and shared through the project website and relevant social media.

KEY ACTIVITIES

The 10 student teams will test the emerging eco-systems by working through their science missions.
The science missions will be guided by the project's 10-steps science mission methodology:

STEP 1
Students as science detectives
STEP 2
Science engagement dialogues with the school team and with the eco-system of science resources
STEP 3
Agreeing on science missions driven by the student teams
STEP 4
Science learning on demand and dialogues with mission resources and stakeholders
STEP 5
Discussions with end-users, involved people and institutions and others with an interest in the science mission
STEP 6
Designing the science missions and negotiating needed resources
STEP 7
Working in the science missions (student teams, school team, eco-system)

STEP 8
Evaluation of successes and failures
STEP 9
Sharing the experience with the other teams and in the project and with creative media – story-telling
STEP 10
Lessons learned

TRANSNATIONAL

PROCESS OUTCOMES

The process outcomes have 4 purposes:
- creating evidence from a scenario
- creating support tools for the project participants
- continuously feeding into the project's website
- contributing to the project's raw material base on which the final outcomes can be created

Raw material from the first round of science missions testing the eco-systems of open science schooling in 5 European communities, including summary

SPECIAL CHALLENGES

A very strong focus on testing the eco-systems through authentic science missions and documenting the mission experience from the 3 perspectives: schools, students/teachers and eco-systems of open science schooling.
The documentation will focus strongly on the functioning of the emerging eco-systems and how the eco-systems support the students' open science schooling.

SCENARIO 4

EVALUATION AND KNOWLEDGE CREATION

TIMING

2 months – project months 13-14

OBJECTIVE

This short but intensive scenario, organised around the second partner meeting, will cover 4 very important actions, ensuring a qualified transition between the two long eco-system testing scenarios:

- evaluating the lessons learned from the first round of eco-system testing

- ensuing a strong focus on evaluating the functioning of the eco-systems from the 3 different perspectives: school, student/teacher and the community based on eco-system of science resources

- evaluating the documentation of the student teams' science missions, and ensuring that qualified knowledge about how the student's learn science through engaging in science missions and eco-systems can be created

- creating improved guidance to schools, student teams and eco-systems for the second-round testing of the emerging open science schooling eco-systems

KEY ACTIVITIES

At the end of scenario 3, practice partners, schools and student teams will create raw material from the eco-system testing and the science missions. This raw material will be structured and edited by the project's knowledge partners and presented at the second partner meeting.

Also, at the end of scenario 3, the project will guide the local partners to capture the experience from the eco-system players in the form of individual and collective testimonies and make this material available at the partner meeting.

The project's knowledge partners will critically review and improve the guidance provided for the second-round eco-system testing, based on the lessons learned, documentation and testimonies from the first eco-system testing scenario.

Last, but not least, these scenarios will include detailed planning of the student team mobility: the "student teams' co-creation empowerment mobility".
The planning will be co-created by the student teams.

TRANSNATIONAL

Partner meeting 2 month 12 or 13 - FI

<u>Objectives</u>

The key progression objectives of the second partner meeting are:
- evaluating the lessons learned from the first round of eco-system testing
- ensuing a strong focus on evaluating the functioning of the eco-systems from the 3 different perspectives: school, student/teacher and the community based eco-system of science resources
- evaluating the documentation of the student teams' science missions, and ensuring that qualified knowledge about how the student's learn science through engaging in science missions and eco-systems can be created
- creating improved guidance to schools, student teams and eco-systems for the second-round testing of the emerging open science schooling eco-systems

<u>Participation</u>

Knowledge partners – 2 professionals
Practice partners – project manager + school team lead + 2 student team captain
Quality assurance partner – 2 professionals

PROCESS OUTCOMES

13
Lessons learned from the first round of eco-system testing, including from the 3 different player perspective

14
Successes and failures from the students' science missions: what works, what does not?

15
How can the school teams improve, widen and qualify the eco-systems in the second long practice period?

16
Improved and revised guidance for student teams for the second round of science missions and eco-system testing

SPECIAL CHALLENGES

Special focus needed in scenario 4 on to what extent sufficient knowledge can be created from the 6 months eco-system testing and science missions, and to what extent the student teams' mobility can contribute with important material for further knowledge creation.

SCENARIO 5

ECO-SYSTEMS TESTING - SCIENCE MISSIONS 2

TIMING

6 months – project months 15-20

OBJECTIVE

Scenario 5 will, based on the improved guidance produced in scenario 4, provide the second testing of how the student teams can learn science through open science schooling supported by the eco-systems of open science schooling in the practice communities.
The scenario is student driven, with support from the school teams.
The second-round testing is expected to be significantly more efficient than the first testing, as all players are now to be regarded "experienced open science schooling eco-systems' learners and resources".

This will happen through the creation of science missions for the 10 student teams in the practice countries.

In this first round the student teams focused the science missions on the local/regional (physical) community, combined with various science communities if possible.
In the second round the student teams will focus the science missions on virtual communities, combined with various science communities if possible.

The ultimate objective of the second round of eco-system testing is to create considerable further practical experience about how the students' open schooling is supported by the emerging eco-systems of science collaboration. The experience will be heavily documented with a variety of media and the documentation will feed into the project's knowledge creation.

The results of the knowledge creation will be discussed in the project in scenario 6 and will feed into the project's website and final outcomes.

The documentation and story-telling from scenario 5 will be strongly supported through the student teams' 5 days mobility, precisely missioned to enable the student teams to co-create the results of the project.

KEY ACTIVITIES

The 10 student teams will test the emerging eco-systems in this second round by working through their science missions. The science missions will be different from the first-round missions, as the second round missions will be focused on virtual communities in possible combination with local/regional science communities.

The science missions will be guided by the project's 10-steps science mission methodology:

STEP 1
Students as science detectives
STEP 2
Science engagement dialogues with the school team and with the eco-system of science resources
STEP 3
Agreeing on science missions driven by the student teams
STEP 4
Science learning on demand and dialogues with mission resources and stakeholders
STEP 5
Discussions with end-users, involved people and institutions and others with an interest in the science mission
STEP 6
Designing the science missions and negotiating needed resources
STEP 7
Working in the science missions (student teams, school team, eco-system)
STEP 8
Evaluation of successes and failures
STEP 9
Sharing the experience with the other teams and in the project and with creative media – story-telling
STEP 10
Lessons learned

TRANSNATIONAL

Student teams co-creation empowerment MOBILITY – month 19 or 20
Apeldoorn NL

<u>Objectives</u>

The student teams' mobility has 3 major objectives:
- students' sharing their science mission and eco-system experience

- empowering students to co-create the project's final outcomes
- producing key elements for the student teams' video movie, IO 2

Key topics

- intensive sharing of open science schooling and science missions experience
- workshops on the video material produced by the student teams
- editing of the video and production of additional material, including students' testimonies
- how to create useful and exciting multipliers and make them work for the local eco-systems?
- how to transfer the eco-systems to the new students?
- how will we continue to engage in science learning and science at local and global levels?
- how can we work with science in our social and gaming networks?
- how can we create personal portfolios demonstrating what we learned and what new competences we acquired?

Participation

Knowledge partners: 2 professionals each
Practice partners: 1 project manager + 1 lead science teacher + 8 students per practice partner
Quality Assurance partner: 2 professionals

The mobility will include a mini partner meeting session for project professionals.

PROCESS OUTCOMES

The process outcomes have 4 purposes:
- creating evidence from a scenario
- creating support tools for the project participants
- continuously feeding into the project's website
- contributing to the project's raw material base on which the final outcomes can be created

17
Raw material from the second round of science missions testing the eco-systems of open science schooling in 5 European communities, including summary

18
Design and organisation of the "Student teams co-creation empowerment mobility"

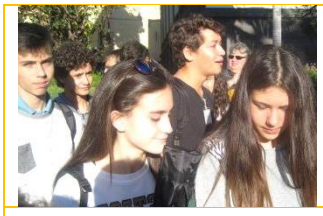
19
The student teams' mobility: what and how did the students co-create?

20
Final evaluation of the science missions, the eco-systems of open science schooling and the testing of the eco-system

SPECIAL CHALLENGES

A very strong focus on testing the eco-systems through authentic science missions and documenting the mission experience from the 3 perspectives: school, students/teachers and eco-systems of open science schooling.

A strong focus must be put at the sufficient and relevant production of documentation and testimonies from the second-round eco-system testing, as the final knowledge creation will be based on this raw material.



SCENARIO 6

FINAL OUTCOMES AND SHARING

TIMING

4 months – project months 21-24

OBJECTIVE

The ultimate objective of the sixth and final scenario is to complete the project's movement from experience to knowledge creation and to final outcomes.

To accomplish this, the scenario will create lessons learned from the second eco-system testing phase based on evidence from the 10 student teams' science missions in the practice countries, backed up and supported by the increasingly mature eco-systems of open science schooling.

Scenario 6 will therefore bring together the material produced from the various project sources:
- the progressive versions of the project guidance
- the documentation from the in total 20 different science missions
- the evaluation of the two long eco-system testing scenarios
- interviews and testimonies from the eco-system resources
- the project's continues knowledge creation

To ensure a most qualified creation of the final outcomes based on this rich material, the project has dedicated 4 months to accomplish this.

KEY ACTIVITIES

Knowledge partners collect, review and edit available material at the end of scenario 5 and make the results available for debate at the third and final partner meeting.

Knowledge partners will take action to create missing elements for the final outcomes, in particular for IO 01.

The third partner meeting will discuss the final editing and publishing of the project's results – including its dissemination in the website and in relevant social media.

Based on the discussions at the partner meeting, the project's IO leads will create the final versions of the IO's.

TRANSNATIONAL

Partner meeting 3 - month 21 - LT

Objectives

The third partner meeting will discuss the final editing and publishing of the project's results – including its dissemination in the website and in relevant social media.

Participation

Knowledge partners – 2 professionals
Practice partners – project manager + school team lead + 2 student team captain
Quality assurance partner – 2 professionals

PROCESS OUTCOMES

Only product outcomes expected in this final scenario.

Those are:

1
Eco-systems of open science schooling – The Guidance Pack

2
How we learned science through the eco-systems – The student video

3
Policy paper: what (more) does it take to make open science schooling a reality?

4
Research paper: what (more) needs research and experimentation to make open science schooling a reality?

SPECIAL CHALLENGES

The final scenario is the project will pay much attention to the quality criteria for the final outcomes, in particular:
- is the Guidance Pack practically useful, realistic and attractive to secondary schools and science teachers?
- is the student video as authentic as expected? Does it allow insight into the world of the new generations of students and their attitudes towards science and towards innovative science learning?
- are the policy and research papers able to provide precise recommendations for further experimentation in the field of eco-systems of open science schooling, from which the various levels of the European community can take action?