DELIVERABLE 3.2

Report on the usage

Authors

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Contributors

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All partners

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Reference

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Acknowledgement

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Abstract	This document describes the usage and activity of each local Open Science Hub (OSHub) in the first two years of the project.
Keywords	OSHub, Open Schooling, Activities, Participants, Resources

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0.1	07 October 2021	Maria Vicente and Pedro Russo	ULEI	Initial Draft
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0.3	29 October 2021	Maria Vicente and Pedro Russo	ULEI	Second Version
0.4	05 November 2021	All partners	All partners	Review
0.5	09 November 2021	Maria Vicente and Pedro Russo	ULEI	Final Version

List of Acronyms

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ACRONYM	DEFINITION
AE L	Ars Electronica
CCSTI	La Casemate
FAB	Onl'Fait
IH	Impact Hub
MFCR	Município de Figueira de Castelo Rodrigo
OSHub	Open Science Hub
OSHub-NL	Open Science Hub - The Netherlands
OSHub-IE	Open Science Hub - Ireland
OSHub-CH	Open Science Hub - Switzerland
OSHub-AU	Open Science Hub - Austria
OSHub-FR	Open Science Hub - France
OSHub-CZ	Open Science Hub - Czech Republic
OSHub-PT	Open Science Hub - Portugal
OSHub-GR	Open Science Hub - Greece
OSHub.Network	Open Science Hub Network
SciCo	Science Communication - Greece
SCIN	Science In
STEAM	Science, Technology, Engineering, Art, and Mathematics
TCD	Trinity College Dublin
ULEI	University of Leiden
WP	Work Package

Executive Summary

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This deliverable corresponds to D3.2: Report on the usage, and describes the usage and activity of each local Open Science Hub (OSHub) in the first two years of the project.

OSHubs work as mediators in each local community, where they support schools to become active agents for collaboration between families, universities, industry, local governments and civil society, positioning them as drivers for societal innovation and community well-being, by engaging in real--life projects where school and community needs are at the core of school projects.

As such, a local OSHub is composed by their local team, a local management board - which consists of different stakeholder groups that are involved in all key processes and decisions of the local OSHubs - and their partner schools, with whom they work closely and in a manner that is aligned with their needs and context. Moreover, each OSHub is rooted on their local challenges, which can be of different nature, depending on the local reality.

In this deliverable, we provide a summary of the usage and activity of each local OSHub in the first two years of the project, by characterizing them in terms of their goals, nature and structure (value proposition, team, management board, partner schools, local context, physical space) as well regarding the programs that each has developed, giving detailed information about the beneficiaries, kind of partnerships, activities, participants involved and resources developed.

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1. INTRODUCTION

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1.1   Background: about OSHub.Network

The Open Science Hub Network (OSHub.Network), a consortium of nine partners across Europe, engages schools and local stakeholders in research and innovation as a tool for sustainable community development.

More specifically, the OSHub.Network is establishing a European network of community hubs – OSHubs, in communities that traditionally do not engage with research and innovation due to various barriers, geographical location, socio-economic status, or ethnic minority group background. OSHubs inspire, empower and engage citizens – from school children to senior citizens – in STEAM (Science, Technology, Engineering, Arts and Mathematics) learning and research opportunities, grounded on collaboration with societal agents.

As such, local OSHubs work as mediators in their local communities, positioning schools as active agents for collaboration between civil society, enterprises, research institutes, and families. This is performed by promoting an open schooling approach grounded in community-based participatory research practices: throughout this process, schools and communities identify local relevant challenges, which are then be transformed into relevant research and innovation projects, led by students and teachers, in collaboration with local stakeholders.

The OSHub.Network is developing a common methodological framework, that allows each OSHub to identify and analyse local needs, issues, opportunities and relevant actors, in order to address socio-economic, geographical, gender equity issues, and untapped growth potential. Inspired by the "Mission-Oriented Research & Innovation in the European Union"[1] approach, developed by Mariana Mazzucato, OSHub.Network will define a set of Open Schooling Missions, aimed at addressing local relevant challenges linked to the Sustainable Development Goals. These Open Schooling Missions will then constitute the basis for the creation and development of the open schooling projects, enabling real collaboration across communities. Importantly, to ensure diversity, inclusion and sustainability, in each OSHub location, there will be a local management board with representatives from local stakeholder groups – schools (including students), families, research institutes and universities, enterprises, industry, media, local governments, civil society organizations and wider society – which will be involved in all key processes and decisions regarding local OSHub programmes and initiatives.

By supporting local schools and communities with the tools and network to tackle relevant challenges, OSHub.Network aims to create local impact while simultaneously promoting an active global citizenship attitude, thus contributing to community development, innovation and well-being. To

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1   Mariana Mazzucato (2018), Mission-Oriented Research and Innovation in the European Union – A problem solving approach to fuel innovation-led growth', European Commission, Retrieved from: https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

encourage usage and maximise impact in Europe and beyond, all resources, products and solutions developed by OSHub.Network will be fully based on Open Standards, such as open education, open technology, open science, open hardware, open design and open architecture. Also, OSHub. Network will create an online platform to share OSHub expertise, resources, and best practices with all OSHubs, their partners and the communities they serve. To ensure the legacy and reach of the project, all OSHub.Network resources will also be shared on existing large online educational repositories, and relevant national networks and repositories.

Finally, OSHubs will develop a legacy and sustainability plan, and will work closely with local governments, to ensure that each local OSHub has the tools and resources to continue beyond the lifetime of the project, and that the Open Schooling approach is incorporated in the school vision and organizational structure.

By the end of the project, it is expected that the OSHub.Network will have impacted 25 000 students, 1 250 teachers and 4 000 members of the community, through involvement in more than 150 school-university-industry-civil society partnerships in open schooling projects and activities.

In the long-run, we envision OSHubs as education brokers in their local communities, supporting local school networks to incorporate Open Schooling in their vision and organizational structure, leading to sustainable quality of education. Most particularly, OSHubs will facilitate the bridge between the needs and realities of schools and their local context and resources, as well as brokering for implementing national/regional policies, passing along signals from schools when policies are failing and advocating for context-sensitive policies.

1.2   Objectives of this deliverable

As mentioned earlier, OSHubs work as mediators in each local community, where they support schools to become active agents for collaboration between families, universities, industry, local governments and civil society, positioning them as drivers for societal innovation and community well-being, by engaging in real-life projects where school and community needs are at the core of school projects.

As such, a local OSHub is composed by their local team, a local management board - which consists of different stakeholder groups that are involved in all key processes and decisions of the local OSHubs - and their partner schools, with whom they work closely and in a manner that is aligned with their needs and context. Moreover, each OSHub is rooted on their local challenges, which can be of different nature, depending on the local reality.

Considering the bottom-up approach of each OSHub, rooted on the local context and on the nature of their networks, both with schools and other stakeholders (universities, industry, NGOs, etc), we observed that the solutions that have emerged in each community are very rich, diverse and tailored to the respective contexts.

Nevertheless, despite this diversity, we have identified commonalities across the different hubs, which allowed us to group them in three main categories:

— Education brokers that facilitate the integration of Open Schooling in the school formal structure / curriculum OSHub-IE, OSHub-PT

— Third place / makerspaces that meet school and community needs in collabora-

tion with local partners OSHub-CH, OSHub-FR, OSHub-GR

— Facilitators of the establishment of new relationships and processes between schools and partners aligned with school needs OSHub-NL, OSHub-AEL, OSHub-CZ

In this deliverable, we provide a summary of the usage and activity of each local OSHub in the first two years of the project, by characterizing them in terms of their goals, nature and structure (value proposition, team, management board, partner schools, local context, physical space) as well regarding the programs that each has developed, giving detailed information about the beneficiaries, kind of partnerships, activities, participants involved and resources developed.
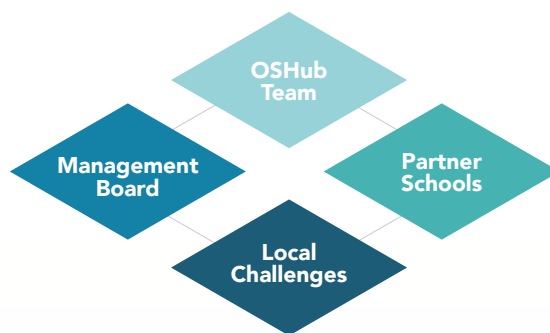
2. OPEN SCIENCE HUBS

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2.1   Open Science Hub - The Netherlands

Value proposition

To increase educational opportunities for all students, by fostering collaboration between primary schools and universities, thus opening up schools to new community members and promoting educational careers for university students.

OPEN SCIENCE HUB

OSHub Team

Sanne van Gammeren	Maria Vicente	Pedro Russo
OSHub-NL Project Manager	OSHub.Network Project Manager	OSHub.Network Coordinator

Management Board

CIVIL SOCIETY

Stichting Bredebuurtschool (SBB)

Rudy van der Bovenkamp
Employee educators, networking in local community, project manager (weekly contact)

Rebecca Gerritse
Employee educators, networking in local community, project manager (weekly contact)

LOCAL GOVERNMENT

Municipality of The Hague

Rebecca Salcedo
Policy member, funding (monthly contact)

SCHOOL BOARD

De Haagse Scholen (DHS)	Karin Striekwold Advisory, implementation schools, supplier for training educators (monthly contact)
Stichting Christelijk Onderwijs Haaglanden (SCOH)	Danielle Ames Advisory, implementation schools, supplier for training educators (monthly contact)
Lucas Onderwijs	Florentien Dijksma Advisory, implementation schools, supplier for training educators

Partner Schools

NAME	LOCATION	SCHOOL YEARS
Gerth van Wijkschool	The Hague	Primary
De Hoogstratenschool	The Hague	Primary
Meester Schabergschool	The Hague	Primary
Comenius	The Hague	Primary
Kindcentrum Da Vinci - Ds.D.A.v.c. Boschschool	The Hague	Primary
Prinses Ireneschool	The Hague	Primary
Prinsehaghe	The Hague	Primary
KC Wondersteboven - Dr. M.M. den Hertog School	The Hague	Primary
De Springbok Wolmaranstraat	The Hague	Primary
De Springbok Pretoriusstraat	The Hague	Primary

Anne Frank School	The Hague	Primary
De Voorsprong	The Hague	Primary
Het Galjoen	The Hague	Primary
Erasmusschool	The Hague	Primary
Prinses Marijke	The Hague	Primary
Het Startpunt	The Hague	Primary
Carolusschool	The Hague	Primary
Nutsschool Woonstede	The Hague	Primary
Nutsschool Morgenstond	The Hague	Primary
Onze Wereld	The Hague	Primary
Drie Linden	The Hague	Primary
Cosmicus	The Hague	Primary
De Vuurvlinder	The Hague	Primary
Toermalijn	The Hague	Primary
De Rosaschool	The Hague	Primary
Yunus Emre - Mandelaplein	The Hague	Primary
CBS Leyenburg	The Hague	Primary
De Horizon	The Hague	Primary
Oranje Nassauschool	The Hague	Primary
De Elout	The Hague	Primary
De Oosterlee	The Hague	Primary
Paul Krugerschool	The Hague	Primary
Rehoboth	The Hague	Primary
Da Costaschool	The Hague	Primary

— Educational inequality; pupils falling behind in their academic, creative and emotional development

— Increased teacher workload due to teacher shortage

— Social/economic disadvantaged neighbourhoods in the Hague, with increased challenges due to COVID-19 pandemic

Physical space

During 2019/2020 and 2020/2021, OSHub-NL has been focusing on a project that does not require a physical space.

In 2021/2022, OSHub-NL is setting-up a makerspace for education at Leiden Old Observatory, but it's still in an early phase.

Programs running at OSHub - NL
Studenten voor Educatie

Figure 1: Photos from Studenten voor Educatie sessions.

Objective:

Quality education for every child, reduce disadvantages created by corona, eliminate teacher workload, meaningful community work experience students universities and high schools.

Description:

The Studenten voor Educatie project supports schools reducing learning deficits due to teacher shortage, which have increased because of the pandemic. For that, students from universities and schools for applied sciences are recruited, selected, trained and guided so they can help as an extra force at schools, by working as tutors of primary students. The Studenten voor Educatie project ensures that a sustainable relationship is built between university students, primary students and teachers so that students can also act as role models for pupils. As a result, university students also gain experience in teaching and are involved in meaningful societal experiences.

Target Public:

Students - both from primary education as well as from higher education, University and School for applied sciences -, primary school teachers, school directors, school boards, parents.

Partnerships:

01 Civil Society

Stichting Bredebuurtschool (SBB)
Management Board

01 Government

Municipality of The Hague
Management Board

03 School Board

De Haagse Scholen (DHS)
Advisory Board

Stichting Christelijk Onderwijs Haaglanden (SCOH)
Advisory Board

Lucas Onderwijs
Advisory Board

08 Academia

The Hague School for Applied Sciences
Researchers for Monitoring & Evaluation

Leiden University college
Communication to students

Study advisors, Leiden University
Communication to students

**Diversity & Inclusion Expertise Office,
Leiden University**
Training of tutors (University students)

ICLON, Leiden University
Training of tutors (University students)

**Pedagogische wetenschappen /
Social Sciences, Leiden University**
Training of tutors (University students)

**Antropologie / Social Sciences,
Leiden University**
Training of tutors (University students)

**Faculteit Governance and Global Affairs,
Leiden University - The Hague Campus**
Training of tutors (University students)

02 Non-formal education -related entity

Student association, Leiden University
Communication to students

**Student association,
The Hague School for Applied Sciences**
Communication to students

Activities:

10   **Training sessions for (tutors) University students**

01   **Research Monitoring and Evaluation Programme**

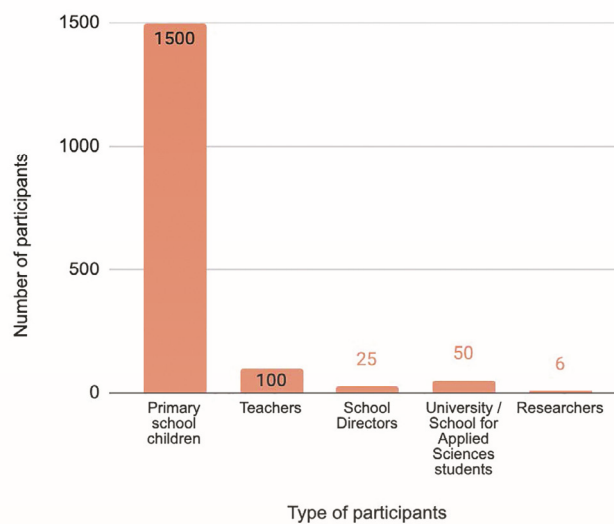**16 400**   **1h university student - primary student tutoring sessions**

Figure 2: Type and number of participants in OSHub-NL activities.

Resources:

—   **Policy paper and budget (in Dutch):** Guidelines on how to establish this project in collaboration with partners, with the respective values and roles, together with the corresponding budget.

—   **Website of Studenten voor Educatie[2]:** Website with description of the project, team and instructions for recruitment of university students.

2.2   Open Science Hub - Ireland

OPEN SCIENCE HUB
MAKEDOCK
IRELAND

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Value proposition

Promoting transdisciplinarity and active global citizenship with Transition Year (TY) students. Additionally, providing or pooling networks of stakeholders that can help build student action out into local communities and vice-versa.

OPEN SCIENCE HUB

OSHub Team

Management Board

Partner Schools

Local Challenges

OSHub Team
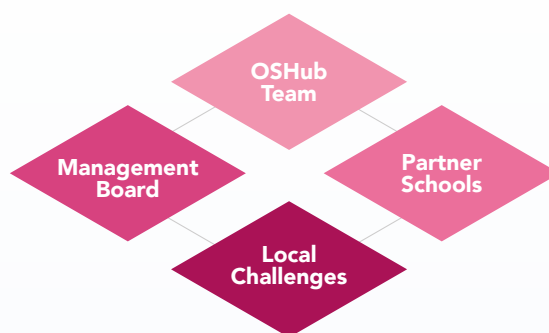
Brendan Owens	**Joseph Roche**	**Shaun Ussher**	**Róisín McGannon**
Open Science Coordinator	Assistant Professor in Science Education	Learning and Engagement Researcher	Informal Learning Researcher

Management Board

NON-FORMAL EDUCATION-RELATED ENTITY

Science Gallery Dublin	Aisling Murray *Head of Programming* Science Gallery connections and interplay
National Youth Council of Ireland	Barbara Nea *STEAM Engagement Programme Manager* Best practice in engaging young people in informal learning settings with STEAM practices

SCHOOL

Ringsend College	Ciara Moran *Vice Principal* Teacher forum member and participating school
Balbriggan Community College	Marie Jan Buckley *Programme Coordinator* *Teacher forum member and participating school*
St. Josephs Secondary School	Chris O'Connell *Science Teacher* Teacher forum member and participating school
Assumption Secondary School	Michelle Salter *Science Teacher* Teacher forum member and participating school l

**Partner
Schools**

NAME	LOCATION	SCHOOL YEARS
Ringsend College	Dublin	Transition Year (15 - 16 yos)
Balbriggan Community College	Balbriggan	Transition Year (15 - 16 yos)
Firhouse Educate Together Secondary School	Firhouse	Transition Year (15 - 16 yos)

**Local
Challenges**

— Student retention in Delivering Equality of Opportunity In Schools (DEIS) schools
— Increasing youth leadership skills
— Student co-creation: challenges defined during the process by the students
— Showcasing future life opportunities for students
— Building / strengthening school relationships in a pandemic
— Tackling SDG with the local community & emphasising science place within society

Physical space

The space OSHub-IE was to use on a part time basis (Unit18 in TCD's Technology and Enterprise Campus) has not been available due to COVID-19 restrictions. Instead OSHub-IE has concentrated on establishing a programme which can be run in any school with local community collaboration. OSHub-IE still intends to make use of the Unit 18 space part time in 2021/22 for interactions with one local school involved in the pilot programme, once restrictions allow.

Open Science Hub Programme Pilot

Figure 3: Photos from Open Science Hub Pilot sessions.

Objective:

To build strong relationships with schools in the local area and invest time to demonstrate to both students and teachers the value of the open schooling approach with STEAM resources and co-creation techniques. To empower students to take local action with global impact on challenges they are authentically interested in. To provide a perspective shift for teachers, students and schools to demonstrate the strengths of inter- and transdisciplinarity.

Description:

A year-long transition year programme facilitated by Science Gallery staff on the OSHub-IE team to spark inspiration through STEAM workshops, rapidly ideate solutions to local challenges with students, construct projects to tackle said challenges and showcase the work beyond the classroom.

Target public:

Students (15-16 year olds), teachers, school heads, local publics.

Partnerships:

02 Civil Society

Office of the Chief Innovation Officer, Trinity College Dublin

Providing a space outside the school and Science Gallery / Trinity College Dublin that is in the community and is regularly used by community actors. Opportunity to prototype challenge projects in a flexible space and interact with those community actors where relevant (e.g. testing, data collection, etc). Opportunities delayed during Covid restrictions in 20/21, but ongoing communication throughout for future plans.

Jigsaw - National Centre for Youth Mental Health

One off event with one school interviewing a regional manager to learn how an organisation practically creates a positive impact in the community.

02 Academia

University College Cork

Consultation with immunologist Dr. Anne Moore to work with Ringsend College students on their vaccine hesitancy project. Included a school presentation, q&a by email, survey consultation and final shareback.

University College Cork

Consultation with Dr. Gillian Murphy, School Psychology on best practice in survey design with particular attention to mitigating bias in participant responses. Included presentations to pilot schools, and direct school consultation while creating drafts of surveys to inform three challenge projects (two on bias and the third on vaccine hesitancy).

Activities:
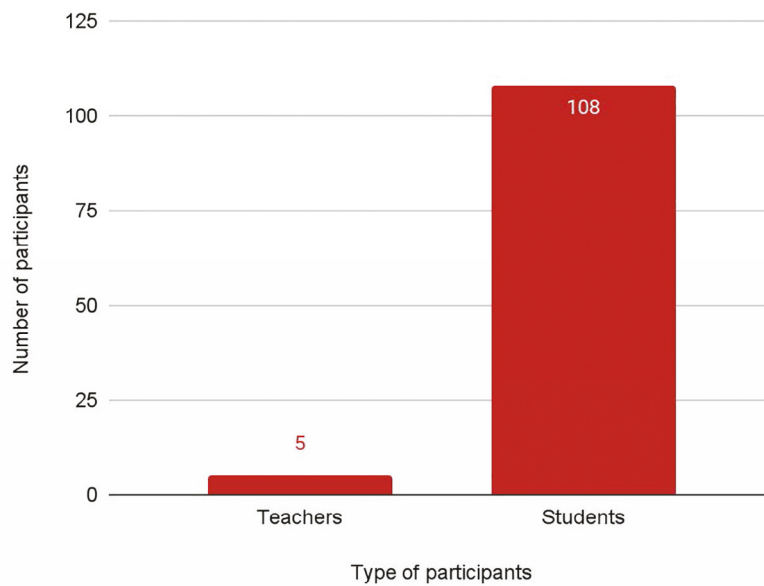
89 Open Science Hub weekly sessions (facilitated)

Figure 4: Type and number of participants in OSHub-IE activities.

Resources:

— **Teacher Handbook and associated presentations:** Developed in Summer 2021, informed by pilot programme feedback. 120 page OSHub Ireland Teacher Handbook available as a printable or downloadable PDF. Contains material designed to cover classes from September until May in the school year. Includes Diversity Equity and Inclusion concept explanations and practical guidance for implementation, STEAM/ global citizenship workshop guides, co-creation ideation session guide, research methodologies, project building formats and tips, and showcase guidelines. It is designed for a collaboration with Science Gallery Dublin, but much of the pack can be reworked for another local context in a different country.

— Links for resources: Suitable for devices[3] / Suitable for print[4]

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3   Suitable for devices:
    https://drive.google.com/file/d/1Ktkb3MR7eP0zS3jDyGY3SE_gtzGJtMzc/view?usp=sharing

4   Suitable for print:
    https://drive.google.com/file/d/1uFgloPEJYt2aGqw06PB97L0YsTp4KB2t/view?usp=sharing

2.3   Open Science Hub - Switzerland

Value proposition

Promoting transdisciplinarity and active global citizenship with Transition Year (TY) students. Additionally, providing or pooling networks of stakeholders that can help build student action out into local communities and vice-versa.

OPEN SCIENCE HUB

OSHub Team
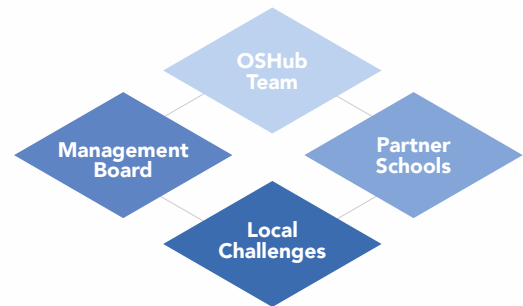
Cristina Olivotto

Fab Lab Manager

Patrick Condevaux

Project Manager

Management Board

ACADEMIA

HEPIA

Kenzo Paul-Julien
Teaching Assistant

Support to set-up objectives for scientific projects linked to sustainability

NON-FORMAL EDUCATION-RELATED ENTITY

Maison de la Rivière

Damien Robert-Charrue

Deputy director

Support to set-up pedagogical relevant programmes
about science and sustainability

INDUSTRY

Après

Antonin Calderon

*Head of Development Department
for the sustainable and social economy*

Connection with private stakeholders engaged in
community and sustainable programmes

GOVERNMENT

**Département de
l'Instruction Publique**

Andreas Fink

Member of the department of Secondary Public Education

Support to identify needs of the local government
for Geneva secondary schools

**Partner
Schools**

NAME	LOCATION	SCHOOL YEARS
CFPP (pre-professional school)	Geneva	15 - 18
CFPT (school of electronics)	Geneva	15 - 16
Collège et école de commerce A. Chavanne	Geneva	+ 15

— Making: strengths and technical competences of Onl'fait

— Interregional: located at the border with France

— Sustainability: key issue identified by Dept Public Education; recently introduced in school programmes

— Collaboration: schools looking for collaborative / applied projects; engaging with science and technology; inspiration about careers

Physical space

OSHub-CH is setting up a 30 m² space at the MACO - where Onl'fait is now based - that will be operational at the end of 2021. OSHub-CH is working with Glitter (Precious plastic Geneva) for furniture.
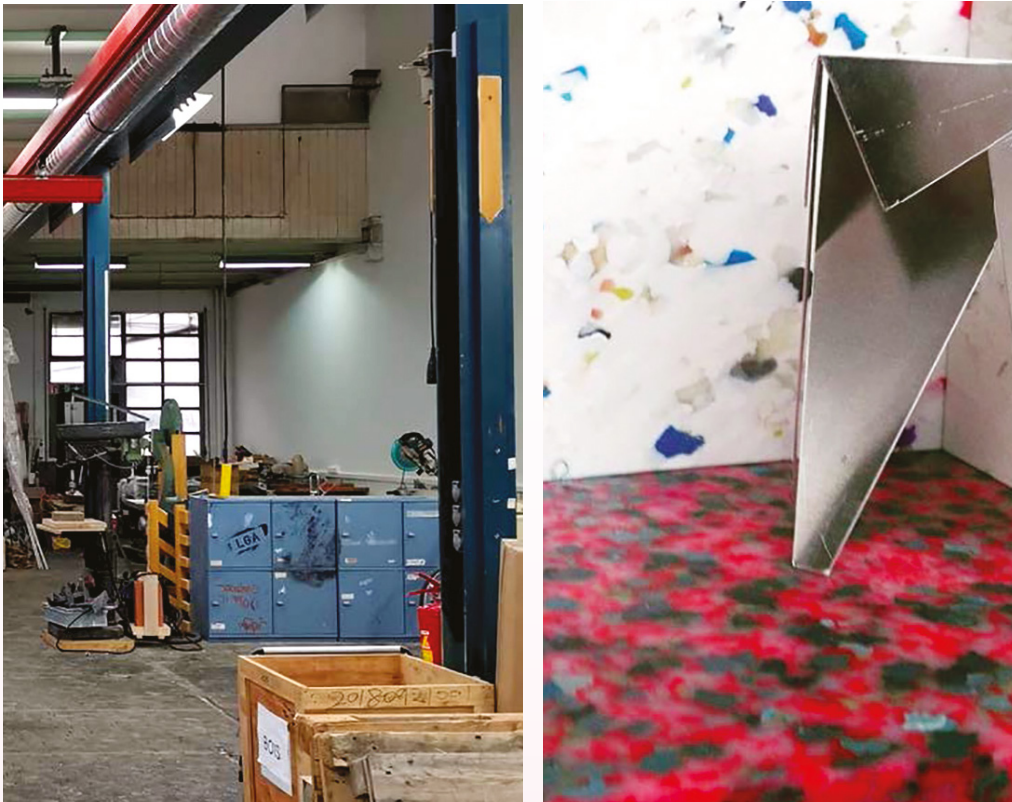
Figure 5: Photos of OSHub-CH physical space and furniture detail.

La cité de science ouverte Programme

Figure 6: Photos from La cité de science ouverte Programme sessions.

Objective:

To develop open-schooling educational programmes for vocational schools and less advantaged students. To sensibilise young people on the multidisciplinarity of societal challenges and specifically about freshwater. To provide a perspective shift for the Department of Public Education to demonstrate the strengths of maker education, open schooling and transdisciplinarity.

Description:

A year-long programme launched by a co-creation session to develop a programme about the importance of fresh water in the region. The main objective is to develop sensors for water quality. The participating classes were divided into working groups: electronics, communication, science, EU relations, stakeholders.

Target public:

Geneva secondary school students from vocational schools (>15 yo), teachers, Department of Public Education.

Partnerships:

01 Non-formal education -related entity

Maison de la Rivière

Regular exchanges with the deputy director to: set the scientific objectives of the programme; co-develop activities.

01 Academia

HEPIA

Exchanges with academic staff to set up the scientific objectives of the programme.

01 Government

Département de l' Instruction Publique

Exchanges with different departments to: identify pedagogical challenges in science and technology; identify target schools; understand the objectives about sustainability for secondary schools.

Activities:

15 Sessions about electronics

04 Interventions at school (comm, science...)

02 School outings

01 Plenary sessions

09 Meetings with teachers

02 Co-creation session

25 Sessions of autonomous work by teachers
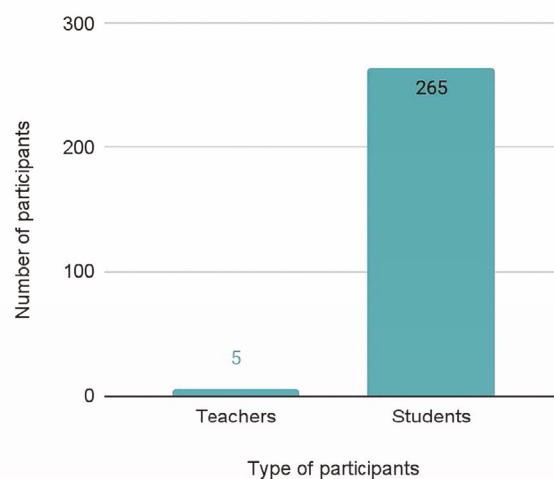
Figure 7: Type and number of participants in OSHub-CH activities.

Resources:

— **Tutorials / notes (in French):** Set of notes published on Github, but not detailed enough to be considered a tutorial. Link for resource[5]

— **Report of the co-creation sessions (in French):** A report of the session and respective results. Link for resource[6]

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5   Documentation on Github: https://github.com/onlfait/WaterQualityMonitoring

6   Report of co-creation sessions:
     https://drive.google.com/file/d/19QxrdkZSZSey9nXsalmMCKqdlAbqvaC3/view?usp=sharing

2.4   Open Science Hub - Austria

Value proposition

To increase digital skills and promote critical and creative thinking in young people aged 11- 18 by inviting artists, peers and other experts working with technology to lead workshops in schools.

OPEN SCIENCE HUB
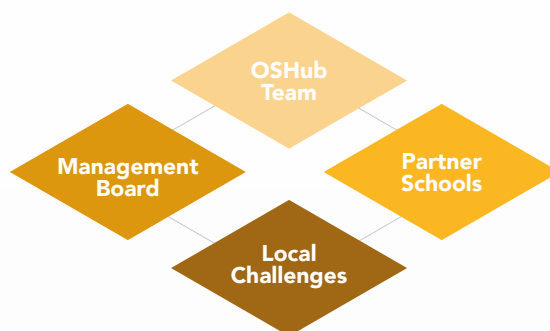
Veronika Liebl	Andrew Newman	Marion Friedl	Hans Christian Merten	Katharina Hof
Managing Director, Ars Electronica Festival-Prix-Exhibitions	Producer - European Platform for Digital Humanism, Ars Electronica Festival-Prix-Exhibitions	Project Manager - Create Your World, Ars Electronica Festival-Prix-Exhibitions	Director - Create Your World, Ars Electronica Festival-Prix-Exhibitions	Education & Content Development, Ars Electronica Festival-Prix-Exhibitions

Management Board

NON-FORMAL EDUCATION-RELATED ENTITY

Ars Electronica

Hans Christian Merten

Director create your world - Ars Electronica

To provide expertise and oversight in content-development for young people, to oversee integration of the OSHub into the broader create your world program for young people at the Ars Electronica festival, and lead acquisition in industry partners to ensure sustainability and legacy of the OSHub.

GOVERNMENT

Innovation Main Square - City of Linz

Kathrin Obernhumer

Director Innovation Main Square

To ensure objectives and activities of the OSHub are responsive and relevant to local challenges in the City of Linz, especially in terms of digital transformation and innovation. To advise and provide feedback on the sustainability of the OSHub.

ACADEMIA

Johannes Kepler University

Kerstin Pell

Art & Science

To create an interface between the OSHub and the research activities of the university. To support the development of the 'Education Day' program with corresponding programs at the JKU and to investigate how science communication activities of the JKU can be integrated with the OSHub, and how the OSHub activities can be integrated into the school education outreach of the JKU.

CIVIL SOCIETY

Artist

Kat Austen

Independent artist focused on environmental issues and participatory practice

With a previous professional background in science communication and scientific research background in chemistry, Kat Austen is now a leading European artist and researcher who provides pedagogic expertise to the OSHub in developing best-practice STEAM activities informed by participatory methods of citizen science and artistic research.

SCHOOL

**BORG Gymnasium
Bad Leonfelden**

Elke Hackl
Teacher

As a professional secondary teacher who has previous experience in delivering non-formal education programs that are STEAM based, and is currently working towards a PhD on STEAM engagement, Elke Hackl provides pedagogic and practical expertise in implementing the activities of the OSHub in local partners schools within Austria.

Partner Schools

NAME	LOCATION	SCHOOL YEARS
Polytechnikum Wien	Vienna	Secondary
AHS Erlgasse Wien	Vienna	Secondary
AHS Bruck an der Mur	Styria	Secondary
BG/BRG Geringergasse Wien	Vienna	Secondary
BRG Kepler Graz	Styria	Secondary
Alpen Adria Gymnasium Völkermarkt	Carinthia	Secondary
Gymnasium Güssing	Burgenland	Secondary
Gymnasium Gmünd	Lower Austria	Secondary
Europagymnasium Baumgartenberg	Upper Austria	Secondary
Gymnasium Sacre Coeur Wien	Vienna	Secondary
BORG Gymnasium Bad Leonfelden	Upper Austria	Secondary

— To tackle community needs of digital literacy in regional schools and schools where students come from low-socioeconomic backgrounds

— To give agency to young people to determine the roles that people and machines will play in the future

— Aligns with Digital Humanism mission of Ars Electronica

Physical space

OSHub-AT prioritised mobility in the establishment of its OSHub with the aim of expanding the existing infrastructure of the Ars Electronica Center with a portable lab that could be set up within schools to accommodate the create your world workshops. Due to COVID-19 lockdown restrictions and the inability to visit schools, the focus of the OSHub was instead on exploring digital infrastructure, specifically Miro and Zoom to create virtual spaces for the workshops to take place.

Programs running at OSHub - AT

Create Your World TOUR

Figure 8: Photos from create your world TOUR sessions.

Objective:

To connect students and teachers with digital humanist content, concepts and processes that are currently of interest to artists and thinkers from across the Ars Electronica network. To coach and support artists and thinkers from across the Ars Electronica network at an early-career stage in developing online workshops based on their expertise.

Description:

Interactive methods, new technologies and materials and artistic positions are prepared for the classroom and dealt with there. A joint learning process is launched and a foundation laid for lasting inspiration for both learners and educators alike.

Thinking together about what's actually going on behind the moon, chatting about your own expectations of artificial intelligence with a programmer in English class, becoming part of a fantastic universe with a visual artist and slipping into the role of a cyberpunk activist, or getting creative yourself with new software and hardware – the tour might bring all this and more into your digital and real classroom!

On the one hand, the open form of education serves as motivation here, on the other hand, the fun and the "do-it-yourself" principle is paramount and automatically brings increased receptiveness to the children and young people.

Target public:

Students and teachers of all school types, students aged 11 - 18, with a focus on students in regional areas or from low-socio-economic urban backgrounds. Workshop leaders from non-formal education background, working within STEAM and with a priority on those at early stage of career.

Partnerships:

03 Non-formal education -related entity

OMAI

Artist and educator developed workshop "OMAi Space Workshop"

Daniel Kohlmeigner

Artist and educator developed workshop "Produce your own beat!"

Tinkerbells on Tour

Artists and educators developed workshop ‚Hacking Humans for Space Exploration'

02 Academia

University of Applied Arts Vienna

Researchers developed workshop 'Climate Change in Stop Motion: Tell your own Story!'

Beate Absalon

PhD researcher developed workshop 'That could help. Self-Care-Zines'

02 Industry

László Siller

Industry professional developed workshop "AI 360°"

MIC

Company that sponsors some of the activities within create your world TOUR

01 Wider Society

Generation Y

Recent school graduates and university students developed workshop 'Generation Y'.

Activities:

03 Teacher training: Education Inspiration Sessions

11 Teacher Consultations

08 Reflection Sessions
with Workshop Leaders

04 Co-Creation Sessions
with Workshop Leaders

01 Workshop for students: Generation Y

04 Workshop for students:
OMAi Space Workshop

05 Workshop for students: Hacking
Humans for Space Exploration

01 Workshop for students:
AI 360°

02 Workshop for students: Climate Change in Stop Motion: Tell your Story!
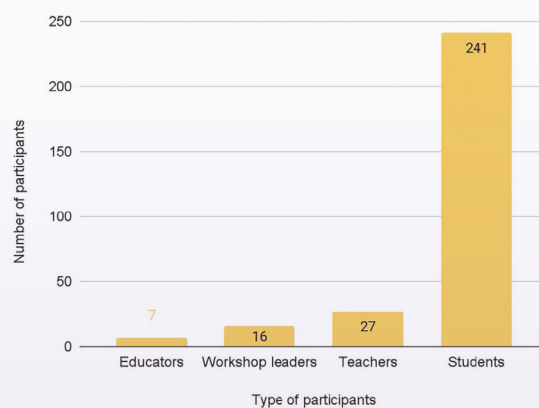
Figure 9: Type and number of participants in create your world TOUR activities.

Resources:

—   **Online Workshop Best-Practices Guidebook:** Advice for translating hands-on workshops that usually takes place online to online formats [DE/EN]. (Expected Publication Mar 2022)

—   **Eight Workshop Activities** (Currently not open-access)

—   **Practical Guide to Delivering Art & Science Programs within School Classrooms.** (Expected Publication Jun 2022)

Ars Electronica Education Day

Figure 10: Photos from Ars Electronica Education Day sessions.

Objective:

To communicate open schooling concepts and best practices in STEAM in education to those working in the non-formal education sector.

Description:

The need to understand how to use digital technologies is emphasised consistently across the globe and educational systems have responded to this by investing in STEM (science, technology, engineering and mathematics). The Education Day at the Ars Electronica festival explores how we can open learning beyond traditional educational institutions and integrate the arts through STEAM. In a series of sessions hosted by Open Science Hub and other partners from the European Platform for Digital Humanism we offer a glimpse of how we can learn and teach differently through integrating art, technology and society. Diverse discussions will demonstrate how a New Digital Deal for education can empower citizens to transform their digital future, enabling them to critically question technologies and understand their deeper implications on the fabric of society.

Target public:

Non-formal educators and teachers (International Audience).

Partnerships:

04   Non-formal education -related entity

National Museum of Science and Technology Leonardo da Vinci

Hosted panel

TBA21

Hosted panel

Creative School

Hosted panel

Open Schooling Together

Hosted panel

01   Academia

Austrian Science Fund

Hosted panel

Activities:

08 Education Conference Panels and Workshops
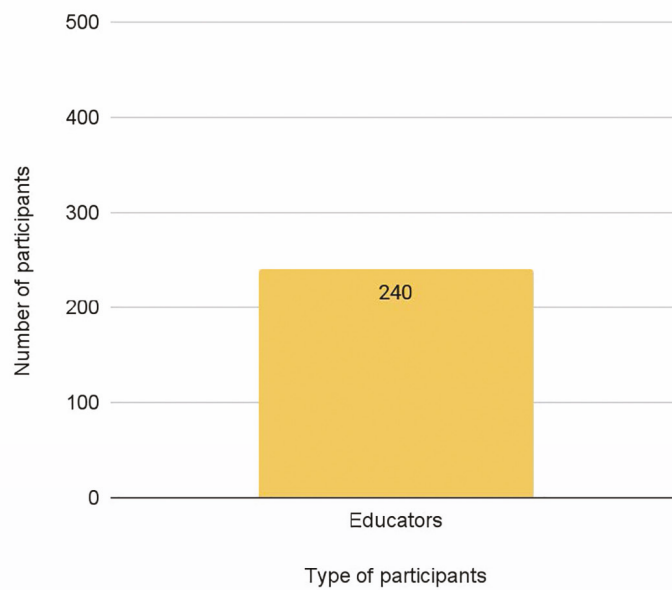
Figure 11: Type and number of participants in Ars Electronica Education Day activities.

Resources:

— **Six video presentations** introducing best-practices in non-formal STEAM education and Open Schooling (will be published on Dec 2021)

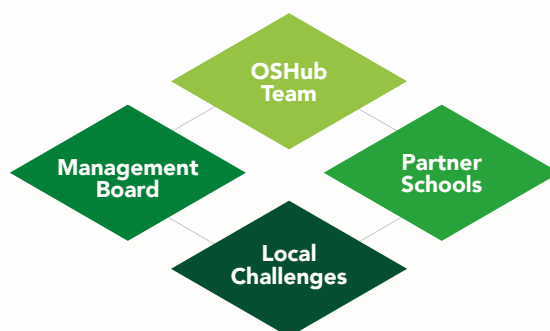## 2.5   Open Science Hub - France

Value proposition

Community hub that supports and helps teachers to develop new projects using the OSHub resources and increase the number of projects making tangible objects.

OPEN SCIENCE HUB

Catherine Demarcq

Public & Mediator Manager, OSHub Project Manager

Jenny Avila

Mediateur Casemate, OSHub Project Manager

Management Board

NON-FORMAL EDUCATION-RELATED ENTITY ASSOCIATION / CIVIL SOCIETY

La Machinerie	Third place organization dedicated to the performing arts and hybrid practices *OSHub-FR is established at La Machinerie* Promotion of the project, participation in the activities

ACADEMIA

Direction des services départementaux de l'éducation nationale	Sophie Thuillier *Organize training workshops for teachers, Pedagogical advisor in mathematics and science of departmental educational* Promotion of OSHub
Maison pour la Sciences en Alpes-Dauphiné	Nathalie Vuillod *Organize training workshops for teachers, Training engineer* Promotion of OSHub
Lucie Aubrac Secondary School	Hugo Daumas *Organize training workshops for teachers, Relay information for teachers* Priority Education Networks coordinator
	Christophe Fasquel *Relay information, Leader of Lucie Aubrac Secondary school*
Ministry of Education	Anne Karine Piot Paquiet *Relay information, Education coordinator*

Partner Schools

NAME	LOCATION	SCHOOL YEARS
Lucie Aubrac (collège)	Grenoble	Secondary

— Neighborhood with social and economic difficulties; increase with the pandemic

— Surge of violence

— Help students to develop their knowledge, their feeling of being an active part of their community ("well being together")

— Capacitate teachers and stakeholders with fabrication skills

— Promote connections and collaborations between local partners and schools

Physical space

OSHub-FR is established at La Machinerie - Fab Lab and third place - in La Villeneuve Grenoble. The Fab Lab is a 100 m^2 space with machines and tables to work with a class. In the Fab Lab, there is a place for the OSHUB project, where it's possible to welcome the residents of the neighborhood.

Figure 12: Photos of OSHub-FR physical space.

Fab Lab for teachers and students
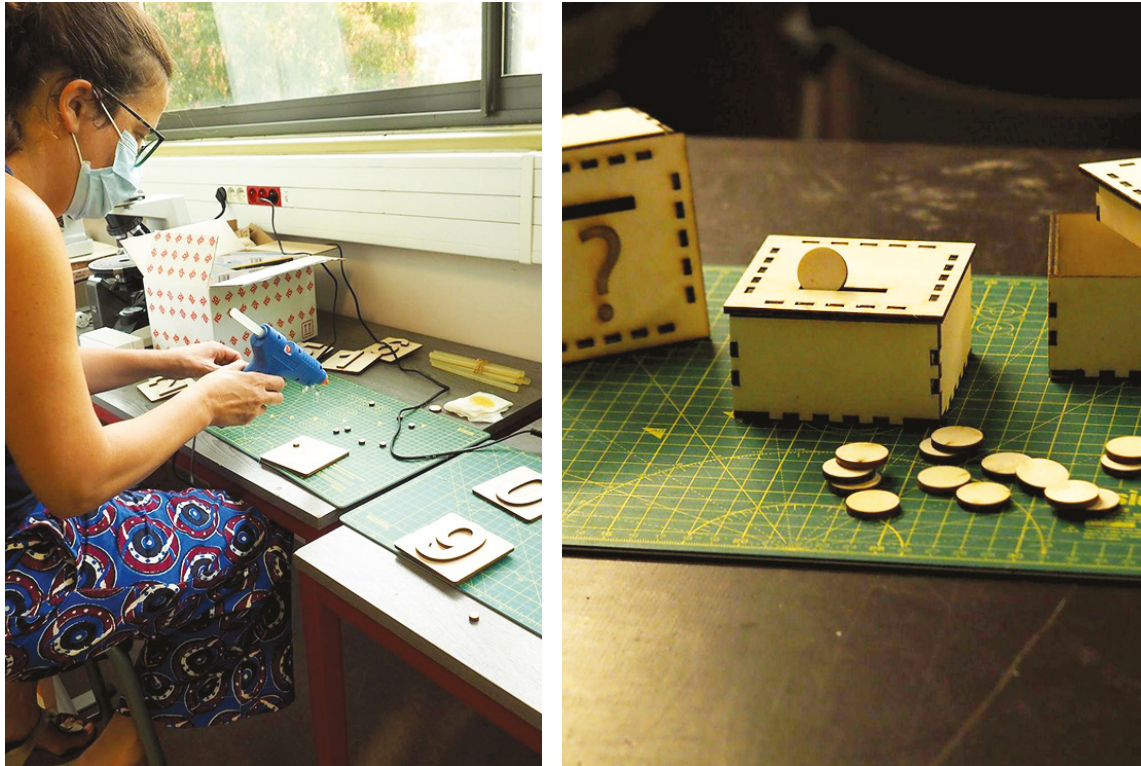
Figure 13: Photos from sessions at Fab Lab for teachers and students.

Objective:

Empower teachers and students to use Fab Lab to prototype ideas and make projects / present OSHub activities to the public.

Description:

The first year project, we communicated with teachers and partners so they understand the potential benefits of making projects using a Fab Lab, we organized a training session and made mathematics kits, we made two projects with teachers.

Target public:

We helped teachers to develop projects with students. Two projects were done with Lucie Aubrac secondary schools involving students from 11 to 13 years old. A workshop session was organized for primary school teachers to prototype educational kits to teach mathematics.

Partnerships:

03 Academia

Pôle pédagogique Maths and Science / Education

Co-development of the contents of the workshop

Maison pour la science / University

A network for the professional development of teachers

Direction de la culture scientifique / University

Network of local researchers

01 Other

La Machinerie / Régie de quartier

It's an open meeting physical space installed in the Villeneuve neighborhood, where the community (residents, teachers, students...) can come and share different knowledge, experiences and local initiatives of the inhabitants and actors of the district.

Activities:

03 Training sessions for teachers

25 Work sessions with students for prototyping projects:

Production of a collective fresco by 300 students, production of an science exhibition "How to Survive on a desert island"

02 Open Days to present OSHub to the public

03 Workshop sessions: Making kites, creative coding
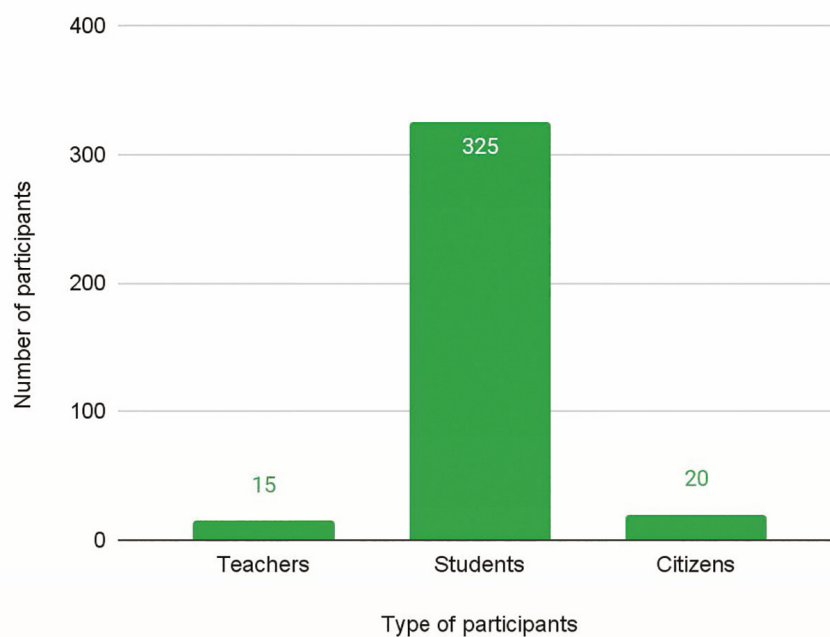
Figure 14: Type and number of participants in OSHub-FR activities.

Resources:

— **Tutorials and guidelines for prototyping the educational toolkits:** The 5 kits aimed to help teachers to develop activities in maths for 5 to 9 years old children. Link for resources - shared in the Fab Lab website[7]
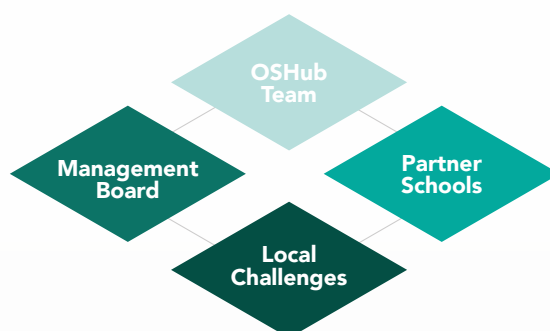
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7   Tutorials for educational toolkits:
        https://fablab.lacasemate.fr/#!/projects/kits-pedagogiques-cycles-1-2-et-3-oshub

2.6　Open Science Hub - Czech Republic

Value proposition

To facilitate the collaboration within the local community to creatively deal with interesting/important daily-life challenges.

Open Science Hub

Petr Mares	**Sylvie Krocakova**	**Tomas Kapler**	**Petr Pokorny**
Open Science Coordinator	Creative and Engagement Specialist	Hands-on Experiments	Scientific Advisor

Management Board

ACADEMIA

Centre for theoretical studies of the Czech Academy of Sciences

Petr Pokorny
Director
Scientific Advisor

Charles University, Faculty of Science

Tomas Matejcek
Expert on Education
Education Advisor

GOVERNMENT

Municipality of Zdikov

Roman Sebanek
Chief of the Municipality
Consulting the approach to schools and municipalities

CIVIL SOCIETY

Do Krajin

Petr Miksicek
CEO
Consulting the approach to civil/NGO organisations

SCHOOL

Skola Vitae

Petr Jonas
Director
Consulting the approach to private schools

NAME	LOCATION	SCHOOL YEARS
Do Krajin Loucna	Loučná pod Klínovcem	Primary to secondary
ZS a MS Zdikov	Zdikov	Elementary
CSOP Volavky Trebon	Trebon	Primary to secondary

Local
Challenges

— To establish a school-led form of education, which engages students, teachers, parents and various local actors for knowledge-based community development

— To tackle environmental, historical, cultural, socio-economic issues faced by local communities

— To build relationships and networks among different levels of stakeholders concerned with sustainable development of local communities

Physical space

There are three OSHubs which are shielded by partner institutions of various nature:

1. **OSHub Trebon** - it's a youth center of approx 120m^2,

2. **OSHub Zdikov -** it's part of a local elementary school (no dedicated space available),

3. **OSHub Konigmuhle -** will be operating partially from a restored building in a former village of Konigmuhle and a TV studio used for education purposes is in Abertamy.

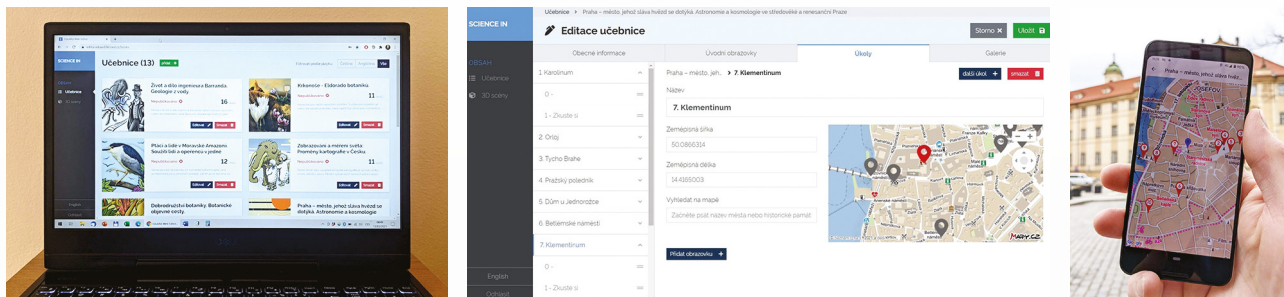Figure 15: Photos of OSHub-CZ physical space.

We Create our own Mobile Path

Figure 16: Photos from We Create our own Mobile Path sessions.

Objective:

To stimulate collaboration within the local community by preparing geolocation mobile trails around interesting places and by common use of the prepared app.

Description:

Use of OSHub CZ prepared app creator that can make Android and iOS geolocated mobile apps on users' own content (text, photos, pictures, audio, video, 3D scenes, AR).

Target public:

Whole parts of local communities, led by schools or by NGOs.

Partnerships:

01 Non-formal education -related entity

SCIENCE IN

Concept, production

02 Academia

Czech Technical University

Collaboration on development of the App Creator

Charles University

Collaboration on piloting of the App Creator

Activities:

12 Piloting the App Creator during field work

01 Introduction at the Konigsmuhle Art Festival
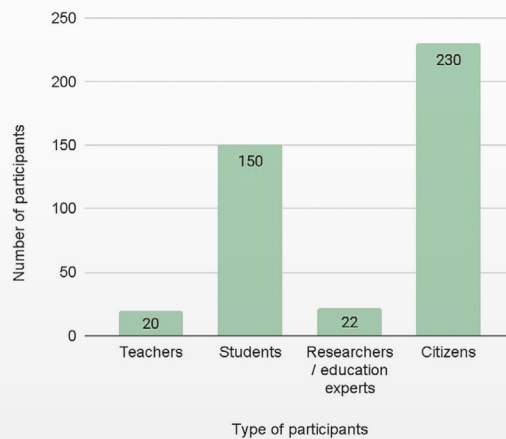
Figure 17: Type and number of participants in We Create our own Mobile Path activities.

Resources:

—   **App creator** (in Czech and English)
—   **Web platform that transforms user´s own data to Android / iOS apps**

KOUMANDO and its experiments

Figure 18: Photo from KOUMANDO and its experiments session.

Objective:

Dealing with real-life challenges and supporting the communication within local communities by doing experiments and lead discussions on the topics of prepared KOUMANDO TV Series.

Description:

OSHub CZ and Czech Television prepared a 12-part TV series about how kids discover interesting topics they meet during their everyday life. The episodes will be nationally broadcasted from January 2022 and simultaneously used to stimulate local communities' interest about important real-life challenges. The topics (drought, sustainability, air pollution, landscape memory, "new wilderness", public areas etc.) are discovered by scientific experiments and creative activities and then discussed during public meetings and school-led seminars.

Target public:

Whole parts of local communities, led by schools, NGOs or municipalities.

Partnerships:

01 Non-formal education -related entity

SCIENCE IN

Concept, production

01 Media

Czech Television

Co-production, national broadcasting

05 Academia

Czech Technical University

Scientific and didactic advisory

Charles University

Scientific and didactic advisory

Palacky University

Scientific and didactic advisory

Mazaryk University

Scientific and didactic advisory

Czech Academy of Sciences

Scientific advisory

Resources:

— **15 short films (in Czech, but will be subtitled in English):** Every episode deals with some interesting topic or important real-life challenge, and contains 2 or 3 experiment or creative activity to discover it.

Let's make our own film documentary

Figure 19: Photo from Let's make our own film documentary session.

Objective:

Children with teachers and parents discover interesting points around their village through creation of their own film documentary.

Description:

The filming team identifies interesting places, study information about them and create a film documentary - script, filming, animations, post production; then the film is presented together with "production experience" to the local community.

Target public:

School pupils (age 8-15) and teachers, parents and other people from local communities.

Partnerships:

01 Non-formal education -related entity

Do Krajin (OSHub Loucna)

Concept, production

05 School

5 schools from neighbouring villages

Collaboration on content

Activities:

01 Workshop for pupils on script, filming, proceeding of materials and postproduction

01 Presentation of the outputs at the Art Festival Konigsmuhle 2021
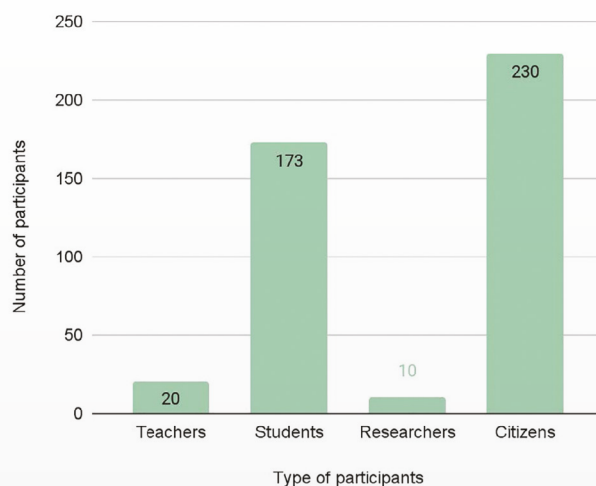
Figure 20: Type and number of participants in Let's make our own film documentary activities.

Resources:

— **Activity guidelines - under development:** Supporting methodology to individual parts of the work (collecting information - script - filming - creating animations - post production). But personal leadership is necessary (by teacher, parent, etc. after initial training).

COVID The Teacher

Figure 21: Photo from COVID The Teacher sessions.

Objective:

Use of actual COVID-19 epidemic to learn important skills.

Description:

Since schools have problems using current events and news in their formal education (they often teach standard lectures without even noticing there is something important going around) we decided to support them with materials that deal with current COVID pandemic - interpreting data, revealing fake news and learning important skills. When there started to be a lack of food in shops in spring 2020 OSHub Trebon prepared inspiring worksheets about what is possible to eat in nature.

Target public:

Children (all age), teachers and parents.

Partnerships:

02 Non-formal education -related entity

Volavky (OSHub Trebon)
Concept, production

SCIENCE IN
Scientific Advisory

Activities:

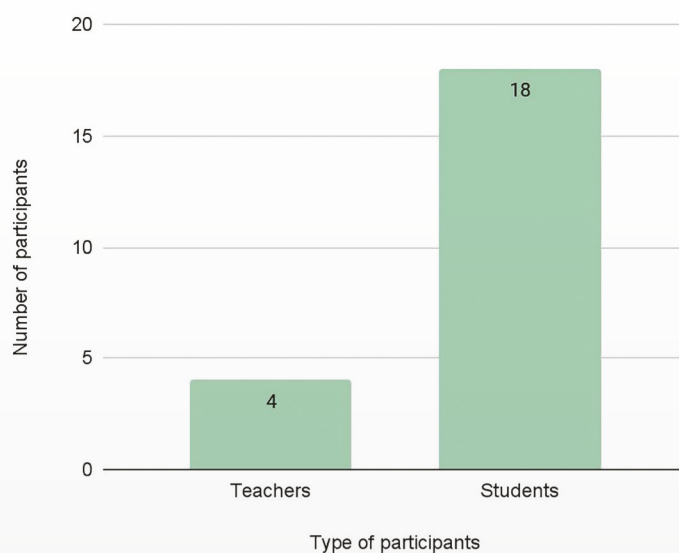# 01 Session with students to pilot activities and create worksheets

Figure 22: Type and number of participants in COVID The Teacher activities.

Resources:

— **Activity guidelines -** under development

2.7　Open Science Hub - Portugal

Value proposition

To support and work together with schools in the co-creation and integration of relevant and sustainable strategies that promote the development of active citizens in addressing local challenges, through research and innovation projects in collaboration with relevant actors.

OPEN SCIENCE HUB
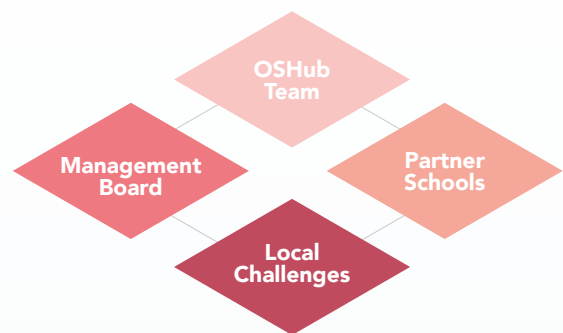
Ana Peso	Célia Paraíso	Inês Saavedra	Maria Inês Veríssimo	Paulo Jorge Lourenço
Project Manager	Teacher	Project Manager	Project Manager	Education Coordinator

Management
Board

NON-FORMAL EDUCATION-RELATED ENTITY

Fábrica Centro de Ciência Viva - University of Aveiro

Pedro Pombo
Director
STEAM and Maker consultant

EduFor - Teacher training center

José Miguel Sousa
Director
STEAM, Maker and evaluation partner

ACADEMIA

CIIMAR, University of Porto

Luís Vieira
Researcher
Freshwater quality and plastic pollution consultant

SCHOOL

School Group of Figueira de Castelo Rodrigo

Ana Cristina Perpétuo
Teacher
Co-creation of open schooling programmes

School Group of Figueira de Castelo Rodrigo, Psychology Office

Maria João André
Psychologist
Co-creation of open schooling programmes

NAME	LOCATION	SCHOOL YEARS
School Group of Figueira de Castelo Rodrigo	Figueira de Castelo Rodrigo	Primary, middle and secondary

Local Challenges

— Low-density territory in the border between Portugal and Spain

— Reduced citizen participation and low collaboration between partners and school

— Low connectedness between students and research & innovation

— Low digital literacy of students and teachers

— Low motivation, autonomy and confidence of teachers for more open and colla-borative approaches

Physical space

At a school room (from the school group of Figueira de Castelo Rodrigo) and at Plataforma de Ciência Aberta-MFCR building.

Figure 23: Photo of OSHub-PT physical space at Plataforma de Ciência Aberta building.

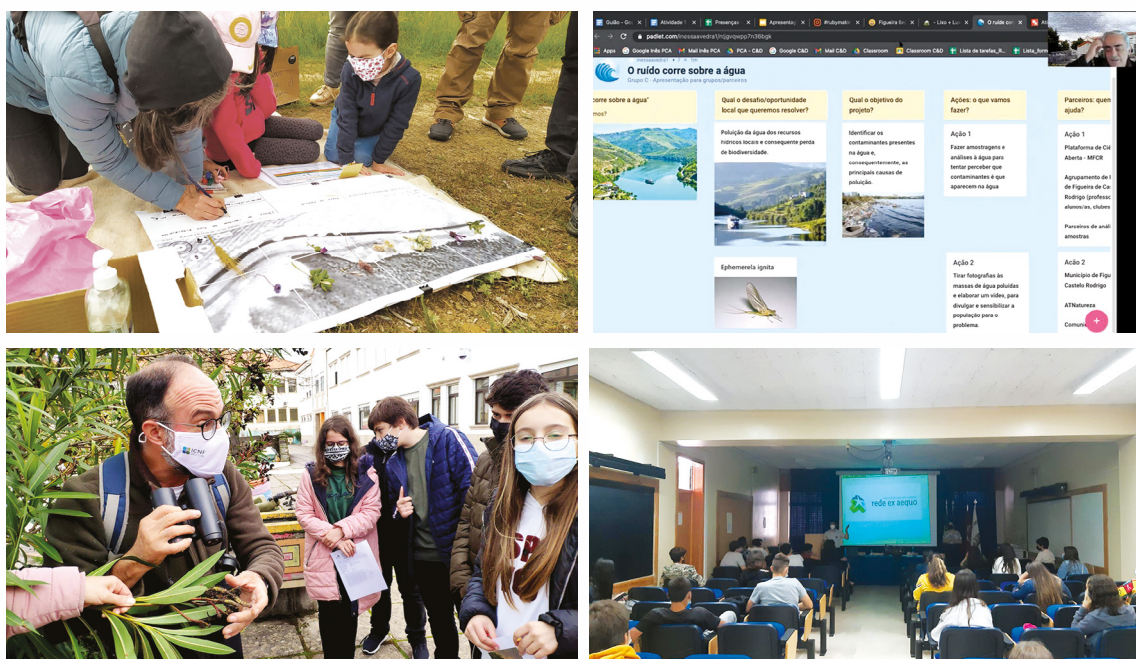# Open Schooling in the discipline of Citizenship and Development

Figure 24: Photos from Open Schooling in the discipline of Citizenship and Development sessions.

Objective:

To promote students' active citizenship through the engagement with community challenges and societal needs, scientific literacy, digital literacy, problem solving and critical thinking, creativity, collaboration, communication, personal development and knowledge acquisition.

Description:

Through the capacity building of teachers on OS activities / methods / tools, OSHub - PT promotes a sustainable OS strategy through the co-development of real-world based projects that foster the development of active citizens through research and innovation.

Target public:

Teachers of Citizenship and Development (from 1st to 12th grade) from the school group of Figueira de Castelo Rodrigo.

Partnerships:

04 School

Psychology Office (SPO)
Co-facilitation of open schooling sessions with several classes

School canteen
Preparation of intercultural meals representative of the nationality diversity at school

School library
Participation in project about healthy food

Sign language teacher
Participation in project about inclusion

04 Civil Society

Rede ex-aequo
Facilitation of sessions about LGBTQIA+ community for several classes

Associação Transumância e Natureza
Participation in participatory session about local challenges

Ginásio Clube Figueirense (sports-related club)
Participation in project about interculturality (interviews of football players from different nationalities)

Ponto Verde Academy
Participation in session about sustainability

02 Media

Newspaper "Ecos da Marofa" Newspaper "O Interior"
Collaboration with local newspapers to communicate about a student campaign to secure computer equipment during the pandemic

03 Government

Municipal Assembly of Figueira de Castelo Rodrigo

Participation of students in the local municipal assembly

Environment Office of the Municipality of Figueira de Castelo Rodrigo

Participation in participatory session about local challenges

Natural Park of International Douro

Participation in participatory session about local challenges

01 Artist

Rúben Almeida, Sculptor

Participation in teacher training sessions in project co-development

02 Wider Society

Local citizens of different nationalities and backgrounds

Participation in project about interculturality

e.cos - Citizen group for sustainability

Participation in teacher training sessions

Activities:

07 Teacher training sessions through a certified continuous training program (national-wide)

47 Open Schooling facilitated sessions inside the classroom

04 Open Schooling follow-up sessions for teachers of the Citizenship and Development discipline
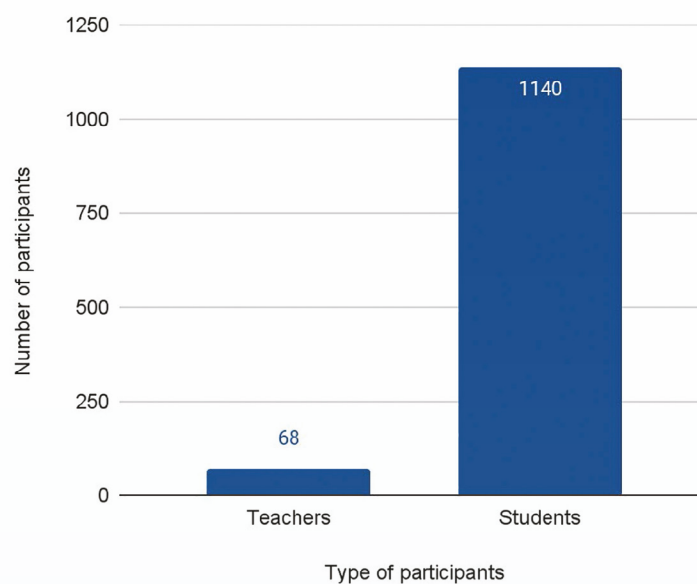
50 Sessions of autonomous work by teachers

Figure 25: Type and number of participants in OSHub-PT activities.

Resources:

— **Practical experience/evidence-based Open Schooling manual for the Citizenship and Development Manual (C&D) (in Portuguese).** This manual is the result of the work done in the school year of 2019-2020, with 17 C&D teachers during the Open Schooling (based on Design-Thinking and Business Model Canvas). Link for resource (last version, not final yet[8])
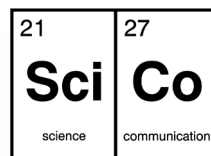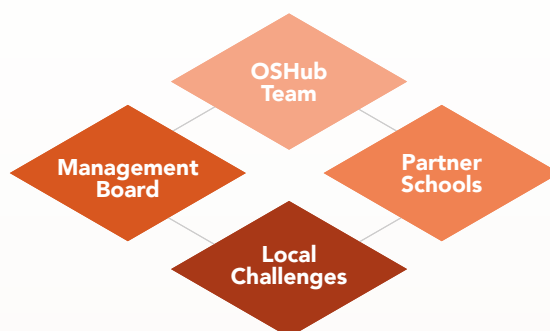
2.8   Open Science Hub - Greece

Value proposition

Supporting and working together with the educational community (schools, educators, students) in order to enhance STEM education and hands-on learning.

OPEN SCIENCE HUB

Lilly Bakogianni	Pandora Sifnioti	Theo Anagnostopoulos
STEM Educator	STEM Director	Founder and General Manager at SCICO

Management Board

SCHOOL

Gymnasio Livadochoriou (Livadochori High Schol)

Charitini Fotopoulou
Principal

Overview of projects - main liaison with other stakeholders

ACADEMIA

Department of Food Science and Nutrition, Aegean University

Konstantinos Gkantzionis
Head of University Department

Coordinator of University participation and input to projects

GOVERNMENT

Municipality of Lemnos

George Dimakis
Municipality - Deputy Mayor

Spokesman from the Municipality of Lemnos - connection with local authorities and broader government

Partner Schools

NAME	LOCATION	SCHOOL YEARS
Gymnasio Livadochoriou	Livadochori, Limnos	12 - 15

— Lemnos island: geographically isolated and with less access to STEM opportunities

— To create tangible projects that address real issues in Lemnos

— Create a live network between school and local stakeholders

— Drive student and teacher engagement in STEM education

— Increase student awareness on SDGs and environmental issues in Lemnos

Physical space

The OSHub physical space is set up in a school room at the secondary School of Livadochori in Limnos.

Figure 26: Photo of OSHub-GR physical space.

Steam For The Environment / Steam For Inclusivity

Figure 27: Photos from Steam for the Environment / Steam for Inclusivity sessions.

Objective:

Through the development of projects that are based on science and technology and provide solutions for real-life issues, learning automatically gains access to the "real world" and the school community is bridged with the broader local community (university, municipality, enterprises, citizens). In addition, students raise awareness for themselves and their local community on environmental issues (stray animals) and societal issues (difficulties of people with disabilities).

Description:

Students worked on the creation of an automatic pet feeder for stray animals which was created mainly by waste (upcycling) and was programmed with the help of Arduino and specific sensors. Students also developed two tools for the visually impaired (a set of smart glasses and a smart walking stick) which were coupled with Arduino code and sensors and are used to help navigate the blind more easily among obstacles. The second project was inspired by a student in their classroom which was visually impaired.

Target public:

Informatics Teacher, Principal, University Students, Parents, School students aged 12-15.

Partnerships:

01 Academia

Aegean University

Introduction of University to students, hands on methods, participation methods, synergies

01 Government

Dimos Limnou

Information and discussion about broader use of pet feeder

Activities:

01 Teacher training

05 Students training

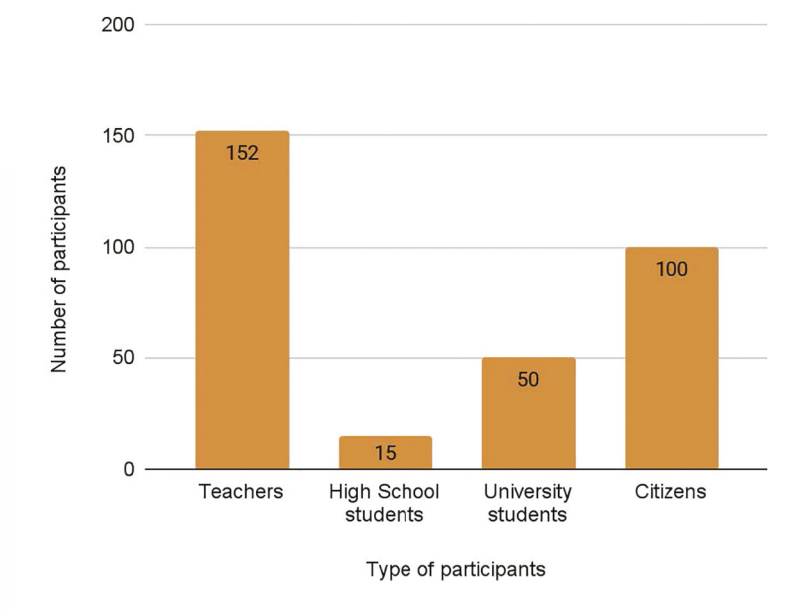# 01 Conference participation

01 Science festival participation

Figure 28: Type and number of participants in OSHub-GR activities.

Resources:

— **During the current year materials and guides on 3D Printing and App Inventor are being developed,** in order to guide the schools, educators and students, along with the workshops and training already conducted.

3. Conclusion

—

In this deliverable we describe the usage and activity of each local Open Science Hub (OSHub) in the first two years of the project, by characterizing them in terms of their goals, nature and structure (value proposition, team, management board, partner schools, local context, physical space) as well regarding the programs that each has developed, giving detailed information about the beneficiaries, kind of partnerships, activities, participants involved and resources developed.

Considering the bottom-up approach of each OSHub, rooted on the local context and on the nature of their networks, both with schools and other stakeholders (universities, industry, NGOs), we observed that the solutions that have emerged in each community are very rich, diverse and tailored to the respective contexts.

Nevertheless, despite this diversity, we have identified commonalities across the different hubs, which allowed us to group them in three main categories:

— Education brokers that facilitate the integration of Open Schooling in the school formal structure / curriculum OSHub-IE, OSHub-PT

— Third place / makerspaces that meet school and community needs in collaboration with local partners OSHub-CH, OSHub-FR, OSHub-GR

— Facilitators of the establishment of new relationships and processes between schools and partners aligned with school needs OSHub-NL, OSHub-AEL, OSHub-CZ

The next steps will be to understand better what are the common principles and learnings across the different OSHubs with the objective of developing a roadmap that will strengthen the work and decisions of the current hubs and to support the integration of new ones. In addition, we are also designing and developing a training program on Open Schooling based on the experience, knowledge and resources that the consortium and the partners have acquired and strengthened throughout the project.

OPEN
SCIENCE
HUB

EMPOWERING CITIZENS
THROUGH STEAM
EDUCATION WITH
OPEN SCHOOLING

DELIVERABLE 3.2
Report on the usage