# COMMENTED BIBLIOGRAPHY AND RELEVANT CASE STUDIES

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# **Executive summary**

The 'Schools as Living Labs' (SALL) project (www.schoolsaslivinglabs.eu) is a Coordination and Support Action (CSA) funded under the Science with and for Society (SwafS) objective of Horizon 2020 (H2020), the Research and Innovation Programme of the European Union. In particular, SALL is a project serving Europe's aim to promote open schooling and collaboration on science education. Moving in this direction, SALL proposes the living lab methodology as a technique for the development of open schooling activities linked to science learning in Europe's schools. Further, SALL chooses to demonstrate the use of this technique through activities prioritizing a focus on the theme of the food system and its links to the Food 2030 research and innovation policy of the European Union.

The SALL team, including ten consortium members and three linked third parties, consists of institutions from twelve countries (Belgium, Croatia, Cyprus, Estonia, France, Greece, Israel, Luxembourg, the Netherlands, Portugal, Serbia, Spain) representing diverse worlds: schools, universities and research organisations, science museums and centres, NGOs, business. Dialogue, mutual learning and co-creation among these worlds lie in the heart of SALL, as does also the systematic engagement of school communities and of various stakeholders in the local communities to which the schools belong.

This deliverable contains three necessary elements to establish a baseline among the participants of the SALL project and will use the SALL Methodology: a **common reference bibliography** about Living Lab approaches, a series of **significant cases** (including those shared by members of the consortium itself) and a **basic glossary** containing some vocabulary that will be widely and constantly used all along the steps of the development of the methodology.



The **bibliography** chosen for this deliverable contains four types of documents: *Reference, Background, Examples,* and *Tools*. We have organized it in two formats: as Reading note cards (which will be found in section 2) and as entries in a Padlet (to allow the continuous growth and evolution of the sample of documents on living lab approaches and the participation of other consortium members all along the project timeline). Thus, this will be an evolutive bibliography. The Padlet which will represent the working document for the next steps of the project can be found following this QR-code or this link:

https://padlet.com/asso\_traces/32mdj8jw5w6pu05v.



The **cases** that were chosen as significant examples are not necessarily identified as Living Lab or Open Schooling projects, but they have characteristics which are similar to the methodology that we will be developing, or which include some of the steps necessary in a Living Lab project. This repository of cases can be found in this document (Section 3) but also as a Padlet, localized on a world map. This is available through the QR code on the left or at

https://padlet.com/asso\_traces/ggchondbggk6fxkk. In this case too, the Padlet will grow during the project with the addition of new examples, as

a live working document.

Finally, since we are a diverse consortium comprising many countries with different languages and cultures, a **basic glossary** will help us to agree upon several terms that will be used all along the project and that represents basic elements for the construction of the methodology.

As a conclusion for this deliverable, we will give a quick description of the next one: The January 2021 Workshop, where all the elements of this document, along with a Pitch for National Coordinators, will find their main purpose.

As soon as the SALL graphical identity will be ready (early 2021), all the elements of the deliverable will be reviewed to be presented in an appealing way and be therefore directly usable by national coordinators and involved schools.

# 1. Introduction

SALL is a European project gathering the expertise of 10 different countries to propose a new approach to Open Schooling<sup>1</sup>. By adapting the principles of the Living Lab methodology, SALL supports schools in linking with their local communities and addressing locally relevant issues related to the food system in all its dimensions (production, distribution, waste management, health, economy, etc.)

By participating in the SALL project, schools and teachers will experiment with an open schooling approach aimed at making STEM teaching more relevant, systemic and inclusive for their students. SALL will also help students develop new skills and positive attitudes, and conceive learning science as a way to actively contribute to the wellbeing of the world they live in.

The consortium will co-create the SALL methodology by building on the OSOS open schooling framework<sup>2</sup>, enriching it with the living labs methodology as a focused technique for the development of school-based innovation. In this way, SALL will propose a concrete methodology for schools across Europe to approach their science education programmes in innovative ways that can make STEM teaching more relevant, systemic and inclusive for their students, collaborating with research centres, with the support of science centres and museums – while always acknowledging the reality and constraints of the formal education system. The result will be a toolkit for schools with practical guidance on how to identify and involve research centres and families, how to select the topic, how to set up the living lab methodology in the classroom, how to implement it, and how to evaluate it.

The project itself needs to be built through a participatory process, starting from the framework and methodology construction that will be implemented in a dedicated workshop that will be held in January 2021. The present deliverable is a baseline to ensure that all the consortium members -coming from several cultures, languages and approaches- agree in the use of terms and other elements that will be necessary in the January 2021 Workshop discussion and further dissemination among all the societal actors involved in SALL projects.

# 1.1. A few words about the authors: WP2 leader TRACES

This report is the result of ongoing work that is being carried out in the context of Work Package 2 (WP2) 'The SALL framework and methodology' (in collaboration with WP3 'Engagement with stakeholders'). The Leader of WP2 and author organisation of this report is TRACES, a not-for-profit association and think-and-do tank on science, science communication, science education and science in social contexts. Its actions revolve around

<sup>&</sup>lt;sup>1</sup> SALL actively promotes Europe's expressed interest in integrating the concept of Open Schooling in science education at all educational levels, whereby Open Schools, in cooperation with other stakeholders, become agents of community well-being by creating new partnerships in their local communities.

<sup>&</sup>lt;sup>2</sup> The 'Open Schools for Open Societies' (OSOS) project (<u>www.openschools.eu</u>) has described and implemented at scale a process that facilitates the transformation of schools into innovative ecosystems, acting as shared sites of science learning for which leaders, teachers, students and the local community share responsibility, over which they share authority, and from which they all benefit through the increase of their communities' science capital and the development of responsible citizenship.

three main axes: interdisciplinary reflection on science and its social impacts; training in science & society and science engagement; consulting on Responsible Research and Innovation, Open Science, Open schooling, science and society for research and education institutions, science centres, companies, schools and local authorities. As a platform between the academic, associative and private spheres and in collaboration with many, very diverse partners, TRACES aims to create spaces in which to reflect, experiment and innovate in the fields of science in society, science education and public communication of science. Since 2011, TRACES has been running the activities of the Espace des Sciences Pierre-Gilles de Gennes (www.espgg.org), the public venue of ESPCI Paris (www.espci.fr/en) and PSL (www.psl-univ.fr). EPSCI is a research institution home of 6 Nobel Prizes, starting from Marie Sklodowska Curie, member of PSL research university, a consortium of 25 leading research and education institutions including Ecole Normale Superieure, Institut Curie, Ecole de Mines, College de France, and art institutions such as ENSAD or FEMIS.

Thanks to the support of PSL University, the city of Paris and the Ile-de-France Region, TRACES is developing a series of experimental projects to transform a science education venue and programs into a connecting device between research, school and society.

In its strategic vision, Traces and ESPGG are committed to create a "living lab of scientific culture" to blur the frontiers between knowledge production and knowledge sharing (that is, between scientific research and science communication and engagement).

# 1.2. TRACES' role in the SALL project

Thanks to its experience on both science education and innovative, living lab inspired approaches in science engagement, TRACES will ensure the coordination of WP2 'The SALL Framework and methodology'. Beside bringing in its own expertise in those field and its own network, TRACES' contribution will be devoted to ensure the connections and exchanges among the various aspects of expertise present in the consortium (complemented when needed with relevant knowledge coming from outside the consortium), and to lead a set of multi societal actors dialogue activities, ensuring that a framework for the Living lab approach to open schooling is developed taking into account the needs of all actors involved.

More specifically, tasks within WP2 will ensure that a) existing knowledge and best practices on living lab methodologies are collected, their relevance for open schooling analysed critically, b) all relevant societal actors for the SALL proposal (mainly: teachers and school system; living lab and co-construction experts; food system experts) are engaged in the framework and methodology development, and co-construction setting are developed in order to ensure a true, valuable and mutually beneficial participation c) A critical revision of potential opportunities offered by living lab for open schooling is presented in such a way (language, format, affordance, etc.) so to facilitate uptake by the different profiles and cultures involved in the experimentations.

TRACES will also ensure that relevant expertise is associated with the project based on specific needs, in particular concerning living lab related competences. Such expertise will be mobilized relying on existing networks with whom traces as ongoing collaborations, such as ENOLL for living labs, ECSITE for science centres, ECSA for open science, etc.

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# 1.3. This deliverable

As part of the Operational Objective number 2 of the SALL project<sup>3</sup>, this deliverable constitutes the basis for the first consortium Workshop, which will be held in January 2021. First, it contains a main part of the framework proposed to start the construction of the methodology (bibliography, glossary, case studies). Second, it allows a common baseline on which the participation of all the consortium will co construct the methodology that will be appropriated by National Coordinators and other participants of the SALL project.

There are three main components of this deliverable:

- Firstly, a commented bibliography divided in four categories: a reference document, *Background*, *Examples* and *Tools*.
- Secondly, a series of significant cases piloted by consortium members along with other examples of Schools as Living Labs around the world.
- Finally, a Glossary with main terms that will be very useful during the construction of the methodology and its further development by each of the actors of this project.

# 2. Living Lab Bibliography

As a recent but very successful methodology, the Living Lab approach has produced a large number of articles, books, research papers and other texts. The WP2 team has chosen and commented on a basic corpus of bibliography, in order to allow the consortium members to have a repository of literature to consult and be informed of the main concepts linked to Living Labs. Rather that providing a long list of references, we choose to point to a limited number of relevant documents and provide quick and targeted reading cards (or pads, in the online versions) identifying the specific relevance of each document for the SALL project. This document contains one main reference and three types of resources of commented bibliography: background articles, examples, and tools. For the full articles and books, please go to the Padlet available at <a href="https://padlet.com/asso\_traces/32mdj8jw5w6pu05v">https://padlet.com/asso\_traces/32mdj8jw5w6pu05v</a>, or use the following QR code:



<sup>&</sup>lt;sup>3</sup> "To co-construct, within the stakeholder community, the SALL framework and methodology for living-labbased open schooling more generally and in particular with a focus on the food system theme, basing this on existing knowledge and best practices and enabling its application in practice through appropriate training and support materials".

# 2.1. Reference document

This document is a baseline for our understanding of the main Living Lab principles.

Type of resource: Handbook	Living Lab: A new form of relationship with the public		
24 pages			
Authors: F.Millet, M.Artheau, L.Battais, R.Fuentes, D.Laval, L.Maggioni	LIVING LAB		
Year: 2014	0.		
<ul> <li>What is interesting:</li> <li>&gt; A good introduction to the Living Lab key principles adapted to non-profit organizations</li> <li>&gt; Even though the focus is on implementing the Living Lab approach in the specificity of science centers, all general principles, and points of vigilance are summarized in an accessible summary.</li> </ul>			
Main Living Lab elements:         Stages of a Living Lab project:       (1) Co-design – (2) Exploration – (3) Experimentation – (4) Evaluation         Stakeholders:       5 considered stakeholder's categories are considered: Users, Research, Business, Creative & Artistic communities & Local authorities         Participation:       what does it mean, how to foster and nurture it.			
Form completed by: Malvina Artheau			
Resource reference: <u>http://www.cite-sciences.fr/fileadmin/fileadmin_CSI/fichiers/au-programme/lieux-</u>			
ressources/carrefour-numerique/ documents/Living Lab/Living-Lab-English.pdf			

# 2.2. Background articles

Documents are presented here which are often cited in Living Lab related articles, and from which the Living Lab principles are derived. Yet, as the Living Lab approach is still evolving some main differences can be observed between these documents and more recent ones.

Background		
Type of resource: Scientific article	Living Labs – the user as co-creator	
6 pages	Living Labs – the user as co-creater In Annual Control of Control	
Authors: Jens Schumacher, Karin Feurstein	1. Living Lab among The WIL Ranks, Nor Wilson Model, Middal and Middal and Kannar Jackstown and property lower (Lab sequence to a strate of the strate of	
Year: 2007	2 User improve A long case. The particular of the PA particular case of the PA particular of the PA part	
What is interesting: > A first definition of the Living Lab concept, focusing on the user as co-creator of innovations > A review of the methods used by Living Labs in Europe		
Case summary and main Living Lab elements: Issue: The basic idea is not about using the users as 'guinea pigs' for experiments, it's about getting access to their ideas and knowledge. Therefore, new methods are required to allow an interaction or co-creative approach between the consumer and the researcher over the whole development process. Main methods: The article does not describe a full solution, but summarises the trends in terms of types of solutions and methods used. Stakeholders involvement: The article mainly tackles collaboration between the Living Lab, the users and the supplier company.		
Form completed by: Didier Laval		

# 2.2.1. Living Labs – the user as co-creator

Resource reference: This article was published under a major European project whose website doesn't exists anymore, i.e. the Corelabs: Co-Creative Living Labs (EP# 35065) coordinated action that was supported by the European Commission under the IST Programme in the 6th Framework Programme.

#### 2.2.2. Botnia Living Lab methodology handbook



## Case summary and main Living Lab elements:

<u>Value</u>: Living Labs focus on creating better value for the end-users, by involving them in a meaningful way in the innovation process.

<u>Influence</u>: A key element of the living lab approach is to grant a large influence to the user, who will cocreate or transform the product or service, and sometimes the process as well.

<u>Sustainability</u>: Living Labs aim to create a sustainable environment, including economical, ecological and social aspects.

<u>Openness</u>: This principle emphasises creating an innovation process that is as open as possible with the stakeholders since multiple perspectives bring power to the development process.

**Realism**: This principle stresses the importance of realistic, natural, real-life setting.

**Process**: A framework for a Living Lab process is provided (see picture below).



Form completed by: Didier Laval

This handbook was designed by Botnia Living Lab and is based on results from the project SmartIES and the process of using and evaluating the FormIT methodology in a Nordic cross-border pilot.

# 2.2.3. Democratizing innovation



> Users, more than supplying companies, are a driving force for innovation.

> Effective models and examples of user-led innovation.

# Case summary and main Living Lab elements:

<u>Users' role in co-creation</u>: The book describes an emerging model of user-driven and democratized innovation. It shows how users, supported by digital and information technologies, develop their own custom products and services to fit their needs and share these solutions with others.

<u>Solutions</u>: The book comprises a multitude of examples, related to software, information products, and physical products, often developed by "lead users".

<u>Learning</u>: Learning processes described are mostly related to using learnings from other experimentations as well as from their own previous attempts to build new innovation or to spread the learnings in "innovation communities".

<u>Stakeholders involvement</u>: Several stakeholder's involvements are described. However, the two main ones regard the involvement of "innovation communities" to support each other in the development of new products and services, and the relationships between users and companies in the development or the mainstreaming of innovations.

Form completed by: Didier Laval

Resource reference: This article was published under a major European project whose website doesn't exists anymore, i.e. the Corelabs: Co-Creative Living Labs (EP# 35065) coordinated action that was supported by the European Commission under the IST Programme in the 6th Framework Programme.

# 2.3. Examples

In this section we present documents that we have found relevant to highlight one or more specific aspects relevant to the Living Lab approach.

EXAMPLE		
Type of resource: Scientific article	A rural energy collaboratory: co-production in Thailand's community energy experiment	
10 pages	A rural energy collaboratory: co-production in Thailand's community energy experiments Laurence L. Delina	
Author: Laurence L. Delina	Journal of Environmental Strategies	
Year: 2020	Springer	

# 2.3.1. A rural energy collaboratory: co-production in Thailand's community energy experiment

#### What is interesting:

> All the Living Lab ingredients are found in the process and methodology even though participants didn't reclaim from the concept (probably never heard of it).

> A very rooted community-based organization and "sufficiency economy philosophy" in place prior to project starting.

# Case summary and main Living Lab elements:

**Issue:** Most households of the area lack access to electricity and are relying on either expensive kerosene and/or illegal firewood (for cooking) from the forest.

**Population based solution**: Community credit to access renewable energy technologies (mainly biogas digesters) introduced in response to inaccessible, expensive and unsustainable cooking fuels.

**Experimentation:** DIY solution through experimentation, trial, improvement

<u>Learning</u>: Informal peer-to-peer learning during existing monthly community deliberative meetings as well as social gathering (visiting neighbours, diners, etc...)

<u>Stakeholders involvement</u>: Collaboration between network partners from various expert groups in a coproduced way + Involvement of stakeholders outside the community for complementary support (learning) + Involvement of experts and technocrats for collaboration.

Form completed by: Malvina Artheau

# 2.3.2. MINDb4ACT. Living lab guide

EXAMPLE	
Type of resource: Handbook	MINDb4ACT Living Lab Guide
30 pages	Guidelines
Author: Jordi Colobrans	MINDb4ACT Living Lab Guide
Year: 2019	Josh Goudoren 31/1/2019

# What is interesting:

> This document explains what Living Labs are: the concept, their nature and varieties, the process of development, their uses and methodologies as well as other pertinent aspects for the creation of specific living labs to carry out pilot programmes within the MINDb4ACT project.

> Good and quick summary of the history and evolution of Living Labs

> General project framework similar as the one of SALL

> Some interesting methodological insights.

# Main elements:

**Project scope:** Supporting solutions to social issues, namely violent radicalism.

<u>Research</u>: The scope of the project implies a thorough background research both on existing knowledge, practice as well as needs, constraints and values of stakeholders. Even though SALL Living Lab might not require such an extensive research work, the part related to the collection of stakeholder's feedback gives interesting methodological trails.

<u>Interculturality</u>: The paper addresses the question of interculturality management and hence cultural intelligence with appropriate references.

**Shortcoming:** The document is using the "person-centered" terminology instead of "person-sponsored".

Form completed by: Malvina Artheau

# 2.3.3. The Library's Voice: a guide to user-driven innovation:

EXAMPLE		
Type of resource: Handbook	The Library's Voice: a guide to user-driven innovation	
40 pages		
Authors: Strong Bright Hearts & The Municipality of Aarhus Citizens' Service and Libraries - The Main Library	The Library's Voice	
Year: 2008		



# What is interesting:

> A concrete example of a user-driven approach to redesign an education environment (a library)

> Details of specific methods and tools (world café, appreciative inquiry, Village square)

> A guide on the process as a whole.

# Case summary and main Living Lab elements:

<u>New model of library</u>: the project aimed to redefine the Aarhus Main Library through co-creation activities, involving staff and users of the library.

<u>Methods and tools</u>: several dialogic and co-creation methods are described in detail. The World Café to explore the role of libraries in societies and the creation of a "competence centre", the appreciative inquiry approach with its 4-D workshop was used to transform two rooms, and the Village Square as a forum to exchange with the library employees.

<u>Practical guide</u>: the handbook gives a quick yet precise overview of the process of co-creation with users and staff, with recommendations and guidelines.



Form completed by: Didier Laval

# 2.3.4. Schools as Living Labs: re-engineering British education out of the factory and into the real world

EXAMPLE			
Type of resource: Non peer	Schools as Living Labs: re-engineering British education out of the factory and		
reviewed Research paper	into the real world		
	FROM COMPETITION TO COLLABORATION - 1 December 2017 Schools as Living Labs: re-engineering British education out of the factory and into the real world By Grant Muno Abstract British education remains standardised to 19° century factory models, fostering deep socioeconomic inequalities and failing to prepare students for 21° century life. As a result, academic		
Author: G. Mitchell Munro	Solutions of an usery and an expertence of a concentration spatiality, curricula performant planty rules interpretational support. Due to these medical charges, the infinish system moves outperforms most other countries. If Britianh hopes to improve their current failing academic and productivity record, policy makers must adopt a similar raisford equalitation of the supported by a 3-part collaborative learning agenda: (1) co-creation of learning spatiant; (2) co-creation of learning assessments, and (3) co-creation of learning spaces. Taken together, these policy changes have the potential to re- engineer British education out of the factory and min 21st century. Living Labs. In other words, dynamic research and innovation hubs where diverse teams of people can maps related word problems and prototype responsive solutions. Such disruptive education policy changes have the relation that the starting agences. Taken is the model and the support of the solution policy changes have the starting agences. Taken is the discust balance in the control of the support of the starting starting starts. Taken the diverse teams are displayed as the support of the solution policy changes have the significant short-team economic and social challenges, it is such short-team challenges are starting starting starts. Taken the diverse teams are supported to the starting starting starts. Taken the diverse teams are short-team economic and social challenges, it is such short-team challenges are starting starting starts. Taken the support starting start starting starts are starting starting starts. Taken the starting start starting starting starts. Taken the support starting start starting starting starts. Taken the starting starting start democracy.		
Year: 2017	Introduction New technology is changing the way people create socioeconomic value, which has shifted cultural foundations from rationality to creativity [1]. Some countries, such as Finland, have recast their education policy to suit and now lead the world in academic performance. However, Britain has been slow to adding, and lags behind in the joblas shcole league tables [2]. Poor due to Britain's failure to address systemic challenges related to economic inequality, learning standardization and social fragmentiation [3].		
	Challenge #1 economic inequality School has great potentials as a 'site for critizenship'—where students develop skills that help them engage in democracy for the public good [3], [4], indeed, British politicians have often paid ip service to the idea that school should brace educational equipment, metricocracy and alianess [3]. Despite the hetoric, the upper achietons of power in virtually every sphere of British life (apart from sport and the hetoric, the upper achietons of power in virtually every sphere of British life (apart from sport and the hetoric, the upper achietons of power in virtually and only 8% graduated from to university, only. In a standed a Russell Group university, and only 2% graduated from Oxbridge. This greatly contrasts British professional life, where 50-60% of staff Whitin the media, civil service and government attended independent schools and oro Xxbridge [16]. While the risk factors shaping British elitism are complex, inattentive parenting, lack of resources and cultural bias to resource the plays a major role [5].		
	To reverse nequality and give working-class children a chance. British policy makers arkvie reverting back to a golden age of state grammar schools (7). Despite the romanic clea hat grammar schools were transformational for working-class students, the reality is grammar schools were a relied of a previous age with higher inequality, indeed there is late evidence that selective schooling improves examin results of bright students beyond what they would have achieved at a between rinth and port and working bottom that beyond what they would have achieved at a between rinth and port and working social mobility [8]. It floring statisfies a statisfies, class- segregated school system would exacerbate current statification and inequality [8]. In contrast to Britaria's elisism, more economically equal counties, such as Floring, counting to comprehensive schools. And unkike Britani, these egalatarian Scandinavian-style models continue to outperform most other.		
	Challenge #2: learning standardization		

# What is interesting:

> A "political" paper calling for deep change in British educational system, it explores living lab approaches as a potential guideline

> The paper concentrates on the recognition of students as active participants not only of learning, but also of educational strategies and policies.

> Although not particularly solid in terms of original research, the paper shows how the living lab concept can be useful in educational contexts, and it includes an interesting set of references.

Main Living Lab elements:

- Recognition of students as an active component of education policies.

- Characterization of "student-led" approaches in education, inspired by "user-led" approaches typical of living lab.

- 3 areas of co-creation involving students are identified, and references are given for scholars addressing each one of them: co-creation of learning curricula, co-creation of learning assessment, co-creation of learning spaces.



# 2.3.5. Participatory design of (built) learning environments

EXAMPLE			
Type of resource: Special issue of the "European Journal of education"	Participatory design of (built) learning environments		
European Journal of Education, Volume 52, Issue 3, Special Issue: Participatory Design of (Built) Learning Environments, Pages: 247-398, September 2017	European Journal of EDUCATION EXEMPT: EVENTS AND POLY		
Author: Karen D. Könings, Susan McKenney	Learning Environments Line to the Incomess WILEY and The Articles BOX (55. 50)		
Year: 2017			
<ul> <li>What is interesting:</li> <li>A set of 5 papers devoted to the issue of the i</li> <li>A clear focus on a practical application of part spaces</li> <li>Examples of how living lab approaches can be</li> </ul>	mportance of the learning environments icipatory design: the design and/or renovation of the physical applied directly for re-designing school environments.		
Main Living Lab elements: - Participatory design, application of participation - Key advantages of a user-led approach in design	on to design and architecture gning learning environments.		
Additional comments: All papers of the special	issue are in open access.		
Form completed by: Matteo Merzagora			
Resource reference: <u>https://onlinelibrary.wiley</u> European Journal of Education, Volume 52, Is Environments, Pages: 247-398, September 2017	.com/toc/14653435/2017/52/3 sue 3, Special Issue: Participatory Design of (Built) Learning		

# 2.4. Tools

This section includes documents referring to methodologies, practices and tools relevant when implementing a Living Lab project.

# 2.4.1. SIScode Toolbox

TOOLS		
Type of resource: Toolkit	SIScode toolbox	
Author: SIS code consortium.	SISCIDE TOOLBOX	
Year: 2020	FOR CO-CREATION JOURNEYS	
What is interesting:		
> Developed within an EU project, it	provides a view on the overall journey of a co-creation activity	
> By setting up a series of step, it shows how to go from a vague idea to a co-designed solution, through the engagement of stakeholder and prototyping		
> Written in the jargon of designer, it might not be very easy to adopt without some support		
> The very concept of an educational project as a co-creation journey might be a source of inspiration for SALL		
Main Living Lab elements:		
The toolbox is organized around 4 phases:		
ANALYSE CONTEXT		
To understand the context based on experience or by analysing the situation, or to re-interpret an existing problem. To identify how differences in circumstances of the environment are related to the project/challenge.		
REFRAME PROBLEM		
Create a structure, visualisation or framework to organise your learnings about the context and stakeholders, but also drawing from personal experiences to gain multiple perspectives about the problem.		
ENVISION ALTERNATIVES		

Elaboration of new ideas based on the previous reflection or conversations and insights into concepts. Clustering and synthesising concepts into coherent value proposition systems.

# PROTOTYPE AND EXPERIMENT

Apply the new visions ensuring that the solutions are purposefully built around peoples' experiences and can provide real value.

For each phase, some canvases and approaches are proposed, to facilitate the progression in the co-creation journey.

The SiScode toolbox is somehow similar to the DIY toolkit. It has the advantage to be built following an overall journey. On the other hand, explanations on potential uses of each tool are less accurate.

Additional comments: Useful tool to organize an educational project.

Form completed by: Matteo Merzagora

Resource reference: https://siscodeproject.eu

# 2.4.2. DIY toolkit: practical tools to trigger & support social innovation

TOOLS		
Type of resource: Toolkit	DIY toolkit: practical tools to trigger & support social innovation.	
24 pages	Development Impact & You	
Authors: NESTA		
Year: 2014		

# What is interesting:

> Although it is a toolkit designed for organizations active in social innovation, it contains many valuable tools that can be used in educational settings.

> Each tool and method is introduced in a clear manner, and its potential uses are explained.

> it is available in several languages, namely English, French,Spanish, Russian, Chinese and Arabic.

> The whole toolkit can be downloaded, or each tool can be downloaded separately; the design is simple and appealing: it is made to be used!

> Some learning modules, supported by videos, facilitate the access and accelerate the learning curve to use the tools.



# Main Living Lab elements:

Depending on the objective, you easily find a tool that suits you. Sometimes this can lead to the actual use of the tool in the course of the project; or it can just inspire "a way of doing", point of attention. We will most probably adapt some of these tools to equip and scaffold teachers in developing their projects.

For example:

SWOT analysis, a dimple and well known tool to identify the strengths and weakness of a specific solution, or if "I want to develop a clear plan by evaluating how I am doing and what my options are"

CAUSES DIAGRAM, if "I want to clarify my priorities by breaking down a complex issue".

PROBLEM DEFINITION, if "I want to clarify my priorities by focusing on key critical issues".

EXPERIENCE TOUR, to guide the observation of the surrounding environment (neighborhood, school), if "I want to clarify my priorities by learning from first hand experiences".

PERSONAS, a well-known method of "I want to know the people I'm working with by visualising their key characteristics".

THINKING HAT, a potential funny way if "I want to generate new ideas by framing a constructive discussion with my team."

Additional comments:

The toolkit was designed for organizations involved in social innovation or social work. It cannot be applied "as such" to the school environment. However, it provides excellent bases to:

a) underline the fact that creativity, good problem framing, engagement of external partners, prototyping etc. are activities that can be planned, and that we can learn to plan them;

b) provide a basis to develop more adapted, practical tools to be used in practice.

Some videos and additional learning support are recommended to appreciate the state of mind and the approach of social innovation. We believe they can be inspiring for National Coordinators as well as for schools involved in the project.

Form completed by: Matteo Merzagora

Resource reference: <u>www.diytoolkit.org</u>

# 3. SALL significant cases

In order to support National Coordinators and schools we gather some case examples of school projects that could be useful to analyse and compare with the elements needed to build a living-lab-based school activity in the context of SALL. We also included school projects driven by SALL members in the framework of OSOS and other Europe funded projects.

Below we present the most relevant case studies briefly analysed by their own protagonists. To have a global view of those cases, you can visit the evolutive Padlet available at <a href="https://padlet.com/asso\_traces/ggchondbggk6fxkk">https://padlet.com/asso\_traces/ggchondbggk6fxkk</a>, or through this QR code:



# **3.1.** SALL partners' cases

# 3.1.1. CYPRUS: Earthquakes in our neighbourhood

Project date: 2019

In the context of the Erasmus+ SNAC project

Country: Cyprus

Language: Greek

Contact person: Ivoni Pavlou (pavlou.ivoni@ucy.ac.cy)

Name of the school: Makedonitissa Gymnasium (location: https://goo.gl/maps/gU9rXnyKzzoNkhpR8)

# Example of a school project from CYPRUS

# 1. Description of the school project

The students and teachers developed a project to identify the knowledge and awareness of students and parents of their school regarding earthquakes. In order to do so, they developed and administrated a questionnaire (with the help of a researcher and the seismologist) to the participants. After they analyzed the data using Excel, they developed various actions within the school in order to increase awareness and knowledge regarding earthquakes. Some of their actions was the creation of games for the students of the school to participate in (for example, see picture 1), sending earthquake alerts and civil protection information to parents and students using the Edmondo digital platform (see picture 2) and doing presentations to their peers regarding information gathered during the project (see picture 3). Students utilized the SNAC digital platform throughout their project to identify and present any earthquakes occurring in the region. After the finalization of their actions, the students, with the support of their two teachers, re-administrated the same questionnaire to parents and students to identify any enhancement of their knowledge and awareness. Their main results showcased an increase of both knowledge and awareness to both groups (students and parents) as a result of their actions with the students having a higher increase of knowledge in relation to their parents. Their study and related results were presented in the form of a report to the school, to a contest of the Ministry of Education (MERA) and to their school's newspaper.

#### 2. What makes this project an open schooling project?

The school involved their local community (as participants to their study and relevant actions and to inform them about their findings).

Students were actively involved in an open-ended project and made decisions with their teachers

# 3. Are there Living Lab elements in this project?

The school's project followed a participatory design in all its stages

It was a real issue identified, investigated and solved by students and their teachers through an inquirybased approach

#### 4. Which local stakeholders were involved in this project?

Civil protection organization (provision of materials)

Seismologist (presentation of main concepts regarding seismology and support for the development of the questionnaire)

Educational researcher (presentation and support during the implementation of the study and the data analysis)

# Other comments?

This school project was implemented in the context of the Erasmus+ SNAC project. It is also presented in the Intellectual Output 5 of the SNAC project

# 3.1.2. THE NETHERLANDS: The School Garden Project.

Country: Netherlands

Language: Dutch

Contact person: Rooske Franse (franse@e-nemo.nl)

# Example of a school project from the NETHERLANDS

# 1. Title and description of the school project

# The School Garden Project

Around the school there was an undeveloped area. The municipality and the school agreed that the school would realize a school garden on this piece of land.

The school's students were asked to design this garden and to involve the neighborhood in this project.

First, the students and the teacher created together a mind map of all the possible users of the garden. Then, the students chose the stakeholders they wanted to involve in their solution.

Some of the students have contacted the residents of a retirement home across the street. These older citizens will look out onto the garden. By interviewing the residents, the students found out what their wishes were for the garden. For example, which flowers or plants they liked.

Then the students talked to the people of a cooking school that was located in the school building. They asked the staff if they wanted to use the garden, in the future, to grow crops.

The students have also talked to the teachers, to hear whether they wanted to use the garden as part of the biology classes. What were their wishes for the garden?

As a final step, the students have processed all these wishes and conditions mentioned by the local stakeholders into their solution of the school garden.

# 2. What makes this project an open schooling project?

The school involved the neighbourhood in their educational program.

The students were encouraged to take initiatives themselves. Normally, the education at this school was done in a classical way: focused on knowledge transfer and teacher-driven.

# 3. Are there Living Lab elements in this project?

Yes, the participatory character of the project. The local stakeholders were not only involved in the project, they participated. First as a co-designer of the garden. Then as a co-user of the garden. The problem of the undeveloped area became a problem of the different local stakeholders and they found a solution that benefited them all.

4. Which local stakeholders were involved in this project?

Students

Retirement home residents

Cooking school staff

Teachers

# 3.1.3. SPAIN: Pampa Grass free town (Municipio libre de Plumero de la Pampa)

Project date: 2018-2019

Country: Spain

Language: Spanish and Basque

Contact person: Inazio Uriguen Arbaiza (inazio.uriguen@colegiourdaneta.com)

Name of the school: P. Andrés de Urdaneta School (https://www.colegiourdaneta.com/)

Link to the project: <u>https://portal.opendiscoveryspace.eu/en/osos-project/municipio-libre-de-plumero-de-la-pampa-849454</u>

# Example of a school project from SPAIN

# 1. Title and description of the school project

The Urdaneta School wanted to help the Provincial Council of Bizkaia and the City Council of Loiu, to eradicate the Pampas Grass, an invasive plant, in their locality. First, students indicated on a paper map where the Pampas Grass were. For this, they learnt to use maps, scales, locate our position, and locate the species in the mountains. Later, students investigated how to eradicate them. For this purpose, they studied the previous studies carried out by the University of the Basque Country and the work carried out by the Provincial Council of Vizcaya, eradicating the species in some specific areas of the province. Finally, students presented a dossier in the town hall. Then, the consistory informed the neighbors about how they should deal with this species, and a treatment in public areas will be undertaken. The work of the students promoted a campaign that benefit their village. 156 students between the ages of 9 and 12 participated in this project, who also created and distributed leaflets on the problems of this plant in its surroundings.

Urdaneta School participated as an OSOS school Hub in the first piloting phase of the project and keeped implementing open schooling activities during the second academic year. The work carried out during these two courses helped them to grow as a school, to become aware of the reality of their municipality and to create synergies with the town hall that have opened the door to future collaborations.

#### 2. What makes this project an open schooling project?

The school involved their local community (the City Council and the neighbors).

Students were actively involved in a real problem in their environment and caused measures to be taken to eradicate the problem in their locality.

# 3. Are there Living Lab elements in this project?

It was a real issue identified, investigated and solved by students and their teachers through an inquiry-based approach.

#### 4. Which local stakeholders were involved in this project?

The Provincial Council of Bizkaia and the City Council of Loiu.

The neighbours who were informed about measures to eradicate the problem.

Experts from the University of the Basque Country who advised on the problem and on previous related studies.

Other local experts in eradicating invasive plants.

# 3.1.4. ESTONIA: Developing a school yard into an active play and leisure area for the community.

Date: January 2020 (beginning)

Country: Estonia

Language: Estonian

Contact: Annika Vesselov (annika.vesselov@ahhaa.ee)

Name of the school: Sillaotsa School

Website: https://www.sillaotsa.edu.ee/, https://www.facebook.com/sillaotsakool

# Example of a school project from ESTONIA

# 1. Title and description of the school project

Developing a school yard into an active play and leisure area for the community.

School and the neighbourhood had no area for children to play and students to spend recesses or classes outside. So, students, teachers and parents decided to cooperate and develop a plan to create the communal leisure and playing area with a garden (for growing crops).

In Estonia several local governments have a budget called *participatory budget*, where once a year citizens, schools, enterprises, etc. can submit their idea that serves the community and apply for the local government's funding. Then voting among the local citizens takes place and the best idea (in some cases three best ideas) gets the funding.

The school along with parents and neighbourhood presented their idea for the participatory budget. They agreed upon what kind of attractions should be in the newly developed area, who is going to design and build them, where what is going to be situated, etc. and launched an awareness campaign to get as many votes as possible. They got the funding and playing area along with the garden were built.

#### 2. What makes this project an open schooling project?

The school involved the parents and the neighbourhood in the process of finalizing the idea, spreading information to get the "votes" for participatory city budget and after getting the funding worked together to make the idea happen.

The students took initiative in filming the video for social media and spreading it, parents also were involved in communication.

Parents and local community activists were involved in the process of finalizing the idea as well.

# 3. Are there Living Lab elements in this project?

Co-creation of the area – school, community and local businesses.

# 4. Which local stakeholders were involved in this project?

Students, teachers, school staff

Parents

Locals

Enterprises (building and designing the area).

# 3.1.5. PORTUGAL (1): Vegetable Selection and Storage: a New Food Concept

Project date: School year 2018/2019

Country: Mozambique

Language: English

Contact person: Adriana Galveias (agalveias@cienciaviva.pt)

Name of the school: Escola Portuguesa de Moçambique

Website: https://ejournals.epublishing.ekt.gr/index.php/openschoolsjournal/article/view/23449

Example of a school project from PORTUGAL (1)

#### 1. Title and description of the school project

#### Vegetable Selection and Storage: a New Food Concept

A problem of malnutrition has been identified in Mozambique, specifically in Ponta de Ouro Marine Reserve. The project embraced the selection, conservation and preparation of packages of dehydrated vegetables (corn, cassava, beans, moringa and peanuts), that contain the widest range of nutrients possible, easy to produce and prepare, and enriched with *xima* (ground corn flour that's turn into a sort of porridge, eaten all over sub-Saharan Africa). The purpose was to improve the cognitive, intellectual and motor development of children and the community in general.

#### 2. What makes this project an open schooling project?

A very real problem was identified (malnutrition, in particular in school children) and the school community was engaged in trying to find a solution, with a partnership with a Faculty that helped to select the vegetables to include in the food packages, as well as to test the best packages. Moreover, the entire community was engaged in a communication plan to raise awareness for the importance of a nutritional-rich diet.

#### 3. Are there Living Lab elements in this project?

Yes, as the stakeholders were engaged to find the best solution with the school and local community, through lab analyses, products testing, etc.

# 4. Which local stakeholders were involved in this project?

[School] Escola Portuguesa de Moçambique

[School] Escola Matatuine

[Faculty] Faculdade de Agronomia e Engenharia Florestal da Universidade Eduardo Mondlane (UEM)

Not local:

[Faculty] Instituto Ricardo Jorge (INSA, Portugal)

# 3.1.6. PORTUGAL (2): Healthy bees without pesticides

Project date: School year 2018/2019

Country: Portugal

Language: Portuguese

Contact person: Gisela Oliveira (goliveira@cienciaviva.pt)

Name of the school: Agrupamento de Escolas de Alcanena

Website: https://portal.opendiscoveryspace.eu/en/osos authoring tool/view/852356/849077

Example of a school project from PORTUGAL (2)

# 1. Title and description of the school project

# Healthy bees without pesticides

Currently one of the biggest problems that beekeepers face is the widespread infestation of their hives by a mite called *Varroa destructor*, that parasites the bees, destroying their pupae and larvae, which results in the death of millions of bees of the species *Apis mellífera*. It not only causes a decrease in the production of honey and the income obtained by beekeepers, but it also affects the pollination of plants and consequently the fruiting of fruit orchards and trees. The purpose of the project was to test the efficiency of a natural, plant-based product (lavender essential oil) to combat the mites' infestations.

# 2. What makes this project an open schooling project?

The problem of hives infestation is very serious both for biodiversity and for the economy linked to the food system. Students were engaged with different stakeholders to actively participate in all the lab procedures that were developed to test the natural product and to find a solution that will not harm the environment.

# 3. Are there Living Lab elements in this project?

Yes, as students worked side by side with several stakeholders, searching for a solution for a local problem and are now disseminating the conclusions of their work through the entire community, namely the beekeepers. 4. Which local stakeholders were involved in this project?
[School] Agrupamento de Escolas de Alcanena
[I&D Institution] Laboratório Nacional de Engenharia Civil
[Agriculture Association] Cooperativa Terra Chã
[Local Authorities] Câmara Municipal de Alcanena

# 3.1.7. ISRAEL (1): New technological tools for a clean environment – Mapping waste in open areas

Project date: November 2017-January 2018

Country: Israel

Language: Arabic, Hebrew

Contact person: Yair Ben-Horin (YairB@admin.ort.org.il)

Name of the school: Taha Hussein

#### Example of a school project from ISRAEL

#### 1. Title and description of the school project

#### New technological tools for a clean environment - Mapping waste in open areas

The students (9<sup>th</sup> grade) addressed an ongoing problem in their town of illegal garbage disposal in agricultural and open areas. The school is in Sakhnin, which is located in a rural area covered by olive and fig groves, and overall more than 40% of the area around the city is farmland. There was a great interest for the community of the city and around it to decrease the illegal use of the land for garbage disposal, because of the damage to crops and to wild animals.

The students worked with relevant municipality representatives to locate areas that were severely polluted with garbage. The data collection was done using drones with photographing and mapping abilities. The final product of this project was a report with all the mapped areas, including photos and relevant description. It was delivered to the relevant municipality factors as a basis for solving this problem. Eventually, the municipality used this report to clean the area.

Furthermore, the pupils learned about saving the environment and garbage disposal specifically. As a secondary product they looked for ways to raise the local community awareness of this problem – as at least a part of it stems from within this community and from residents of the region. This included conducting recycling workshops.

#### 2. What makes this project an open schooling project?

The aim of the project was to solve a problem that was relevant for the town' residents.

The students worked with constant guidance and support of several local stakeholders.

At the end of the project, the students delivered their final product to the relevant local stakeholders.

#### 3. Are there Living Lab elements in this project?

The project consisted of a long process that included constant dialogue with the community. In this sense, it was a co-creation of the students and the other community factors, in two main aspects: working with the support of the municipality in order to achieve a certain product that will later serve the municipality (and the

whole residents of the town); and working with the residents (especially the students' families to raise their awareness to the problem and help decreasing it in the future.

# 4. Which local stakeholders were involved in this project?

- Sakhnin Municipality (Sanitary department)
- A regional environmental association
- The students' families

# 3.1.8. SRAEL (2): Precision Agriculture: students help solving agricultural problems with farmers

#### Example of a school project from ISRAEL

#### 1. Title and description of the school project

#### Precision Agriculture: students help solving agricultural problems with farmers

The project consisted of about 50 students (9<sup>th</sup>-10<sup>th</sup> grades). They met with farmers from the region of their own town, in order to look and discuss the problems they tackle and to understand their needs. They were assisted by the supervisor of precision agriculture in the Israeli Ministry of Education, and also worked with representatives of the Ministry of Agriculture and Rural Development

The proposed challenge by the farmers was their uncertainty in the distribution of crops in a carrot field, and their need to understand better its pattern in order to use irrigation and fertilizers more efficiently. To answer that, the students' project was aimed to map the carrot field, analyze the data and deliver their results to the farmers. The mapping of the area was conducted with a drone.

A short clip about this project: <u>https://youtu.be/z-U6FALq1iU</u>

#### 2. What makes this project an open schooling project?

- a. The project addresses community needs agricultural challenges of certain farmers
- b. The students worked together with different stakeholders all along the project: the farmers, supervisor from the Ministry of Education, and researchers from the academy that helped the students with professional knowledge.
- c. The students delivered their final product of the project to the benefit of the community (the farmers).
- d. the central work in this project placed outside the classroom and the school as the students worked to map an area outdoors.

#### 3. Are there Living Lab elements in this project?

The students worked right from the beginning of the project with farmers, as the main goal was to identify and help in solving the farmers' challenges. The farmers helped the students with understanding the challenges and gave them professional knowledge. At the end of the project the students delivered a report to the farmers with the data they needed.

# 4. Which local stakeholders were involved in this project?

- farmers from a nearby Kibbutz
- researchers from the academy (Volcani Center Agricultural Research Organization)

## 3.1.9. GREECE: FoodSHIFT2030

FoodSHIFT2030 is an ongoing EU-funded project in which the school of Ellinogermaniki Agogi (EA) participates. This project is closely linked to the living lab concept and the Food System theme, as well as representing a wider-frame initiative which unveils a bigger, more 'systemic' picture that SALL can draw above the level of individual, sometimes isolated, initiatives.

Contact persons: Pavlos Koulouris (pkoulouris@ea.gr), Katerina Riviou (kriviou@ea.gr)

# Example of a school project from GREECE

# 1. Title and description of the school project

FoodSHIFT2030 (<u>https://foodshift2030.eu</u>) is an H2020 Innovation Action addressing EU's call for innovative and citizen-driven food system approaches in cities. Its aim is to launch an ambitious citizen-driven transition of the European food system towards a low carbon circular future, including a shift to less meat and more plant-based diets.

FoodSHIFT2030 establishes nine FoodSHIFT Accelerator Labs in different European cities (Athens, Avignon, Barcelona, Bari, Brasov, Berlin, Greater Copenhagen, Oostende, Wroclaw), with the purpose to mature, combine, upscale and multiply existing food system innovations. Each FoodSHIFT Accelerator Lab has defined an innovation focus and innovation actions to increase the technological and societal readiness levels of existing food system innovations within ten major themes and eleven Sustainable Development Goals (SDG) across the Labs. Each FoodSHIFT Accelerator Lab contributes and shares knowledge within the FoodSHIFT2030 consortium to drive innovation upscaling and cross-pollination between the FoodSHIFT Accelerator Labs. Furthermore, each of the nine FoodSHIFT Accelerator Labs will initiate the establishment of three FoodSHIFT Enabler Labs to facilitate the food system transition in other city regions.

EA is leading the Athens FoodSHIFT Accelerator Lab, defining it as the 'Open School' Lab and anchoring it on the idea of schools as sites of food experience and food system transformation. The Lab focuses on social innovation by engaging schools in (re-) connecting young people with land and nature as well as using summer courses to promote healthy eating and plant-based foods. It uses community empowerment providing hands-on learning opportunities for the food-smart citizens of tomorrow and strengthens the link between urban and agricultural communities by developing the dialogue between schools and food actor networks. It will also work on solutions for using leftovers in school canteens and kitchens.

#### 2. What makes this project an open schooling project?

The Athens FoodSHIFT Accelerator Lab was conceived as the 'Open School' Lab, on the foundations of the concept of open schooling, and inspired by the development of the OSOS framework.

# 3. Are there Living Lab elements in this project?

The Living Lab element is central to the approach of FoodSHIFT Accelerator Labs and overall of the FoodSHIFT 2030 project.

The Labs set out to empower citizens to influence how food is produced, distributed, consumed and recycled, based on the quadruple helix approach, engaging stakeholders from the private, public, voluntary and academic sector.

The FoodSHIFT 2030 framework focuses on increasing the technological and societal readiness levels of food system innovations. In particular, it focuses on identifying, maturing and scaling-up citizen-led innovations in the local communities that respond to social and environmental challenges, using sustainable design and circular economy principles to help scale and grow initiatives to become economically viable and socially valuable.

#### 4. Which local stakeholders were involved in this project?

The list of the local stakeholders who will eventually be involved in the developing school activities is open and evolving. The aim is to develop activities facilitating a sustainable food system transition, with SMEs, NGOs, local governments, researchers and citizens co-developing the food system of the future.

# 3.2. Other projects

#### 3.2.1. FRANCE: Termitia: serious video game

Project date: 2014-2015

**Country: France** 

Language: French

Link: https://termitia.wordpress.com/

Contact person: Malvina Artheau (malvina.artheau@gmail.com)

#### The story of the serious game Termitia

The story of Termitia started in 2010 when a group of researchers scanned a termite nest to extract a 3D model in order to better study it. The 3D model is presented during a Science Communication event. The success of this presentation draws the attention of the team of a science centre. They decide to use it as a model for designing a serious game. The researchers are up to it. Very fast, a start-up specialized in synthetic imaging and real time 3D is brought into the project and the three partners build up a project and receive national funding to develop it. Once funding is secured, two new partners are joining the project: a high school student and a PhD student in social sciences.

During the course of the project, partners get the time to learn about each other. Meetings are held in each partner's location and associated with a tour of the facility or a thorough description of one of the partner's work, expectations and/or constraints. This scheme will lead the newly formed team to prove itself resilient when adversity will eventually happen. The project is moving forward with many iterative steps, each time involving a large set of potential end-users from various communities who are engaging is the scenario, the design, the game play etc. The last version of the game is presented during a video-game festival. It is judged by players, with no mercy and a lot of respect. The game is not considered an exotic or boring learning game. It has the potential of a real video-game, with scientific content fully embedded in the gameplay. The full team is present, even though the start-up itself no longer exists, as its team went through a major internal disagreement, but for Termitia, they stick together one last time.

#### What makes this project a Living Lab project

**Stakeholders involvement**: Almost all concerned stakeholders (with the exception of the funding organization) have been involved at each step of the project. Involved stakeholders were scientists (from different fields, for the projects content and for the project evaluation), science centers (from different institutions, as partners and as intermediate end-users), end-users (with a set of different modalities), tech development.

Each partner's needs, concerns, values, knowledge have been respected, each voice was heard and taken into account.

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**Living Lab iterative circle and prototyping:** The project went through all the Living Lab phases more than once. In the video game industry, it is common to release beta-version to testing, in this project, we open up to testing many earlier versions of the game to try out it's different components at different stages.

#### What can be learned from this project

**Project's resilience is related to partners understanding each other very well**: The time spent getting to know each other is not lost time, it does play a strong role in bonding the partners/community and enhances a sense of responsibility toward the project that can be strong enough to overcome internal conflict.

**Early stages testing opens up unexpected perspectives**: Early testing and iteration are very fruitful and are giving new understanding not only project centered but also related to society at large. For instance, at a presentation during a science communication event we realized that not all teenagers are "video-game literate", event today the digital gap is a thing even among youngsters, some of which have either little or no access to playing video games at all

Long term sustainability should be considered (even if it isn't in the initial planning): As far as project sustainability is concerned, even though the project can still be uploaded and played, the project failed to scale up to a fully developed video game (which it had the potential of). This probably due to the fact that no follow up, especially in terms of business model, had been planned, and funding partners not fully involved with the collaborative course of the project. Property rights have not been fully addressed resulting in the game ownership laying in people who have no interest in fostering further development and no open access measures to allow for others to bring the project to new developments.

#### 3.2.2. Aquatic Life Lab (ALL)

Multi Countries. https://www.aquaticlifelab.eu/

Funded through Erasmus + (2017-1-IT02-KA201-036817)

#### Project description:

The **digital technologies and devices** make it possible for students from different nations, distant from each other, to participate in engaging **and inclusive** educational experiences. The aim of the ALL project was to offer the participants a **"cool"** way of approaching the complexity of the Mediterranean marine environment: knowing means becoming **more aware, responsible and respectful**, and when learning can be a fun experience, **everyone wins**. The project involved **several actors**, each of them motivated to bring their best contribution. **ENI** and **FEEM**, with a substantial injection of *economic-organizational energy and specific expertise*; the **Fondazione Cetacea in Italy** and the **Blue World Institute** in Croatia, both involved in providing a high *quality content* structure; **CivicaMente**, which has been in charge to translate the project with *digital teaching methodologies*, an App and a dedicated web platform; **Unesco** and the Local Territorial Communities that have helped respectively *drafting and organizing* the project. The main actors, however, were **teachers** 

and students, all coming from four cities tightly related to the Mediterranean Sea: Gela and Ravenna for Italy, Zagreb for Croatia and Limassol for Cyprus. The project was developed within the Erasmus + frame and made use of the implementation of two specially created digital tools: an *App* running both in the *Android and iOS environment* and an online platform that can communicate with it; the platform has restricted access areas, remote learning areas and specific tool-kits for output production.

The virtual, **cross-media dimension** of collaboration was inspired by the principles of the educational strategy "**peer education**": attentional stimuli, exploration, interaction and use of diversified **multimedia content**, give further value and quality to the educational path. The project included **preliminary training for tutors**, **teachers and students** of the participating schools, in order to prepare an **in-depth knowledge** of the thematic areas, i.e. the *Mediterranean marine environment and its habitats, bio-indicators and target species, of what can alter ecosystems and what can help them survive*. Other specific preliminary sessions were addressed to focus on the **tools and methodology** to be used. After this phase, the students and the teachers, assisted by tutors and by the drafting staff, find themselves doing exciting **field research through the App**, between oceanographic museums and important bio-marine education sites in their cities. The final part of the project was to divide the participants into transnational groups, connected to each other thanks to the **ALL digital sharing platform** and motivated to reach the goal of producing the final works.

#### What made this school project an open schooling project:

Schools involved were cooperating with various institutions in their local communities in order to create, explore and fulfil their tasks using mobile phone apps and QR codes. Tasks for students were designed between teachers and specialists from above mentioned local organizations.

#### Does the project show characteristics of a Living Lab?

It does, since students were actively learning about the marine environment from the local community stakeholders and organizations on the field.

Local stakeholders involved: Museums, research centres, public institutions and NGOs.

# 4. Glossary

As mentioned previously, during the first consortium exchanges several important terms presented a kind of ambiguity due to the great cultural diversity (and therefore richness) within the SALL project. A list of those words is defined below.

#### Community:

A community is a social unit (a group of living things) with commonality such as norms, religion, values, customs, or identity. Communities may share a sense of place situated in a given geographical area (e.g. a country, village, town, or neighbourhood) or in virtual space through communication platforms.<sup>4</sup>

#### Idea:

The description/articulation/formulation of a possible response to an issue.

#### Issue (aka problems, topics):

A complex subject, generally comprising one or several problems.

For the SALL project, we prefer the term "issue" to the term "problem": it is more open and less stigmatizing in some contexts. It also reflects the fact that the issue may comprise several problems and that it is not always something to be "solved" (it can be addressed, questioned, explored...).

#### Partners:

Societal actors that participate/are engaged in the project.

#### Project (aka activity):

#### **Project in school and university context<sup>5</sup>**

A project is an individual or collaborative enterprise that is carefully planned and researched about by students. At schools, educational institutes and universities, a project is a research assignment - given to a student - which generally requires a larger amount of effort and more independent work than that involved in a normal essay assignment. It requires students to undertake their own fact-finding and analysis, either from library/internet research or from gathering data empirically. The written report that comes from the project is usually in the form of a dissertation, which will contain sections on the project's inception, analysis, findings and conclusions.

#### Prototype:

<sup>&</sup>lt;sup>4</sup> As proposed by WP5, from Wikipedia, retrieved 22 November 2020.

<sup>&</sup>lt;sup>5</sup> Taken from the Wikipedia definition of 'Project', on 14th December 2020.

A prototype is an early sample, model, representation or release of a product or service. It is generally built to precise, explore and test an idea. A prototype may be material (e.g. a small model), virtual (e.g. simulation), or story-based (e.g. storyboard of a service). It may be low-tech (e.g. made of cardboard) or high-tech (an alpha version of a smartphone application). Prototyping uses a wide variety of tools and techniques, in order to give a first - and often imperfect - representation to an idea. The prototyping process in itself will bring a lot of additional details to the idea and offer a first confrontation to the "real world".

#### **Response:**

A response to an issue is a way to contribute to its solution. Most issues do not have a clear full solution, so a response is a contribution, a way to have a positive impact related to that issue. A response usually lowers the gravity of the issue, mitigates the risks, solves parts of the problems or raises awareness of the issue.

#### School:

A school is a teaching and learning institution made not only of teachers and students, but also their families and all the associated staff working in the school.

Furthermore, when we consider a school, we always think of it as part of a larger system of other social actors and situated in a specific neighbourhood or territory.

\* It is not mandatory that all actors of the school ecosystem be directly involved in the project (i.e as partners), but they all should be considered, and the reasons not to involve them clarified.

#### School ecosystem:

School + societal actors.

#### Societal actors (aka social actors / engaged parties / potential partners / stakeholders\*):

All individuals or institutions that have a common interface and/or a common interest with the school, and that are interested or affected by the process or the outcomes of the project. They range from the municipality to the local bakery, from the local environmentalist association to the driver of the food truck.

\*Stakeholders: Too jargon, less intelligible for all project participants

#### **Topic** (aka theme/subject):

A disciplinary subject (e.g. geography) or subtopic (evolution of demographic in a country), recognisable as a school topic by school and teachers. A living lab project will link/cover several topics.

#### Task = Activity:

An activity is a task involving the various partners of the Living Lab, "accomplished within a defined period of time or by a deadline to work towards work-related goals. It is a small essential piece of a job

that serves as a means to differentiate various components of a project".<sup>6</sup> It may have very different goals, such as to understand or explore an issue, to identify ideas, to prototype, experiment or evaluate them, or to debate about the social and ethical questions around an issue or an idea.

<sup>&</sup>lt;sup>6</sup> Taken from the Wikipedia definition of 'Activity', on 14th December 2020.

# ANNEXES

# Annex 1 - Next steps: the first Workshop

On January 25, 26 and 28 2021 the first co-construction workshop will be held, entirely online. It will be organised and facilitated by WP2 and WP3 with the participation of all the consortium members. The week previous to the Workshop, there will be 3 masterclasses that will give a starting point to the discussions and shared constructions that will happen during the meetings.

For the masterclasses of 30-45 min 3 specialists on Living Lab and/or Open Schooling Projects will share their experiences with all the consortium members on three main topics: The Living Lab approach and how it transforms the production process; how to gather very different actors to work together around an issue and how the participants feel about being a part. Webinars **will be recorded** and made available to maximize attendance and impact both to workshop participants and to other relevant societal actors.

The Workshop sessions will last 3 hours each in the morning:

8h30 - 11h30 am (Portugal time)

9h30 - 12h30 am (Brussels time)

10h30 - 13h30 (Greece time)

In between the workshop sessions asynchronous sub-group and/or local network/societal actors collaborative work is foreseen. Modalities are still being discussed to allow the workshop to be most effective for all partners and associated partners. There will be 33 participants maximum. Each participant is expected to follow the webinars and attend the 3 workshop sessions.

The outcomes expected for the end of the workshop are: a first draft of the SALL Methodology and clear next steps to be taken for implementation.

# **Annex 2 - Pitch for National Coordinators**

SCHOOLS AS LIVING LAB

A preliminary pitch for national coordinators

\*The purpose of this document is to facilitate a quick appropriation of the project generalities for the National coordinators, and to establish a baseline for all the consortium members.

(version of 18/11/20)

#### What is SALL: Schools As Living Labs?

SALL is a European project gathering the expertise of 10 different countries to propose a new approach to open schooling. By adapting the principles of the Living Labs, SALL supports schools in the implementation of projects which link with their local communities and addresses locally relevant issues related to the food system in all its dimensions (production, distribution, waste management, health, economy, etc.)

By participating in the SALL project, schools and teachers will experiment an open schooling approach based on the Living Lab methodology, aimed at making STEM teaching more relevant, systemic and inclusive for their students. SALL will also help students develop new skills and positive attitudes, and conceive learning science as a way to actively contribute to the wellbeing of the world they live in.

#### What does "Living Lab" mean?

Within the SALL project, "Living Lab" is the methodology used to support the collaboration among different partners who want to address a concrete issue relevant for each of them, going through a Living Lab cycle typically comprising:

- Creating ideas together after exploring the issue
- Quickly building some elements of the solution, which can be done in a cheap and fast way (often referred as prototyping)
- Testing the solution with users, and getting feedback to improve the solution

This cycle may be implemented several times, in an iterative way, to refine the solution at various levels.

The key principles are:

- 1 Real issue real solution, making use of the participants' personal experience,
- 2 Co-creation, involving of all impacted societal actors,
- 3 Quick prototyping, as ideas are immediately put in practice and tested.

# What do we mean by "school"?

A school is a teaching and learning institution made not only of teachers and students, but also their families and all the associated staff working in the school.

Furthermore, when we consider a school, we always think of it as part of a larger system of other societal actors and situated in a specific neighbourhood or territory.

#### Who are the "other societal actors"?

All individuals or institutions that have a common interface and/or a common interest with the school, and that are interested or affected by the process or the outcomes of the project. They range from the municipality to the local bakery, from the local environmental association to the driver of the food truck.

#### What is SALL aiming to achieve?

Through the Living Lab projects, SALL will:

1- support schools in partnering with other societal actors to address an issue that are relevant for each one of them;

2- foster the recognition of every actor as an agent of change, breaking the roles and boundaries of traditional teaching

Through these objectives, the activities will widen the students' representation of science and promote open schooling.

#### What does the "food system" theme mean?

SALL addresses the general theme of the food system. The food system is a complex web of activities involving the production, processing, transport, and consumption<sup>[1]</sup> of food - from seed to plate to waste.

This can include many different aspects, for example food waste management, cultures and traditions of food, carbon footprints of the food system, agriculture, physiology of taste, packaging, local circulation of food, health issues, economy, aesthetics, ... Each school will define what is most relevant for them.

#### Which kind of project?

Ideally, SALL projects are expected to satisfy four fundamental conditions:

- They involve actors within the school (students, teachers, technicians, administrators, directors, support professions), and other societal actors.
- They respond to a common issue that needs to be solved, and is relevant for all the parties involved (ie: directly or indirectly impacted by the issue or its solutions).
- They involve the design and testing of solutions during the course of the project.
- They aim to make a real and sustainable change for the school and the other societal actors, with tangible outcomes (e.g. collective event organization, change in waste management, newsletter, participatory board in local decision making, etc...)

#### What are the requirements of these projects?

- Contact point: any school or institution may participate, and should start by identifying one main contact person for the SALL project.
- Partnerships: schools will need to identify and build a local partnership with the other societal actors.

- Co-creation workshops: during the whole course of the project co-creation workshops will have to be held together with schools and societal actors.
- Timeframe: a project would typically have a duration of 2 to 6 months, but may be adapted to each school context.
- Project time: a project would typically involve the teachers and students 1 to 4 hours per week, but may be adapted to each school context.
- Number of students involved: students typically work on these projects in small teams of 2 to 6 students. However, the total number of students you want to involve is up to you, from 2 to 999.
- Reporting: a short reporting form about the activities carried out will need to be filled-in to monitor the progress of SALL.

#### What are the main benefits of participating?

- A stronger engagement of students through an active approach.
- Establishing the school in a network of local actors (NGOs, companies, policy-makers, etc.),
- Building soft skills for the future (creativity, critical thinking, collaboration, problem-solving, media/information literacy, etc.),
- Intersecting STEM related topics with wider issues, civic engagement and other disciplines (e.g. Arts and Humanities),
- Responding to an issue that matters for the school.
- Being part of an international school network of SALL projects.

#### How do we know that our project worked?

SALL project is a three-year project (2020-2023) and the first year of the project works as a pilot phase. Thus, your feedback and contribution throughout this school year will be very useful for us in order to improve our methodology and materials. During the design and the implementation of your SALL project, we will need to collect useful information from all participating actors (students, teachers, school's administration, external actors) about their contribution to the ongoing process of the project. It is important to know that your participation is voluntary and all the information you will provide for evaluation purposes will remain anonymous.

#### What do we want to know from students?

We would like to see whether their participation in the SALL projects will impact on their motivation for doing science and the level of their engagement in their community. Thus, they will be asked to anonymously fill in two questionnaires related to their motivation for doing science and their level of engagement in their community.

- The tests might take **approximately 20 minutes** to fill in, but they can also be provided as homework for students.
- They can be provided in **paper and pencil format or online.**
- They will be **re-administered** to students **at the end of your implementations** in order to be able to identify the project's impact.

What do we want to know from teachers, school's administration, and other societal actors?

We have developed a set of reflective questions for the school's administration, the participating teachers and other societal actors in order to facilitate the planning of your project. It will take approximately 20 minutes per participant to answer these questions via an online meeting or a face-to-face communication, etc. This process will help you create a clearer picture about the project you will implement, the ways you can collaborate with others and it will also help the national coordinators to tailor their support based on your school's needs. At the end of your implementations, similar questions will be asked to the same participants to facilitate your reflection on what worked and what did not work during your project, to be able to improve our Living Lab methodology and support the wider implementations the following year.

# Can I participate in spite of the COVID-19 pandemic?

Indeed! The Living Lab approach links the students with other actors, outside of the school, through various means including online teleconferences and virtual meetings. Moreover, students can do some research and other work from home, and they can collaborate through online tools and platforms. Thus, the project can be done fully online, fully in real life, or in a hybrid way.

# That's all?

- It is important to remember that all the parties involved are partners of the project. In a SALL activity everyone has something to teach and something to learn. Students are not there only to learn, teachers not only to teach, etc.: they all participate in a mutual way and contribute actively to a local issue, and use this participation to teach, learn, etc.
- As a medium to long term impact, SALL activities should help school governance, students, teachers, staff and local actors to feel part of the same school ecosystem, in which each one can benefit from the other. We are deeply convinced that this approach can help them better fulfil their core mission as educational institutions.

<sup>[1]</sup> https://www.futureoffood.ox.ac.uk/what-food-system







