SCHOOLS AS LIVING LABS

SCHOOL PREPARATION MATERIALS AND TOOLS

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Executive summary

The 'Schools as Living Labs' (SALL) project 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 and mutual learning among these worlds lies in the heart of SALL.

The present document constitutes deliverable D4.1 'School preparation materials and tools' of the SALL project, developed in the context of Work Package 4 (WP4) 'Implementation of school living labs' in the very early phase of the project, from month 1 to month 6 (M1-M6). The deliverable provides an overview of the preparations for the implementation of the initial piloting of the methodology proposed by SALL in at least 42 'focus schools' in 10 countries in the following 6 months (up to M12). It concisely reports on the overall situation, the different strategies and materials used to engage schools, how National Coordinators (NCs) will support schools in the following months, the needs of NCs, schools and teachers in their efforts and how the SALL project will respond to these needs, and relevant decisions taken.

1 Introduction

Work Package 4 (WP4) of the 'Schools as Living Labs' (SALL) project is enabling the implementation of the living-lab-based open schooling methodology developed by SALL, in the participating school communities. As an introductory statement, we would like to highlight the aim of WP4 at this stage:

In Year 1 (M6-M12) the project will run a first pilot of the living lab methodology, focusing on the theme of the food system, with 42 schools from the 10 participating countries, in order to collect feedback and data to inform and adapt the methodology and evaluate its impact at a first level.

In the first phase of the project, WP4 has dedicated effort to prepare the first phase of piloting starting in February 2021, with a target of involving 42 schools (the so-called Focus Schools). This initial piloting in the first project year will serve to evaluate the SALL approach and the outcomes from other WPs, i.e. mainly the SALL community platform (WP1), the Living Lab methodology, techniques and tools (WP2), the strategies for actively involving external stakeholders (WP3), and the methodology to evaluate the impact on participants (WP5).

During the first six months of the project (M1 to M6), the National Coordinators (NC) have been working closely in WP4 to understand and improve the model that SALL is proposing to school communities from M6 onwards. In addition, the WP4 leader and participants have worked with other WPs to integrate all the work done and find the best way to transfer it to the target audience for adoption.

Preparing the first pilot with schools has been a challenge due to the tight timing, with only 6 months available since the beginning of the project, the multiple tasks being developed in parallel which needed to be integrated into WP4 and, obviously, the difficult situations and uncertainty that all countries are experiencing because of the Covid-19 pandemic.

In this document, we will describe the overall situation of the piloting countries at this initial phase; the different strategies and materials used to engage schools; how NCs will support schools during the following months; the needs of NCs, schools and teachers in the effort to implement the Living Lab approach in their communities, and how the SALL project will respond to these needs; and the decisions taken to help succeed in the first year of piloting with schools.

2 Schools engaged for the first piloting

2.1 Number and profile of schools engaged

The project expected 42 schools to be engaged in the first piloting year. At this moment, this number has been reached, with 51 schools contacted and involved in the SALL project by NCs. A first challenge is to keep these schools actively involved during the first and successive years of the project, and beyond.

In Table 1, we present the number of schools targeted in each country and the number reached so far.

Country	Target number of schools	Actual number of engaged schools in February 2021
CYPRUS	5	8
GREECE	6	10
FRANCE	5	2
ISRAEL	5	7
THE NETHERLANDS	5	3
PORTUGAL	5	9
SPAIN	5	6
SERBIA	2	2
CROATIA	2	2
ESTONIA	2	2
TOTAL	42	51

Table 1: Targeted and actual number of engaged schools in each participating country

Most of these are schools with which NCs have already collaborated in previous projects (e.g. OSOS). The profile of the schools is varied. Some have experience in open schooling, but not in the Living Lab methodology. Others have never experimented with a model that opens schools to external actors from the community. Some schools are large and located in urban environments, while others are small rural schools. This diversity is very enriching for the project and for evaluating the SALL approach, as we will be able to evaluate the methodology and tools in different contexts, analysing the pros and cons in each case.

In all cases, the NCs have stressed the experimental nature of this phase, in which we want to test the methodology, activities and materials developed. The WPs developing the SALL approach are still working on it, creating new resources and tools for schools and teachers, and elaborating strategies to actively involve community agents and policy makers. All the work done during the first six months of the project and still in-progress will be evaluated in the first piloting phase. The information and data collected during this process will lead us to identify the needs and challenges for the schools implementing the Living Labs, refine the SALL approach, and work on tools and resources needed to prepare for the second large-scale implementation cycle from September 2021 onwards.

In addition to the difficulties of this type of piloting, we have to add the uncertainty arising from the Covid-19 pandemic. To the usual challenges, we have to add the incidents that may arise over the coming

months and the difficulty of carrying out face-to-face activities, which especially affects the collaboration of the participating schools with local community agents. However, we will work in this context, appropriately dealing with the obstacles that may arise, and taking advantage of the opportunities that ICTs offer to connect people and organisations working together remotely.

2.2 Strategies and materials used

NCs have contacted trusted schools, with whom we have previously collaborated successfully. We are aware of the experimental nature of this phase, so we need schools that trust us and know that we are evaluating work in progress that may fail or need improvement. In addition, these schools are aware of our way of working and of the importance of collecting rich information in a variety of ways to evaluate different aspects of the project.

As a first resource to communicate the SALL concept, we have used the 'pitch' document designed in WP2 (Annex I). This document has been very useful for all NCs, as it contains the main concepts, activities and objectives of the project.

On the 18th, 19th and 20th January 2021, the project organised a series of masterclasses with experts, to address different topics related to the Living Lab methodology (Annex II). All NCs attended the talks and the feedback was very positive, as the masterclasses helped to better understand the Living Lab methodology and the SALL approach. In our meetings, the NCs have noted that they do not have difficulties in explaining and making the SALL project appealing to the contacted schools.

In the following week, on 25th, 26th and 28th January 2021, project partners held three workshops to elaborate on the SALL approach and provide orientation for the work in the following months. These workshops were very dynamic, participatory, and engaging for all participants. As with the masterclasses, the workshops were also very positively evaluated by the NCs as helpful in orienting their work with the first focus schools.

NCs have met with schools primarily through online meetings and, in some cases, in face-to-face meetings. In these first conversations, they have explained the SALL approach, key aspects, objectives, concepts, activities foreseen, etc. In addition, schools' concerns and challenges have been collected. After general meetings with interested groups of schools, NCs have arranged individual meetings with some of them to address specific aspects of the school and the community, such as:

- Discussion and mapping of ideas to identify the topic related to the overall food system theme that will be implemented in the school project.
- How to identify, involve and collaborate with external stakeholders, bringing ideas such as a "stakeholders' festival", online meetings with speed-dating, etc.
- A deeper understanding of the Living Lab methodology, phases, type of activities, etc.

These meetings have included, in some cases, the SWOT analysis designed in the evaluation of the project (WP5).

In the following months (M6 to M12), NCs will hold regular meetings with schools, individually or in groups, to monitor the progress in the pilot, to identify challenges and needs for information or clarification in any aspect of the SALL approach, and to carry out the evaluation activities foreseen (WP5). In addition, NCs will have a monthly meeting to share their experiences, concerns and needs, and discuss the actions to be taken in the frame of the project.

2.3 Challenges

For now, the main challenges identified in relation to the piloting with schools are:

- The need to define the steps to follow in the piloting, the activities included in each step, and the starting point. This includes both the implementation activities and the activities related to evaluation.
- How to actively involve community actors and work with them in school projects.
- Understand what the food system theme encompasses and get ideas for school projects.
- The need to gather ideas on how to develop creative online initiatives that will bring together school communities and social actors to start Living Labs (COVID pandemic response).

These are not the only challenges we will face during the piloting, but they are the most commonly identified ones after the meetings held with teachers, school leaders and other stakeholders.

3 Supporting school communities

In response to the challenges identified by the focus schools and the needs identified by the NCs, we have launched a series of actions in collaboration with the different WPs.

3.1 Roadmap

We will work on a very concrete and concise, step-by-step roadmap describing the key aspects and the methodology to implement a Living Lab in the focus schools. The roadmap will describe the steps to be followed in the school project and propose a series of activities to develop these steps. For example, it may include activities to agree on a topic among several participants, identify roles in the group, design a prototype, or establish communication channels and procedures between the various actors involved. WP2, WP3 and WP5, along with WP4, are the work packages more directly involved in the description of this roadmap.

Further, the key points that every Living Lab school project should have during the initial pilot, are the following:

Key points

It the core of the Living Lab school projects during the initial pilot, there should be:

1. A real-life issue

2. Engagement of societal actors

3. Prototyping.

A school project that does not follow ANY of the elements of the methodology, respects the above three points, is great!

A school project that follows all the steps of the methodology but does not work on a real-life issue together with local stakeholders, is no good!

The piloting phase is about collecting diversities and new ideas!

The overall implementation is divided in two main phases: Preparation, and Implementation. These phases are further divided in several steps, which we briefly present here.

Phase 0 - Preparation

- Approach: What do I need to approach and engage a school?
- Societal actors: How do we engage societal actors from the community?
- **Topic**: How do we select and agree on a food-related topic?
- **Evaluation** (WP5): Evaluate the baseline of participants regarding several aspects of the project.

Phase 1 - Implementation

- Step 1 Cocreation. Identify the needs and articulate ideas (of products, services, solutions) from all participants. Define the topic. Select issues, identify needs and produce a wide range of ideas.
- Step 2 Exploration. One or more ideas are deepened and transformed into a prototype. Turn ideas into use case scenarios and prototypes, explore opportunities.
- **Step 3 Experimentation.** Try out the prototype or scenario in a real-world setting. Test in real-life situations.
- **Step 4 Evaluation.** Analyse the experimentation results to validate or improve the solution. Validate, discuss, improve or dismiss the solution.

In the following weeks, SALL partners will work on detailing this roadmap to produce a complete and at the same time flexible guide for schools to follow. During the implementation phase, and thanks to the continuous monitoring of focus schools, NCs will identify further needs from participants (i.e. teachers, students, community agents, etc.), which will be addressed by the project. Depending on participants' previous experience in similar projects, in the open schooling approach or in Living Lab methodologies, they will have a different level of expertise and skills to develop the Living Lab school projects (Figure 1).



Figure 1: Level of expertise of participants in the SALL approach

According to this expertise, we foresee the need for deeper levels of detail as schools and teachers will become experienced and comfortable with the SALL approach (Figure 2).

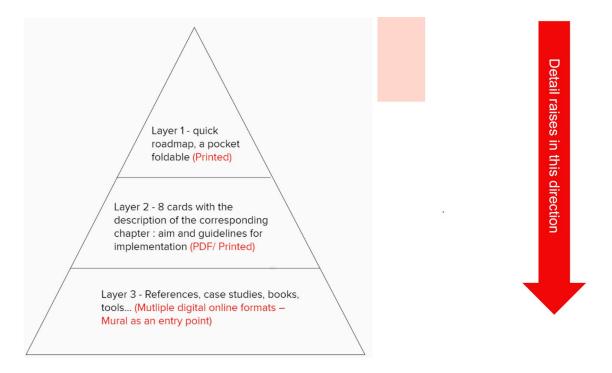


Figure 2: Layers of information provided as participants gain further expertise in the SALL approach

3.2 A good project example throughout the phases

The NCs have identified the need to provide examples of projects -best cases- so that schools can be inspired and clearly understand the methodology. These examples will describe the different phases followed in the Living Lab methodology. A first effort has been made to identify projects that meet the main characteristics required in SALL, which are: starting from a real problem, involving agents from the environment, prototyping a solution, and, during the first year, focusing on topics related to the food system. We are now working on adapting these projects more specifically to the methodology and the whole cycle of the Living Lab approach. In Annex III we are presenting a preliminary example of a Living Lab school project.

3.3 Being part of a greater community

Participating NCs and schools are very positive towards the possibility to boost collaboration among schools, both at the country level and internationally. This can attract and highly motivate schools, teachers and students to participate in SALL. We want participants to feel part of a larger community and to be able to share experiences, challenges, learning, and everything that makes it possible to have such a broad community of agents.

To this end, the online SALL community platform that is being developed (WP1) will facilitate the presentation and search of schools and teachers, as well as the interaction among agents that could be interested in working together in any aspect of the SALL school projects. In addition, meetings between schools from various countries will be organised during the piloting to give them the opportunity to get to know each other and to share their experiences in SALL. What brings schools together may be the topic they are working on, specific aspects of the methodology, the educational level or any other common interest that may arise. The interaction could be among teachers and schools, but also among students who are working in similar projects and may gain from exchanging experiences with students from other regions or countries, as well as comparing the similarities and differences when addressing a similar challenge in different geographical zones, cultures or socioeconomic environments.

3.4 Identification of school needs during the piloting

As we have already mentioned, the piloting phase aims to test, contrast and evaluate all the aspects that we are developing in the project. For this reason, it is essential to closely monitor the implementation in the focus schools and collect all the information that will be useful to improve the methodology, resources and tools.

This monitoring will be carried out periodically by the NCs through meetings and other formulas according to their needs. The information collected will be shared with the project members, mainly WP4 and other NCs through regular online meetings. In this way, we will be able to identify the needs of the participants in the pilots, the difficulties or obstacles in the different phases, and the aspects that enable and facilitate the implementation of the SALL approach.

The consortium will respond to the identified needs, elaborating and improving the different elements that make up the proposed methodology. In the case of generating new resources, these will be available to participants through the online platform and will be made known through webinars, meetings and other means.

4 Conclusions

In WP4, from M1 to M6 we have been preparing NCs to support schools in piloting the SALL approach, integrating the work done in WP1, WP2 and WP3, as well as evaluation (WP5). NCs have been working together in different ways and strategies to transfer the SALL approach, the methodology, materials and

resources so that schools and community agents can develop school projects on topics relating to the food system and following the Living Lab methodology.

During this period, NCs have contacted schools to involve them in the first phase of the project. The focus schools will ideally work with us for three academic years and will allow us to thoroughly evaluate and improve the SALL approach. We have seen the different strategies and resources that have been necessary to involve the schools and the first needs identified to implement the Living Lab school projects in the coming months, as well as the mechanisms each NC will use to support and monitor the activities during the piloting.

From the perspective of WP4, we wish to highlight some aspects of this first piloting year:

- The context: This is a piloting phase with trusted schools in especially difficult conditions.
- **The objective**: We aim at monitoring, testing, learning, improving and refining any of the aspects of the SALL approach.
- Our tasks:
 - \circ ~ To support and guide schools through the process.
 - \circ To identify, report and address the main challenges during the piloting in each school.

ANNEX I - AN INVITATION TO SCHOOLS (PITCH)

The 'pitch' document used to introduce the approach and main concepts of SALL to schools.



WHAT IS SALL: SCHOOLS AS LIVING LABS?

SALL is a European project gathering the expertise of 13 organisations from 12 different countries to propose a new approach to open schooling. By adapting the principles of the Living Lab methodology, SALL supports schools in the implementation of projects which link them with their local communities and address 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. SALL will also help students develop new skills and positive attitudes, and conceive learning science as a way to actively contribute to the well-being 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, which typically comprises:

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

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 all impacted societal actors
- 3. Quick prototyping, as ideas are immediately put in practice and tested.

WHAT DO WE MEAN BY "SCHOOL"?

For us, 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, we think of the school as part of a larger system of other societal actors, 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 school project. They range from the municipality to the local bakery, from the local environmental association to the driver of the food truck, to mention just a few examples.

WHAT DOES SALL AIM TO ACHIEVE?

Through the Living Lab school projects, SALL will:

- support schools in partnering with other societal actors to address issues that are relevant for each one of them
- 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 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 of food - from seed, to plate, to waste.

This can include many different aspects, such as 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 SCHOOL PROJECT?

Ideally, SALL school 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 (i.e. they are 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. through the collective organization of an event, a change in waste management, the publication of a newsletter, a participatory board in local decision making, etc...).

WHAT ARE THE REQUIREMENTS OF THESE SCHOOL PROJECTS?

- Contact point: any school or institution that wishes to participate should start by identifying one main contact person for SALL.
- 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 school project, co-creation workshops will have to be held together with societal actors.

- Timeframe: a school project would typically have a duration of 2 to 6 months, but this may be adapted to each school context.
- Project time: a school project would typically involve teachers and students 1 to 4 hours per week, but this may be adapted to each school context.
- Number of students involved: students typically work on such school 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 progress.

WHAT ARE THE MAIN BENEFITS OF PARTICIPATING?

- A stronger engagement of students through an active approach
- Establishing the presence and role of 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 to the school
- Being part of the international school network of SALL.

HOW WILL WE KNOW THAT OUR SCHOOL PROJECT WORKED?

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

What do we want to know from students?

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

- The questionnaires may take approximately 20 minutes to fill in, but they can also be given to students as homework.
- They can be provided in paper and pencil format, or online.

• They will be re-administered to students at the end of your activities, so that we can identify the impact of the project.

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

We have developed a set of reflective questions for the administration of the school, 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. This process will help you create a clearer picture about the school project you will implement and the ways you can collaborate with others. It will also help SALL to tailor its support to you based on the needs of your school. At the end of your activities, the same participants will be asked similar questions, to facilitate your reflection on what worked and what did not work during your school project, and so that we can improve our Living Lab methodology and support its wider implementation the following year.

CAN I PARTICIPATE IN SPITE OF THE COVID-19 PANDEMIC?

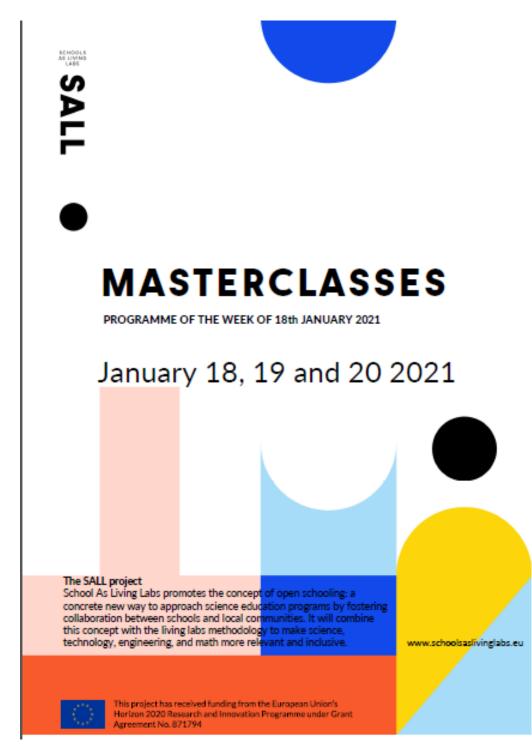
Indeed! The Living Lab approach links students with other actors outside of the school through various means, including online teleconferences and virtual meetings. Moreover, students can do some research and other work from home, and they can collaborate through online tools and platforms. Thus, the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

IS THAT ALL?

- It is important to remember that all the parties involved are partners in the school 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 to contribute actively to addressing 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 others. We are convinced that this approach can help schools better fulfil their core mission as educational institutions.

ANNEX II - MASTERCLASSES

The leaflet used to disseminate the masterclasses organized in January 2021.



#1 Мопday 18th Јапиагу 12:00-12:45 сет



Dr Lorraine Hudson - Director of Bristol Living Lab, Knowle West Media Centre (UK)

Lorraine works for <u>Knowle West Media Centre</u> (KWMC), an arts charity in Bristol (UK), which is a member of the European Network of Living Labs. Bristol Living Lab brings together citizens, artists, technologists, business, academics and public sector organisations to co-create ideas, tools and technologies that address local challenges. Lorraine manages the development of social innovation projects with

a focus on diversity and inclusion of citizens, collaborating with a wide range of external stakeholders including academia, business, the public and voluntary sectors. Participate (zoom link here)

#2Tuesday 19th Јапиагу 12:00-12:45 сет



Elin Geerlings - Student

"Hi, my name is Elin and I'm 13 years old. I'm in 9th grade at CalandLyceum in Amsterdam. This is a school where they also teach me how I can do projects with other organizations. What I like about school is having fun with my friends. I really like to surf and skate. When I grow up I want to be a sports physiotherapist. In the Netherlands we now have a lockdown. I don't like that because I can't meet my friends as much as I want to. A positive thing about having school online is that I can skate and surf more often because not all of our lessons can be given online". Within the SALL project, multiple societal actors, including teens and adults, will engage in locally relevant food system issues. What is it like, as a thirteenyear-old, to work with adult stakeholders in a project? Participate (zoom link

here)

#3Tuesday 19th January 18:00-18:45 CET



Emeline Brulé – Service designer, University of Sussex (UK)

Emeline Brulé is a designer and lecturer in the School of Engineering and Informatics at the University of Sussex, and is part of the Creative Technology research Group. They received their PhD from Télécom Paris in 2018. Their PhD thesis focused on schooling experiences of visually impaired children in France, and how inclusion could be improved by the design of a more multisensory curriculum. This was part of the Accessimap research project, which led to the design of an audio-tactile display for images and schema. Their current research focuses on technology policy, *lumeters*.

accessibility and design education. Participate (zoom link here)

#4 Wednesday 20th January 12:00-12:45 CET



François Millet – Living Lab Manager, Le Dôme, (France)

After fifteen years of piloting scientific cultural projects steeped in digital, pop culture and ornithology, François took part in the adventure of designing and piloting Le Dôme, a cultural space dedicated to research and participatory innovation. His work is to deploy a cultural program where researchers, communities, businesses and creative communities come together with the population to prototype new objects, uses and services in a spirit of responsible research and innovation. Participate (zoom link here

* Webinars will be recorded. If you activate your camera on Zoom during the masterclass, you authorize the SALL Project to use your image for educational or communication purposes. For any questions and comments please write to claudia.aguirre@groupe-traces.fr

ANNEX III - SALL SCHOOL PROJECT EXAMPLES

Below we show some examples of school projects that as seeds to further describe the SALL approach and the whole cycle of the methodology. These examples have been collected from NCs based on previous open schooling projects related to the food system theme.

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)

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 mellifera*. 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 the 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

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 neighborhood 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

SCHOOLS AS LIVING LABS

SALL





