RESOURCE

Guide for Organizing a Climathon

This resource is a guide for promoting project-based pedagogy by organizing a Climathon, as part of a whole-school approach. It offers methodological guidance for organizing students-led projects that focus on implementing climate change mitigation or adaptation solutions at local level, whether in schools or the surrounding community. This approach emphasizes collaboration between a diverse group of stakeholders —including teachers, educators, scientists, policymakers, NGOs, parents, and urban planners— to enhance students' pro-environmental engagement. The proposed methodology is a guide that all educational communities can adopt. It provides educational teams with tools, scientific and pedagogical insights, and a method that can be replicated anywhere in the world, while remaining adaptable and contextualizable.

This guide outlines the key steps for organizing a Climathon and underscores the value of project-based pedagogy in student learning. It also highlights the specific benefits of this approach, such as reducing eco-anxiety and empowering students by fostering a sense of agency.

An example of a climathon which took place in France during the 2023-2024 school year is used to illustrate the methodolgy described in this guide. The project focused on developing nature based solutions for the adaptation of the school yard during heat waves. **This action was part of the european project ESM2025.**

Summary

Methodological Guide
Students (6 to 18 years), teachers, local associations, parents, scientists, policymakers, NGOs...

Subjects
Natural sciences, social sciences, philosophy, media and information education, citizenship education, environmental education

Pedagogical Approach
Project-based learning

United Nations Educational, Scientific and Cultural Organization

Office for Climate Education

UNDER THE AUSPICES OF UNESCO AND THE FOUNDATION LA MAIN À LA PÂTE

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Eva Perrier-Ponsin.

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OVERVIEW

AUTHORS
Natalie Chong (OCE), Simon Klein (OCE), Eva Perrier-Ponsin (OCE), Mathilde Tricoire (OCE)

RESOURCE TYPE
Methodological guide

PUBLIC
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KEYWORDS
Climate action, adaptation, mitigation, project-based learning

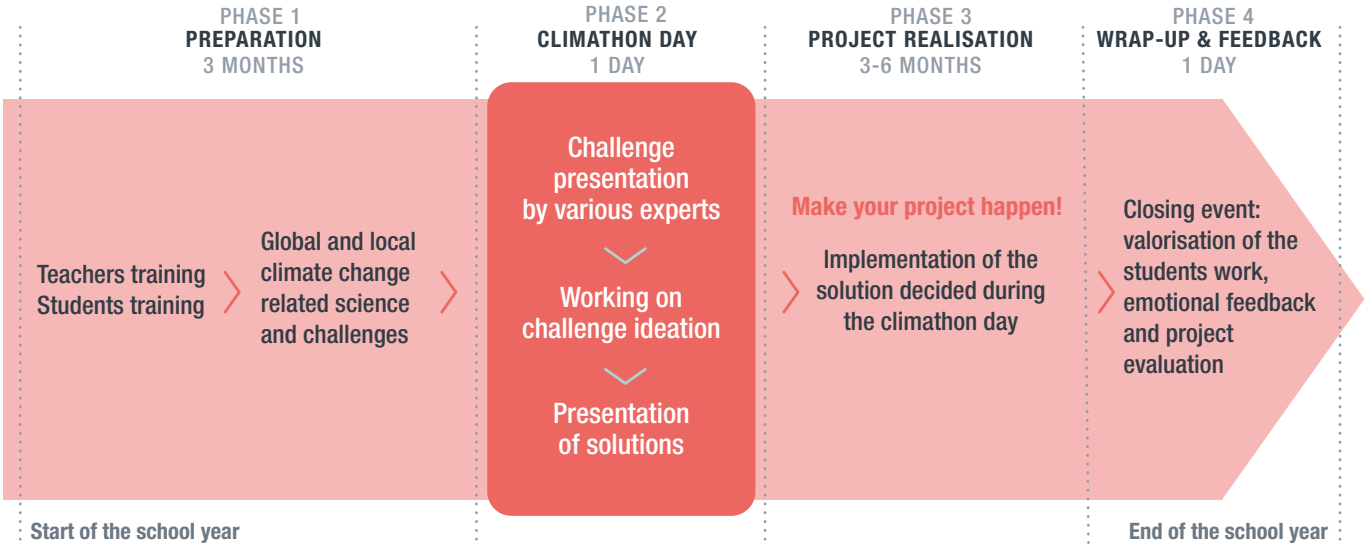
PEDAGOGICAL APPROACH
Project-based learning

PROJECT DESCRIPTION

A '**Climathon**' (climate + hackathon) is an initiative brought to life by the Climate-KIC organization (https://www.climate-kic.org/), which has been adapted for formal education by the Office for Climate Education (OCE).

Using project-based pedagogy, students go through 4 main phases over several months: a **PREPARATION PHASE**, a **CLIMATHON DAY**, dedicated to designing solutions to a local climate change-related challenge; a **PROJECT REALISATION PHASE**; and a **WRAP-UP AND FEEDBACK PHASE**.

Below is a general timeline of a Climathon, which is detailed further in the document.



PHASE 1

Preparation

- **LOCAL CONTEXT**

A central aspect of the Climathon methodology is tackling climate challenges **at the local level**. Educational research shows that educational interventions are most effective when they focus on local, tangible and achievable aspects[1]. It is important for students to feel empowered to actively contribute to climate change adaptation or mitigation efforts within their school or local community. This could involve initiatives such as greening the schoolyard to reduce the heat island effect or developing a local clothes recycling and upcycling center to counteract the negative impacts of fast fashion.

- **METHODOLOGY**

Organizing Climathons requires some advanced coordination among various stakeholders and time for acquiring the necessary professional skills in climate change education.

It is recommended that teachers and educators involved in the project engage in **professional development related to climate change education**. This can be achieved through personal development tools, such as materials developed by the OCE, or, preferably through face-to-face workshops conducted by teachers trainers, or educational communities. These workshops should cover various aspects of climate change education, including fundamental topics related to the greenhouse effect, the ocean and cryosphere, and emotional responses to the climate crisis, as detailed in OCE's professional development resources.

To effectively implement both the Climathon Day and the full project, it is essential to establish **a project coordination team**. This team should include individuals responsible for logistics, as well as contacting relevant experts, scientists, and local practitioners. This process may require persuasive arguments and securing a budget. The benefits to student learning and empowerment, as well as the positive impact on local adaptation or mitigation plans, can serve as compelling reasons to support the initiative.

It may also be advantageous to align the Climathon project with an existing larger local adaptation or mitigation initiative, while keeping in mind that the primary focus is to provide students with the opportunity to design their own projects, even if they are integrated into the broader effort.

Teachers first identify the local context in collaboration, determining the specific climate challenges relevant to the school or community. Once this context is established, they can select experts—either with input from students or independently—based on their relevance to the identified challenges. This ensures that the experts provide valuable, targeted insights to support the students' projects.

PEDAGOGICAL INSIGHTS

INTEGRATED PEDAGOGY

Climathons should be integrated into a year-long pedagogical interdisciplinary path that combines **cognitive, socio-emotional, and behavioral learning** (as promoted by the Green Curriculum Guidance[1]). For instance, we recommend starting by developing **climate literacy** with students using active pedagogies to cover **key scientific concepts** related to climate change. Afterwards, shift focus to developing an **emotional connection** to the topic with students, followed by implementing a **project-based approach** using Climathon methodologies.

Ideally, the first two steps should last no more than three months, leaving the rest of the year for the project implementation.

SCIENTIFIC KNOWLEDGE

Start with **science classes about climate system**, such as greenhouse effect, carbon cycle or sea level rise. If you want to work on alimentation you can use this cardgame or decide to work on carbon footprint calculator.

Scan the QR Code to access OCE's class activities on climate change.

EMOTIONS AND SOLUTIONS

You can use the following set up presented in our lesson **How do you feel about climate change?**: students choose individually 3 feelings among a list of various emotions, share them in small groups and then in the whole class.

Scan the QR Code to access the lesson D2 - How do you feel about climate change? Working on emotions.

PROJECT ACTION (CLIMATHON)

This is where **students get in the positions of actors** to build solutions to address the climate crisis. Through the project, students act and develop various competencies that may help them reduce potential eco-anxiety.

Scan the QR Code to access OCE's mitigation, adaptation or awareness projects for the classroom.

Note that while we advocate a sequential approach and emphasize the importance of students having a clear understanding of scientific concepts, it is possible to rearrange the pedagogical approaches throughout the year.

1. Anderson Allison (2012). Climate change education for mitigation and adaptation. Journal of Education for Sustainable Development, vol. 6, n° 2, p. 191-206.
2. UNESCO. 2024. Greening Curriculum Guidance: Teaching and learning for climate action. Paris: UNESCO

PHASE 2

Climathon Day

The project so-called "Climathon" is organized around a special **kick-off day: Climathon Day.** During this dedicated day, students engage with **local experts** from various fields through **scientific talks, hands-on activities, and reflective sessions**. The objective is for students, working in groups, to gather information about a **local climate change adaptation or mitigation challenge**, develop and design a solution, and present their proposal to the class and experts. The day concludes with a vote and a deliberation, and the selected project(s) will be developed by the school and local partners during the realisation phase.

As an example, Climathon Day can be organized as follows:
Introduction: Reactivation of prior knowledge, formulating a problem, clarification of the day's objectives and its schedule.
Morning: Scientific talks and school activities centered on the local challenge (with the whole class or in groups).
Afternoon: “Speed dating” with local experts and group reflection on designing solutions.
End of the school day: Vote and selection of project(s).

PROJECT PLANNING

A clear way to succeed in implementing a Climathon project throughout the year is to have a well-defined plan and set various objectives and milestones, regular feedbacks to students, culminating in a final evaluation and presentation to the whole community (schoolmates, parents, and other involved stakeholders). Keeping in mind the different steps involved in designing the project is useful for establishing the necessary actions for its success. Moreover, it is up to the stakeholders involved to guide the students to ensure the project is achievable.

Use the **'Project Action Plan' worksheet** on page 11 to help students define objectives, involve stakeholders, and create a short- to long-term timeline.

PHASE 3

Project Realisation

After Climathon day, and for a few months up to some years, students, in interaction with teachers, various experts of the community, local policy makers and economic actors will realize the project. It is an important phase that can take various aspects, such as fundraising, urban planning, education campaigns, local land protection, school building projects... It is necessary to **integrate as many students as possible in the governance of the project**. You may decide to allocate regular school time dedicated to the project.

SCIENTIFIC INSIGHTS
WHOLE SCHOOL APPROACH

Regarding pedagogical innovation, the Climathon approach aligns with the **whole school approach**, an important element of climate change education. This approach requires the **engagement of the entire school community**, including teachers, administrators, and staff. It also requires connecting the school with families, local associations, companies, and policymakers.

Integrating the Climathon project within this whole school approach framework effectively engages both students and the broader community in greening the school. This aligns with another important document from the Green Education Partnership, namely the Greening School Quality Standard[1].

A Climathon project can initiate several pillars of school greening engagement, such as:

A climate-ready green learning environment should...

SCHOOL GOVERNANCE

...entrust the Green Committee to develop a Green School vision and policy and cover 1/3 of suggested activities on:

- Cultivating sustainable practices
- Ensuring daily sustainable practices
- Resilience and climate-proof governance
- Establishing a green community

TEACHING AND LEARNING

...develop lesson plans on ESD and climate change education and cover 1/3 of suggested activities on:

- Integrating ESD with an emphasis on climate change in teaching and learning
- Fostering meaningful connections beyond the school
- Hands-on projects and initiatives
- Leadership and capacity building

FACILITIES AND OPERATION

...set up a monitoring team and cover 1/3 of suggested activities on:

- Climate education, awareness, and training
- Developing a climate-friendly infrastructure
- Ensuring climate resilience and disaster preparedness
- Promoting school safety and educational continuity management
- Promoting green procurement and ethical purchasing

COMMUNITY ENGAGEMENT

...organize awareness campaigns for the school and the surrounding community and cover 1/3 of suggested activities on:

- Building climate resilience in the community
- School's contribution to community resilience to climate change
- Local community support for education responses to climate change
- General community-based climate awareness

1. UNESCO. 2024. Greening school quality standard: greening every learning environment. Paris: UNESCO

PHASE 4

General Feedback

A successful project is a project with a good ending. Therefore, even if the project wraps up toward the busy end of the school year, it is important **to dedicate time to evaluate the project**, **to valorize students engagement** and **assess the learning outcomes**.

- **EVALUATION**

An easy way to evaluate a project is by checking whether the initial objectives were achieved. An ambitious project leading to improvement of adaptation or mitigation to climate change at a local scale can have expected and measurable impacts. These impacts can be assessed using various **indicators**. For instance, greening the schoolyard should lead to the reduction of temperature in the yard, which can be measured after the implementation of the plan.

- **VALORIZE STUDENTS WORK**

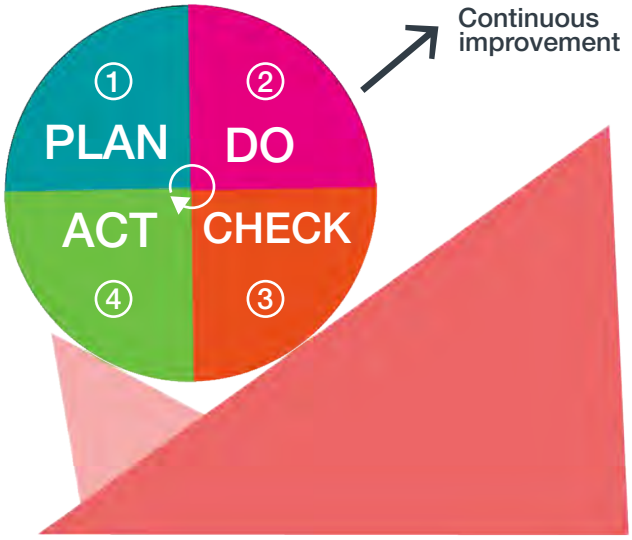
Students have invested time and energy in the implementation of the project. Students have gained valuable experience by applying a range of skills and knowledge needed to develop such projects, and recognizing their efforts is a crucial step in fostering their sense of agency. It is possible for instance **to organize a fair or a celebration** with parents and the various stakeholders engaged in the project. You may also engrave the engagement of the students in the project with a dedicated plaque.

- **STUDENTS' FEELINGS**

Take some time to evaluate with your students how they felt about the project. You can organize for instance an activity allowing students to express and share their emotions (see OCE resource).

- **PRINCIPLE OF CONTINUOUS IMPROVEMENT**[1]

By having a countinuous checking of students situation (comprehension, actions taken or planned), it is an efficient way to improve students' understanding and having them focused on the project on a long term aspect.



1. A. André, J.-L. Berthier, F. Guilleray. Innover avec les sciences cognitives - Des projets pédagogiques pour mieux apprendre. Collection : Du Labo à la Classe. 2021.

The general idea of the Climathon is **to empower students and to go beyond cognitive learning**. This approach deliberately targets behavioral learning and envisions transforming individuals' choices, values, and habits through action. A key challenge in climate change education is to **ensure that every student is climate-ready.**

This focus on empowerment and action is strongly supported by growing research as a key element in shaping students' behaviors. **Action-based pedagogy** is an important method for reducing eco-anxiety. Maria Ojala's work[1] highlights an action-focused coping strategy, where individual initiatives help alleviate the fear of the future under climate stress, which can be a trigger for anxiety.

However, as Ojala also notes, climate change is an immense challenge that no one can (or should) face alone. Attempting to solve climate change independently or in a single effort is an unrealistic goal that may lead to frustration or disillusion. Therefore, it is important to remind students that the role of school is to learn and experiment, but it is not the responsibility of students or the school to 'fix' the climate.

4. Acting for sustainability	**4.1 Political agency**	To navigate the political system, identify political responsibility and accountability for unsustainable behavior, and demand effective policies for sustainability.
	4.2 Collective action	To act for change in collaboration with others.
	4.3 Individual Initiative	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

SCIENTIFIC INSIGHTS
TRANSFORMATIVE EDUCATION

It is also important for students to understand that their actions matter and that their projects can lead to tangible results in terms of local climate adaptation or mitigation. While the project should be ambitious and go beyond superficial engagement, it is equally important to **set achievable goals within the resources and time available**. An unfinished project can lead to disappointment for students, so it is crucial to anticipate challenges, adjust expectations, and work with students to develop their ideas into an ambitious yet attainable project. This way, students can feel empowered and committed to the project's completion, including its evaluation and presentation.

Pedagogical frameworks developed to enhance climate literacy, such as the **Green Comp**[2] developed by the European Commission, stress the importance of skills that can be developed through a Climathon, including those in the fourth area of competence, *"Acting for sustainability".*

CONCLUSION

A Climathon is an excellent way to implement best practices and follow researchers' recommendations in climate change education. Key outcomes include long-term engagement, active project-based learning that mobilizes cognition, attitudes, and behaviors, and community involvement that values **indigenous knowledge** in **solution-focused approaches**. It mobilizes diverse change agents, with organizations worldwide embracing this method, sparking a global surge in participation.

1. Maria Ojala, How do children cope with global climate change? Coping strategies, engagement, and well-being, Journal of Environmental Psychology, Volume 32, Issue 3, 2012, Pages 225-233.
2. You can find more detailed competencies in the full document: Bianchi, G, Pisiotis, U, Cabrera Giraldez, M. GreenComp – The European sustainability competence framework. Bacigalupo, M., Punie, Y. (editors), EUR 30955 EN,Publications Office of the European Union, Luxembourg, 2022; ISBN 978-92-76-46485-3, doi:10.2760/13286, JRC128040.

Example of a Climathon

SCHOOL GREENING INITIATIVES AND TREE PLANTING IN SOUTHWEST FRANCE

In 2024, in the framework of the European project ESM2025, Acclimaterra (a regional association of climate researchers and policymakers), the Office for Climate Education (OCE), Maison Pour la Sciences Association, and local delegates from the Ministry of Education organized a Climathon at La Roche Beaulieu Middle School in Southwest France.

The school is situated in a suburban area near a forest. Although the surrounding areas are covered with vegetation, the schoolyard itself has very little vegetation. This lack of greenery can cause discomfort and pose health risks during heat waves as the schoolyard acts as a heat island. To address this issue and make the school more resilient to climate change, this Climathon focused on developing projects to transform and adapt the schoolyard.

During the morning session, students worked in groups on various aspects of the topic. For example, they explored the albedo effect through scientific demonstrations and learned the concept of the urban heat-island effect and adaptation strategies using a multimedia animation developed by OCE through the ESM2025 project.

Groups of students working on designing solutions.

Students discovered various aspects of the phenomenon of the urban heat island effect through active pedagogy activities.

In the afternoon, students used the knowledge gained from the morning session to draft their project proposals, with guidance from teachers and local experts.

At the end of the school day, they presented their proposals to the class and collectively voted on the best options.

Examples of proposals for improving the schoolyard.

The top three projects were submitted to the regional department responsible for funding and overseeing the construction, from which one project will be selected.

WORKSHEET DATE : ..... NAME : .....

PROJECT ACTION PLAN

Vision

What is the desired outcome for our school?

Current State

What is your school like right now?

Problems to solve

What local climate problem are you facing?

Barriers and Challenges

What is standing in your way?

Stakeholders

Who will be affected? Who can help you?

Change Agents & Opinion Leaders

Who can help you make things change ?

Tools

What processes can you use?

Short-term

What will you do in the next few weeks?

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Mid-term

What will you do in the next few months?

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Long-term

What will you do in the next few years?

- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Office for Climate Education

The Office for Climate Education (OCE), created in 2018, is an ambitious response to the Paris Agreement, which emphasizes the importance of climate change education in its Article 12.

A center under the aegis of UNESCO, an observer member of the IPCC, and co-coordinator of the *Greening Education Partnership*, the OCE leverages its dual scientific and educational expertise to support the Sustainable Development Goals. It fosters strong international cooperation among scientific organizations, NGOs, and educational institutions.

The OCE offers teachers worldwide high-quality, interdisciplinary educational tools based on IPCC reports. These tools emphasize active pedagogies (inquiry-based learning, project-based learning, etc.) and are adapted to local contexts. With the help of its partners, it provides professional development opportunities and on-the-ground support.

The OCE also assists education systems globally in implementing high-quality climate change education through expertise and pilot project deployment.

http://oce.global
contact@oce.global
Sorbonne Université, Case 100
Campus Pierre et Marie Curie
4, place Jussieu
75005 Paris – France

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Earth System Models for the future

This resource is published in the framework of the **European project ESM2025**, The project's aim is to develop the next generation of Earth System Models which will provide relevant climate simulations for the deployment of ambitious and realistic mitigation and adaptation strategies.

GRANT AGREEMENT
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