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Deliverable 5.1: Trainings Progress Report

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Abstract	<p>This document reports on the training conducted within the Erasmus+ Teacher Academy CLIMADEMY during the first two years of operation. Aiming to offer training activities for serving and student teachers that will lead to a better understanding of climate change issues and enhance their teaching and learning efficiency about climate change, equipping them with the necessary subject-matter knowledge and teaching strategies, CLIMADEMY succeeded in enrolling 402 in service and 272 pre-service teachers across its 4 Hubs, providing them with synchronous (virtual and physical) and asynchronous (through CLAUDI) learning opportunities, and material tailored to the specificities of each country within the framework of the educational training model it has developed.</p>



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Executive Summary

The Trainings Progress Report is the first deliverable of Work Package 5. WP5 aims to organise the large-scale implementation of the training activities leading to an enhanced notion of Climate Change Education for participating teachers and eventually on their professional development. It provides support services and networking activities aiming to foster the teachers' competences (skills, knowledge, and attitudes).

Thus, the specific objectives of WP5 are to:

- organise, support, and implement a series of national engagement events to involve student teachers and service teachers supported by the hubs throughout the duration of the project,
- enact the large-scale implementation of learning activities in the proposed training environments,
- establish close links with local partners, organisations, NGOs, research centres, and other communities,
- design and implement an international professional development course,
- support the development of new, common projects, initiatives, and activities that could be integrated into school curriculum on climate change, and foster skill and competence achievement,
- create a European network of organisations to implement the training activities for teachers beyond the consortium partner countries.

The work of WP5 is divided into five tasks: 1) the development of a General Implementation Plan to support the establishment of the national networks as well as to provide information and guidance on the actions needed and times planned, 2) the development of Localised Plans for each Hub to adapt activities to the relevant local and specific needs and challenges, 3) the implementation of Local and National Training Events and Activities 4) the implementation of International Training Courses and 5) the Teacher's Academy Conference close to the end of the project.

WP5 is supported by the four hubs and CLAUDI, developed in WP4 (D4.1/D4.2), it also receives information from WP1 on the selection of teachers' enrollment (MS3), based on motivation and competences, WP2 on the educational materials on Climate Change (MS4), WP3 on the development of the start-up educational model for teacher training (D3.1) and provides information to WP6 on lessons learned and to WP2 and WP3 on potential improvements of the educational material (Figure 1).

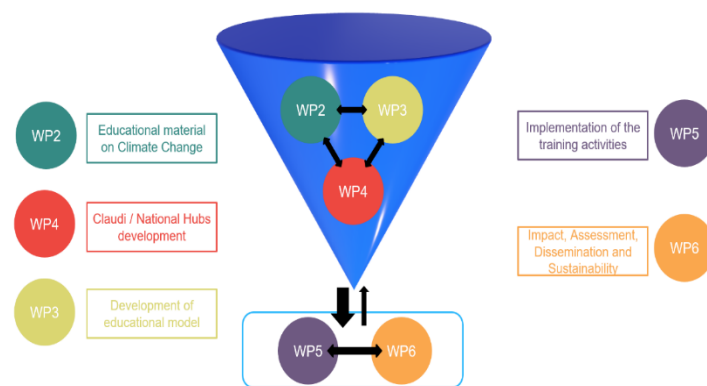


Figure 1: Positioning of WP5 in CLIMADEMY

and provides information to WP6 on lessons learned and to WP2 and WP3 on potential improvements of the educational material (Figure 1).

To this end, the document will present how the Climademy training was structured, providing the developed plans, General and Localised for each Hub, and the report for the first phase of the training with the pilot/co-designer teachers (1st year) and the second phase of training with all the enrolled teachers (2nd year).



1 Introduction

1.1 Purpose of the document

Deliverable D5.1 is a report on the progress of the training activities conducted under the framework of the ERASMUS+ Teacher Academy [CLIMADEMY](#) which aims to offer a comprehensive program for teachers that will lead to a better understanding of climate change and to an efficient methodology for teaching the next generation of European citizens. CLIMADEMY is developed around four hubs, one in each participant country, and one common virtual place, the platform [CLAUDI](#).

In this framework, each Hub developed its training implementation plan and its own educational and training material adapted to the local context but following the Academy's general implementation plan as well as the Academy's educational model for teacher training. Deliverable 5.1 presents thus these plans (general and localized) as well as their implementation, providing detailed information for each training event held by the Academy regarding the structure, the participants, the learning objectives, and the training material.

1.2 Target audience of the document

The main target audience of this document is the European Commission to be presented with the work done during the implementation of the training activities of CLIMADEMY.

In a second stage, national coordinators, teacher education institutions, training providers, and other stakeholders could use this document to explore how the CLIMADEMY is structured and how the training provided developed and evolved up to the second out of three years of the Academy's operation.

1.3 Structure of the document

The deliverable is structured as follows:

- Session 1 introduces the document's scope and target audience.
- Session 2 presents the CLIMADEMY Training Activities Implementation Plan, which includes the General Implementation Plan of Training (actions plan and time plan), the actions for the establishment of the networks, and the Localized Implementation Plans.
- Session 3 is divided into two sections. The first section refers to the initial phase of the project, the pilot implementation phase, where teachers act both as trainees and co-designers by providing the necessary feedback. The second section refers to the large-scale implementation of teachers' training and includes: 1) the enrollment of more than 100 in-service teachers who are attending training activities and implementing the educational materials of CLIMADEMY in their classrooms 2) the training of more than 100 student teachers at their national hubs and 3) the implemented international courses.
- Session 4 presents the conclusions of the work carried out, and the next steps planned for the third year of the Academy's operation.



2 The CLIMADEMY Training Activities Implementation Plan

2.1 The General Implementation Plan of Training and Network Establishment

The General Implementation Plan was outlined in the first stages of the project and is systematically checked and revised. It defines a set of actions for establishing the teachers' networks and the preparatory work for the training activities to start. In addition, it provides a timeline plan taking into account various issues.

The plan has been developed in this way as part of the strategy to:

- 1) promote teachers' mobility and align with the deadline for KA1 funding which expires in February every year,
- 2) offer a comprehensive series of courses distributed evenly throughout the operation of the Academy,
- 3) follow the structure of the project based on the objectives, the deliverables, and the interconnection of the Work Packages.

For establishing the national networks, the hubs follow two recruitment methodologies and implementation strategies:

- a) the **top-down approach** by using official channels of communication such as Universities/Ministries of Education (Table 1) and
- b) the **bottom-up approach** by organizing informational events and workshops directly inviting teachers from schools in their local area, also linked to the work of WP4- Establishment of the National Hubs (Table 2).

Public Announcements by official channels	
Greek Hub	University of Crete Regional Directorate Education of Crete (Ministry of Education)
Finnish Hub	University of Helsinki
Italian Hub	University of Bologna / Fondazione Golinelli
German Hub	University of Bremen

Table 1: Top-down approach for recruitment

Events and workshops directly inviting teachers from schools in their local area	
Greek Hub	41 teachers around Crete participated in a seminar about climate change and for the first time the Greek Hub at Finokalia/Nofalia was actually utilized for educational activities. The teachers involved in the CLIMADEMY project were also invited to visit the Greek Hub with their classes. Their visits were completed on 04/05/2023.
Finnish Hub	40 teachers have been introduced to the Hyytiälä Hub and its activities, either as a part of teacher training or during a visit with their students. Visits to Hyytiälä have included guided tours of the climate research station SMEAR II (Station for Measuring Ecosystem-Atmosphere Relations), various workshops on tree carbon sequestration, lectures by scientists on climate change and their research and independent exploration of Hyytiälä's research through an 18-panel science trail.
Italian Hub	27 school managers and teachers have been introduced to the Climademy project and the Italian Hub and its activities (12/5/2023).
German Hub	7 schools with 11 teachers have been introduced to the aim and goals of the Climademy project, and its activities, providing information on satellites and modeling simulations to be offered by the German hub (16/12/2022).

Table 2: Bottom-up approach for recruitment



According to the developed timeline of the Trainings' General Implementation Plan (Figure 2):

- From December 2022 to May 2023, during the first phase of training, the pilot teachers who are selected according to specific criteria (defined by each Hub) act both as trainees and co-designers of the educational material and the proposed activities. They are taking part in meetings and workshops with the National Representatives of the Hubs and make visits to the Hubs. They prepare educational material and implement this material in their classroom providing feedback.
- From June 2023 to May 2025, during the second phase of training, a series of Local/National training events and courses (online, onsite, and hybrid), part of the localised plans (see §2.2) are organized in each Country. These trainings are addressed initially to the 100 enrolled teachers (selected according to specific criteria, defined by the Hubs, in September 2023) who act as mentors for future trainees.

Trainings' General Implementation Timeline Plan

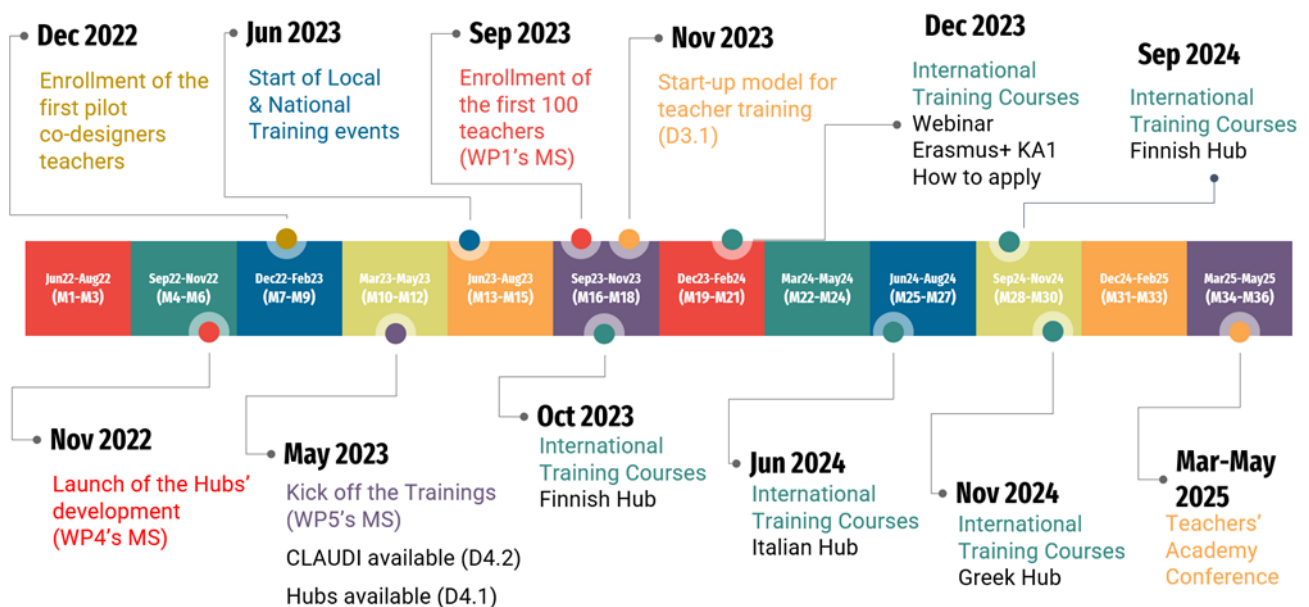


Figure 2: Timeline of the Trainings' General Implementation Plan

- A series of [International Training Courses](#) (online, onsite, and hybrid) during the periods September 2023 to December 2023 and June 2024 to December 2024 for both training the teachers in climate science/climate change education and supporting them in applying for KA1 funding are organized. These trainings are addressed to the 100 enrolled teachers and all interested teachers.

Additionally, the [CLIMADEMY Summer School 2024](#) is organized in July 2024 with objectives for the participants' teachers to: understand the basic aspects of Climate and Climate Change (drivers, impacts, and mitigation options) and gain solid scientific knowledge, develop useful skills to teach Climate Change in their classroom, be introduced to the CLIMADEMY competence framework which frames the structure of the general and specific goals to pursue through the teaching activities, become familiar with pedagogies and methodological approaches (e.g. inquiry-based,



problem-based) to adopt them in their daily practice, participate in an active teaching and learning community of Continuous Professional Development.

The International Training Courses are promoted through Hubs' Networks and the [EU Education for Climate](#) platform.

- A Teachers' Academy Conference, open to all the teachers' communities is organized close to the end of the project, between March and May 2025.

Basic requirements for starting and implementing the training refer to the National Hubs and the Common Virtual Climate Auditorium (CLAUDI) site to be available (D4.1 and D4.2), as well as the list of available educational material and tools on climate change (D2.1) and the start-up model for teacher training (D3.1).

2.2 The Localised Implementation Plans of Training

Localised Implementation Plans were developed from each Hub, adapting activities to the relevant local and specific needs and challenges. The development of the plans was based on the template (Table 3) created and distributed to the Hubs in the initial phase of the project to map their activities. The Localised Implementation Plans demonstrate the variety of activities the Hubs are integrating into their curriculum. However, all the plans take into consideration the educational material developed under WP2 and the start-up model for teacher training (D3.1).

Structure of 'Localised Implementation Plans' Template
Title of training activity
Learning Objectives
In the framework of...
Timeline (start and end dates)
Duration (hours)
Type (Onsite / Online / Hybrid)
Level of integration (Local / National / International)
Language
Open to the Public or not
No of Participants
Profile of Participants (teaching specialty/experience/aware of climate change issues)
Training methodology (workshop/seminar/course/visit)
Training materials
Trainers
Additional Information

Table 3: 'Localised Implementation Plans' Template



Finnish Hub Implementation Plan

Activity 1: IPCC Interactive Atlas workshop

The estimated duration of the workshop is 1 - 2 hours.

Activity topics

- Visualized data on the impacts of climate change
- Systems thinking related to the climate change
- Future scenarios and adaptation

Activity 2: Hyytiälä science trail

The estimated duration of the trail is 2 - 4 hours.

Activity topics

- Comprehensive overview of Hyytiälä Hub's versatile and multidisciplinary research topics related to forests, soil, lakes, rivers, swamps, and climate. The trail consists of 18 information boards that contain tasks for visitors.

Activity 3: Carbon tree workshop

The workshop uses the SMEAR II data from Hyytiälä Hub. The estimated duration is 2 - 3 hours.

Activity topics

- A carbon tree animation shows how a pine tree at the University of Helsinki's Hyytiälä forest station is sequestering carbon dioxide in the air right now. You can also view days since 2008 and different weather conditions.

Activity 4: Photosynthesis and Modeling Workshop

The workshop uses the SMEAR II data from Hyytiälä Hub. The estimated duration is 2 - 3 hours.

Activity topics

- Impact of photosynthesis on the amount of carbon dioxide
- The effect of light on plant photosynthesis
- Carbon tree SMEAR II data study / The interaction between forests and climate

German Hub Implementation Plan

Activity 1: Climate change theory – Drivers, impacts, adaptation

The first training session is a theoretical one that aims to provide information on fundamental scientific concepts of climate change, its drivers, and impacts. Open questions and multiple-choice answers will be discussed in groups. The estimated duration of the session is around 3 hours.

Activity topics

- Introduction to the atmosphere and its layers
- Greenhouse effect and energy balance / Greenhouse gases and their impacts on climate
- Anthropogenic emissions vs natural emissions

Activity 2: Theoretical and practical training in satellite data

The second session aims to provide information on satellites, monitoring techniques, and satellite data usage. The training is divided into three thematic sections: i) spectrometry and climate, ii) from space to climate, and iii) orbiting the climate. Teachers will have the opportunity to work with a spectrometer, to explore satellite data and to understand their



importance in climate change monitoring. The estimated duration of the session is around 4½ hours.

Activity topics

- Spectroscopic instruments on satellites
- Different spectral properties of different materials/ gases
- How does one obtain the concentration of GHG?
- Why are satellite orbits the way they are? / What quantities are measured?
- What are the limitations of satellite data?
- What is spatial/temporal availability? / How do we determine the rate of change?

Activity 3: Theoretical and practical training in numerical (mathematical) climate modeling

This activity will introduce teachers to the concept of mathematical models. Teachers will get to know how computational modeling is used in climate sciences. Moreover, they will get hands-on experience with a simplified climate model where they will work in groups to assess various climate scenarios, such as what the temperature of the planet will be if we do not change the way we are living and the emissions from humans remain at the -high-levels they are now. The estimated duration of the session is 4 hours.

Activity topics

- Computational modeling of the atmosphere
- Fundamentals of atmospheric physics / General atmospheric circulation
- Global pollutant transport / Solar radiation and energy balance

Greek Hub Implementation Plan

Topics of the training activities

- Introduction to the project
- The climate change science
- Comprehensive overview of research results on the drivers and the impacts of climate change in the south-east Mediterranean region
- Climate change in the national curriculum
- Hands-on activities to investigate climate-related phenomena
- Exploring data from the Finokalia hub
- Scenarios and adaptation measures
- The Pedagogical Model and the Climademy Competences Framework
- Inquiry-based learning
- Development of Educational material (activities related to 'Climate and weather', 'Greenhouse Effect', and 'Composition of the atmosphere')
- Implementation of the activities in the classroom
- Assessment of the implementation

Italian Hub Implementation Plan

Topics of the training activities

- Community building as a professional development opportunity
- Content, approaches, methodology
- Future literacy



- Uncertainty and complexity
- Data literacy
- Storytelling
- Science citizenship

3 The CLIMADEMY Training Activities Implementation

3.1 First Phase of Training

The first phase of the training was addressed to the pilot teachers who acted both as trainees and co-designers. Having this dual role, they provided substantial contributions from the early beginning, in the development of the Hubs, the educational material, the localised plans, and the educational training model.

The following sections present for each Hub, the selection criteria for teachers, the number of enrolled teachers, and detailed information on the training events.

3.1.1 Finnish Hub

Selection Criteria:

Hyttiälä (Finnish Hub) selected 5 co-designer pilot teachers based on motivation letters sent to the arranged open call. The selected 5 teachers were chosen to represent a gender balance and a range of several disciplines (biology, geology, history, philosophy, English and Finnish language and literature) where climate change is part of the school curricula. We chose teachers who had experience with developing and implementing climate change education within their class teaching and were active members of different teacher networks. The next 20 teachers were selected based on participation in a CLIMADEMY teacher training.

Total number of enrolled teachers: 25

Training Events

Title	Date	Duration	Type	No of participants	Description and Training Material
Teachers Training and Community Building	31/1/2023	1 day	Online	13	Kick-off meeting
Teachers Training and Community Building	8/3/2023	1 day	Online	11	Materials to CLAUDI
Teachers Training and Community Building	26-27/5/2023	2 days	Onsite	9	Training in the Hub (Hyttiälä)

Results and Feedback

The Hyttiälä/Finnish Hub activities have been successful.



3.1.2 German Hub

Selection Criteria:

Everyone was allowed to participate.

Total number of enrolled teachers: 11 from 7 schools

Training Events

Title	Date	Duration	Type	No of participants	Description and Training Material
Introduction to Climademy	16.12.2022	1 h	Onsite	11	The participants from 7 schools have been introduced to the aim and goals of the Climademy project, and its activities, providing information on the activities to be offered by the German hub

Results and Feedback

Positive feedback regarding the activities was received. The teachers expressed that their high workload might be a reason for lower participation although they are highly interested.

3.1.3 Greek Hub

Selection Criteria:

Highly qualified teachers were selected. They needed to have a PhD either in the science subject matter or in science education. Effort to satisfy the gender balance was made.

Total number of enrolled teachers: 12

Training Events

Title	Date	Duration	Type	No of participants	Description and Training Material
Meeting with pilot teachers	20/12/2022	2h	Online	12	Planning of the training activities
In the framework of the development of the Hubs	21/1/2023	4h	Onsite	40	Hands-on Activities / Guided tour on the monitoring Station of the Hub (Finokalia)
Meeting with pilot teachers	20/2/2023	2h	Online	12	Learning Communities
Interaction between scientists and teachers	5/3/2023	5h	Onsite	19	Ideas for analysing scientific data in the classroom
Meeting with pilot teachers	13/3/2023	2h	Online	12	Educational Model
Meeting with pilot teachers	27/3/2023	2h	Online	12	Preliminary presentation of the learning scenarios to be developed



Meeting with pilot teachers	10/4/2023	2h	Online	12	Competence Framework, assessment tools
Meeting with pilot teachers	2/5/2023	2h	Online	12	Use of scientific data from the Greek hub in the learning scenarios
Meeting with pilot teachers	9/5/2023	2h	Online	12	Ideas for implementation of the scenarios in the classroom
Meeting with pilot teachers	30/5/2023	1h	Online	7	Guidelines for the organization of the educational material

Results and Feedback

From training the co-designer teachers and their involvement in developing the material, as well as from the pilot use of this material in their classrooms, it became clear that activities related to Sustainability Competences needed further development based on CLIMADEMY's educational framework. Also, further elaboration was needed for tasks regarding the assessment of these competences. Overall, the developed educational material covers various aspects of climate change and is suitable for use by teachers of different subjects and levels of expertise.

3.1.4 Italian Hub

Selection Criteria:

- People and schools previously involved and active participants within the network of partnerships and collaborations of Fondazione Golinelli and the University of Bologna.
- People with a strong interest in educational interdisciplinary approaches.
- Lower and upper secondary school teachers.

Total number of enrolled teachers: 12 (7 co-designers teachers and 5 colleagues)

Training Events

Title	Date	Duration	Type	No of participants	Description and Training Material
Kick-off meeting with the 5 Local Schools to start co-design the Italian Hub and identify the co-designer teachers	01/12/2022	2h	Online	7 teachers 5 team members	The first introductory online meeting has been focused on presenting the CLIMADEMY project aim and starting to share ideas and opportunities for school partners and Italian teachers (meeting's output). The beneficiaries of the training were low and upper-secondary school teachers. TRAINING MATERIAL: HERE
Update about the project and starting workshop on the idea of CLIMADEMY pedagogical model	17/02/2023	2h	Online	8 teachers and 4 team members	The second online meeting aimed to share and discuss the pedagogical model, and the European mobility opportunities and pointed out some design principles for teachers training for the local hub. The beneficiaries of the training were low and upper-secondary school teachers. TRAINING MATERIAL: HERE
Workshop of community	04/04/2023	3h	Onsite	7 teachers and 10 team members	The third meeting was a peer training workshop during which some good



building: go on with the identification of practices, approaches and objectives for the local Hub					practices were shared and discussed to point out approaches, values, and areas of interest for content development, also some materials were collected for future upload on the CLAUDI platform (output) TRAINING MATERIAL: HERE
Workshop on content, approaches and methodology for teachers' training for the Italian Hub	08/05/2023	3h	Onsite	7 teachers, 3 FG educators/experts and 6 UNIBO personnel	This peer to peer in presence training workshop was aimed to further work on the development of the pedagogical model and on the implementation plan. TRAINING MATERIAL: HERE

Results and Feedback

During the meetings, the Italian hub priorities were defined and outlined:

Combining the consolidation of basic scientific skills (on drivers, impacts, and mitigation measures), with an active, constructivist and steam pedagogical approach mainly working on:

- future literacy
- uncertainty and complexity
- data literacy
- storytelling
- civic education and active citizenship (agency)

Within this framework, a training program was established for all Italian teachers for the following school year.

3.2 Second Phase of Training

The second phase of the training refers to the large-scale implementation of teachers' training including: 1) the enrollment of the in-service teachers who attended training activities and implemented the educational materials of CLIMADEMY in their classrooms 2) the training of the pre-service teachers at their national hubs and 3) the implemented international courses. This phase was officially started at the end of May 2023 (MS7), when the requirements as they had defined in the General Implementation Plan were achieved, meaning that Deliverables D2.1, D4.1, and D4.2 were ready, and the preparatory work needed on D3.1 was carried out (*D2.1: List of available educational material and tools on climate change, D4.1: National Hubs available, D4.2: Common virtual Climate Auditorium (CLAUDI) site available, D3.1: Start-up model for teacher training*).

Therefore, the following sections present a detailed report on the in-service and pre-service training for each Hub and the international courses for the first year of the implementation.

3.2.1 Finnish Hub

In-Service Teachers Training

Selection Criteria: The teachers of the second phase were selected based on participation in a CLIMADEMY teacher training.



Total number of enrolled teachers: 25 in the 1st phase + 59 teachers participating in onsite training in the 2nd phase. In addition, more teachers have visited the Hyttiälä hub with their school classes.

Results and Feedback from the Enrollment Process

In the Finnish Hub, contacting teachers personally as well as the participation in several already existing networks have been the most efficient ways to get teachers involved. In Finland, the open call to become a CLIMADEMY pilot teacher was announced in active climate change teacher social media and other networks and yielded 21 applications from teachers with different disciplines showing that there was general interest in becoming a member of an international teacher network. Hyttiälä welcomes all upper secondary or high school teachers planning or implementing climate change teaching in their work to join in.

Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Espoo Physics Teacher visit	18/4/2023	3 hours	Onsite in Espoo	14	interactive Introduction lecture and co-development of teaching	Lecture slides
Teachers Training and Community Building	7/6/2023	1 day	Online	10	Plans for the next Autumn	
Teachers Training and Community Building	20/6/2023	1 day	Online	11	Ideas for workshops in the CLIMADEMY International Training Course 2023 in the Finnish Hub in the framework of the Teacher Climate Change Forum	
Teachers Training and Community Building	28/8/2023	1 day	Online	13		
Suomen Metsäyhdisty: Biology teacher visit	16/9/2023	6 hours	Onsite	21	SMEAR II introduction round, interactive introduction lecture and co-development of teaching	Lecture slides
Teachers Training and Community Building	27/9/2023	1 day	Online	11	Preparing the CLIMADEMY International Training Course 2023 in the Finnish Hub in the framework of the Teacher Climate Change Forum	
Teachers Training and Community Building	15-17/11/2023	3 days	Onsite	13	Training for trainee teachers	Activities from the localised plan
CLIMADEMY Teacher winter meet	18-19/1/2024	2 days	Onsite	18	CLIMADEMY teacher winter meeting, SMEAR II introduction round and interactive lecture on air chemistry and physics, Co-development of CLIMADEMY teaching material	Lecture slides, workshop materials, CLIMADEMY teaching material
Teacher visit	28/4/2024	6 hours	Onsite	6	Teachers from Valkeakoski, SMEAR II introduction round	Lecture slides, workshop materials,



					and co-development of teaching	CLIMADEMY teaching material
School visits	fall 2023 - spring 2024	4-16 hours	Onsite	132	School class visits to Hyttiälä	Hyttiälä Science trail, Workshop guides

Results and Feedback from the training

Trainings are tailored to the visiting group. All of them include an introduction to the measurement site SMEAR II station where atmospheric research is naturally introduced. The participant, for example, learns about a forest's carbon balance, how trees' uptake of CO₂ from the atmosphere is measured, and how it reduces the greenhouse effect and hears how climate change impacts the forest's growth. The other activities are selected based on the training length, the teachers' discipline, and the availability of organizers' time. If the local host (or hosts) is free for the whole visit, personal interaction and free discussions with the trainers are provided. Another option is to give independent activities such as instructing the visitors to explore the local science on a 2-3 hour walk on the [Hyttiälä Science Trail](#).

Pre-Service Teachers Training

Pre-Service Teachers enrolled: 13

Description of the training: Physics, Chemistry, and Math pre-service teachers visited Hyttiälä

Training Material: Lecture slides, workshop materials, CLIMADEMY teaching material

Type and Duration of the training: Onsite training with SMEAR II introduction round and lectures by researchers working at the station, hands-on workshop on using open data in school teaching

Results and Feedback from the training: the pre-service teachers' training was a success, and the plan is to arrange it annually.

3.2.2 German Hub

In-Service Teachers Training

Selection Criteria: Everyone was allowed to participate.

Total number of enrolled teachers: 15

Results and Feedback from the Enrollment Process

In the German Hub, all the approaches of the general implementation plan were followed with the most successful one the verbal communication. However, the feedback from the German Hub is that teachers in Germany state that schools are severely understaffed and thus confronted with a heavy workload. As a result, the number of enrolled teachers until now is 15. A proposed mitigation plan was the presentation of the German Hub to the EU [Education for Climate Coalition](#) country group.



Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Die Atmosphäre verstehen: Von Luftverschmutzung bis zum Klimawandel und deren Folgen	13/02/2024	2h	Onsite	3	Atmospheric structure, atmospheric composition, radiation balance, greenhouse effect, anthropogenic influence, consequences of climate change, sources of GHGs, sinks of GHGs	Quizzes Slides Available on CLAUDI
Von Pixeln zu Mustern: Klimawandel mit Satellitendaten beobachten	29/02/2024	2h	Onsite	5	Orbital mechanics, different satellite orbits, difficulties of satellite data, spectroscopy on satellite, CO2 Fit	Slides Online Tools (Satellite image viewer/ online retrieval) Available on CLAUDI
Wenn Zahlen sprechen: Praktische Einblicke in Klimamodelle	14/03/2024	2h	Onsite	7	Different models, Discretization of space and time, Balancing all relevant processes, weather vs climate forecast, online climate model, IPCC, ensembles	Slides Online climate model Available on CLAUDI

Results and Feedback from the training

The feedback was strongly positive on the sessions. Additional workshops were requested by the participants. It was suggested to implement it in a different lecture series. The teachers noted that the German teaching schedule does not allow for an easy incorporation of such a complex interdisciplinary topic into the classroom. So only parts of the topic can be discussed in individual subjects.

3.2.3 Greek Hub

In-Service Teachers Training

The Greek Hub received 72 expressions of interest under the call for the enrollment of teachers.

Selection Criteria:

- equal geographical distribution
- balance by gender
- participation of teachers from disadvantaged areas
- participation of teachers from special categories of schools (special schools, vocational schools, art schools, etc.)
- priority of STEAM teachers

Total number of enrolled teachers: 45 (including the 5 co-designers teachers) of which 34 are from STEM disciplines and 6 from other disciplines.



Results and Feedback from the Enrollment Process

In Greek Hub, there was a great response from teachers already involved in related projects and engaged with local networks and partners.

Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Introductory Training event	25/11/2023	5h	Onsite	49	The aim of the event was teachers' familiarization with the main ideas of CLIMADEMY project. Particularly the presentations focused on introduction to drivers and impacts of global climate change, on contemporary research data from the Finokalia Station related to climate principles and on the educational framework of CLIMADEMY, as well as example activities. The co-designer teachers also briefly presented the educational material they developed.	Teachers presentations available on CLAUDI
Training workshop for the teachers that participate in the first stage of the implementation plan	11/3/2024	2h	Online	10	Feedback on the training progress	
Training workshop for the teachers that participate in the first and second stage of the implementation plan	14/3/2024	2h	Online	30	Presentation of digital tool: EO Browser from ESERO Greece and training on analysing satellite images	https://apps.sentinel-hub.com/eo-browser/
Training event at Finokalia station	21/4/2024	5h	Onsite	17	During the meeting, the in-service teachers explored activities designed for different sustainability competences from the CLIMADEMY educational framework. They reviewed and discussed how to use these activities in their lessons.	Available on CLAUDI
Training event at Finokalia station	18/5/2024	5h	onsite	21	During the meeting, the in-service teachers explored activities designed for different sustainability competences from the CLIMADEMY educational framework. They reviewed and discussed how to use these activities in their lessons.	



Results and Feedback from the training

The educators perceived their engagement with such an innovative subject as a formidable challenge. This challenge extended beyond merely imparting scientific knowledge; it also involved fostering students' skills and attitudes concurrently. Initially, this dual focus was unfamiliar and daunting for the teachers. However, over time, they came to appreciate the importance of addressing a multifaceted issue like climate change in a holistic manner, with a forward-thinking perspective.

The teachers received comprehensive support through various forms of interaction. These included plenary sessions during initial training events, collaborative gatherings at the Filokalia station, and ongoing mentorship via online meetings within the learning community. This multi-tiered support system enabled the teachers to tailor these activities to their students' needs and successfully implement them. Some examples of these STEM interdisciplinary activities were the investigation of photosynthesis using sensors, the monitoring of Earth through the eyes of satellites, the investigation of plants under stress due to climate change, the investigation of changes in the sea flora due to climate change, by using sensors, the development of applications to calculate carbon footprint.

Pre-Service Teachers Training

In the Greek hub, along with the in-service teachers, 39 undergraduate teachers of primary and secondary education were also trained.

Undergraduate students' training was focused on the CLIMADEMY framework competences assessment. In particular, the students were involved in processes of reflection and development of their own assessment tools aimed specifically at the assessment of attitudes and skills apart from knowledge regarding Climate Change.

Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Primary pre-service teachers training event	4-18/4/2024	12h	Onsite	17 pre-service primary education teachers	In four three-hour meetings, pre-service teachers familiarized themselves with the educational framework of CLIMADEMY. They focused on assessing sustainability competences through different types of assessment tools.	
Secondary pre-service teachers training event	15/5/2024	6h	Online	22 pre-service secondary science education teachers	In two three-hour meetings, pre-service teachers familiarized themselves with the educational framework of CLIMADEMY. They focused on assessing sustainability competences through different types of assessment tools.	



3.2.4 Italian Hub

In-Service Teachers Training

Selection Criteria:

- People and schools previously involved and active participants within the network of partnerships and collaborations of Fondazione Golinelli and the University of Bologna.
- People with a strong interest in educational interdisciplinary approaches.
- Lower and upper secondary school teachers.

Total number of enrolled teachers: 29 co-designer teachers (representing 16 schools) in the 1st phase + 146 teachers participating in training activities in the 2nd phase.

Results and Feedback from the Enrollment Process

A strong impact in terms of numbers on the enrollment process was the network of Fondazione Golinelli created by mailing list practice. Another practice very useful in terms of numbers on the enrollment process was the PLS (“PROGETTO LAUREE SCIENTIFICHE”) Programme of Unibo. In the feedback considerations, it is also necessary to include the methodology adopted for the November 9-11, 2023 residential training held in Bologna. The training had a dual purpose: it was both a training event for teachers and an opportunity to expand the co-designer community and thus set the conditions for teachers' analysis and work over the year.

Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Workshop on data and climate change within the Italian Masterclass for steam	19/07/2023	7h	Onsite	24	<p>The third day of the Masterclass for steam, the FG's program of excellence for 24 selected Italian teachers, was dedicated to Climademy and in particular to the theme "The human side of data: from steam stems to sustainability"</p> <p>Three workshops were offered to participants:</p> <ul style="list-style-type: none"> • Environmental data and Citizen Science: The workshop to experiment with citizen science and the human approach to data, which will be collected analogically and from below, thanks to a serious game on the theme of urban mobility. An opportunity to reflect on the consequences and large-scale impact of our individual and daily choices • Learn about the Earth by observing it from Space: The workshop on the theme of Earth Observation and on the use of open data (satellite) made available by international research bodies such as ESA, to explore opportunities for investigation and learning, through the use of data capable of connecting the planetary dimension with the territorial one. 	<p>LINK WEB COMMUNICATION: HERE</p> <p>TRAINING MATERIAL: HERE</p>



					<ul style="list-style-type: none"> Dear Data. A workshop inspired by the research of Giorgia Lupi, an internationally renowned artist and information designer who in her professional and artistic work is interested in the humanistic approach to data, challenging the impersonality of data through the creation of visual narratives that connect numbers to stories, to people, to ideas. 	
Climate Change at School: Training Proposals For Italian Teachers Of The European Climademy Project	19/09/2023	2h	Online	92	<p>Present to Italian teachers, trainers, and actors of the world of education, the opportunities and resources of CLIMADEMY.</p> <p>The objective of the initiative was to support high school teachers of each discipline in addressing the challenges of climate change.</p> <p>The program modules conveyed were:</p> <ul style="list-style-type: none"> The European Climademy project: its values and pedagogical vision. Lecturer/Trainer: Olivia Levrini, University of Bologna. The resources of the European and Italian academy, Giulia Tasquier, University of Bologna. The Italian training program for 2023-2025, Giorgia Bellentani, Golinelli Foundation. Claudi: the European networking, sharing and e-learning platform on climate change at school, Francesco Martinelli, Fondazione Golinelli and Radar Magazine. <p>A Q&A session was held at the end.</p> <p>The contents and activities are designed and conducted in collaboration with 12 co-designer teachers from the "A. Einstein" Scientific and Musical High School in Rimini; Scuola delle Idee (STEAM lower secondary school) in Bologna; Scarabelli Ghini Agricultural and Chemical Technical Institute of Imola; Leonardo da Vinci High School in Casalecchio di Reno; "Baracca" Higher Education Institute of Forlì,</p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>STREAMING WEBINAR:</p> <p>- ITALIAN HUB INTRODUCTION</p> <p>- PEDAGOGICAL MODEL</p> <p>- 23/24 TRAINING PROGRAMME</p> <p>TRAINING MATERIAL: HERE</p>
Analyse, Act And "Feel" Through Data	17/10/2023 24/10/2023 31/10/2023 07/11/2023	8h	Online	14	<p>A course that values data as a cognitive tool of phenomenological reality (data science) but also of the unique and personal reality of each subject (data humanism). The topic of the course is air quality understood as the qualitative and quantitative assessment of pollutants in the atmosphere.</p> <p>The course was structured in 4 modules of 2 hours each.</p> <p>1° module: Through an exploratory quiz/game it is possible to delve deeper into the issue of air quality, analysing qualitatively and quantitatively the pollutants present in the atmosphere. Understanding the relationship between outdoor and indoor air quality can help teachers and students to determine measures and identify appropriate actions to take to improve it both at school and at home. Workshop was led by</p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>VIDEO RECORDINGS:</p> <p>17.10.23 24.10.2023 31.10.2023 07.11.2023</p> <p>TRAINING MATERIAL: HERE</p>



					<p>Stefania Zampetti, FG educator and science teachers at Scuola delle idee and Climademy co-designer teacher.</p> <p>2°module: mBlock is a platform designed for learning coding through block programming, which offers many opportunities for developing projects at all levels of complexity. Through it it is also possible to acquire air quality data related to a city of interest in real time. The comparison between different cities can initiate a classroom reflection on the development strategies and models chosen by the reference communities. Workshop was led by Stefania Zampetti, FG educator and science teachers at Scuola delle idee and Climademy co-designer teacher.</p> <p>3°module: Data visualisation is the practice of translating information into a visual context, such as a map or graph. It is an integral part of analysis, as it allows us to visually understand fundamental aspects such as trend, volatility, the presence of anomalous values, etc. Choosing the most effective format to represent the data also allows it to become more understandable and easier to use, helping to raise awareness by producing concrete results in the community. Workshop was led by Stefania Zampetti, FG educator and science teachers at Scuola delle idee and Climademy co-designer teacher.</p> <p>4°module: Can data tell us who we are and our perception of a phenomenon? According to Georgia Lupi, a well-known Italian information designer, yes. This is where the concept of "data humanism" was born, where data becomes a tool to connect the planetary dimension with the territorial and personal one. Starting from collecting data on one's ecological footprint and/or emotional state in relation to the main issues related to the air quality issue, it will be possible to create creative data visualisations in a postcard that can become a way of talking about ourselves and our sense of the problems and challenges of our time. Workshop was led by Stefania Zampetti, FG educator and science teachers at Scuola delle Idee and Climademy co-designer teacher.</p>	
Climate Change: The Role of Didactic Reflection Between Data Storytelling, Complexity, And Text Analysis Toward Building Citizenship Skills	09/11/2023 10/11/2023 11/11/2023 20/12/2023	25h	Hybrid	35	<p>The training was designed with a hybrid mode: 1 hybrid meeting (9.11.23), 2 on-site meetings (10-11.11.23), and 1 online meeting (20.12.23).</p> <p>During the training, pedagogical and instructional tools were presented for designing teaching experiences that enable students to work with research data in a cross-curricular way. The course was particularly aimed at teachers who want to become co-designers of the project, experimenting with the activities with students</p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>VIDEO RECORDINGS: 9.11 PEDAGOGICAL MODEL 9.11 GREEN COMP</p> <p>TRAINING MATERIAL: 9-11 NOV 2023</p>



				<p>and sharing them with the national and international project community.</p> <p>The proposed activities were also designed to consolidate a community of teacher designers who experiment with students, train colleagues in their own contexts also designing together, and share resources and results.</p> <p>Below, the bullet points with the faced topics during the 4 days :</p> <p>1° day: Pedagogical model 2° day: Data and storytelling - approaches and tools 3° day: Complexity and uncertainty -From scientific texts to maps - Sense Making 4° day: - Project ideas - Review and feedback</p> <p>Below the programme with the activities and details carried out during this training course:</p> <p>9.11.23 - PEDAGOGICAL MODEL</p> <ul style="list-style-type: none"> • From knowledge to action: what green skills for today's challenges. Lecture by Guia Bianchi, JRC; • Icebreaking workshop and initiating common meaning making, with Giorgia Bellentani and Francesco Martinelli; • Facilitating complex processes and knowledge on climate change: pedagogical model workshop, with Olivia Levrini. <p>10.11.23 - DATA STORYTELLING</p> <ul style="list-style-type: none"> • Hands-on workshops with activities to download, aggregate, interpret, and narrate, with reference to geolocation, and climate change data; • Telling a journey with data (activity around the experience at the Teachers' Climate Change Forum at the Hyytiälä research station in Finland); <p>11.11.23 - COMPLEXITY AND UNCERTAINTY - SENSE-MAKING</p> <ul style="list-style-type: none"> • Climate change opportunities to work with complexity. Activities and examples to make climate challenges a stimulus for exercising colleagues and students to interpret uncertainty and live with complexity. Workshop in collaboration with co-designers Michela Clementi and Paola Fantini of Einstein High School in Rimini. • From scientific texts to maps to consolidate science and language skills. A workshop that starts from some research articles and proposes useful analysis and reworking tools. With the trainer Giulia Tasquier in collaboration with the co-designers Barbara Teodorani and Andrea Zanchini of ITAER F. Baracca in Forlì. 	<p>(KEY PASSWORD: CODESIGNER_1)</p> <p>20 NOV 2023</p>
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					<ul style="list-style-type: none"> Instructional design and sensemaking workshops. Facilitated small group activities: redefining and sharing both teaching and collaborative priorities and strategies with your colleagues. <p>20.12.23 - PROJECT IDEAS - REVIEW AND FEEDBACK</p> <p>Design idea sharing workshops for students and faculty colleagues with review and feedback and activities to reflect on transformation processes in their own contexts.</p>	
Perspectives on teaching/learning climate change to educate to imagine scenarios, develop action skills and reflect on the change process	14/12/2023 11/01/2024 01/02/2024 14/02/2024 06/03/2024 02/05/2024	20h	Hybrid	10	A CLIMADEMY course for in-service teachers made of 6 meetings to provide examples of how to deal with climate change within the disciplinary curricula.	<p>Website link for communication and enrollment activities: https://www.pls.unibo.it/editions/612</p> <p>Training material https://claudi.chemistry.uoc.gr/course/view.php?id=208</p>
The Teacher's Profession in the Society of Acceleration and Uncertainty	15/12/2023	2,5h	Online	12	Social and environmental changes pose significant challenges to schools and teacher professionalism. Reflections and examples of how such challenges can become a goal to train colleagues and students to interpret uncertainty will be shared during the meeting.	<p>LINK WEB COMMUNICATION: HERE</p> <p>TRAINING MATERIAL: HERE</p> <p>VIDEO RECORDING HERE</p>
Climademy - Data Based Teaching: Which Useful Tools	24/11/2023 12/12/2023 10/01/2024	6h	Online	18	<p>A series of thematic workshops dedicated to some useful tools to address complex issues in the classroom with a data-based approach. Where and how to find reliable, understandable and free data? How to organise simple databases? What tools can be used to represent the data in a clear and understandable way?</p> <p>The course was structured in 3 modules of 2 hours each.</p> <p>1st module: CO2 emissions, average temperatures, precipitation, extreme events and more. Climate change-related phenomena are formidable sources of educational insights. In this workshop were discussed some online data sources that are useful for structuring teaching activities on climate crisis issues.</p> <p>2nd module: A workshop dedicated to using google sheets to make organised and functional databases. Using free, online data sources (already explored in the first meeting) small databases functional for educational purposes will be made.</p> <p>3rd module: Using the free online tool datawrapper, simple and appealing data</p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>TRAINING MATERIAL: HERE</p> <p>VIDEO RECORDINGS:</p> <p>24.11.2023 12.12.2023 10.01.2024</p>



					visualisations can be produced. In this workshop, an attempt will be made to produce info-graphic maps in particular, from the databases created in the previous meeting.	
Open Data and Environmental Impacts	16/01/2024 23/01/2024 30/01/2024	6h	Online	24	<p>How can environmental impacts related to the actions of humans be understood and interpreted through the use of open satellite data? Leveraging historical images from Google Earth and information that ESA makes available on EO browser, we explore issues such as land consumption, deforestation, coastal erosion, and biodiversity loss.</p> <p>The course was structured in 3 modules of 2 hours each.</p> <p>1 module: <u>Changes and land consumption</u> Satellite data offers the opportunity to learn about, visualise and process a wealth of information of different kinds. In this meeting was explored, through examples and replicable exercises, the historical maps of Google Earth, with special focus on major environmental changes in recent decades.</p> <p>2 modules: <u>Extreme events and environmental impacts</u> Using EO Browser satellite images, some small-scale time-scale phenomena have been analysed qualitatively, useful insights for educational activities on very current topics, such as extreme weather events and anthropogenic impacts on the environment.</p> <p>3 modules: <u>Biodiversity as seen from satellite</u> In this workshop has been introduced the concept of diversity (ecological and otherwise) by exploring some of the resources available on EO Browser. Some simple indices commonly used to measure diversity have been looked at, with replicable activities in the classroom.</p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>VIDEO RECORDINGS: HERE (KEY PASSWORD: OpenDataClimademy)</p> <p>TRAINING MATERIAL: HERE (KEY PASSWORD: OpenDataClimademy)</p>
Storytelling - Telling the Story Of The Climate Crisis	04/04/2024 11/04/2024 18/04/2024	6h	Online	12	<p>The series of meetings aims to explore the world of journalism and science communication, the techniques and channels commonly used to produce real and fake news, and the tools to expose them. It will provide teachers with conceptual elements and ideas for practical activities based on data analysis to work in the classroom on issues related to journalism and science communication.</p> <p>The course was structured in 3 modules of 2 hours each.</p> <p>1st module: <u>Scientific literacy, why it is important to learn more</u></p>	<p>LINK WEB COMMUNICATION: HERE</p> <p>VIDEO RECORDINGS: HERE (KEY PASSWORD: StorytellingClimademy)</p> <p>TRAINING MATERIAL: HERE (KEY PASSWORD: StorytellingClimademy)</p>



					<p>The meeting was dedicated to scientific information: what is news? where and how (and if) do we look for it? Who is in charge of scientific information today? After a theoretical introduction, the workshop explored some online resources for searching for scientifically reliable information, with particular reference to climate change issues.</p> <p>2nd module: <u>Fake: climate negationism and misinformation</u></p> <p>As the EU has repeatedly pointed out, online disinformation is a major threat to fundamental rights and modern democracies. Climate denialism is an unfortunately widespread practice that uses the power of the internet to spread ideological and scientifically unsupported propaganda. In this workshop has been explored the complicated world of fake news and online disinformation.</p> <p>3rd module: <u>Scientific storytelling</u></p> <p>This final meeting explored various formats and narrative techniques commonly used to tell about scientific issues. In addition, participants have created a small series of communication and information works on climate-related topics.</p>
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Results and Feedback from the training

As a result of the training program, educational materials were designed, collected, and uploaded in private mode with student passwords on the CLAUDI platform within the Italian Hub section. These educational materials will be available to the enrolled teachers to train other colleagues and school students. In the upcoming year, all the educational materials will be open source but with a mandatory subscription to CLAUDI.

Over this training period, co-designer teachers began teaching experiments, the results of which will be collected in the following months.

At the start of the “Open Data and Environmental Impacts” training course, the CLAUDI platform and its tools were tested and used for the first time. Since then, the CLAUDI platform has been the teaching platform and tool used for the training conducted.

Another result is that for courses designed by multiple synchronous meetings, more than half of the participants reached 60% attendance of the training hours.

Pre-Service Teachers Training

The research group in Physics education of UNIBO is involved in the prospective teachers' training programme. Particularly, the master's degree programmes of the Department of Physics and Astronomy “A. Righi” has a curriculum in Physics Education and History of Physics (led by Olivia Levrini) that counts about 30 students per year. Moreover, the research group in Physics education is in charge of the teacher training courses and laboratory for pre-service primary teachers that counts 300 students per year, among which about 140/180 attend the course in presence. Those two programmes are suitable contexts where it has been valuable to insert the CLIMADEMY approach within the training programme. Since those activities were



carried out within the official programme of the University of Bologna, the training materials used for these courses have been stored in official UNIBO platforms which are open access only for UNIBO students. The total enrolled pre-service teachers are 220.

Training Events

Title	Date	Duration	Type	No of participants	Description Topics of Activities	Training Material
Why and how teach climate change at primary level?	19/02/2024 20/02/2024 22/02/2024	12h	Onsite	140	Training course on climate change targeted to pre-service primary teachers in order to analyse how to deal with the complexity of the topic from the perspective of primary pupils.	TRAINING MATERIAL: https://virtuale.unibo.it/course/view.php?id=50928
Climate Change in the Physics Lab	27/03/2024 03/04/2024 05/04/2024	9h	Onsite	30	Training course on the potential of dealing with climate change within the physics laboratory targeted to pre-service secondary school teachers	TRAINING MATERIALS: https://liveunibo.sharepoint.com/:f/s/LaboratorioDidattica della Fisica AA.2023-24/Elk26toENaBCtNwt0xXn4J8BBwj7KAG_MbYIPkZACJZr1Q?e=edbT1b
CLIMADEMY and the Pedagogical Model	13/05/2024	3h	Onsite	50	Training course for University master's degree students and secondary school pre-service teachers	

Results and Feedback from the training

The possibility of having these official university contexts devoted to pre-service teachers, let to have a big impact in terms of numbers and quality of the course toward a target that can be considered more difficult to be reached since the project is mainly devoted to in-service training. In this case, it was also possible to reach out to both secondary and primary pre-service teachers, going beyond initial expectations.

3.2.5 International Training

According to the Training General Implementation Plan, two International Training Courses were implemented until May 2024. The first was in the Framework of Teachers' Climate Change Forum (TCCF) in the Finnish Hub and the second was for supporting teachers in preparing and submitting applications for funding under the framework of ERASMUS+ KA1 Mobility Action. More details about them are presented below.



Training Events

Title	Date	Duration	Type	No of participants	Description and Training Material	Topics of Activities
International Teachers' Climate Change Forum	2-3/10/2023 Program available online and AnnexII https://www.helsinki.fi/en/science-education-and-academic-outreach/teachers/teachers-climate-change-forum	12,5h	Morning Sessions: Hybrid Afternoon Sessions: Onsite	36	Organised by the Finnish Hub in the framework of the Teachers' Climate Change Forum (TCCF). TCCF deals with climate science, climate education, and the connection between these two domains. Peer learning activities and workshops were provided both from the UH Climademy team and the co-designer teachers from Finland and Germany. The link to lecture recordings and the training material are available at CLAUDI.	<ul style="list-style-type: none"> - Teaching methods in sustainability and climate education - Systems thinking tools for climate change education - Building Concrete Utopias in High Schools - Climate Warriors - Outdoor learning - SMEAR II – research station visit - Towards worldview considerate climate change education - Getting familiar with the environmental emotions
How to write a successful Erasmus+ KA1 School Education Learning Mobility funding application	14/12/2023	1h	Online	47	The webinar was provided by the EA climademy team to support schools and teachers to take advantage of Erasmus+ Learning Mobilities. The link to the recording and the training material are available at CLAUDI, as well as on the climademy summer school website. https://esia.ea.gr/climademy-summer-school/#1636536298861-29cd91e4-ee20 .	<ul style="list-style-type: none"> - Learn how they can write a successful Erasmus+ KA1 application. - Discover useful tips on how to outline their strategy for medium- and long-term internationalization and modernization by presenting a development plan. - Be informed about all the upcoming International Courses and the Summer School offered by Climademy.

Results and Feedback from the Training for KA1 Mobility Action

The 'KA1-How to apply' [webinar](#) met the expectations of the participants who answered the survey (45% of the total number of participants) more or much more than expected (81% rate 4/5 and 5/5). An overwhelming percentage of participants hold a master's or Ph.D. degree (95,2%) and have more than 16 years of experience (81% from which 38,1% have more than 26 years of experience), showing that experienced teachers have a great interest to learn about the ERASMUS+ KA1 funding process that will ensure them new training opportunities in the framework of life-long learning.



4 Conclusions

The training activities of CLIMADEMY are progressing according to the General and Localised Implementation Plans and the enrollment of teachers has exceeded the initial targets of 100 pre-service and 100 in-service teachers.

Strategies from both the top-down and bottom-up approach (blended) that approved efficiency were the use of existing networks, the personalised approach and the in-person meetings, the approach to teachers who are interested and already active in related activities and the use of motivated teachers as mentors and advertisers of the activities.

The training sessions have provided teachers with new knowledge, teaching methodologies, and strategies, as well as the CLIMADEMY competence framework. These plenary sessions during collaborative gatherings at the Hubs and ongoing mentorship via online meetings within the learning community enabled the teachers to tailor these activities to their students' needs and partially or comprehensively incorporate them into their classroom practices.

The educational material co-developed with the teachers will be available to all the enrolled teachers to train other colleagues and school students in the upcoming 3rd year of CLIMADEMY.

For this 3rd year (2nd year regarding the implementation of large-scale training activities) many more events are planned according to the Academy's Training Implementation Plan at local, national, and international levels. These events, including the CLIMADEMY Summer School and the Teachers' Academy Conference, will help to form the final educational program of CLIMADEMY and increase the number of trained teachers.

Issues such as the level of teachers' confidence in teaching climate change, students' engagement and participation, and the level of collaboration between teachers will be reported in the final progress report through specific feedback from teachers and students, as well as lessons learned and recommendations.

The analysis of the questionnaires that the participating teachers will be called to complete will evaluate the work carried out during the different phases of the project and define the impact of the teacher professional development program.



ANNEX I

The representatives of the Hubs have identified organizations that meet the defined criteria and can implement the proposed activities and have compiled a list of them.

Greek Hub	German Hub	Finnish Hub	Italian Hub
<p>SCIENTIX: Greek Community of STEM (Science, Technology, Engineering and Mathematics) teachers. https://scientix.ellak.gr/</p>	<p>Zentrum für Lehrerinnen- /Lehrerbildung und Bildungsforschung (ZfLB) Center for Education for teachers</p>	<p>LUMA Centre Finland Science education network of Finnish Universities</p>	<p>IIS Corinaldesi Padovano , Senigallia</p>
<p>Greek Association of Heads of Science Laboratory Centres (PANEKFE) https://panekfe.gr/</p>	<p>https://www.bildung.bremen.de/start-251714 Senator for children and Education in Bremen</p>	<p>Climate University Network of 28 Higher Education Institutions in Finland for climate and sustainability education</p>	<p>1-2-4-TUTTI! An italian network of lower and upper secondary schools coordinated by Fondazione Golineli devoted to steam approach development</p>
<p>Hellenic Physicists Union https://eef.gr/index.php</p>	<p>https://www.kmk.org/ Conference of ministers of education</p>	<p>Pirkanmaan ympäristökasvatuksen yhteistyöryhmä cooperation group of environmental education activities in the Pirkanmaa region</p>	<p>I.I.S. G. Vallauri - Fossano(CN)</p>
<p>Association of Physicists of Crete https://www.sfkritis.gr/</p>		<p>BMOL ry The Biology and Geography Teachers' Association (BMOL) is an educational organisation</p>	<p>INDIRE</p>
<p>Hellenic Chemists Union https://www.eex.gr/</p>		<p>Suomen Metsäyhdistys ry Suomen Metsäyhdistys ry is a cooperation organisation for forest communication</p>	<p>Istituto Superiore Enrico Fermi Mantova</p>
<p>Hellenic Geological Society http://geosociety.gr/</p>		<p>Suomen luonto- ja ympäristökoulujen liitto ry Suomen luonto- ja ympäristökoulujen liitto works to promote nature and environment education for children and young people.</p>	<p>I.I.S. Ettore Majorana, Bologna</p>
<p>Association of Biologists O.E.L.M.E.K. http://www.biosyn-oelmek.org/</p>		<p>Nuorisokeskus Marttinen Marttinen is one of nine national youth centres in Finland supported and supervised by the Ministry of Education and Culture.</p>	<p>AIF - Associazione per l'Insegnamento della Fisica (https://www.aif.it/)</p>
<p>Regional Directorate of Primary and Secondary Education of Central Macedonia https://kmaked.pde.sch.gr/site/</p>			
<p>Institute of Educational Policy http://www.iep.edu.gr/</p>			
<p>Hellenic Centre for Marine Research https://www.hcmr.gr/en/</p>			



Natural History Museum of Crete https://www.nhmc.uoc.gr/			
European Geosciences Union (EGU), Geosciences Information for Teachers (GIFT) https://www.egu.eu/education/gift/			

List of Organisations

ANNEX II

Programme of the International Training Event 'Teachers' Climate Change Forum'

<p>Monday, October 2nd</p> <p>8.45-9.15: Opening words Professor Maija Aksela, University of Helsinki</p> <p>9.15-10.00 Keynote: Lessons learned from project CCC-CATAPULT: European young people's climate attitudes and ideas for effective climate change education Dr. Essi Aarnio-Linnanvuori, University of Tampere</p> <p>10.00-10.30 Group discussion on-site and remotely Professor Maija Aksela, University of Helsinki</p> <p>10.30-10.40: Presentation of CLIMate change teachers' acaDEMY Dr. Nikos Kalivitis, CLIMADEMY project manager</p> <p>10.40-10.45: Carbon tree and how it can be used in education. Project coordinator Reetta Matilainen University of Helsinki</p> <p>10.45-11.00 Summary Professor Maija Aksela, University of Helsinki</p> <p>*End of online session*</p> <p>12.00-13.30 Parallel workshops in Hyttiälä: Workshop 1: Pinja Tolvanen: Teaching methods in sustainability and climate education Workshop 2: Emmi Vuorio: Systems thinking tools for climate change education Workshop 3: Workshop by Finnish CLIMADEMY high school teachers: - Kirsi Haapamäki & Aki Saariaho: Building Concrete Utopias in High Schools - Merja Kuisma: Climate Warriors - Aulikki Laine: Outdoor learning</p> <p>14.00-15.30 SMEAR II – research station visit. Senior University Lecturer Taina Ruuskanen and University Researcher Juho Aalto, University of Helsinki</p> <p>15.30-16.55 three parallel workshops in Hyttiälä Workshop 4: Essi Aarnio-Linnanvuori: Towards worldview considerate climate change education Workshop 5: Workshop by German CLIMADEMY teachers Workshop 6: Anette Mansikka-aho: Getting familiar with the environmental emotions</p> <p>16.55-17.00 Summary Senior University Lecturer Taina Ruuskanen, University of Helsinki</p> <p>Tuesday, October 3rd</p> <p>9-9.45 Keynote lecture 2: Arctic climate change and young people: reality, perceptions and an escape game" University Researchers Maija Heikkilä and Kaarina Weckström, University of Helsinki</p> <p>9.45-10.15 Group discussion on-site and remotely Senior University Lecturer Taina Ruuskanen, University of Helsinki</p> <p>10.15-11.00 Keynote lecture 3: How to build environmental hope in the midst of the crisis? Supporting young people's environmental emotions Doctoral researcher CCC-CATAPULT, Anette Mansikka-aho, University of Tampere</p> <p>12-12.30: Keynote lecture 4: Build a global earth observatory Leader of Institute for Atmospheric and Earth System Research Markku Kulmala, UH</p> <p>12.30-12.45: Group discussion on-site and remotely Professor Maija Aksela, University of Helsinki</p> <p>12.45-13.30 Concluding remarks and TCCF2024 Professor Maija Aksela and Senior University Lecturer Taina Ruuskanen, University of Helsinki</p>
