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# ClimaTePD: "Towards a new model of Teachers' Professional Competence Development on Climate Change"

**Grant Agreement: 2020-1-EL01-KA226-SCH-094834**

## Intellectual Output 5
## Teachers' training for climate change education with IBL, gamification and digital teaching methods
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## Transnational Report including National Reports

FINAL VERSION DATE: 30.07.2023

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

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|---|---|
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# Concept: Climate Education, a framework for teachers' training

## Content

# 1. About ClimaTePD

Education is a key factor especially for the long-term, but to some extent also for the immediate global response to climate change, as it increases knowledge, enables informed decisions and can promote behavioural change for sustainable lifestyles. Here, the role of teachers in developing awareness of climate change and its implications for human development is crucial. However, in promoting education for sustainable development, teachers face a number of difficulties, mainly related to the multidisciplinary and multidimensional nature of the topic.

The Erasmus+ project entitled "Towards a new model of Teachers' Professional Competence Development on Climate Change" (acronym: ClimaTePD) aims at networking the actors of the different subject areas and dimensions (educational policy, school development and lesson design) with the aim of promoting subject-specific and cross-disciplinary competences. ClimaTePD wants to make a contribution to this in order to promote the topic of "Climate Education"at secondary school level.

The ClimaTePD project aims to support in-service secondary school teachers in developing digital competences and teaching skills on climate change. To this end, synchronous and asynchronous training course is being developed to support teachers in developing their own activities in online, face-to-face or blended teaching environments.

# 2. The teachers training approach in the of ClimatePD

The proposal for a teacher training on climate education (CE) and education for sustainable development (ESD) incorporates the results of IO1 and IO2, which were central to identifying the current state of the topics in the participating countries and also in other European countries and to elaborating the training and content requirements for the target group of student teachers and in-service teachers in Europe. Central to the teacher training concept are the scenarios created within IO3 to support teachers in their efforts to integrate climate education into their teaching, using innovative pedagogical approaches such as inquiry-based learning and gamification, as well as the support of digital tools and concepts around them. The training concept is also based on the developments of IO4, the technical platform (MOODLE-based), which provides a concrete guide to the technical possibilities, but also takes into account the pedagogical requirements of IO1-IO3.

# 3. Requirements on the teacher training

The results of IO1, IO2 and IO3 serve as a basis for the concept and provide a starting point and reference material for the content of the online training. The main requirements coming out of the two intellectual outputs (IO1 and IO2) can be generically summarised:

1. The online course is to be developed for the target group of teachers. The motivation and the high range of the age of the teachers poses a particular challenge for the course development since the participating countries experience different levels of development and attention on the topic.
2. The teachers' training should be based on the same innovative learning methods which are expected teachers to apply in the classroom, as opposite to the popular lecture-based teaching, traditional most of the teachers' trainings in the partners' countries. The two main concepts that will be explored via the training are Inquiry-based-learning, Gamification and use of digital technologies.
3. Based on the outcomes of IO3 there are selected 10 scenarios to be embedded in the training activities: Vacation on a plastic island (BG), Bionic architecture of the future (BG), Can I predict the future of the planet? (GR), Do you have a climate-friendly carbon footprint? (GR), Energy audit of the school (SP), Climate Summit (SP), Alternative Energy sources: Green science (TR), Green energy is always by my side (TR), Sinking islands (DE), Mobility and Weather Extremes (DE.)
4. Addressing teachers should not only be based on push factors, but also on pull factors. This means that the positive, motivating aspects of engagement in climate education should also be highlighted. Climate education is not only about a crisis, but also an opportunity for a general shift in thinking and action at all levels of society, leading to better use of resources, more social justice and ultimately a better life for all.
5. Addressing the emotional aspects and how to cope with them should also be an important part of the teaching training.
6. Three different aspects need to be considered when acquiring knowledge: Expert knowledge, system knowledge, concept knowledge.
7. From a conceptual point of view, the course should include a number of activities that can be directly transferred to the classroom situation that can be easily implemented.
8. The concept should include a blended learning format, synchronous sessions for group work should take place if one of the participants is a member of the group.
9. Preference will be given to a Moodle based (Massive) Open Online Course, offered in a blended learning format where possible. This should give participants

the opportunity to engage with and discuss the content at their own pace, independent of time and place.

10. Prerequisites for participation: General knowledge about digital media. In the same time the functionalities of the system Moodle should be explained in a beginner-friendly way.
11. Considering that teachers, involved in the ClimaTEPD training will come from different disciplines, it is necessary to think about a good approach to address the problems and the motivation. For examples, the different disciplines can provide different approaches and motivations for Climate Education and Education for sustainable development. E.g. a religion teacher may need a different approach than a physical education teacher, who in turn needs a different approach than a geography teacher.
12. If possible, developing the ability to interact with another teacher or group of teachers to strengthen a transformative process in the school should also be addressed
13. From a methodological point of view, integrating ethical dilemmas into lessons (no right or wrong answer, discussion, argumentation, research and ethics) that support critical thinking, argumentation and fact-checking is considered as a very important and interesting approach
14. Authentic context, i.e., methods and concepts to link topics and conceptual knowledge to students' everyday life.
15. The development of emotional competences is important, especially a constructive way of dealing with students' emotions. This is also related to the ability to promote sustainable action and reflection, to strengthen students' self-efficacy, to arouse interest in environmental protection and to strengthen the sense of community.
16. Due to the heavy workload of teachers and student teachers, it is necessary to limit the training to a maximum of 30 hours in total, including active reading/watching, interactive time, and elaboration.
17. Due to the time constraints of teachers, it is also important to maintain an open format with a small amount of synchronous activities.

# 4. Suggested structure for the training on climate education

The teacher training courses comprise three main parts. They are designed to support teachers in service and student teachers to understand climate change and learn tools and methods for supporting climate education at school (part A); to use and adapt the teaching scenarios developed in climatePD (part B); and to develop their own scenarios and reflect on teaching activities based on the knowledge acquired (Part C) .

| Part A Introduction | Part B Interaction | Part C Construction |
|---|---|---|
| 1. **Introduction** to Climate Change<br>2. Learn Tools and Methods for Climate Education | 3. Get to **know** teaching scenarios<br>4. Get to know how to **adapt** teaching scenarios | 5. Construction of individual scenarios<br>6. Construction of teaching concepts |

## 4.1. General concepts about ClimaTEPD teacher' training methodology:

**Learning Goals:**

1. Understand climate change
2. Learn basic concepts of climate education
3. learn about concepts and tools of inquiry-based learning in schools
4. Learn about the concepts and tools of gamification in schools
5. Understand and apply teaching scenarios
6. Adapt teaching scenarios
7. Develop own teaching scenarios
8. Reflect on own lessons to incorporate climate education into own classroom activities
9. Use digital tools for classroom activities

**Learning Format:**

1. The training takes place online. The majority of all activities are asynchronous. In some cases and to encourage collaboration and interaction, synchronous activities take place.
2. The training consists of a total of 6 e-learning units of 90 minutes each.
3. In order to receive a certificate, participants must achieve 100 points.
4. The additional points earned can be used to skip one or more mandatory activities. (Depending on the participation of the learners, 40 or more extra points can be awarded).

# Part A: Introduction to Climate Education (30 p)

| | Part A.1: Introduction to climate Change | 15 points (P) | 90 min |
|---|---|---|---|
|  | **About this Training:** Introductory overview to the entire training:<br>Why is the topic of Climate Change Education important for secondary schools?<br><br>**About this Unit:** Short introduction on the unit and training goals<br>How to work through this unit: Hints on how work through the learning unit | 1 P | 10 min |
|  | **Introduction to Climate Change aspects and issues**<br>What is Climate Change?<br>• General introduction based on scientific outcomes from known science institutions (video presentation) | 2 P | 15 Min /90 Minutes |
|  | Climate Change?<br>True-false questions on facts about climate change with photos that give background information. | 1P | 5 Min |
|  | **Introduction to Climate Change Education**<br>What is Climate Change Education for sustainable development? (H5P interactive video)<br>• General introduction and pointing out different approaches and related to that: How can I do ESD in the sense of the different approaches in school?<br>• Examples from the different countries that implicitly convey what impact climate change is already having; | 2 P | 10min |
|  | **Why Climate Education?**<br>True-false questions on Climate Education (incl. references where these topics are taken up again and where you can get more information). | 1 P | 5 Min |

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|  | **Discussion activity** in the Forum: Reflection question about the presented videos: What and How can my subject (discipline) contribute to the topic of Climate Education?<br>In the context of the activity the interdisciplinary approach of the Project will be launched. | 3 P | 15 Min |
|  | **Mindmap activity:** Climate Change Education in the context of my own subject or discipline / my own school.<br>Goal: Understanding the basic concepts in relation with the own work<br><br>Tool: e.g. Jam board or Xmind or other mind map tool | 3 P | 15 Min |
|  | Peer feedback on the mind map activity. This activity promotes collaboration and social interaction amongst the participants | 2xP (xP= extra Point) | |
|  | **Brief examples of school materials for climate education purposes.**<br>Training participants are asked to post examples of school materials to the Digital Repository section of the platform. The contribution will be rewarded with two extra points. | 2 P | 10 Min |
|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP (xP=EXTRA POINT) | 5 Min |
|  | **Link list:** Propose a list of links to information sites, projects or repository<br>Training participants are asked to post examples of school materials to the Digital Repository section of the platform. The contribution will be rewarded with two extra points. | 1 xP for bringing a new reference | |

| | **Part A.2: Methods and digital tools for climate education** | **15 points** | **(90 min) /** |
|---|---|---|---|
|  | **About this Unit:**<br>Short introduction on the unit and training goals<br>Why is it important to be aware of different methods and tools for climate change education?<br>How to work through this unit: Hints on how work through the learning unit | 1 P | 5 min |
|  | **Introduction to IBL**<br>What is Inquiry Based Learning (IBL)?<br>How to implement IBL in school?<br>• General introduction<br>• Examples | 2 P | 10 min |
|  | **IBL?**<br>True-false and Multiple Choice questions on facts about IBL and its application in school context | 1P | 5 min |
|  | **Online Meeting:** IBL in the different subjects and disciplines: How is it already being applied? How can it be applied in the Future? | 2 P | |
|  | **Introduction to Gamification**<br>What is Gamification / Game-based-Learning in school?<br>• General introduction<br>• Examples | 2 P | 10min |
|  | **Gamification and GBL?**<br>Gamified QuiZZ on Gamification and GBL<br>Tool: Kahoot or similar | 1 P | 5 min |
|  | **Online Meeting:** Gamification in the different subjects and disciplines: How is it already being applied? How can it be applied in the Future? | 2 P | |
|  | **Introduction to digital tools supporting your teaching**<br>Tools are presented according to the same scheme (Fact sheet / profile)<br>• white boards and virtual collaboration tools | | 40 min |

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| | • Digital tools for public debates, critical thinking, argumentation<br>• Digital tools for 3D Modelling<br>• Geographic maps<br>• Digital tools for online games<br>• Digital tools for visualization<br>• Digital tools for photo /picture editing<br>• Digital tools for presentations, posters, printed materials<br>• Digital collection for ideas for hands-on activities and experiments<br>• Climate change tools<br>• Digital tools and calculators | | |
|  | **Activity: Discussion in the Forum or upload a short presentation**: Choose 5 tools, describe them in the context of your teaching and think about ideas how to use them in your teaching | 5 p | 20 min |
|  | Peer feedback on the presented tools. The feedback is given on an asynchronous modus. | 2xP | |
|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP | |
|  | Link list: List of Tools for digital education.<br>The list is enhanced by training participants | 1 xP for bringing a new tool | |

| | **Part B.1: Scenario introduction to Climate Change and Climate Education** | **15 Points** | **90 Min** |
|---|---|---|---|
|  | **About this Unit:**<br>Brief introduction to the unit and educational objectives.<br>Scenarios in climate education: Why is it important?<br>How do the scenarios relate to your own classroom activities and topics?<br>How do you work through the unit? | 1 P | 5 Min |
|  | Short **presentation** of the scenarios approach (H5P interactive video) based on one scenario | 2 P | 10 Min |
|  <br>  | **Self-reflection**/Discussion: what do these connections have to do with the reality of my students' lives? | 2 P | 15Min |
|  | **Presentation** of concrete ClimaTePD scenarios. The scenarios are either science or social oriented.<br>Science:<br>• Energy audit of the school<br>• Alternative Energy Sources: Green Science<br>• Green Energy is always by my side<br>Social:<br>• Do you have a climate-friendly carbon footprint?<br>Sinking Islands,<br>• Climate Summit | 4 P | 30 Min |
|  | **Reflection and implementation** of one scenario: How could it be used / adapted to your teaching?<br>Implementing the scenario to the concrete teaching (Guided process),<br>Creation of a rough draft of a scenario | 6 P | 30 Min |
|  | **Compare** two scenarios and upload the outcomes in the **forum** / Feedback on the adapted scenarios | 5 xP | |

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|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP | 5 min |
|  | Link list: List of Tools for digital Education | 1 xP for bringing a new tool | 5 min |

| Part B.2: Scenario Adaptation | | 15 Points | 90 min |
|---|---|---|---|
|  | **About this Unit:**<br>Brief introduction to the unit and educational objectives.<br>Why is this important? Relation to own teaching activities and topics<br>How do you work through the unit? | 1 P | 5 Min |
|  | **Face-to-face or Virtual meeting**. In the context of the online meeting the scenarios are presented and discusses with the participants<br>Short **presentation** on scenario adaptation and transformation:<br>- Considering curriculum,<br>- Students' age, interests, pre-requisite knowledge<br>- Use of gamification approaches in class<br>Use of digital technologies in class | 4 P | |
|  | **Watching and commenting** on the Recording of the presentation of the Online Meeting. | 2 P | 10 Min |
|  | **Self-reflection**: First ideas on which scenario could be interesting to adapt.<br>The scnearios can be adapted individually or in collaboration with others | 2 P | 5 Min |
|  | **Presentation:**<br>Step by step adaptation of a concrete scenario with digital tools and integration in MOODLE | 4 P | 20 Min |
|  | **Activity**: Adapting one scenario to the own teaching / individual or in a group | 6 P | 30 Min |
|  <br>  | **Self-reflection**/Discussion: Selection of tools and methods for the adapted scenario. | 5 xP | 20 Min |

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|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP | |
|  | Link list: Further adapted scenarios. | 3 xP | |

# Part C: Construction (40 P)

| Part C.1: Scenario Construction | | 20 Points | 90 Min |
|---|---|---|---|
|  | **About this Unit:**<br>Brief introduction to the unit and educational objectives.<br>Why is this important? Relation to own teaching activities and topics<br>How do you work through the unit? | 1 P | 5 Min |
|  | Short presentation on how to build an own IBL scenario. In this short presentation, the participants are introduced to the basic concept and ideas for building their own scenario | 2 P | 10 Min |
|  | **Self-reflection**/Discussion in the group: Which scenario could I / we develop? | 1 P | 5 Min |
|  | **Face-to-face or virtual meeting** to present the ideas for own scenarios and to form the development groups | 2 P | |
|  | **Concept for a scenario according to the ClimateTEPD template.**<br>The template is based on the ClimatePD approach for teaching scenarios. | 6 P | 20 Min |

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|  | **Develop a scenario according to the concept**<br>The result: new teaching scenario for climate education. The scenario can be uploaded on the digital repository of ClimeTePD | 8 P | 30 Min |
|  | **Peer-Feedback on a scenario.** After the development phase, teachers can upload their scenarios and receive feedback from their peers | 5 xP | 20 Min |
|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP | |
|  | Sharing the developed scenario with peers.<br>Upload of the develop scenario in the Digital Repository within the learning platform | 3 xP | |

| | **Part C.2: Global / Holistic approach** | **20 points** | **(90 min)** |
|---|---|---|---|
|  | **About this Unit:**<br>Brief introduction to the unit and educational objectives.<br>Why is this important? Relation to own teaching activities and topics<br>How do you work through the unit? | 1 P | 5 Min |
|  | **Self-reflection**/Discussion: How to use the scenarios in day-to-day- teaching? Possibilities and constrains at school? | 4 P | 5 Min |
|  | **Final Essay** (based on a structured template):<br>- 1-3 A4 pagesReflecting the current teaching Reflecting how to incorporate climate education in teaching activities | 10 P | 80 Min |

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|  | Face-to-Face Meeting or Virtual Meeting for presenting and discussing the final essay or parts of them | 5 P | |
|  | **Peer feedback on the reflections** | 5 xP | |
|  | Evaluation of the unit based on ClimatePD's evaluation framework. The goal is to learn about the training experience and improve it according to the feedback from the learners | 1 xP | |
|  | Training evaluation: overall evaluation of the training activity, including the transfer of learning outcomes to daily teaching practice. The evaluation will follow the ClimatePD evaluation framework. | 5 xP | |

**Rollout of the training in 2022**

- April and May: Creation of online content
- June and July: testing of all components
- August and September: Localisation to the participating countries
- September and October: Start of training activities
- January: Review of the training according to the evaluation outcome

# 5. Start oft he Teachers‘ Training with in the ClimaTePD Partner-Countries

ClimaTePD pursues the goal of anchoring climate education more deeply in the curricula of the federal states and providing support and useful tools for this purpose. A central building block for this is on the one hand the digital repository, with which it is possible to support teachers and schools in climate education by providing helpful materials for teaching, but also school development purposes. However, in order to use this handout in a targeted manner and to develop its effectiveness, it is important to provide the acting actors, first and foremost the teachers, with a "know-how" on climate education. At the beginning of the ClimaTePD development process, many teachers complained that although they would like to focus more on climate change in their lessons, they might lack the necessary expertise and materials. To solve this problem and to give teachers more confidence in climate education, ClimaTePD developed the digital learning platform and the accompanying Teachers Training.
At this point it is important to note that the needs of the different partner countries in the field of climate education could be very different. This made a course or a learning platform according to the "one-size-fits-all" model for all countries impossible, but it had to and wanted to be addressed to the individual needs and also topics of the different regions. The assumption that there would be a broad social debate about the importance of climate protection everywhere in the world must therefore be judged to be wrong. Thus, the development of an effective teacher training was a great challenge for ClimaTePD, which, however, allowed for a broad pool of different materials, approaches and perspectives. This is further proof that climate change and climate education must not only be viewed from one perspective, but from different perspectives, because the consequences of climate change are not felt everywhere in the same way, and not everywhere is there the social will and consensus to confront this problem in a unified manner. In some partner countries, for example, it was necessary to begin with educational work on climate change and empirical evidence of this in order to explain the importance of climate change mitigation in a further step, whereas in other countries this could be skipped and teaching methods could be addressed directly. All this shows the complexity of climate education and also the social attitudes towards it.
The approach of the individual ClimaTePD partners to the implementation of the teacher training was also different, always based on how it could be designed most attractively and effectively for the respective target group of their countries. Germany, for example, chose to implement the Teacher Training as an online course, with an introductory session at the beginning and a final and feedback session via Zoom at the end. A similar approach, but with frequent online meetings for support and consultation, was chosen by Greece, Turkey and Spain, for example. In this case, a blended learning concept was applied. Bulgaria took a different approach, where the focus of the teachers training was on face-to-face meetings.
In the following explanations, the focus will be on the implementation and handling of the Teachers Training in the individual partner countries and rather less on the course validation. These results can be found in the report on IO8, but it can be stated that the ClimaTePD course was evaluated as extremely positive in its implementation, design and effectiveness.

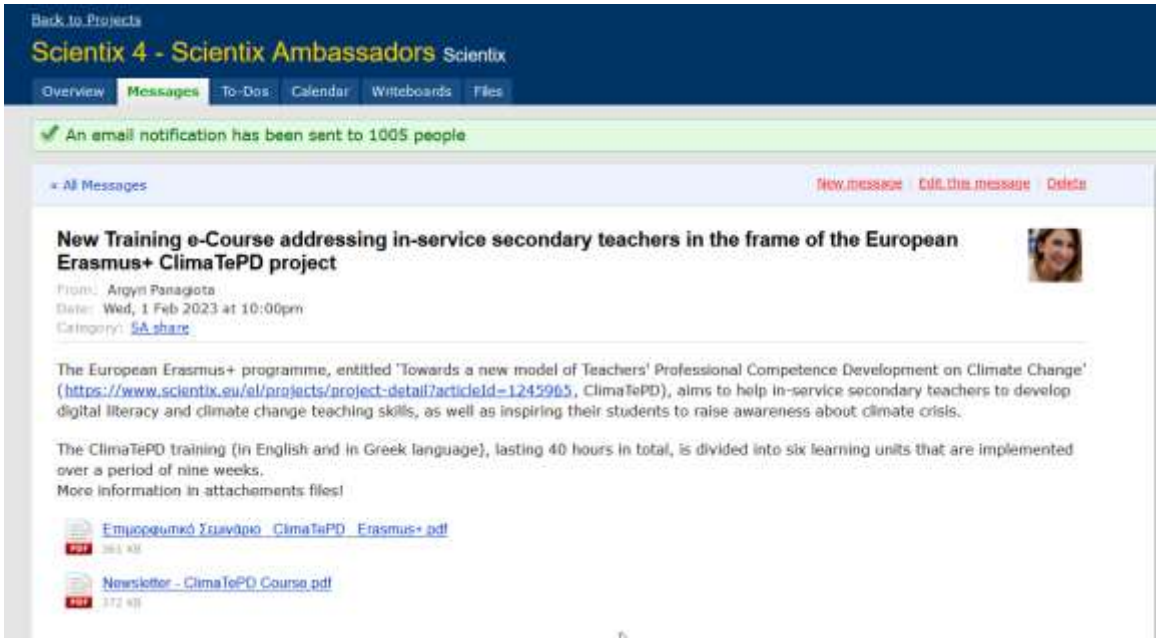
# 6. Adapting and Offering the Training in Greece

## 6.1. Preparation of the pilots

The training was advertised through the following strategies:
Strategy 1: Newsletter

- A newsletter advertising the course was send to Secondary Education Directorates as well as to individuals (Education Counselors and secondary school teachers who have previously undertaken training with them)

Strategy 2: E-mail to 1005 Scientix Ambassadors



Strategy 3: e-learning platform

- The course page included a description, objectives, contents, methodology, calendar, total working load, certification requirements, and a link to enrol.


Strategy 4: Presentation of the project and course in schools

- Teachers' training meeting, Eretria Gymnasium
- Teachers' training meeting, Zoi Schools


Strategy 5: Presentation in conferences

- 4th Scientix Conference with the **Plenary Online Presentations** entitled "ClimaTePD", 18-19.11.2022

## 6.2. Key Data

| | |
|---|---|
| Start of the training | 6th of March, 2023 |
| End of the Training | 30th of May, 2023 |
| Number of participants | 42 enroled |
| Type of Participants (in-Service teachers / Student teachers) | 3 education counsulors, 39 in-service teachers |
| Tutor(s) | Magda Lymperopoulou, Panagiota Argiri |
| Describe the activities undertaken by the tutor | Provide feedback to activities, answer participants' questions, facilitate synchronous online meeting |
| Synchronous Sessions | 17th of February, 2023 |

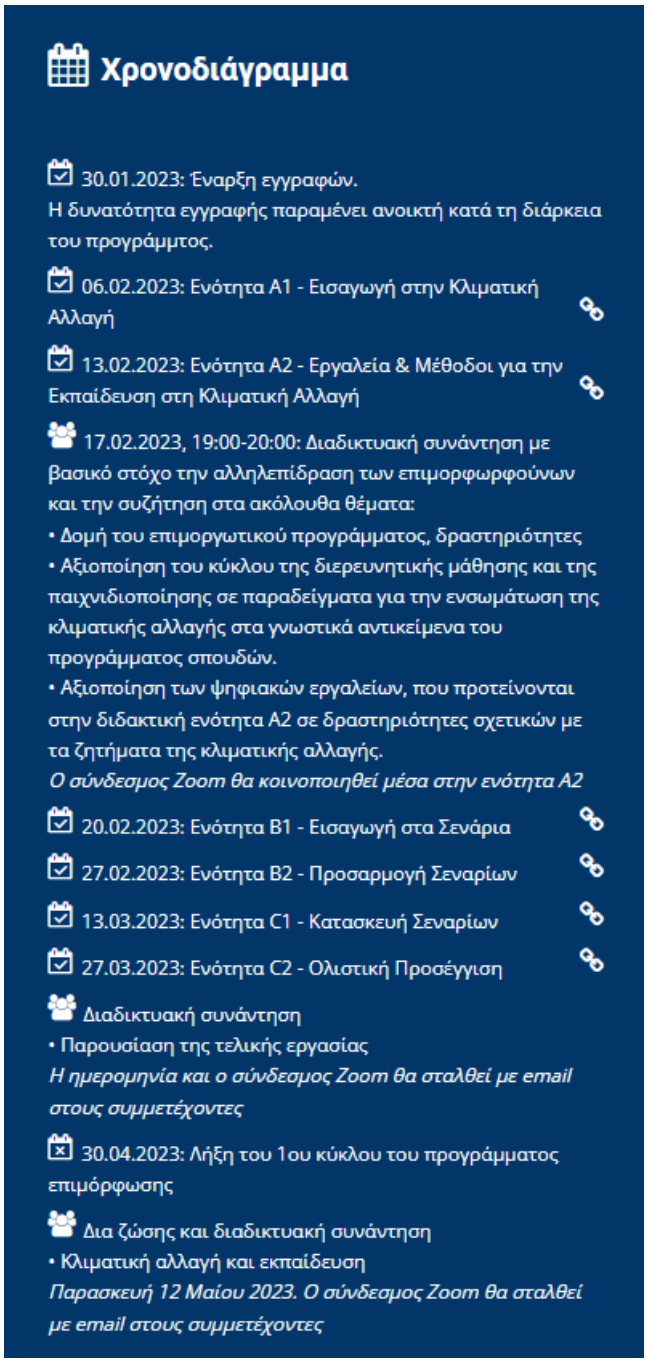
## 6.3. Adapting the ClimatePD-Training to country needs

The training concept remained largely unchanged. However, before the course began, a group of three in-service teachers tested all six learning units, including content, activities, and module assessments, to assess and potentially adjust assignments, task instructions, activities, and content to better suit the participants' needs. Feedback received included occasional difficulties in creating new repository entries, uploading assignments, translation accuracy issues, some technical challenges (e.g., password resetting), and a lack of progress tracking capability.

In response to this feedback, minor adjustments were made before the course started:

- Enhanced task completion instructions.
- Improved translation accuracy.
- Introduction of the "Completion Progress" block in all learning units.
- Inclusion of the GreenComp competency model using an H5P tool, providing participants with a concise reference to the video content.
- Gradual release of module content to maintain participant motivation.
- Availability of module content for download as a PDF file.

## 6.4 Training Organisation




Participants could access the course at any time and from any location from the URL https://course.climatepd.eu.

The welcome page contained the following details:

The course schedule, encompassing dates and the content of upcoming virtual meeting, as well as the dates for the gradual release of subsequent modules.

A brief overview of the course's structure, objectives, units, and methodology.

Supplementary information regarding scoring, certificate issuance, and more.

At the conclusion of Week 2 in the course, a virtual meeting was arranged for course participants. During this session, participants were briefed on the course's framework, the various tasks and activities, and the scoring system.

In order to provide the in-service teachers (working full-time) with the greatest possible flexibility in their individual learning, specific dates were planned for the activation of the individual learning units, but there were no fixed deadlines by which the modules, including the activities, had to be completed.

Participants in the course had the option to reach out to their course tutors anytime using the "Message my teacher" block, which was accessible in all Learning Units.

Additionally, each participant could easily track their progress by referring to the progress bar featured within each learning unit.

## 6.5 Evaluation

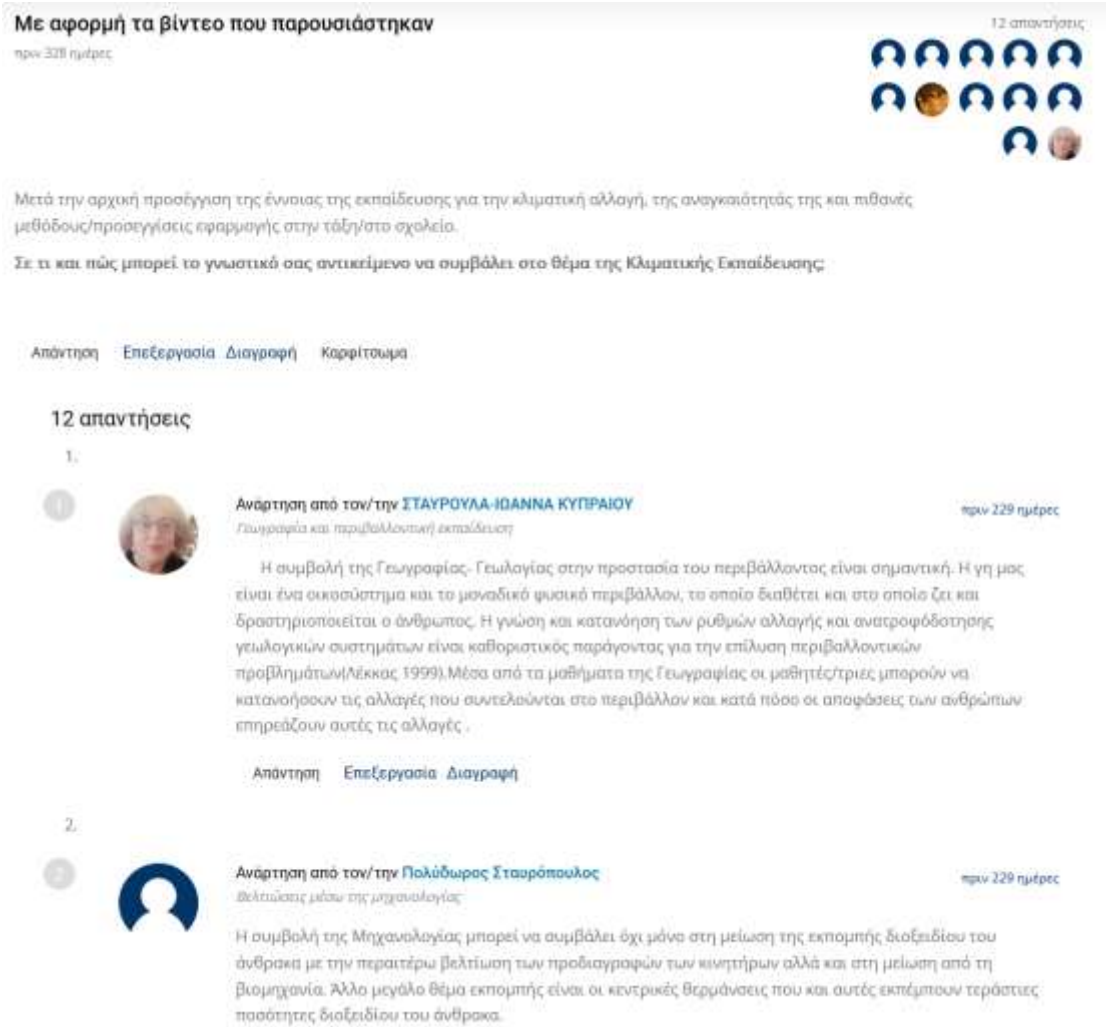
### 6.5.1 Approach.

The course adhered to the assessment strategy outlined by IO5 leaders, involving a summative, performance-based evaluation. This evaluation relied on the submission of learning evidence for each learning unit. In accordance with the plan, completing both the learning unit evaluation form and the course evaluation form was mandatory for assessment.

## 6.5.2 Results

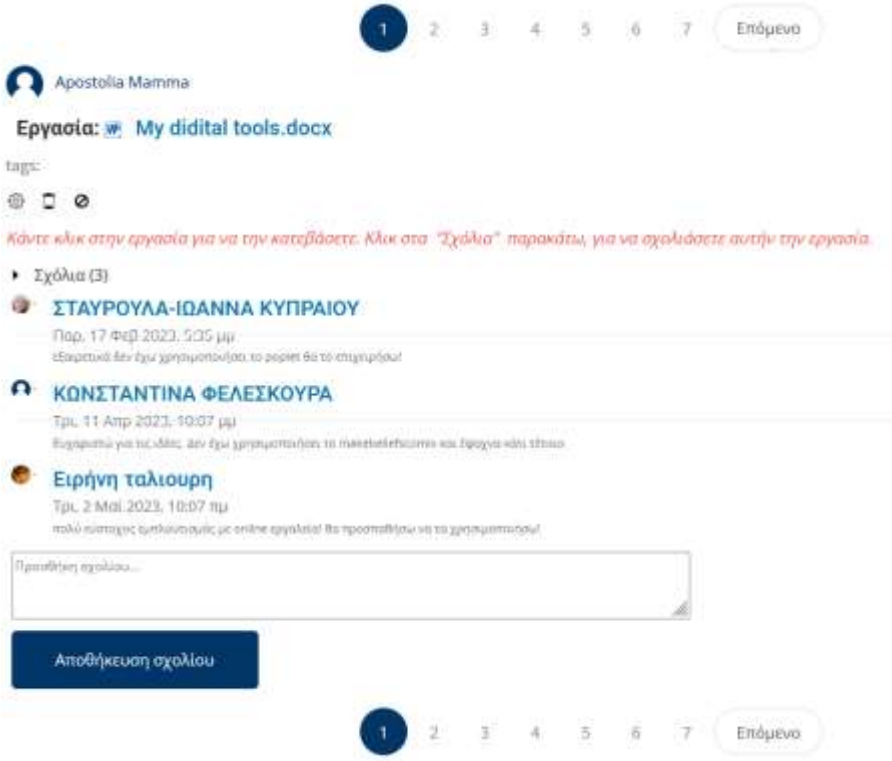
As a result of the course, teachers produced:

- In Learning Unit A1, twelve participants engaged in a discussion about the presentation video and the role of their respective subjects in climate change education. This discussion encompassed contributions related to various subjects, including Biology, Chemistry, Geology, Geography, Technology, Mathematics, and English language.

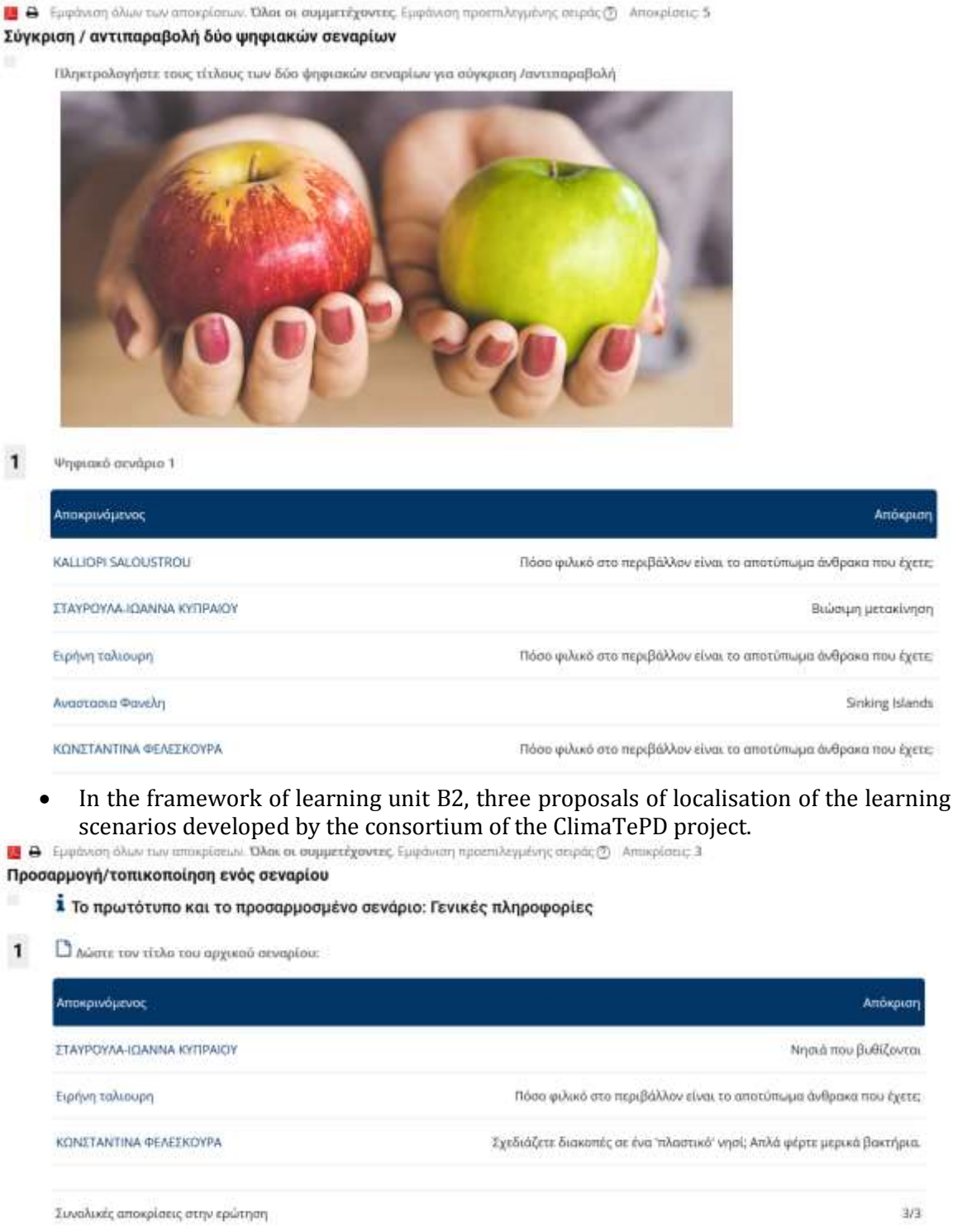


- Fifteen conceptual maps related to climate change education were submitted as part of the activity in Unit A1.


- Seven essays about digital tools that can be used to teach climate change issues were submitted.



- Five exercises comparing two of the learning scenarios developed by the consortium of the ClimaTePD project, including similarities and differences regarding the scenario objectives, methodology, and assessment as part of the activities for learning unit B1.




- In the framework of learning unit B2, three proposals of localisation of the learning scenarios developed by the consortium of the ClimaTePD project.

- Three new Inquiry-Based scenarios for climate change education with gamification and digital tools developed by individual participants, in learning unit C1.

Αποκρινόμενος: **Ειρήνη ταλιουρη** Υποβλήθηκε: Τρίτη, 2 Μάιος 2023, 11:42 μμ

**Δημιουργία νέου σεναρίου**

**Το σενάριο: Γενικές πληροφορίες**

* **Τίτλος σεναρίου:**

Επενδύοντας στον πλανητη μας, διοτι το μέλλον του ειναι στα δικα μας χερια!

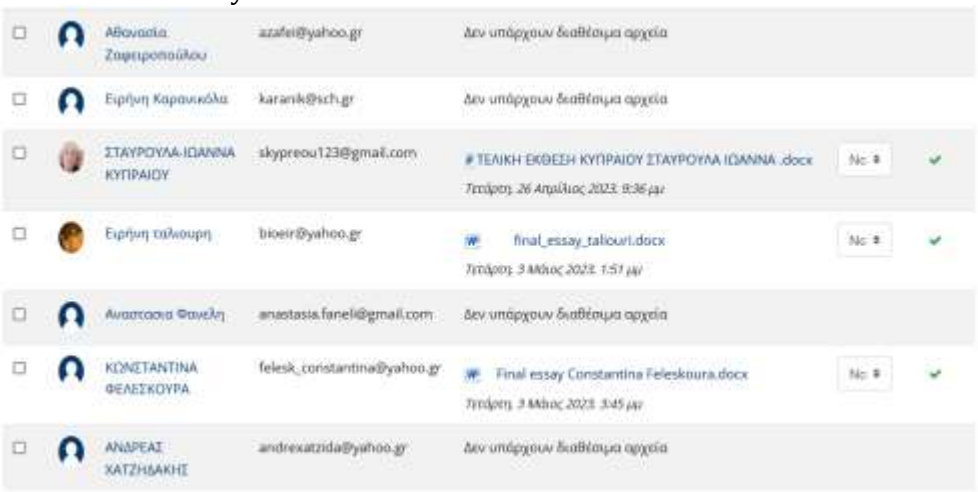
* **Ποιους επιστημονικούς τομείς καλύπτει το σενάριο;**

- [x] Βιολογία
- [ ] Φυσική
- [ ] Χημεία
- [ ] Γεωγραφία
- [ ] Γεωλογία
- [ ] Μαθηματικά
- [ ] Μηχανική
- [ ] Κοινωνιολογία

* **Βαθμίδα εκπαίδευσης:**

- [ ] Α' Γυμνασίου
- [ ] Β' Γυμνασίου
- [ ] Γ' Γυμνασίου
- [ ] Α' Λυκείου
- [x] Β' Λυκείου
- [ ] Γ' Λυκείου

- 3 final essays




- Ten responses in learning unit / course evaluation forms

## 6.6 Conclusions and Outlook

The course primarily comprised secondary school teachers specializing in STEM subjects such as Biology, Chemistry, Physics, and Geology. However, it also included educators from social sciences, philology, and English language backgrounds. Additionally, three participants served as education counsellors specializing in STEM.

Qualitative feedback from participants in the Climate Change Education course offered valuable insights:

Suggestions for Improvement:

- Real-World Application and Feedback: Participants want more opportunities for practical application in classrooms and teacher feedback mechanisms.

- Continued Online Availability: Participants recommend keeping the course online for accessibility and flexibility.

Most Valuable Aspects:

- Structured, Interactive Learning: The structured, interactive approach was highly valued.
- Diverse Media and Tools: The use of diverse media and tools enriched the learning experience.
- Practical Scenarios: Practical scenarios were recognized as valuable for teaching applications.
- Supportive Course Material: The course material and structure were supportive.
- Holistic Approach: Collaborative tools like Padlet enhanced experiential learning.
- Repetition of Work Steps: The repetition of steps clarified lesson plans experientially.
- Relevance to Future Teaching: Participants found the content highly relevant to their future teaching in STEM subjects.

During the course's execution, certain challenges arose, all of which were promptly addressed with technical support:

- Inability to reset forgotten passwords.
- Issues with file uploads in the Mindmap activity, attributed to file naming problems.
- The progress bar failing to indicate completion for certain activities.

## 6.7 Material needed

Nothing was added except for what has been stated in previous sections.

## 6.8 Tutoring approach

The primary responsibilities of the tutor included:

- Approving participants' contributions to specific activities.
- Responding to participants' inquiries.
- Facilitating virtual meetings.

Participants predominantly had their questions addressed through the "contact my teacher" block on the platform and via email. Tutor contact information was readily accessible within the learning units. Tutoring operated on an on-demand basis, where teachers contacted the tutor, and responses were provided promptly. Tutors also proactively reached out to teachers when they identified errors in task delivery or content.

## 6.9 Feedback on the training

We believe that the training design, encompassing content, methodology, and evaluation, was well-suited for its target group.

Quantitative data from Greece indicates a high overall appreciation of the Climate Change Professional Development course, both in its entirety and across individual modules. Participants' responses suggest that the course effectively engaged them and provided valuable knowledge and teaching skills related to climate change topics.

Qualitative feedback from Greek teachers further emphasizes the course's effectiveness in terms of structure, content, and practical application. It highlights the importance of maintaining online availability and fostering teacher collaboration and feedback opportunities. These insights can guide future improvements for an enhanced learning experience.

It's worth noting that a significant dropout rate occurred between the first learning unit (A1) and the final unit (C2), a phenomenon common in free-of-charge online courses. This may be attributed to the substantial workloads of in-service teachers who prefer to use the course content as a reference point.

# 7. Adapting and Offering the Training in Spain

## 7.1. Preparation of the pilots

The training was advertised through the following strategies:
Strategy 1: Mailing lists

- Mailing list from the Institute of Professional Development - secondary school teachers who have previously undertaken training with them
- Mailing list from the Future Learning lab - secondary school teachers who have previously been involved in actions from European projects. This list contains a high number of teachers who participated in the training of the Engaging Science project (year 2016), which was also online and included scientific topics of social interest such as Climate Change.

Strategy 2: Social networks

- Twitter: The Future Learning account which has 200 followers, which include educational institutions (schools, high schools, universities), individual teachers (primary, secondary), professors and researchers, teacher-support organisations and climate change-related organisations, among others.


*Figure 1: Example of a tweet that was sent to promote the course (in Catalan)*

Strategy 3: Personalised emails

- Teachers who have been active
- Professors
- Other

Strategy 4: Website of the Institute of Professional Development
The course was advertised as part of the professional development offer for preschool, primary and secondary school teachers during 2022-23, term 1. The course page included a description, objectives, contents, methodology, course facilitators, calendar, total working load, certification requirements, maximum number of participants, language, and a link to enrol.


*Figure 2: Screenshot of the course description at the website of the Institute of Professional Development of Universitat de Barcelona*

## 7.2. Key Data

| | |
|---|---|
| Start of the training | 16th of January, 2023 |
| End of the Training | 10th of February, 2023 |
| Number of participants | 65 enroled, 55 started |
| Type of Participants (in-Service teachers / Student teachers) | in-service teachers |
| Tutor(s) | Silvia Alcaraz-Dominguez, Mario Barajas |
| Describe the activities undertaken by the tutor | Provide feedback to activities, answer participants' questions, facilitate synchronous webinars |
| Synchronous Sessions | 18th and 26th of January, 2023 |
| Cooperation partners | Institute for Professional Development of the University of Barcelona |

## 7.3. Adapting the ClimatePD-Training to country needs

No major changes were done to the training concept. The 6 modules were kept, including their content, activities and evaluation.
The minor changes or adaptations done were:

- Changing the videos in English which did not have a translation available for videos with the same content in Spanish
- Achieve a reasonable ratio between length and workload of the course considering the working conditions of our teachers, who mostly work 40 hours a week.
- Set up deadlines for finishing each module - to keep participants engaged in a 4-week long online course.
- Organise synchronous webinars - to keep participants motivated and to respond to a need they expressed in IO2 Workshops, which is to share what they learn or do with peers.
- Release the content of the modules progressively to keep participants interested
- Provide an option to download the content of a page or module in .PDF for teachers to keep or to consult them offline

The course was tested with a group of 20 pre-service students of the degree of Pedagogy at University of Barcelona, as part of a course on digital learning environments. The test included 1) Walkthrough the modules, 2) Interact with the modules and do the self-correcting (H5P) activities, and 3) Fill in a questionnaire based on Zhang et al.'s Assessing quality of online learning platforms for in-service teachers' professional development: The development and application of an instrument (2022).

*Figure 3: Photos from the course testing with preservice teachers*

Feedback gained from the test:

- Not possible to move from one module to another without having to go backwards (to the page of all modules)
- Information about the course facilitator/s and how to get in touch with them is needed
- Ensuring smooth communication between participants, for exemple through the chat, while respecting their privacy
- Change some of the wording for more intuitive words
- Some H5P activities appear in English

This feedback was communicated to Forth and incorporated in the platform.

## 7.4. Training Organisation

Participants could access the course at any time and from any location from the URL https://course.climatepd.eu/ .
The course welcome page included: information about the course objectives, methodology and assessment, as well as a calendar, and an introduction video from the course facilitator (see figure below).

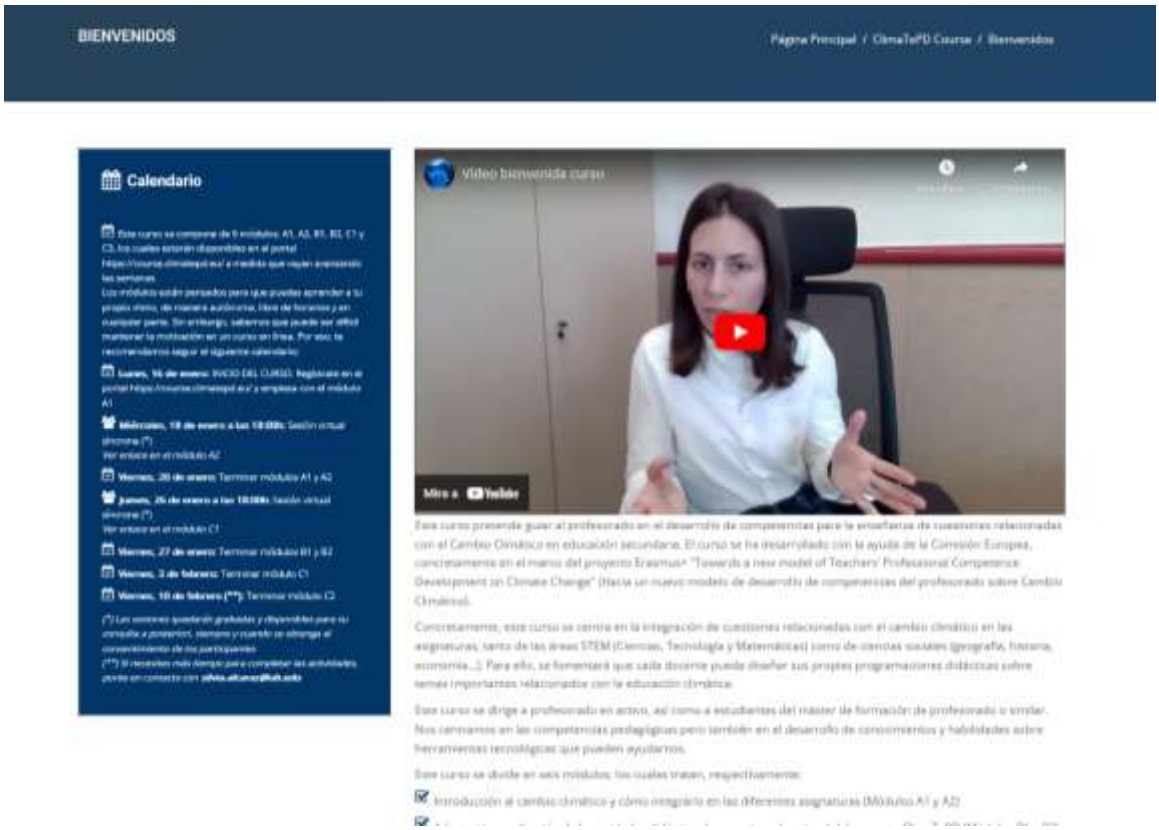



*Figure 4: Screenshot from the course welcome page*

Deadlines were set to deliver the activities, although they were not compulsory (see figure 3). These deadlines were communicated to the participants through the course welcome page and were reminded in the synchronous webinars.

- Monday, 16th of January: COURSE START. Self-register in the portal https://course.climatepd.eu/ and start with Module A1
- Wednesday, 18th of January at 18:00h: Webinar (*)
    - Zoom link: https://ub-edu.zoom.us/j/95949899499?pwd=MmJWR3NHZTB3SDBTbjlxRThPUjN4QT09
    - ID: 959 4989 9499

- Code: 739833

- Friday, 20th of January: Finish Modules A1 and A2
- Thursday, 26th of January at 18:00h: Webinar (*)
  - Zoom link: https://ub-edu.zoom.us/j/93476325407?pwd=UVAvZk1zZkJ1WWx3aHZTVGtPY2RoQT09
  - ID: 934 7632 5407
  - Code: 249235
- Friday, 27thof January: Terminar módulos B1 y B2
- Friday, 3rd of January: Terminar módulo C1
- Friday, 10th of February (**):
  - Finish Module C2
  - Fill in the course evaluation form

*Figure 5: Course calendar*

Two webinars were organised, and recorded with the permission of participants. The recordings of the webinars were made available in the course platform.

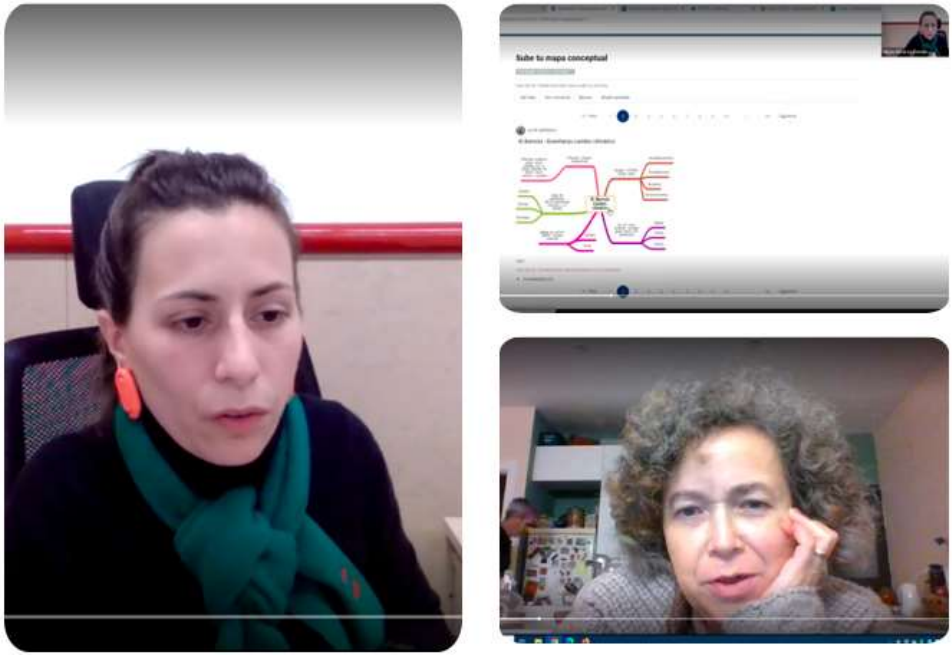


*Figure 1: Screenshots from webinar 1*

*Figure 2: Screenshots from webinar 2*

Each participant could see their progress by looking at the progress bar that was available in each module.
There was only one collaborative activity, i.e. create a scenario. To that goal, participants were randomly assigned to a group and provided a shared Google Document to work with the group.

## 7.5. Evaluation

### 7.5.1. Approach

The course followed the evaluation plan provided by IO5 leaders: summative, performance-based evaluation on the basis of delivering learning evidences for each module. Also following the plan, it was mandatory to answer the module evaluation form and the course evaluation form to be assessed. The activities that participants did within the modules were reviewed by a course facilitator. It was necessary to pass all the activities to obtain a course certification. Teachers obtained a certificate from the Institute for Professional Development from Universitat de Barcelona, which is an official in-service teacher training provider in the sense that teachers can add this training in their CV if they want to benefit from any of the open calls from the Catalan ministry of Education (promotion, changing school, etc.).

### 7.5.2. Results

As a result of the course, teachers produced:

- 26 conceptual maps about climate change education in their school: what is being done, what can be done, and who is involved (see figure 6)
- 29 texts about digital tools that can be used to teach climate change issues
- 24 exercises comparing two of the learning scenarios developed by the consortium of the ClimaTePD project, including similarities and differences regarding the scenario objectives, methodology, and assessment.
- 21 proposals of localisation of the learning scenarios developed by the consortium of the ClimaTePD project
- 18 new Inquiry-Based scenarios for climate change education with gamification and digital tools developed by the participants, either individually or collaboratively
- 18 course evaluation forms, and at least the same amount of module evaluation forms.

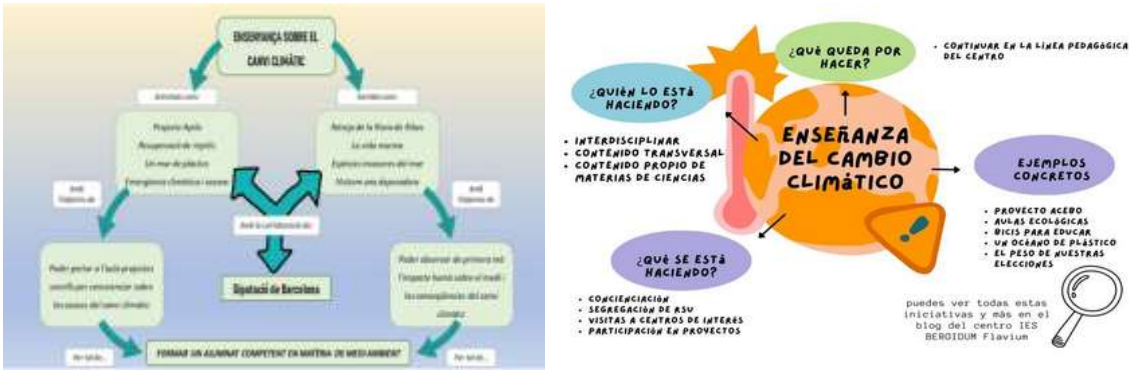



*Figure 6: Conceptual maps from 2 teachers (reproduced with permission of the participants)*

## 7.6. Conclusions and Outlook

Most of the participants in the course were secondary school teachers from STEM areas (Biology, Chemistry, Physics, Geology…). A few participants taught other subjects, such a social science. Only 1 or 2 participants were teachers at vocational training schools.
Main feedback received from the participants:

- Too much workload
- Activity from modules B1-B2 too repetitive
- Technical problems
- Resources in the repository very appreciated
- The group activity from Module C1 was not easy to do because teachers in a group were not able to understand whether the other participants were still actively participating in the course

During its implementation, the course faced some challenges, which were promptly solved by the technical support:

- Not possible to reset lost password
- Files of the Mindmap activity (Module 1) not uploading correctly.
- Progress bar not showing completion of some activities
- Activity not resuming
- …

Lessons learnt:

- The synchronous webinars were useful to keep participants engaged and motivated
- Chat works very well
- Automatic assessment?

More research is needed to evaluate its impact on teacher learning.

## 7.7. Material needed

Nothing was added except for what has been stated in previous sections.

## 7.8. Tutoring approach

The main role of the tutor was to:
- Approve participants' contributions to certain activities
- Answer participants' questions
- Facilitate synchronous webinars

Participants' questions were answered mainly through the chat tool of the platform, and by email. Contact information about the tutors was available in the welcome page of the course and in other parts of the modules. Tutoring was provided on an on-demand basis, i.e. teachers contact the tutor and the tutor answers in a timely manner. Tutors also contacted teachers when they observed mistakes in the delivery or the content of a teachers' task.

## 7.9. Feedback on the training

We believe that the training design was appropriate to its target group in terms of content, methodology and evaluation.
We consider that the training was successful in terms of completion and participants satisfaction. As per the first aspect, there were 2 dropout points: 1) Between registration and start of the course, and 2) between start of the course and end of 1st module. The first dropout point can be explained by several factors, including the time passed between the course was advertised and its start, and the fact that teachers may sign up for a course that is free of charge without knowing if they will be able to do it. The second drop-out point can be explained by the fact that it is only when teachers start reading through the content of the first module that they can grasp to what extent it is really useful for them and how much work it will demand. To our judgement, all in all a 50% drop-out rate between the start and the end of the course is usual in online, free-of charge, professional development courses for secondary school teachers.

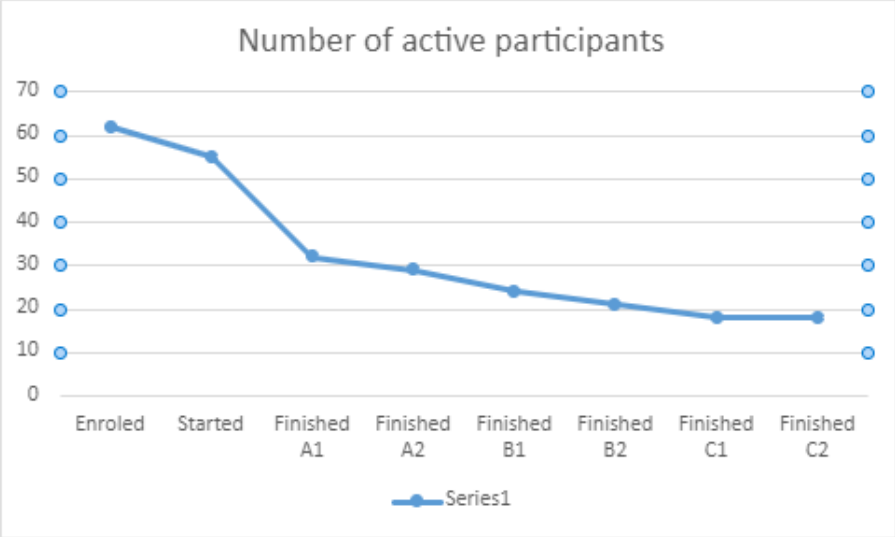



*Figure 7: Number of active participants throughout the course*

The training could be improved by adding more interactive content, making it more visual, and making some activities more smooth, especially the collaborative ones.

# 8. Adapting and Offering the Training in Turkey

## 8.1. Preparation of the pilots

1. In order to disseminate the training, the teachers of the Faculty of Education in our University were contacted. In particular, professors working on science education and sustainability issues were identified.

2. The definition of our project was made to the prospective teachers who attended the courses given by these professors. They were also invited to participate and help in the development of the online training module and content you have developed, and a pilot study was carried out with those who accepted.

3. Another effort is that contact was established with teachers from many regions of the country at the conferences organized by StemPd (Stem Education organization), of which many science education teachers in Turkey are also members. In the conferences and trainings organized with these trainers, the project was explained, and the prepared training was introduced. They were called upon to support the pilot study.

4. Invitations were made on existing social media and WhatsApp groups.

## 8.2. Key Data

| | |
|---|---|
| Start of the training | 18th of March, 2023 |
| End of the Training | 25th of May, 2023 |
| Number of participants | 42 enrolled, 30 started, 13 completed |
| Type of Participants (in-Service teachers / Student teachers) | Pre service teachers |
| Tutor(s) | Gültekin Çakmakçı, Orhan Curaoğlu, Yunus Özyurt |
| Describe the activities undertaken by the tutor | Provide feedback to activities, answer participants' questions, facilitate synchronous webinars |
| Synchronous Sessions | 22nd of March and 5th of May, 2023 |
| Cooperation partners | Stem Pd Partners and Bolu Abant Izzet Baysal University |

## 8.3. Adaptating the ClimatePD-Training to country needs

The study was continued without any significant changes in the training content. The 6 modules, including content, activities and assessment, were delivered as specified in the online course.

During the course, participants' comments and suggestions were recorded and any confusion caused by the Turkish language was immediately corrected by the trainers. A few technical complaints were forwarded to the webmasters and improved. Some of these are below.
- Those that were added but had errors in translation into Turkish were edited. Completing the Turkish subtitle deficiencies of the videos on the site and forwarding them to the video editing team
- The occasional disruption of the program during busy teaching periods for student teachers.
- Setting deadlines for the completion of each module is a challenge - it takes a lot of effort to keep participants engaged and engaged in a 4-week online course.
- Organizing simultaneous webinars - it seems necessary to keep the participants motivated, i.e. to share what they have learned or done with their peers.
Individuals with low motivation and self-regulation to work on their own tend to drop out very early.
- A gradual progression of participants can keep interest more alive.

## 8.4. Training Organisation

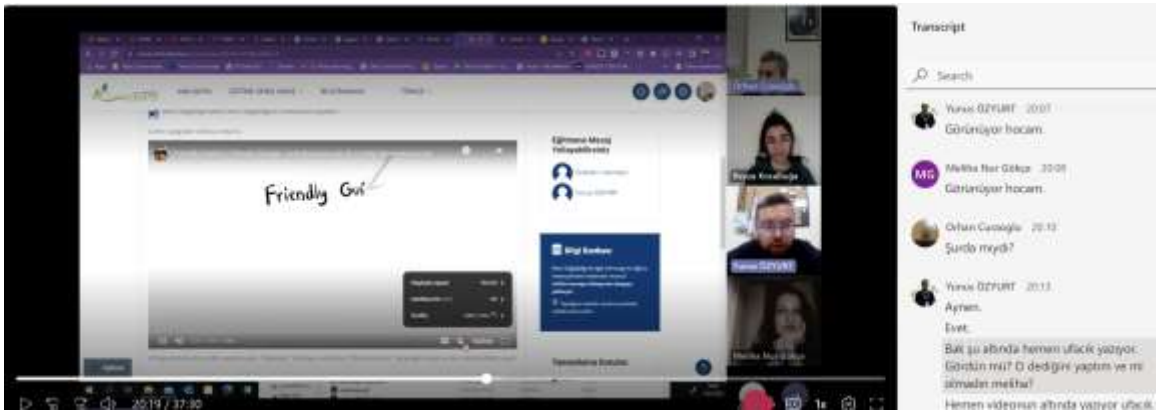


Figure 1: Screenshots from the webinar

Figure 2: Screenshots from webinar

## 8.5. Evaluation

### 8.5.1. Approach

The training course followed the evaluation plan provided by the project team: a summative, performance-based assessment based on providing evidence of learning for each module. Also, according to the structure, answering the module evaluation form and the course evaluation form was a requirement to be assessed. Participants' activities within the modules were then reviewed by a course facilitator who was present. Participants who successfully completed all activities were awarded certificates. Participants who successfully completed all activities were given a certificate by ClimatePd Turkey team to add this training to their CV. This certificate was a valuable asset for them to take advantage of any open call (promotion, changing schools, etc.) from the Ministry of National Education or the education sector.

KATILIM SERTİFİKASI

Sayın,

Ayşegül AYÇİÇEK

Avrupa Birliği ERASMUS+ program bünyesinde desteklenen 2020-1-EL01-KA226-SCH-094834 no'lu "İklim Değişikliği Konusunda Öğretmenlerin Mesleki Yeterlilik Gelişimine Yönelik Uygulamalar (ClimaTePD)" projesi kapsamında yürütülen çevrimiçi kurs eğitimini başarı ile tamamlayarak bu sertifikayı almaya hak kazanmıştır.

Dr.Öğr.Üyesi Orhan CURAOĞLU
(Proje Yöneticisi)

Figure 3: picture of Certificate of completion of ClimatedPd Course

### 8.5.2. Results

The study was continued without any significant changes in the training content. The 6 modules, including content, activities, and assessment, were presented as outlined in the online course.

Participants' comments and suggestions were recorded during the course and any confusion caused by the Turkish language was immediately corrected by the trainers. A few technical complaints were forwarded to the webmasters and improved. Some of them are below.

- Those that were added but had errors in translation into Turkish were edited. Completion of the Turkish subtitle deficiencies of the videos on the site and forwarding them to the video editing team- Occasional interruption of the program during busy teaching periods for student teachers.
- Setting deadlines for the completion of each module was a challenge. It took a lot of effort to keep participants engaged and interested in a 4-week online course.
- Organizing simultaneous webinars - the need to motivate participants, i.e. to share what they have learned or done with their peers, was very clear. Individuals with low motivation and self-control to work on their own tended to drop out too early and therefore needed some support from the trainers, especially during the training C phase.

- A gradual progression of the participants could keep the interest alive, i.e. the stages of the course should be active as the participant progresses through the sections according to his/her pace.

## 8.6. Conclusions and Outlook

Most of the participants in the course were 3rd and 4th-year pre-service science teachers. They were also research assistants working in the field of science education. It is evident that the participants were generally well-versed in the fields of online education and science education.
The main feedback from the participants:
- There are activities that require a lot of time.
- Activities in modules B1-B2 are multi-repeater
- There are confusing factors in the guidance within the module.
-Technical issues with uploading assignments, when participants uploaded Turkish characters, their assignments did not show as submitted. These warnings need to be made by educators or the system needs to give warnings to users. Or they should be informed that the assignment was not accepted due to the format of the accepted writing.
- Many participants were very satisfied with the sample scenarios in the knowledge base.
- The group activity in Module C1 was not easy to do because the teachers in one group could not understand if the other participants were still actively participating in the course. More support for the participants here is important for the success of the course. Anything like small feedbackers working environments would be enough.

During implementation, the course encountered some difficulties that were promptly resolved by technical support:
- It is not possible to reset the lost password
- The files of the Mind Map activity (Module 1) are not uploading correctly, e.g. Turkish character errors in the file names.
- The progress bar does not show the completion of some activities.

Lessons learned:
- Simultaneous webinars were useful to keep participants engaged and motivated
- Chat works very well
- Components such as learning analytics can be considered for the analysis of assessment forms.

## 8.7. Material needed

Nothing was added other than what was mentioned in the previous sections. Certificates were also printed and given to those who completed the training.

## 8.8. Tutoring approach

The training was planned and implemented to realize the practices expected of a good facilitator.

An educator needs to be able to actively listen to their group and understand what they are trying to say. Paraphrasing, summarizing or using other active listening techniques are great ways to fully grasp what people are saying and gauge its meaning in the online meeting and chat sessions.

Asking open-ended questions has been shown to initiate discussions that lead to solutions that are much more valuable for everyone involved.

Being authentic is intended to help you connect and relate better with participants, and to be an authentic facilitator, a safe space is created where individuals are encouraged to open up and express themselves without fear or hesitation.
It was communicated to the participants which activities to do and how to do them, how long each one would take, and what you could do to best help the group. It was also made sure that you steered the conversations in a constructive direction and avoided unnecessary discussions or conflicts.

Another idea was to have someone take notes of the meeting for future reference.

## 8.9. Feedback on the training

The online asynchronous training on climate change is considered to be a suitable content for teachers and pre-service teachers.
Those who completed the training reported that they were generally satisfied with the training. However, units B and C of the training have an intensive content. For this reason, the

number of those who interrupted the training in module B is around 60% of the sample group. The fact that it is simultaneous can be considered both an advantage and a disadvantage. While it is an advantage for teachers and pre-service teachers to manage the process at their own pace, the significant difference between those who started the training and those who continued can be seen as a disadvantage in terms of providing self-control. Some suggestions from the participants can be listed as follows:

1) It would be better if the menus under "Training Overview" in the top menu remained fixed as a left menu.
2) The toggle buttons at the bottom can be made more prominent when switching between modules.

# 9. Adapting and Offering the Training in Bulgaria

## 9.1. Preparation of the pilots

During the preparation phase, an in-depth analysis was made in order to set up and launch carefully the Bulgarian pilots. Therefore, Bulgarian partners implemented two different approaches for promoting the ClimaTePD online course and to attract ClimateTePD pilots' participants.

First, the two target groups were closely analyzed, including their needs, interests and preferences and it was decided to address these groups separately one from another.

- The first target group included in-service teachers, and our approach was to attract in-service teachers from all across the country.
- The second target group covered students from third and fourth year of their BSc program, enrolled in teacher' training specialties at Sofia University.

Second, there were identified two different approaches for the two groups of participants – in-service teachers and students.

- For in-service teachers, we organized a face-to-face Multiplier event in February 2023 for promoting and briefly explaining the ClimaTePD methodology, promoting platform and online learning and holistic approach.
- For student teachers, we organized two groups of face-to-face presentations (2 groups, 2 classes each) in March and April and presented them how to use ClimaTePD platform and how to prepare their assignments.

## 9.2. Key Data

| | |
|---|---|
| Start of the training | February 2023 for in-service teachers<br>March 2023 for students |
| End of the Training | June 2023 |
| Number of participants | All participants in the platform –<br>53 participants enrolled initially; |
| Type of Participants (in-Service teachers / Student teachers) | In-service teachers – 40<br>Student teachers - 15 |
| Tutor(s) | Albena Antonova phd,<br>assoc. prof. Kamelia Yotovska phd,<br>assoc. prof. Asya Assenova, phd; |
| Describe the activities undertaken by the tutor | Prepare the materials;<br>Present short overviews in synchronous sessions;<br>Moderate online classes and face-to-face group activities;<br>Evaluate final scenarios and approve final essays.<br>Write emails and communicate with course participants. |
| Synchronous Sessions | There were organized 2 online sessions for all target groups:<br>On 23rd of February 2023<br>On 16th of May 2023;<br><br>In plus, there were organized 1 F2F meeting/Multiplier event with teachers on 8th of February 2023;<br>And 4 face-to-face sessions with students<br>1st group - 8th March, 19th of April;<br>2nd group – 7th of April; 28th of April; |
| Cooperation partners | National Centre for in-service teacher training at Bankya |

## 9.3. Adaptating the ClimatePD-Training to country needs

Following the in-depth analysis of the situation in Bulgaria, our team identified as one major drawback for ClimaTePD training pilots that climate change issues in Bulgaria are not well integrated in the study program. This means that actually climate change is not taking part in any specific school discipline. Some of the topics are covered in a dispersed way across the curriculum, for example in Geography, Biology, Physics and other, but none of these subjects have addressed the topic in holistic or integrated way.

That is why, our main approach in the course piloting was to introduce the interdisciplinary approach of the ClimaTePD methodology for making students' projects and to stimulate cooperation with teachers among school subjects. Especially, we tried to promote

this approach as suitable for STEM centers. Considering IBL and gamification models, it has to be acknowledged that in the curriculum there are not many hours dedicated for project-based learning and STEM.

Another important remark is that teachers in Bulgaria are supposed to follow very punctually the State Educational Standards. On one hand this is due to numerous external evaluations of the pupils (after the 4th Grade, after the 7th Grade, the 10th Grade and the final state matriculation exam after the 12th Grade). On the other hand, the school programs are very intense and there lack a room for additional exercises and work on student projects. This was another challenge, to convince teachers that they can use IBL and active learning approaches even in limited time-frame.

However, the most specific hardship came from the need to convince the in-service teachers that the ClimaTePD training is suitable for their specific disciplines. Another problem was due to the limited experience of Bulgarian teachers to work with MOOCs and online training programs. Usually they prefer face-to-face trainings, that are approved by Bulgarian authorities and that provide additional bonus points for their qualifications. As the ClimaTePD course is a pilot course, this was not possible to provide the authorized certification with official professional credits for the teachers.

Finally, during the last years and especially after the pandemic, many teachers reported "digital fatigue", as in most of the cases they had to have their whole day in front of the computer. So, our final decision was to make the ClimaTePD trainings as much as possible combining online and face-to-face interactions/blended learning, providing multiple opportunities for the teachers to interact and to work together during the face-to-face events.

## 9.4. Training Organisation

To select the appropriate timing of the pilot trainings in Bulgaria it was considered the time requirements/limitations of each group.

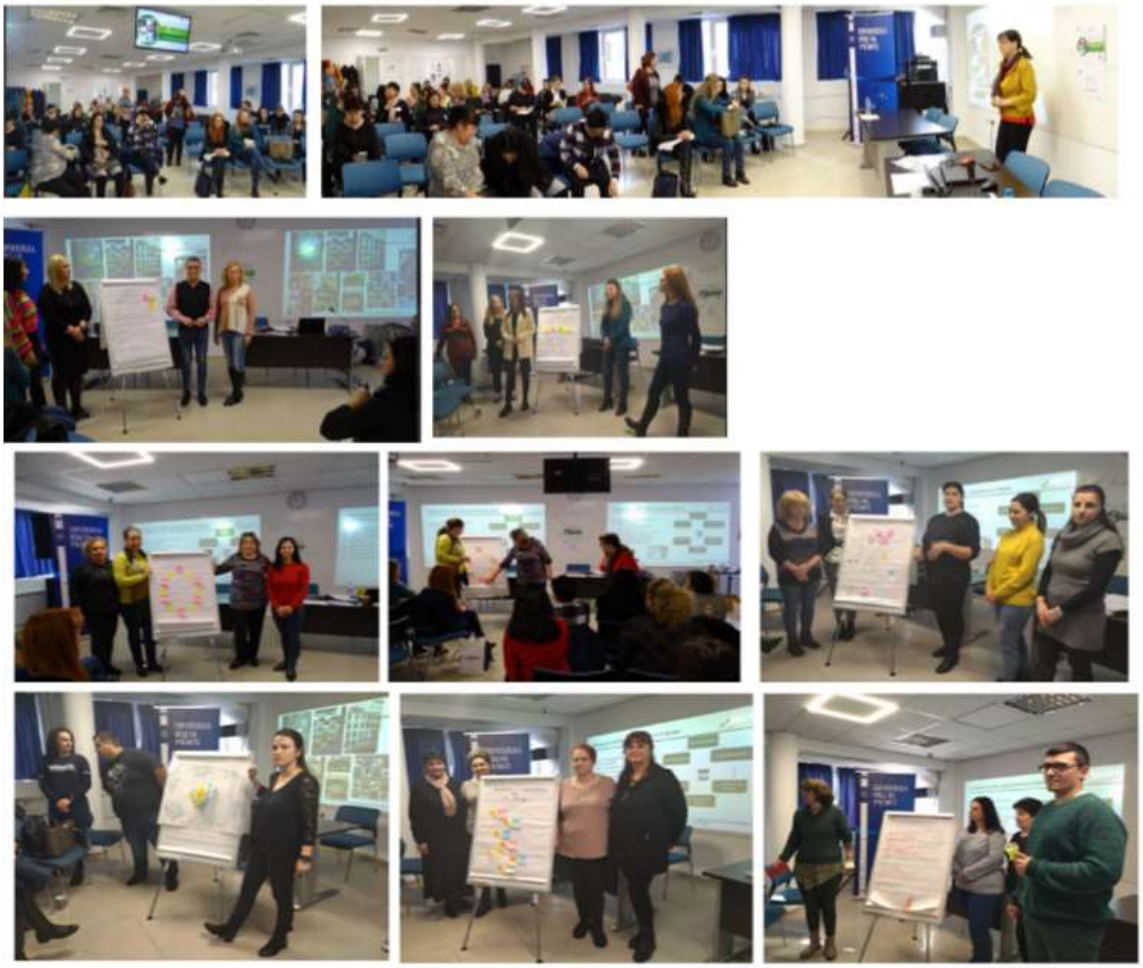
There were organized 2 online classes, as previewed, on 23rd of February 2023 and on 16th of May 2023, but unfortunately, only 5 participants took part in each of them.

The organization of the trainings for the In-service teachers.

- It was decided to launch the In-service teachers' pilots in February, as usually January is very busy for schools and for teachers. The first semester is finishing at the end of January, most of the teachers have to organize mid-term examinations, and in plus they have additional administrative and paperwork. It was decided to use the premises and the network of the National Center for Qualification of Teachers (https://niokso.bg/), located in Bankya (near Sofia), as they have the experience

to organize intensive teacher trainings for in-service teachers from the whole country.

- Thus, the official launch of the ClimaTePD course was made with a Multiplier event in Bankya on 8th of February 2023 with about 45 teachers from the whole country. The program included a short overview of the ClimaTePD project, discussion about Climate education challenges and short introduction of the ClimaTePD online course structure and content. At the end of the event, the teachers have to develop in groups and to presented the first versions of their own ClimaTePD IBL scenarios, that can be implemented in class.
- In total, 12 projects for IBL scenarios were designed and presented by the teachers. During the day, about 42 participants registered in the ClimaTePD platform. However, 29 participants entered only once and never came back.
- Only 2 participants from the Teacher' training group completed all the activities and received a final certificate of accomplishment.



Organization of the students' ClimaTePD pilots

- For the students, it was decided to launch the pilots in March, as the Summer semester starts in the beginning of March, but during the first weeks, students usually had some additional time constraints, linked to elective disciplines, to organize in-presence classes in schools and others.

  There were organized 4 face-to-face sessions with the students:
- 1st group - 8th March and on 19th of April;
- 2nd group – 7th of April and on 28th of April;

Not all of the students registered in the ClimaTePD system, but all of them get some experience and presented some short Climate Change projects, following IBL methodology. Considering that most of the students are in the third and fourth year of their studies, it was decided to allow them to finalize their participation in the ClimaTePD activities until mid-June.

Short introduction in the ClimaTePD project and in the Online system

Second session, where students work/present their own projects (in-class activity)
Third session, where students work on their projects (in-class activity)

- About 12 participants from the students' groups completed all the activities and received a final certificate of accomplishment.

- All students and in-service teachers, who successfully passed all the activities received their certificates for completing the course.
- The certificate of completion of the ClimaTePD pilot verified that the participants had successfully completed all the activities and are capable of applying Climate Change education scenarios in class.

## 9.5. Evaluation

- Most of the teachers enjoyed the ClimaTePD pilot experiences and provided very positive feedback. Even if not all of them joined the system, our efforts were to ensure that all the activities will be meaningful and enjoyable for them.
- During the face-to-face trainings, teachers and students enjoyed to work together, to share knowledge and to cooperate while designing innovative IBL scenarios for their learners. Teachers shared that this is something they miss a lot – to work together in face-to-face settings, to work in teams, to feel encouraged and to openly discuss about different ideas. Teachers somehow opposed to the online training, even if some of them recognized that it can be useful and time saving.

### 9.5.1. Approach

- Considering the evaluation forms after each module, the following feedback forms were collected. The calculations are made upon the registered participants in each module.

| Module | A1 | A2 | B1 | B2 | C1 | C2 | Course evaluation |
|---|---|---|---|---|---|---|---|
| Collected forms | 14 | 14 | 12 | 13 | 13 | 14 | 14 |
| Participants in the module | 53 | 22 | 18 | 23 | 19 | 14 | 14 |
| % | 26% | 63% | 66% | 57% | 68% | 100% | 100% |

### 9.5.2. Results

Most of the results in the collected forms were positive and in general all ClimaTePD pilot participants enjoyed the online training and the training materials. Following the self-assessment questionnaires at the end of each module, we can make the following summary:

**Module A1**
- 6 of 14 participants needed more than 4 hours to complete; 2 participants needed more than 8 hours to complete module A1.
- The main problems were due to uploading the mind-map in the system.
- Most of the learners enjoyed the video presentation and the mind-map exercise.
- All of the learners enjoyed the topic, the visual elements, the module structure and think that they can use this in their classes.
- Learners enjoyed interactive exercises and games.

**Module A2**
- Most of the learners liked the module 2, and among the positive issues are enumerated the multiple resources, gamification approaches and online tools, that learners can use in their classes.

One learner had some technical problems with the ClimaTePD online platform, and another student was not really confident about the description of the task in A2. The main

suggestions were to improve the description of the task in Module 2 and to provide some examples.

**Module B1**

- Learners enjoyed the scenario methodology and the examples of IBL scenarios. However, some of them find that there are many repeating parts and redundancy and they preferred to have better structuring of the module. Some learners stated that the scenarios are too long.

**Module B2**

- Learners in general liked the approach and the techniques how to adapt and modify scenarios for making them more appropriate for the local environment, for the age of the students or for the specific learning curriculum. Some students had technical issues, and one student reported to have problems to understand the task to be completed. The key recommendation is to provide more examples.

**Module C1.**

Most of the learners easily worked with the provided templates and directions for making their own scenarios. One of the learners had some technical issues when uploading the scenario in the system, another learner – a teacher from a kindergarten had difficulties to adapt and prepare the scenario for the kindergarten context. She suggested to provide some examples and good practices for small pupils as well, taking in mind that children can learn a lot about climate in the kindergarten through play, integrative approach and close connection with the nature and environment.
However, after the scenario, most of the learners felt confident and happy to be able to prepare their own IBL scenarios for Climate change.

**Module C2**

Learners reported to enjoy the last module as well and the way to summarize their experience in a final essay. They liked to read the work of their pairs and to reflect on it. Most of the learners appreciated the opportunity to express their final thoughts about how to improve their teaching practices with real-life experiences, IBL scenarios and climate change issues. In general students enjoyed the module c2.

Self-assessment of the whole course was very positive. Most of the statements in the evaluation form are supported with very positive rankings (between agree/4.2 and strongly agree/4.8). Most of the learners enjoyed the innovative approach, the scenarios and the additional materials in the repository, the structure and vision of the learning materials, the good explanations, the good ideas and the feedback received from the others. Almost all the participants recommended to use more interactive exercises and short videos, for the topics of the scenarios and for additional topics in the field of Climate change.

In general, it can be stated that the course was successfully validated and most of the participants enjoyed this unique experience. As stated by some of the teachers, present in the face-to-face activities – it was "…. very useful, very well organized training, inspiring speaker. I would be happy to participate in your upcoming trainings and projects…." ZK - Dupnitza.

## 9.6. Conclusions and Outlook

The Bulgarian team started with 53 participants (enrolled in the system), but finally only 14 completed the online activities and received their certificate. This way the success rate of the online course is about 26% which is higher than average for the MOOC courses.
At the same time, it should be stated that much more learners took part in the face-to-face trainings and therefore, even if they didn't register to the system, they learned how to apply IBL and gamification in their classes. All participants were free to choose to enroll or not in the system, so from our perspective this is a very positive outcome.

Concerning the 14 persons, who successfully took the course, 2 participants are teachers from kindergartens and 12 are students from Sofia University. Most of the participants were happy with the platform and the activities, but the course was time-consuming and they simply didn't come back, even if we tried to send them several emails; We had a very positive feedback from some in-service teachers, but unfortunately, they were not able to make the whole course, due to time constraints. So, our suggestion would be to reduce some of the content and to make it more affordable and less time consuming for in-service teachers as well.
Bulgarian pilots started in February 2023 and actually finished on 15th of June (this is the date of the last learner completing the course). Most of the teachers and participants in the pilots enjoyed the methodology, the course materials, the online platform. During the all face-to-face sessions Bulgarian lecturers tried to explain in details the Climate change issues as very broad and interdisciplinary model, including IBL, the gamification models and scenarios. Teachers and teachers-to-be had to practice during the face-to-face session how to make an IBL scenario in cooperation with a team. Most of them succeeded to present very good ideas about how to implement and structure different scenarios for IBL projects on practice.
For example, in the session with teachers in February, they presented 12 very nice project ideas about IBL scenarios, but unfortunately, teachers never came back to describe them in the online platform.
Among the recommendations and remarks, most of the training participants would enjoy to have more video content and more interactive exercises.
Considering that teachers in Bulgaria are supposed to follow very punctually the curriculum, it was very useful to openly discuss with them how to improve and make their teaching practices more enjoyable and engaging for their pupils. We discovered that for example students – teachers-to-be need to be better instructed as they simply don't have the

idea, that they can do the same learning activities more enjoyable, gamified and pleasurable for the pupils. After presenting several examples, the Bulgarian lecturers actually, demonstrated them how they can use ChatGPT in order to suggest more interesting scenarios for their classes. This way even the students who decided not to enroll in the online classes were convinced to change their approach for teaching ClimaTePD scenarios.

## 9.7. Material needed

In addition to the online materials, available in the ClimaTePD online platform, several presentations were prepared to be used during the face-to-face classes.
In one of the face-to-face sessions, learners were asked to use Chat GPT in order to generate more suggestions how to improve IBL phases with more engaging and amusing experiences for the pupils. There were automatically generated several scenarios – for escape room about biology and botany lesson, and a two-day student excursion with research topic – protecting the Black Sea.

## 9.8. Tutoring approach

The role of the tutor was very important both online and offline. Actually, the Bulgarian team assisted closely the learners and supported them to remain motivated and engaged between the modules. Several offline discussions were made and different active learning approaches were used to engage pilot participants with meaningful learning experiences.

## 9.9. Feedback on the training

Bulgarian lecturing team is very satisfied with the training results, remaining that engaging teachers and teachers-to-be during the school year is very difficult and time-demanding. However, a considerable group of teachers were attracted to the project and learned how to implement more holistic climate education approach in class.
The learners showed to be very engaged during the face-to-face classes. They visibly enjoyed this experience and definitively will take some good practices in their classes. Due to the digital fatigue, many teachers in Bulgaria try to avoid using computers and online trainings. This explain why only 14 persons out of 53 actually took all the activities in the system. However, the final outcomes – the essays and the scenarios, generated by Bulgarian participants in the online platforms were very interesting and well elaborated. This proved that online learning materials and the learning platform were well prepared and very useful.

# 10. Adapting and Offering the Training in Germany

## 10.1. Preparation of the pilots

The training was advertised through the following strategies:

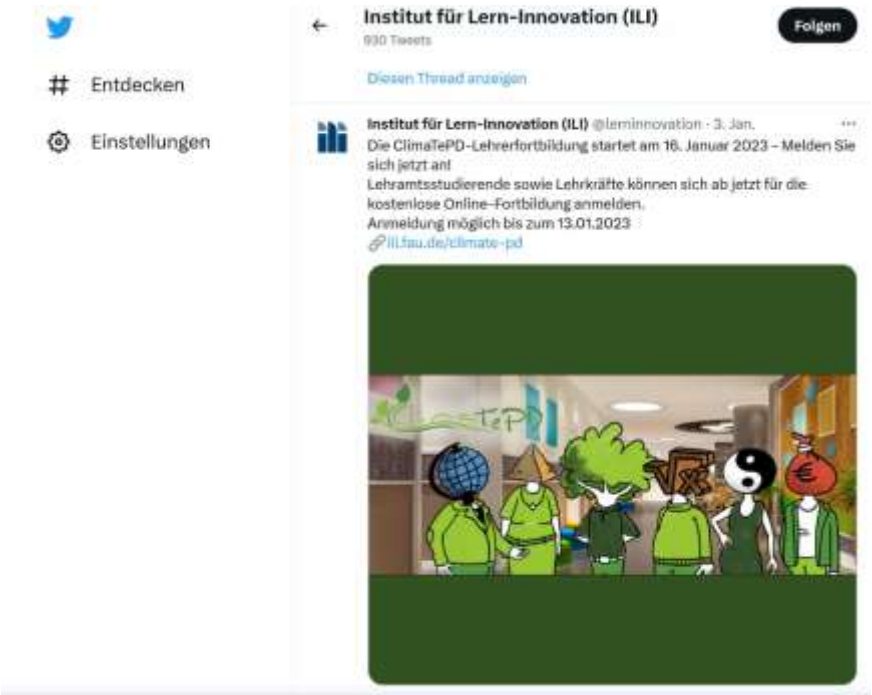
Strategy 1: Websites

- Advertising the online course on the website of the Institute for Learning Innovation at FAU


- Mention of ClimaTePD on the training portal of the Bürgernetz Dillingen (https://fibs.alp.dillingen.de/), the central contact point for (teacher) training in Bavaria.
- Advertising of the course on the training site of Umwelt im Unterricht, which is under the auspices of the German Federal Ministry for the Environment and provides, among other things, teaching materials related to environmental education.

Strategy 2: Social networks

- Twitter: Use of the ILI Twitter account for the dissemination of the course offering




Strategy 3: Promotion of the course in newsletters

- Advertising of the course in the newsletter of the FAU Green Office, the central coordination office for sustainability and climate protection topics of the university
- Advertising in the ILI-Newsletter

Strategy 4: The course was advertised in a didactics seminar of university students (pre-service teachers)

Teilnahme an virtueller Lehrkräftefortbildung (BNE, Klimawandel, IBL, digitale Tools)

Liebe Studierende,

gemeinsam mit weiteren Forschenden aus unterschiedlichen Ländern haben wir im Rahmen eines Erasmus+ Projekts (ClimaTePD) eine virtuelle Lehrkräftefortbildung zum Thema Klimawandel/Klimabildung konzipiert, deren erster (Test-)Durchlauf kommende Woche starten soll. **Hierfür benötigen wir dringend Ihre Unterstützung!**

Der Kurs besteht aus mehreren Modulen mit unterschiedlichen Schwerpunkten (Klimawandel, Klimabildung, BNE, das Unterrichtskonzept "forschenden Lernen/Inquiry-based Learning", digitale Tools im Unterricht etc.) und kann fast vollständig selbstreguliert von überall aus durchgearbeitet werden (Zeitraum: 16.01. bis wahrscheinlich Mitte/Ende März, also max. 2 Monate). Details zum Projekt wie auch zum Kurs können Sie hier nachlesen:
ClimaTePD Projektbeschreibung
ZfL ClimaTePD Infos

Das erste Modul wird **morgen** freigeschaltet, eine Anmeldung ist auch danach noch möglich. Ich würde mich sehr (!) freuen, wenn sich aus meinen Kursen einige engagierte Teilnehmende bereit erklären, an der virtuellen Fortbildung (mit Erklärvideos, H5P-Übungen, Texten zum Download, ein bis zwei Online-Treffen etc.) teilzunehmen.

Anmelden können Sie sich über folgenden Link
Und hier geht's zum Online-Kurs

Selbstverständlich erhalten Sie von mir/uns nach Abschluss des Online-Kurses eine **Teilnahmebestätigung**.
Der Einsatz digitaler Tools im Unterricht genauso wie das Unterrichtskonzept des forschenden Lernens und auch die Themenblöcke Klimawandel, BNE-Kompetenzen u.Ä. sind sicher auch mit Blick aufs Staatsexamen wie auch auf Ihre spätere Lehrtätigkeit interessant.

Viele Grüße

Emel Löffelholz

## 10.2. Key Data

| | |
|---|---|
| Start of the training | 16th of January, 2023 |
| End of the Training | 29th of May, 2023 |
| Number of participants | 22 enroled, 19 started |
| Type of Participants (in-Service teachers / Student teachers) | 1 in-service teacher, 18 student teachers |
| Tutor(s) | Emel Löffelholz, Sónia Hetzner, Nicklas Ophey |
| Describe the activities undertaken by the tutor | Provide feedback to activities, answer participants' questions, management of virtual meetings |
| Synchronous Sessions | 27th of January and 21th of April, 2023 |
| Cooperation partners | Professorship Didactics of Economics and Law |

## 10.3. Adapting the ClimatePD-Training to country needs

Since the target group was full-time working teachers and students (pre-service teachers), the course was conducted according to the "**online-first principle**", i. e. the synchronous meetings took place online and the participants were given maximum flexibility for their individual learning process.
All 6 modules (including content, activities, and module assessment) were retained.
**Before** the start of the course, 5 students/teachers tested the platform in order to check and, if necessary, **adapt assignments** and task **formulations**, **activities** and **content** to the **needs of the participants**. This involved, among other things:

- the logical structure of the modules
- the clarity of content and linguistic accuracy
- the transparency of the activities (H5P-activities)
- potential technical challenges
- any further need for revision …

**Feedback** received:

- Occasional difficulties in understanding a few tasks
- Switching between the individual modules only functions indirectly by returning to the homepage (where all modules are shown)
- Course structure or page layout sometimes confusing (too many extra clicks needed to navigate between pages)
- still necessary improvements of the translation accuracy
- some technical challenges

**Before** the start of the course, **minor adjustments** (also based on received feedback) were made as follows:

- Reformulation of individual tasks
- Improvement of the translation accuracy
- In Module A1, a summary of the content of the Climate Change video was added.
- The GreenComp competency model, which was already (briefly) presented in the explainer video, was again summarized using an H5P tool, so that course participants had the video content once again summarized for reference.
- Gradually release the content of the modules to keep the participants motivated.
- The contents were also made available to the participants for downloading as a PDF file.

Some feedback could be revised by the German team. If this was not possible, the open points were incorporated into the platform with the prompt and competent support of the project partners (at Forth).

Adaptations **after** course start:

- In order not to overburden the (full-time) teachers, activities were shortened or replaced during the course, as the participants expressed (during a virtual meeting) that they could not manage the number of activities (mainly in modules B1, B2 and C1). The scope of the activities was reduced by redesigning the tasks, but without jeopardising the necessary acquisition of competences (see 4.5.2 Results for more information on adapting the tasks).

## 10.4. Training Organisation

After activation, the course was accessible online at any time, beginning on January 16th. A **course schedule** was created in advance and uploaded to the welcome page, which could be accessed at any time via the course homepage:


The welcome page included the following information:

- Course schedule, including the dates and the content of the planned online meetings, the dates for the gradual activation of the next modules
- Short description of course structure, course objectives, course units, methodology
- Additional information on scoring, awarding of certificates, etc.

Two virtual meetings were scheduled with the participants, with the link provided in a personal welcome email sent via the course platform.
The **first meeting** was planned to get to know each other, to reiterate the basic concept of the course, to answer questions and to give information about the certificate. The possibilities and limitations of climate education in schools should also be discussed. As the first meeting was scheduled after the first module (A1: Climate Education) had been activated, a rich discussion could take place as most of the participants had already familiarised themselves with the content of the first module.
The **second meeting** was to reflect on the working process and the current level of knowledge of the participants. It was also aimed at discussing any challenges that might have arisen in the course of working with the modules (in order to be able to make any necessary adjustments). Another focus of the second meeting was mutual feedback, which the participants were asked to give each other in a discussion round on the activities they had worked on (mind map, essay...). Aspects of the content were also exchanged and deepened.

In order to provide both in-service teachers (working full-time) and pre-service teachers with the greatest possible flexibility in their individual learning process (which had also been expressed as an important concern by the participants), specific dates were given for the activation of the individual modules, but there were no fixed deadlines by which the modules, including the activities, had to be completed. At the request of the participants in the first synchronous kick-off meeting, the number of synchronous Zoom meetings originally planned was reduced. Since both pre-service teachers and in-service teachers had to complete the course in their free time (and were not excused from other commitments, for example), they were critical of the workload and asked for the greatest possible flexibility with as few appointments as possible.

The course participants had the opportunity to contact the course tutors at any time via the platform https://course.climatepd.eu/ and also made use of this.

## 10.5. Evaluation

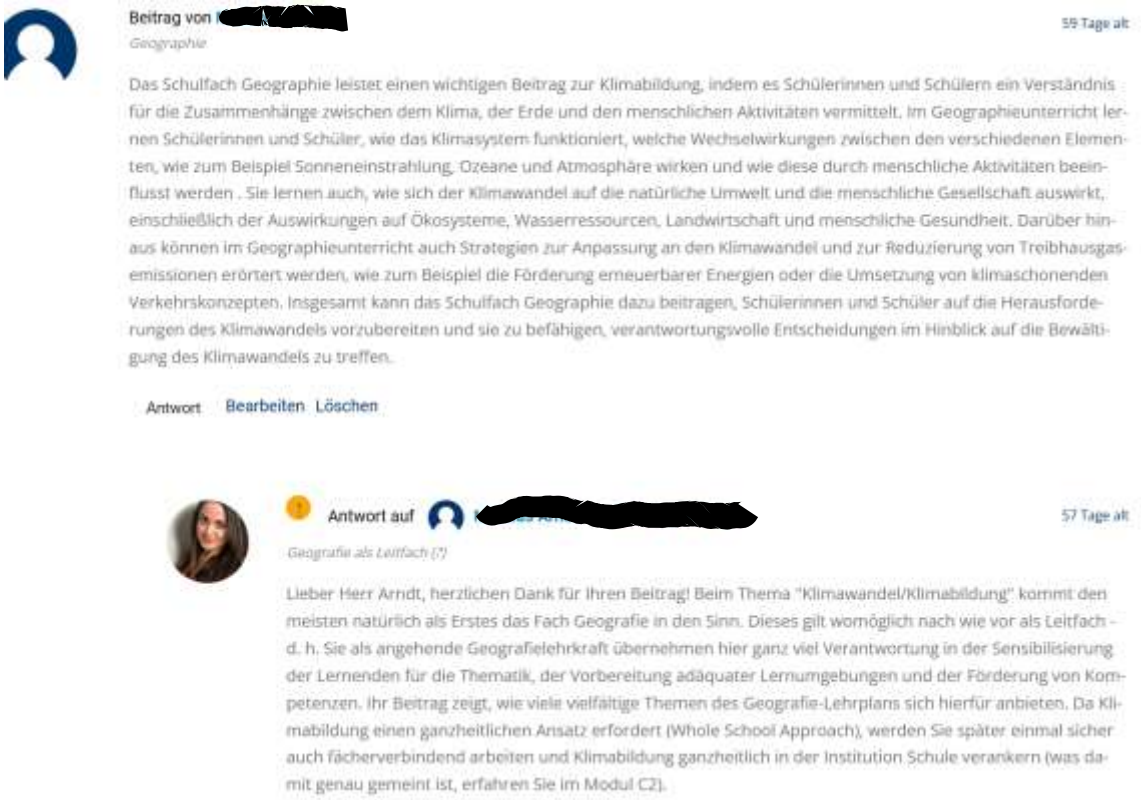
### 10.5.1. Approach

The training course followed the evaluation plan provided by the project team: a summative, performance-based assessment based on providing evidence of learning for each module. Also, according to the structure, answering the module evaluation form and the course evaluation form was a requirement to be assessed. Participants' activities within the modules were then reviewed by a course facilitator who was present. Participants who successfully completed all activities were awarded certificates.

### 10.5.2. Results

The outcome of the course or the individual modules is as follows:

- Module A1: 9 course participants reflected on the contribution their subject(s) can make to climate education. Due to the different subject combinations of the teachers and the students, it was possible to analyze the perspective on climate change education from different disciplines and many interfaces for interdisciplinary teaching emerged, which in turn is also of fundamental importance in the sense of the global approach.



Beitrag von [redacted] 59 Tage alt

*Geographie*

Das Schulfach Geographie leistet einen wichtigen Beitrag zur Klimabildung, indem es Schülerinnen und Schülern ein Verständnis für die Zusammenhänge zwischen dem Klima, der Erde und den menschlichen Aktivitäten vermittelt. Im Geographieunterricht lernen Schülerinnen und Schüler, wie das Klimasystem funktioniert, welche Wechselwirkungen zwischen den verschiedenen Elementen, wie zum Beispiel Sonneneinstrahlung, Ozeane und Atmosphäre wirken und wie diese durch menschliche Aktivitäten beeinflusst werden . Sie lernen auch, wie sich der Klimawandel auf die natürliche Umwelt und die menschliche Gesellschaft auswirkt, einschließlich der Auswirkungen auf Ökosysteme, Wasserressourcen, Landwirtschaft und menschliche Gesundheit. Darüber hinaus können im Geographieunterricht auch Strategien zur Anpassung an den Klimawandel und zur Reduzierung von Treibhausgasemissionen erörtert werden, wie zum Beispiel die Förderung erneuerbarer Energien oder die Umsetzung von klimaschonenden Verkehrskonzepten. Insgesamt kann das Schulfach Geographie dazu beitragen, Schülerinnen und Schüler auf die Herausforderungen des Klimawandels vorzubereiten und sie zu befähigen, verantwortungsvolle Entscheidungen im Hinblick auf die Bewältigung des Klimawandels zu treffen.

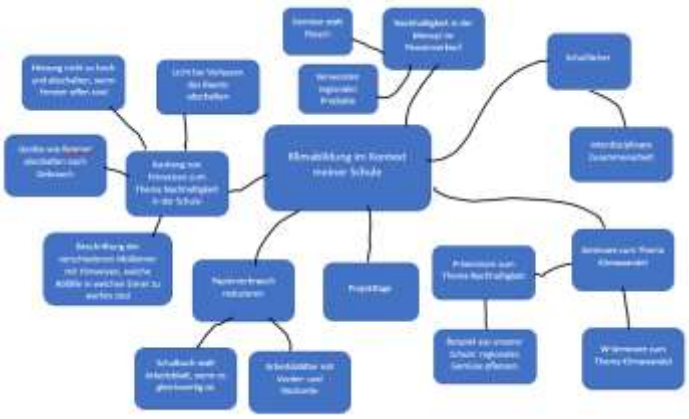
Antwort Bearbeiten Löschen

Antwort auf [redacted] 57 Tage alt

*Geografie als Leitfach (?)*

Lieber Herr Arndt, herzlichen Dank für Ihren Beitrag! Beim Thema "Klimawandel/Klimabildung" kommt den meisten natürlich als Erstes das Fach Geografie in den Sinn. Dieses gilt womöglich nach wie vor als Leitfach - d. h. Sie als angehende Geografielehrkraft übernehmen hier ganz viel Verantwortung in der Sensibilisierung der Lernenden für die Thematik, der Vorbereitung adäquater Lernumgebungen und der Förderung von Kompetenzen. Ihr Beitrag zeigt, wie viele vielfältige Themen des Geografie-Lehrplans sich hierfür anbieten. Da Klimabildung einen ganzheitlichen Ansatz erfordert (Whole School Approach), werden Sie später einmal sicher auch fächerverbindend arbeiten und Klimabildung ganzheitlich in der Institution Schule verankern (was damit genau gemeint ist, erfahren Sie im Modul C2).

- **Module A1:** 8 course participants have created mindmaps that map ideas around the topic of "climate change education in the context of their own school/internship school." The mindmaps show the current status of measures around climate change education at the school, further possibilities for action as well as possible (also external) cooperation partners.



- **Module A2:** 7 essays were uploaded reflecting on different digital tools for use in climate change education

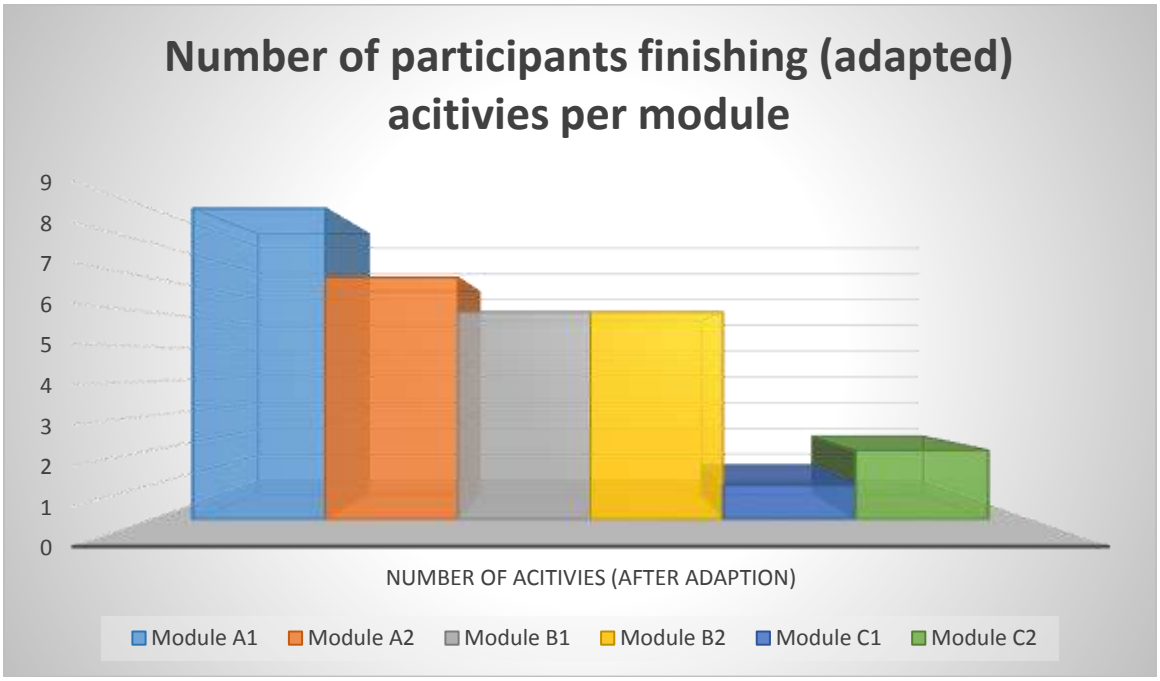
- **Module B1:** 6 Participants compared two learning scenarios with each other based on given criteria (similarities, differences, methodical implementation possibilities in the classroom, etc.). After feedback from the participants that the activities in B1 would take too much time, the comparison of two scenarios was reduced to the reflecion of one scenario. After the change of the task, one more essay was added.

- **Module B2:** Based on feedback from the participants, the activity in B2 also had to be adapted to the needs and possibilities of the pre-service and in-service teachers. Course participants were encouraged to adapt a scenario of their choice for your own classroom. Afterwards, they reflected on the question of what challenges they might encounter when creating a scenario and what possible solutions there might be for addressing them. This activity was completed a total of 6 times.

- **Module C1:** At the request of the participants, the assignment in C1 also had to be adapted. The course participants were free to decide whether they would like to construct a new scenario or prefer to adapt an existing scenario. This activity was carried out once.

- **Module C2:** Two final essays were uploaded on Global Approach. These outlined the current and target status with regard to climate change education and described possible measures for change.

- The individual modules were evaluated 33 times. Thereby A1 was evaluated eleven times, A2 seven times, B1 six times, B2 six times, C1 once and C2 twice.



## 10.6. Conclusions and Outlook

The target group and thus also the participants of the virtual training were in-service teachers as well as university students (pre-service teachers). The subjects represented range from science subjects such as chemistry and biology, to social science subjects such as geography and economics, to language subjects such as English.
The final conclusions for the training concept can be derived from the received feedback:

- Too much workload in B1, B2 and C1, which caused a reduction of motivation, to which the non-performance of activities can be partly attributed
- Activities in B1 and B2 repetitive
- Activity in C1 (construction of a new scenario) was too time-consuming and therefore not feasible
- Since the B1, B2, C1 modules were found to be repetitive, it makes sense (also in terms of content) to merge the modules to just one, combining the content.
- Providing ready-made scenarios (which can be used for one's own teaching after adaptation) was considered very valuable. The wish was expressed that the contents of the repository should also be available in the long term and should be further promoted.
- A few technical challenges
- The virtual meetings were very important for the exchange of ideas and experiences. Teachers as well as students were able to report from practice and exchange ideas, for example, about climate change education at their school, measures and challenges. It was remarkable that through the contact in the virtual meetings, participants also networked privately in order to exchange ideas on climate change education/ESD in the long term.
- Since it happened that activities were skipped, it might make sense to have the following modules unlocked automatically only after the previous module has been completed (if this is possible in technical terms).
- It must always be taken into account that the participants are not released from their daily obligations (work, study ...) for the participation in the course and work on all contents in their free time. Therefore, a middle ground between "too much" and "too little effort" is of immense importance. Too many or too extensive activities that take a lot of time (such as creating a new scenario) lead to demotivation, which is reflected in the decreasing number of participants per module.
- Game-based exercises with the H5P tool were very helpful in keeping the participants engaged.

## 10.7. Material needed

Adding extra materials was not necessary.

## 10.8. Tutoring approach

Tutorial support included the following main activities:

- On-demand point of contact for participant concerns, answering questions as they arise. This was done by using the chat tool of the platform.
- Organization and management of the virtual synchronous meetings
- Reviewing and approving completed activities by participants

- Contacting the participants to remind them of the upcoming activation of the next module

## 10.9. Feedback on the training

- Expanding the target group (teachers) to include students (pre-service teachers) was a very good idea, since the virtual meetings showed, among other things, that students and teachers like to network in order to link theory (university) with practice (everyday teaching in schools). Both perspectives have been able to contribute their point of view, which has enriched the content.
  Training for teachers in Bavaria is mainly organized and offered by the Academy for Teacher Training in Dillingen. Teachers are released from work to take part in the relevant training courses. Thus the academy represents a very large competition, since their popularity and general acceptance are very large all over Bavaria and many officially recognized training courses for teachers run over the academy. A cooperation with the academy would certainly be advantageous.
- In order to attract more students for the training, the integration of the course (as a key qualification) into the teacher training programs at the university would be advantageous. In this way, students could also receive ECTS credits for participating in the training.
  The low number of participants in the course can be attributed to these two points in particular. Appropriate measures (such as cooperation, integration into the course as a key qualification with ECTS credits) can significantly increase the number of participants.
- The registration process must be as uncomplicated as possible, as this can be the first hurdle at which one or the other participant may drop out.
- The decrease in motivation can be explained, among other things, by the high workload from module B1 onwards. It can be seen that fewer activities were carried out, especially in B1-B2-C1, and that the general activity of the participants declined sharply. It is therefore important not to overtax participants and at the same time to ensure that they acquire competencies.
- Adding more interactive content, faster-paced (small-step) activities, merging repetitive content can help keep participants motivated and improve the course (outcome).