

CLimate change teachers' acaDEMY (CLIMADEMY)

Ioannis METAXAS (1), Chara BITSAKI (1), Emily MICHAILIDI (1),
Dimitris STRAVROU (1), Nikos KALIVITIS (1), Maria KANAKIDOU (1, 3),
Olivia LEVRINI (2), Giulia TASQUIER (2), Eleonora BARELI (2),
Mihalis VREKOUSIS (3), Laura RIUTTANE (4), Jari LAVONEN (4),
Athina GINOUDI(5), Giorgia BELLENTANI (6), Thalia TSAKNIA (7),
Sofoklis SOTIRIOU(7)

(1) University of Crete, Greece

(2) University of Bologna, Italy

(3) University of Bremen, Germany

(4) University of Helsinki, Finland

(5) Regional Directorate of Primary and Secondary Education of Crete, Greece

(6) Fondazione Golirreli, Italy

(7) Elinogermaniki Agogi, Greece

Abstract The goal of the CLIMADEMY Erasmus + project is to create a community of practice and network to facilitate the establishment of creative professional development techniques and programs for serving as well as ongoing professional development for teachers about climate change and its effects. A Teachers' Academy, which will be established through four hubs in different countries as well as a common virtual Climate Auditorium. The initial network will consist of, 200 trainees from around Europe who will participate in this Academy over the course of three years through online, in-person, and blended learning.

Introduction

There is no denying the unquestionable fact that human activity is to blame for the century-long, fast shift in climate. Its effects are harmful to the environment, endangering ecosystems' biodiversity and ability to support human societies, as well as having an impact on economies and world health. But even while stakeholders, decision-makers, and the scientific community are becoming more interested in climate change education, it is still not widely included in science curricula in schools [1]. This can be because new scientific subjects are being incorporated into school curricula slowly. Informal learning environments like science labs and research centers play a crucial role in overcoming this restriction [2]. Finally, with regard to climate change in particular, [3] the use of environmental monitoring stations as informal learning environments can have a positive impact on learners' knowledge of both pedagogical and scientific information.

The considerable challenges teachers encounter while teaching such current concerns are another barrier to successfully integrating climate change themes in scientific courses. The need for teachers' professional development is particularly highlighted by recent educational research on climate change and other contemporary scientific topics [4]. Studies in teacher education show that when instructors participate in learning activities with their peers in communities of practice, learning and professional growth are more successfully achieved [5].

Taking into account everything described above, the goal of the CLIMADEMY Erasmus + project is to provide a thorough training framework on climate change, its causes, effects, and mitigation strategies for both practicing and student teachers. The project will also comprise teaching models and instructional materials, both of which will be made publicly available via a single, multipurpose internet platform that is linked to four national centers.

Methodology

A partnership including seven partners (universities and public entities) from four countries (Greece, Italy, Germany and Finland) was established to carry out the aforementioned goal of the CLIMADEMY project. There will be five stages to the project. A thorough survey of currently available educational resources and a study of the literature on climate change and climate change education will be carried out in the first phase. In the second phase, a community of practice of teacher educators, seasoned environmental scientists, and researchers in science education will be formed by twenty teachers from the participating organizations' home countries. The Teachers Academy, which will be formed in the following phase. Each participating nation will have one of the four hubs where the Academy will be constructed. Furthermore, a single virtual platform (Climate Auditorium, CLAUDI) will be used. The 20 teachers from the previous community of practice will act as mentors for 100 serving teachers in the third phase. These working educators will use CLIMADEMY curriculum in their classrooms and participate in teacher-learning events like training sessions and summer schools. A hundred student teachers will also receive training at their national hubs and will be encouraged to participate in ERASMUS-sponsored training at other hubs in addition to the serving teachers. In the final phase, the Academy will be accessible to all teachers in Europe (with a goal of 2000 teachers by the program's conclusion).

Preliminary Results

A detailed review of the current educational resources on climate change education concluded the project's first phase. This content has been categorized along four main axes: the causes of climate change, its effects, and measures for adaptation and mitigation. The socioeconomic issues that this global catastrophe poses to contemporary society is covered in the materials content, in addition to the physicochemical aspects of climate change. Additionally, a strong theoretical framework for teaching about climate change has also been suggested consisting of four pillars. *Values and attitudes* necessary for someone to become concerned about climate change. *Scientific Inquiry* for the development of critical scientific thinking as well as the understanding of the scientific basis for climate change. *Creativity*, is the ability to think creatively in order to develop and assess potential solutions for the various problems caused by climate change. The ability to organize, carry out, and assess concrete activities is the fourth and final pillar, which is called *Action*.

References

- [1] A. Sharma., Global climate change: What has science education got to do with it?, *Science & Education*, **21(1)** (2012) 33-53.
- [2] B. Rogoff, M. Callanan, K. D. Gutiérrez and F. Erickson, The organization of informal learning, *Review of Research in Education* (2016) **40(1)** 356-401.
- [3] L. J. Saxman, P. Gupta, and Steinberg, R. N. CLUSTER: University-science center partnership for science teacher preparation *The New Educator* (2010) **6(3-4)** 280-296.
- [4] R. Blonder The influence of a teaching model in nanotechnology on chemistry teachers' knowledge and their teaching attitudes *Journal of Nano Education* (2010) **2(1-2)**, 67-75.
- [5] E. Kyndt, D.Gijbels, I. Grosemans and Donche, V. (2016). Teachers' everyday professional development: Mapping informal learning activities, antecedents, and learning outcomes. *Review of Educational Research* (2016) **86(4)** 1111-1150.