

A2.1 Country research to specify important issues on CC and identify existing relevant material on CCE

February 2024
MIO-ECSDE

Project Number 2023-1-EL01-KA220-SCH-000158033

Contents

Contents	2
Glossary	3
1. Aims & Methodology	4
2. The research tool	6
2. Respondents' Profile	7
3. Experiences	9
<i>3.1 Approaches/methodologies that work best in engaging the students in environmental topics with a focus on climate change</i>	9
<i>3.2 Identified gaps in the available learning resources for climate change</i>	10
<i>3.3 Students' misunderstandings and misconceptions in relation to climate change</i>	11
<i>3.4 Inventory of Educational Resources on climate change</i>	12
4. Needs and preferences	13
<i>4.1 Thematic areas of a new learning material on climate change</i>	13
<i>4.2 Important features of an effective learning material on climate change</i>	15
5. Summary	16
ANNEX I. Lists of diagrammes	18
ANNEX II. The research tool	19
ANNEX III. Inventory of Educational Resources	22

Glossary

AR	Augmented Reality
CC	Climate Change
ECC	Education for Climate Change
EE	Environmental Education
ESD	Education for Sustainable Development
GAREOE	Gamification and Augmented Reality in Environmental and Outdoor Education
ICTs	Information and Communication Technologies
VR	Virtual reality

1. Aims & Methodology

This specific activity (A2.1) focused on the conduction of a country-based research in order to identify and highlight important issues related to Climate Change Education (CCE) and identify existing relevant material on CCE. The particular survey invited formal and non-formal educators engaged in Environmental Education (EE), Education for Sustainable Development (ESD) and CCE to reflect on educational approaches and methodologies, learning topics and teaching experiences when it comes to climate change. In addition, the respondents were invited to identify existing learning resources and materials on CCE that are worthy to capitalize on as well as to complement. In this line, activity A2.1 is actually setting the background of the key product of PARCCE Project that will be the new educational materials in traditional and digital format.

In this context, the specific **objectives** of Activity 2.1 were:

- To provide an overview of the state-of-the-art regarding learning resources on CCE in the partners' countries: identified gaps, strong features, etc.
- To obtain meaningful input for the content development of the new traditional educational material (TEM) to be co-created by the partners in the next activity (A2.2) in terms of thematic areas; educational methodologies; educators' needs, and students' misconceptions.
- To create an inventory of existing learning materials on CC from the partners' countries, and namely, Cyprus, France, Greece and Italy (and beyond).

To this end, the partners co-designed and applied the following **Methodology**:

- Drafting of the custom-made questionnaire to be used as the tool of the research by MIO based on what is provisioned in the PARCCE's proposal and on partners' initial discussions during their 1st online meeting on 10 November 2023.
- Sharing of the draft questionnaire to all partners for initial feedback several days before the kick off meeting.
- Elaboration on the draft questionnaire during the Kick-off Meeting (Athens, 11-12 December 2023) and finalization. Care was given so that the tool will be interesting and not demanding excessive time to complete. Its content was based on previous similar European research

project reflecting teachers' needs, challenges, etc. around ESD/CCE/EE. The partners agreed that the questionnaire will include three separate sections, with the first one including a few selected questions on participants profile (see more in para.2)

- During the kick-off the **format** of the tool was also discussed; the partners agreed to set the tool on a google form because it is user-friendly, easy to disseminate, accessible by all partners to monitor progress at any time and is automatically translated.
- The **dissemination** plan of the questionnaire was discussed and agreed: It was decided that the questionnaire will be shared by all partners to their relevant "audiences", and namely:
 - Their staff.
 - Schools and Universities, they collaborate and/or network with.
 - Educational institutions and Centers, NGOs, museums, etc. active in the fields of EE/ESD/CCE, they collaborate and/or network with.
 - Their lists of individual teachers and non-formal educators.
- The questionnaire was disseminated by all partners to the aforementioned groups and was active for completion for a period of time of approx. a month, gathering in total 272 dully filled replies. This number (sample) for a pilot survey can be considered quite adequate.

Activity 2.1 was led by the partner UMARINU and implemented with the contribution and input by all partners.

The report drafted by MIO-ECSDE with the feedback by all partners aims to present the results and findings of the research and trace any trends about the current teaching and learning experiences in formal and non-formal educational settings regarding CCE.

The statistics that are presented in the next paragraphs confirm that the opinions and suggestions made by the sample will be "learned" and will reflect "expert" advice.

2. The research tool

The questionnaire includes the following three sections:

- **Personal information/profile:** Gender, country, job title, as well as their level of confidence (as they perceive it) in teaching CCE. The survey followed the Privacy Policy Rules of MIO-ECSDE - the coordinator of the PARCEE Project - that are fully compliant to the EU GDPR rules, which was presented in the beginning of the questionnaire. It mentioned explicitly that *"The requested personal data are asked and collected only for internal purposes for the sake of research in the context of the ERASMUS+KA1 funded "PARCEE" (2023-1-EL01-KA220-SCH-000158033) and will not be revealed"* and the respondents were asked to check on the option "Consent to the MIO-ECSDE Privacy Policy" in order to proceed with the completion.
- **Questions on experience:** In this section, we ask about teaching approaches, gaps in learning resources and student's misunderstandings that educators identify based on their experience regarding CCE. Additionally, they were asked to name educational resources on CCE (students' materials, teachers' manuals, videos, etc.) they have used and recommend.
- **Questions on needs / preferences:** In this section, we ask about the needs and preferences (expectations) of the educators for a new learning material on Climate Change, regarding the thematic areas and the key features, that the material shall have.

The questionnaire is included in Annex I.

2. Respondents' Profile

The 272 respondents were in their great majority (**75%**) **women** (see diagramme 1) a common element in educational initiatives, researches and programmes. In terms of countries' representation in the survey Greece (39,7%) and Italy (37,5%) contributed almost equally in the survey, while followed by Cyprus (15,1%) and France (7,7%) (diagramme 2).

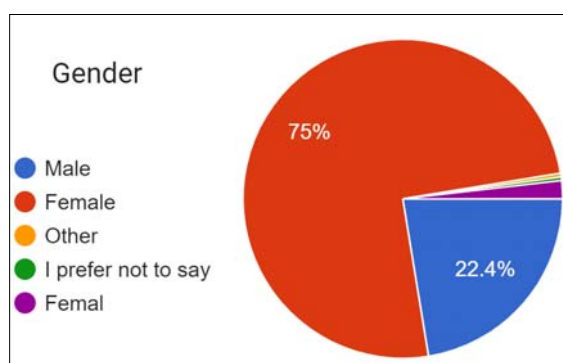


Diagramme 1. Gender

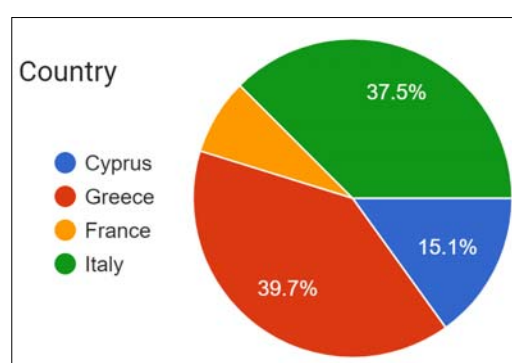


Diagramme 2. Country

The research managed to engage to a great extent **formal educators** (working in the official educational system) reaching the **78,5%**, with the rest coming from the field of non-formal education and "other". In more details regarding the work profile almost half of them was Primary school teachers (44,5%) with the rest being: Middle school teachers (18.8%), Non-formal educators (11,4%), High-school teachers (8,8%) and Heads of schools (4,4%), Tertiary education staff (2%) while the rest 10% reported teaching support staff, advisors in ESD/EE, independent experts, kindergarten teachers etc.

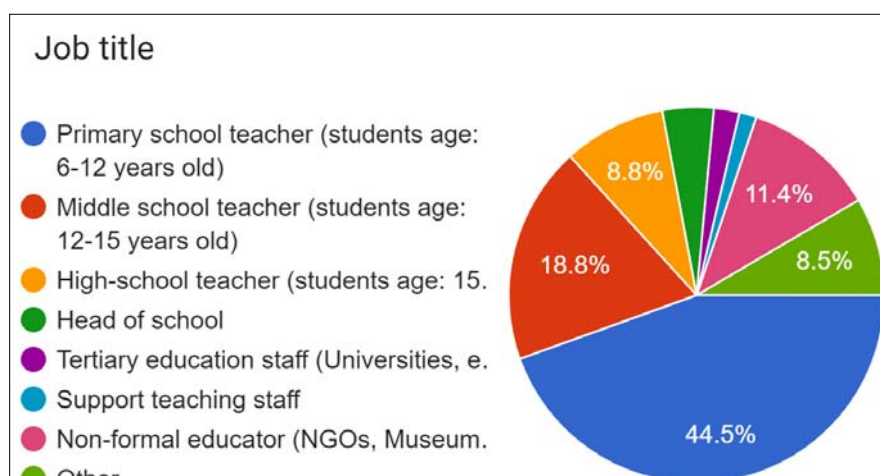


Diagramme 3. Profession

Last but not least more than **two third of the respondents** expressed that they feel confident in teaching climate change topics.

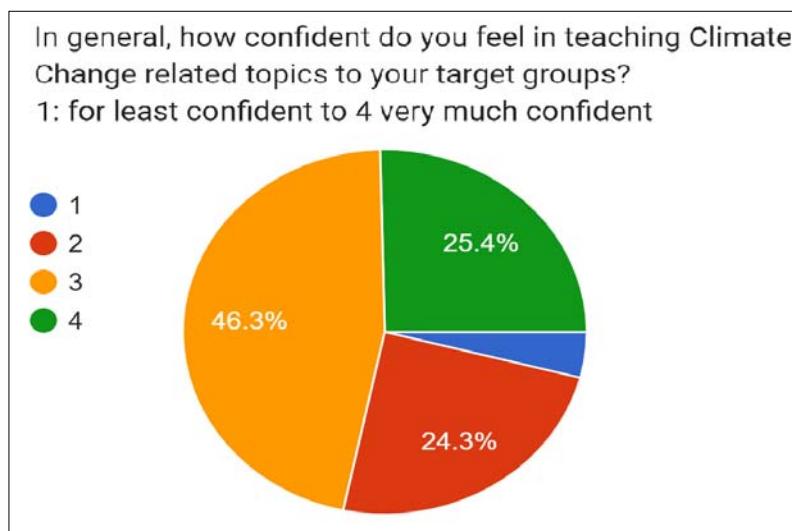


Diagramme 4. Expressed confidence in teaching about climate change

Overall, the major group that participated in this research came from the formal educational system (schools) and was women. Furthermore, Greece and Italy provided > 2/3 of the sample and France and Cyprus a bit lower than the 1/3 of the sample. 2/3 of the respondents are stating that they feel confident/very much confident themselves in teaching climate change related topics.

3. Experiences

This Section devoted on educators' experience about CCE provided feedback in regards to the teaching approaches mostly appreciated, the gaps they have identified in the existing learning resources and the student's misunderstandings and misconceptions, in the context of CCE. Additionally, in this section the respondents named educational resources on climate change topics that they have used and recommend.

3.1 Approaches/methodologies that work best in engaging the students in environmental topics with a focus on climate change

The next diagramme (5) depicts the approaches and methodologies the respondents chose as best in engaging the students in environmental topics with a focus on climate change, choosing from a given list up to seven options, while there was the open option "other".

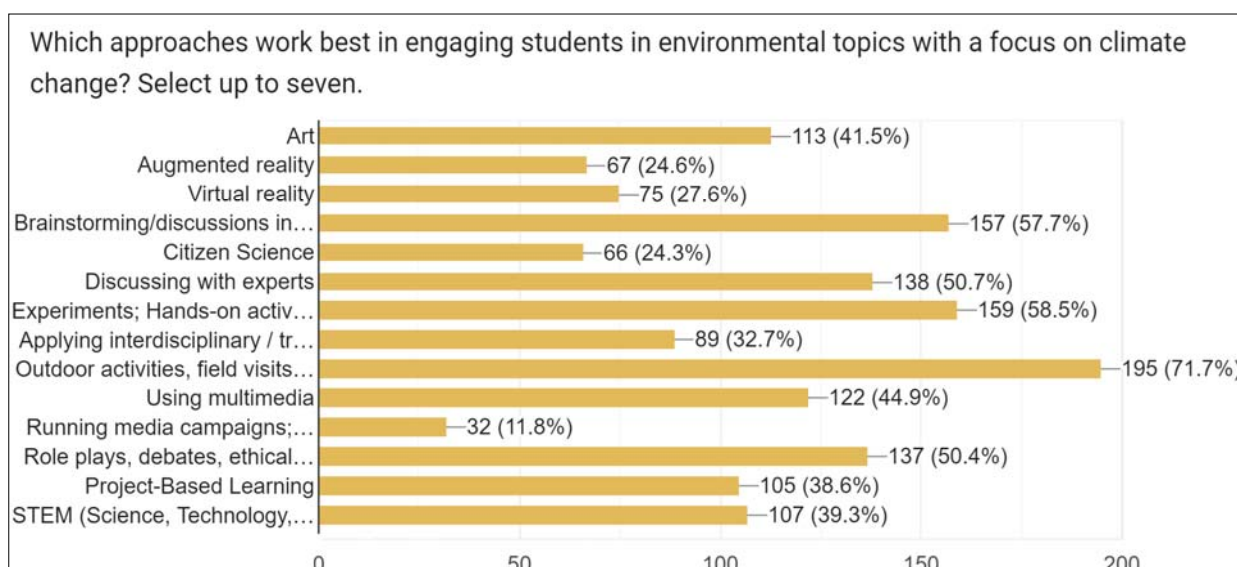


Diagramme 5. Approaches working best in engaging students on environmental topics with a focus on CC

“**Outdoor learning, field visits and work**” was the first to appreciate **(71,7%)**, followed by “Hands-on/experiments” and “brainstorming /discussion sessions” in the second place (**~58%**), and “Role plays, debates, ethical dilemmas, future scenarios” and “Discussing with experts” in the third (**~50%**). Multimedia tools and art came in the forth (**44,9%**) and fifth (**41,5%**) place of their preferences respectively.

In the mid-bulk of the choices we find STEM (39,3%), “Project-based learning” (38,6%), “Applying interdisciplinary/transdisciplinary approaches” (32,7%), “Citizen Science” (24,3%) and “Running media campaigns” (11,8%),

Noteworthy to mention for our project is that New Technologies such as “Augmented reality” and “Virtual Reality” was chosen from the 24,6% and 27,6% respectively; this may be explained from the fact that such approaches and tools are not so common nor available in the majority of schools and teachers.

Other approaches added by the participants were drama, songs, story-telling, educational games (not digital), pedagogic gardens, etc.

3.2 Identified gaps in the available learning resources for climate change

The other question in this Section was about the gaps existing in the available related materials, and namely: “According to your experience, what are the gaps in the available learning resources for climate change?” (an open-ended question).

The question was not completed or completed with the phrase “I do not know” by a relatively small percentage (7%). So, it seems that in one way or another the majority of the respondents have used or at least, are aware about educational resources on climate change. A small percentage (6%) replied as: “No gaps identified”.

The following “trends” emerged summarizing the replies – commonly identified in all four countries - about the identified gaps of the existing learning resources for CC. They are presented below from the most frequently mentioned to the least:

- a) **Lack or insufficient content** on CC in the school curriculum. In addition, the school educational material (books) that do include some content related to CC are not updated.
- b) **Lack of interactive material** on CC e.g. multimedia; new technologies on simulations / models/ AR.
- c) The easily accessible interactive material on CC (see b) are available **only in English** or they are considered as “**old-fashioned**”.

- d) In most cases, educational materials on CC are too “theoretical” and **not engaging**, they do not include e.g. hands on activities, experiments, field work, etc.
- e) The available learning resources on CC do not go into depth, they follow a rather superficial approach; They **do not present the intersecting, relationships and interlinks** of CC effects on people (society - economy) and on the ecosystems; Most of them are cut-off from the real world and local cases are rare.
- f) **Lack in discussing, proposing and exploring measures, solutions and actions** to the problem; sticking only to the description of the problem and contribute to creating “climate anxiety”.
- g) Some of the educational material on CC **are not based on reliable** resources.

Other scattered replies reflected as gaps were: *“Lack of clarity between natural causes of CC and the climate change due to the human action”*; *“The technical and specific language (climate jargon)”*; *Ethics*.

In addition, several respondents (again from all countries) mentioned general educational gaps when it comes to CCE and not specifically targeting the learning resources, such as:

- *Lack of available time in the school timetable for CC topics.*
- *Lack of teachers’ training to use the resources.*
- *Lack of guidelines/plan in order to develop a whole school approach about climate change issue.*

“If students could see with the use of augmented reality how a landscape will transform or what the weather will be like in certain years”

3.3 Students’ misunderstandings and misconceptions in relation to climate change

One more element that was explored in this Section was the students’ misunderstandings and misconceptions in relation to climate change based on the respondents’ experience (an open-ended question). The question was not completed or completed with the phrase “I do not know” by a relatively small percentage (7%). The most commonly identified students’ misunderstandings and

misconceptions about CC – reported by respondents from all participating countries - are summarized below, from the most frequently mentioned to the least:

- a) Limited knowledge is observed in general, when it comes to topics related to CC. **Confusion of environmental phenomena and issues** and particularly, the greenhouse phenomenon with the ozone layer depletion; the global warming with the greenhouse effect; They conceive greenhouse effect as a negative phenomenon that is caused by the humans; They mix up the greenhouse gases, etc.
- b) Students do not see how particular behaviours, attitudes, practices and choices are related to the problem; They consider **individual and collective action as irrelevant or with no impact** - neither the positive ones nor the negative.
- c) Consideration of CC **as a not serious nor an actual issue (it is natural)**; Half of the respondents raised this misconception, mentioned also that these students follow their family's negative attitude towards CC (denial).
- d) Consider that CC is a **problem of the next generations**; They see it as distant, not urgent, not relating to them neither they experience the impact.
- e) Confusion of “**weather**” and “**climate**”.
- f) They believe that this is the first time in Earth's history that climate change has occurred.

Apart from the abovementioned misconceptions, several respondents pinpointed particular knowledge gaps related to the environmental, social and economic impacts of CC as well as difficulty in understanding the long-term impact of CC e.g. biodiversity loss.

3.4 Inventory of Educational Resources on climate change

In this Section, apart from the educational approaches, the gaps in learning resources and the student's misconceptions, the educators were invited to note titles and web-links (if available and known) of educational resources on Climate Change which they have used and recommend, including students' materials, teachers' manuals, videos, etc. The detailed list of the reported educational resources is presented in Annex II.

4. Needs and preferences

This Section of the research was about the needs and preferences of the educators when it comes to a new learning material on CC.

The participants were asked about what topics they consider important to be included in a new learning resource on CC.

They were also invited to reflect on the most important features they attribute to an effective learning material on CC based on their experience.

4.1 Thematic areas of a new learning material on climate change

The following diagramme (6) depicts the thematic areas the respondents chose as important to be included in a new learning material on CC, choosing between the options:

- What is climate and what is climate change? *The greenhouse phenomenon; Distinction between climate and weather; Tracing climate change in our everyday lives.*
- What are the causes of climate change. *GHG emissions by productive sector -food, energy, travel and transport, clothing, etc. Current models of consumption and production, etc.*
- What are the impacts of climate change? *Extreme events & natural disasters; melting of ice/glaciers, ocean currents, water scarcity, soil erosion, biodiversity loss, intrusion of alien species, agricultural changes/food safety, socioeconomic and health problems, urban heat islands, poverty, environmental refugees, etc.*
- What can we do about climate change? *Adaptation strategies to cope with the changes that are already underway & mitigation measures to reduce greenhouse gas emissions through applied examples/ case studies (environmental protection/protection of biodiversity, sustainable development, renewable energies, integrated water management; global citizenship; institutions/legislation; our role as citizens and students, low carbon lifestyles)*

They also ranked the aforementioned thematic areas with 1 for the least important to 4 for the most important. The replies are depicted in Diagramme 6.

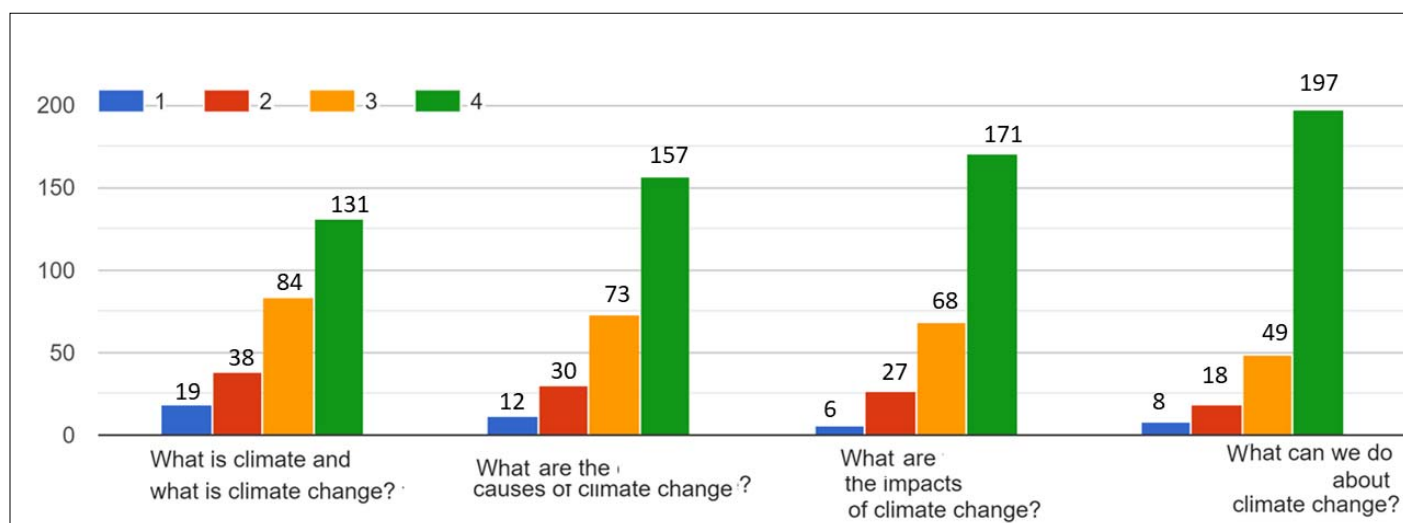


Diagramme 6. In your opinion, which thematic areas should be included in a new learning material on climate change? Rank from 1 (least important) to 4 (most important).

It is obvious that all four CC thematic areas – “What is”, “Causes”, “Impacts”, “Measures/Actions” - are considered important by the majority of respondents, with 48% as most important “What is climate and CC”, the 58% as most important “the Causes of CC”, the 63% “the Impacts of CC” and the 72% considered as most important the actions and measures about it (“What can we do”).

Other topics the respondents mentioned to be included in a new material on CC (within the aforementioned thematic areas) were the following:

- Local impacts of CC.
- Building an eco-friendly culture; developing a social component on "acceptance of change", without it being just a postponement of technologies, but indeed another way of living.
- Food: why many people are becoming vegan or are approaching a type of diet that tries to replace animal products
- Climate justice, Earth Overshoot Day, footprint calculator
- Provide scientific evidence to any climate crisis “sceptics”

4.2 Important features of an effective learning material on climate change

Another question in this Section traced the features/characteristics/qualities that an effective learning material on climate change shall have based on their experience. The participants could choose from the below list, up to 6 options:

- Establishing the connection between climate change and everyday life.
- Enhancing self-efficacy and responsibility.
- Being in line with curricula context.
- Including various learning activities (for different learning styles).
- Integrating the local community dimension.
- Including story telling / lived experiences testimonies.
- Including experiential / hands-on approaches in balance with new technologies (ICTs).
- Providing clear, accurate, comprehensive knowledge of climate change aspects in an attractive way.
- Having student-friendly language (avoid terminology jargon).
- Provide up-to-date information through practical real-world examples (case studies).
- Using a variety of media formats (images, texts, infographics, videos, etc.).
- Keeping the narrative hopeful (avoid only gloom and doom examples) connecting to solutions.

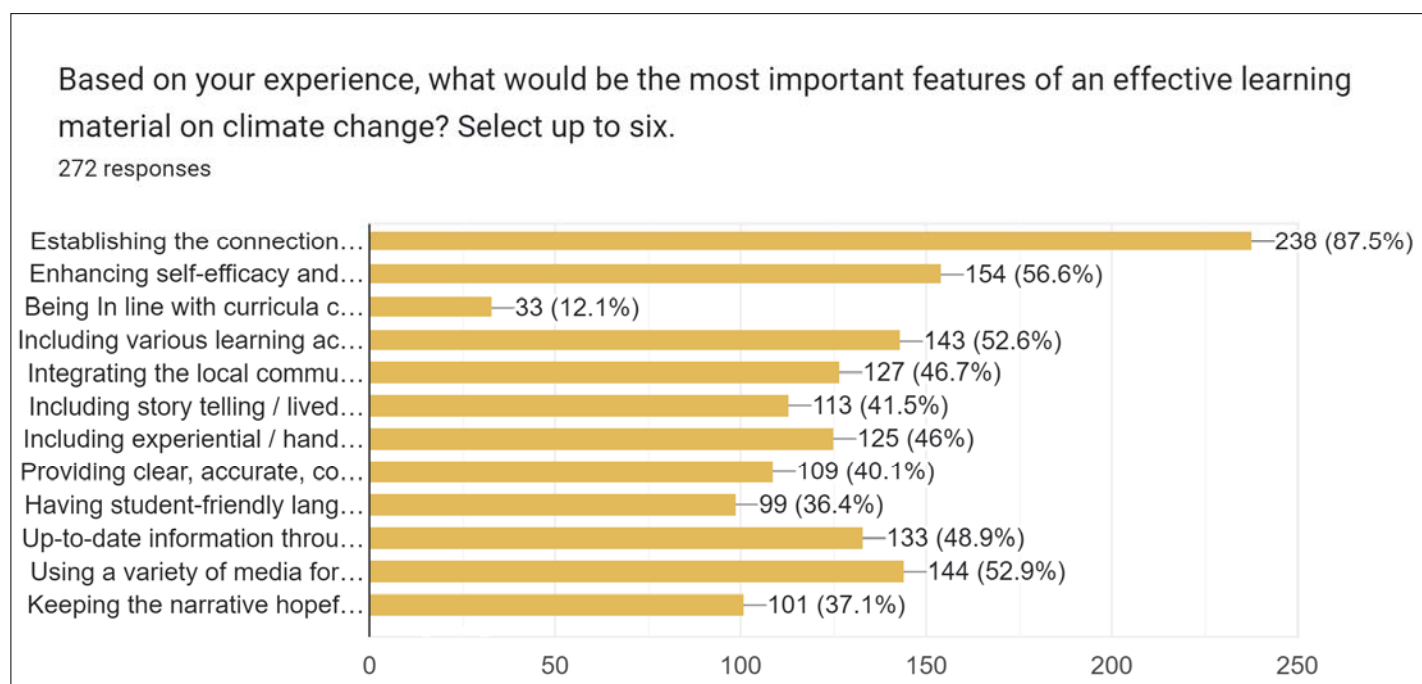


Diagramme 7. What makes a Learning Material on CC effective?

It seems that the **connections between climate change and everyday life** is valorised as the most important feature of an effective learning material on CC (voted by the **87,5%**). Second in their preferences (with a big difference from the first choice) came **enhancing of self-efficacy and**

responsibility of learners (voted by the **56,6%**) while in the third place came the inclusion of a **variety of media formats** (images, texts, infographics, videos, etc.) (voted by **52,9%**) and **various learning activities** (for different learning styles) (**52,6%**).

As other features not included in the given list a few respondents added the options of “engaging the parents/family in actions”, and “the need of more time and means for educators within the curriculum”.

5. Summary

The present research was delivered within the context of the Erasmus+KA2 Programme “PARCCE” aiming at: (1) tracing important topics, features and approaches that a new learning resource on Climate Change Education (CCE) (2) listing educators’ needs and gaps in the existing materials on CCE (3) reviewing students’ misconceptions about CC, and, (4) identifying existing learning materials on CCE that the educators themselves consider worthy to capitalize and recommend. The research engaged 272 respondents the majority of which (75%) came from the formal educational system (mainly schools) and were women, while Greece and Italy provided about the 2/3 of the respondents, and the other 1/3 came from Cyprus and France.

The top choices of methodologies in engaging the students in environmental topics with a focus on climate change found to be “Outdoor learning, field visits and work” ; “Hands-on/experiments” & “brainstorming /discussion sessions” and “Role plays, debates, ethical dilemmas, future scenarios” and “Discussing with experts” . On the other hand, the top gaps of the existing educational materials on CC were reported as the “Lack or insufficient content on CC in the very own school curriculum/or outdated content”; the “Lack of modern interactive material on CC (multimedia; new technologies on simulations / models/ AR) in national languages and the “entirely theoretical and not engaging materials”.

The most commonly reported misconceptions of students when it comes to CC were the “Limited environmental knowledge in general and confusion of environmental phenomena and issues (greenhouse phenomenon- ozone layer depletion-global warming - greenhouse gases, etc.); the incompetency to relate behaviours-practices-actions to the problem (causes-effect) as well as the perception that CC is neither serious nor urgent nor an issue “close” to them (geographically and time-wise).

The majority of the respondents ranked high the four key thematic areas related to CC- “what is”, “causes”, “impacts”, “measures/actions” and ranked as higher importance the part “actions and measures about it” (“what can we do”). So, the need to develop knowledge on relevant phenomena and their negative impact in the short and medium/longer term followed by developing understanding of the necessary and available mitigation and adaptation approaches including individual and collective responsible action seem to be a priority of a new learning resource on CC. In this line, the connections between climate change and everyday life were valorised as the most important feature of an effective learning material on CC; as well as the enhancement of learners of self-efficacy and responsibility. Lastly the educators pinpointed the variety of useful media formats (images, texts, infographics, videos, etc.) and learning activities as an important component of an effective learning material on CC.

ANNEX I. Lists of diagrammes

No	Diagramme	Page
1	Gender	7
2	Country	7
3	Job title	7
4	Expressed confidence in teaching about climate change	8
5	Approaches working best in engaging students on environmental topics with a focus on climate change	9
6	Thematic areas of a new learning material on climate change	14
7	Important features of an effective learning material on climate change	15

ANNEX II. The research tool

PERSONAL INFORMATION

In this section we would like to know a bit more about your background and your interest in education.

Gender*

1. Male
2. Female
3. Other
4. I prefer not to say

Country (the survey concerns only these countries)*

1. Cyprus
2. Greece
3. France
4. Italy

Job title *

1. Primary school teacher (students age: 6-12 years old)
2. Middle school teacher (students age: 12-15 years old)
3. High-school teacher (students age: 15-18 years old)
4. Head of school
5. Tertiary education staff (Universities, etc.)
6. Support teaching staff
7. Non-formal educator (NGOs, Museums, Parks, Natural Sites, etc.)
8. Other

If you chose "other" in the previous question, please explain here.

In general, how confident do you feel in teaching Climate Change related topics to your target groups? Choose from 1: for least confident to 4 very much confident*

QUESTIONS ON EXPERIENCE

In this section, we ask you about teaching resources, approaches and gaps you have identified regarding Climate Change topics, based on your own experience.

Which approaches work best in engaging students in environmental topics with a focus on climate change? Select up to seven. *

Art

Augmented Reality

Virtual reality

Brainstorming/discussions in groups

Citizen Science

Discussing with experts

Experiments; Hands-on activities

Applying interdisciplinary / transdisciplinary approach

Outdoor activities, field visits and work

Using multimedia

Running media campaigns; Using of social media

Role plays, debates, ethical dilemmas, future scenarios

Project-Based Learning

STEM (Science, Technology, Engineering, Mathematics)

Other...

Please provide **educational resources on Climate Change**: students' materials, teachers' manuals, videos, etc. that you have used and you recommend. Please note their titles and web-links, if any.*

According to your experience, what are the **gaps in the available learning resources** for climate change? *

Based on your experience, what are your **student's misunderstandings & misconceptions** in relation to climate change? *

QUESTIONS ON NEEDS / PREFERENCES

In this section, we ask you about your needs and preferences for a potential new learning material on Climate Change. What topics should it tackle and how?

In your opinion, which **thematic areas should be included in a new learning material** on climate change? Rank the topics from 1 (least important) to 4 (most important). *

What is climate and what is climate change? the greenhouse phenomenon; distinction between climate and weather; tracing climate change in our everyday lives.

What are the causes of climate change (GHG emissions by productive sector -food, energy, travel and transport, clothes, etc.; current models of consumption and production; etc.).

What are the impacts of climate change? (extreme events & natural disasters; melting of ice/glaciers, ocean currents, water scarcity, soil erosion, biodiversity loss, intrusion of alien species, agricultural changes/food safety, socioeconomic and health problems, urban heat islands, poverty, environmental refugees, etc.)

What can we do about climate change? Adaptation strategies to cope with the changes that are already underway & mitigation measures to reduce greenhouse gas emissions through applied examples/ case studies (environmental protection/protection of biodiversity, sustainable development, renewable energies, integrated water management; global citizenship; institutions/legislation; our role as citizens and students, low carbon lifestyles)

If there any other topics not listed in the previous question, please add them here.

Based on your experience, what would be **the most important features of an effective learning material** on climate change? Select up to six.*

Establishing the connection between climate change and everyday life

Enhancing self-efficacy and responsibility

Being In line with curricula context

Including various learning activities (for different learning styles)

Integrating the local community dimension

Including story telling / lived experiences testimonies

Including experiential / hands-on approaches in balance with new technologies (ICTs)

Providing clear, accurate, comprehensive knowledge of climate change aspects in attractive way

Having student-friendly language (avoid terminology jargon)

Up-to-date information through practical real-world examples (case studies)

Using a variety of media formats (images, texts, infographics, videos, etc.)

Keeping the narrative hopeful (avoid only gloom and doom examples) connecting to solutions

Other...

ANNEX III. Inventory of Educational Resources

The resources documented by the survey respondents are presented in the following table.

	TITLE	WEBSITE	LANGUAGE
1	Article, "Ocean Literacy in the Marine Protected Area of "Tavolara- Punta Coda Cavallo" Martina Gaglioti	https://aquadocs.org/handle/1834/42766	EN
2	Climate Action Network Europe	https://caneurope.org	EN & more
3	Learn English kids on environmental topics by British Council	https://learnenglishkids.britishcouncil.org/listen-watch/short-stories/planet-earth	EN
4	"A TRIP IN THE RAINFOREST" EXPRESS PUBLISHING		EN
5	Climate change kit for Schools Erasmus+ Project "Click4schools" (lessons plans)	https://www.clickforschools.eu/index.php/did/	EN, GR, FR
6	Wastes in our Lives, MIO-ECSDE / MEDIES	https://medies.net/waste-in-our-life/	EN, GR
7	CO2 online calculator	https://www.treedom.net/it/co2	EN, IT
8	An Inconvenient Truth movie (2006)	https://www.imdb.com/video/vi2897608985/?playlistId=tt0497116&ref=tt_ov_vi	EN
9	Climate change kit activities	https://www.changeclimatechange.it	IT
10	Climate Time Machine Series of interactive visualizations showing how some of Earth's key climate indicators are changing over time.	https://climate.nasa.gov/interactives/climate-time-machine	EN
11	Risorse didattiche per la scuola primaria	www.twinkl.it	IT
12	Video clips on CC for young kids	https://youtu.be/Hkk9zKiR1_o?si=vNmHdmayDiDY889s , https://youtu.be/x8-T09AWmH4?si=cRCgr6Q4SBq9kLHk	IT
13	SUBJECT TO CLIMATE Database of free climate resources for all K-12 subjects.	https://subjecttoclimate.org	EN

14	COOL: Australian database supporting primary and secondary teachers with open education resources on CC like lesson plans, worksheets	https://cool.org/	EN
15	CLIMATE CHANGE COMMUNICATION RESEARCH HUB/Climate Classrooms	https://www.monash.edu/mcccrh/projects/climate-classrooms	EN
16	Climate 4 Classrooms , based on scientific data and projections, provides a curriculum linked teaching resources about climate change for pupils.	https://www.rgs.org/schools/resources-for-schools/climate-4-classrooms	EN
17	E-Learn courses of UNCCC (for adults)	https://unccelearn.org/courses	EN
18	Climate Detectives open free lesson plans, activities and data for pupils	https://climatedetectives.esa.int/resources/	EN
19	A series of videos from the NASA Utube channel on CC	https://www.youtube.com/@nasaclimatechange	EN
20	Climatekids by Nasa, infographics, activities, games	https://climatekids.nasa.gov/menu/atmosphere/	EN
21	STEM Activities on CC by NASA	https://www.jpl.nasa.gov/edu/teach/tag/search/Climate+Change	EN
22	Osservatorio CittàClima:	https://cittaclima.it, https://www.changeclimatechange.it/	IT
23	Green World Project	https://thegreenworldproject.com/	EN
24	Google Earth "Warming Planet" interactive section	https://earth.app.goo.gl/Rz1ms5 ; https://earth.app.goo.gl/ynxCJS	EN
25	Video clips by UNEP	https://www.youtube.com/watch?v=LwRTw_7NNJs	EN
26	European Union and Climate Change	https://climate.ec.europa.eu/climate-change/causes-climate-change_el https://climate.ec.europa.eu/climate-change/consequences-climate-change_el	EN & more
27	ΨΗΦΙΑΚΟ ΣΧΟΛΕΙΟ ΠΕΡΙΒΑΛΛΟΝ - ΚΛΙΜΑΤΙΚΗ ΑΛΛΑΓΗ - ΑΕΙΦΟΡΙΑ, Video clips plus a	https://elearning.schools.ac.cy/index.php/el/meno-spiti-ucy/category/16-klimatiki-allagi	GR
28	Webinar for Cypriot teachers for Climate Change	https://elearning.schools.ac.cy/index.php/el/meno-spiti-ucy/video/765-safeinternet-6?fbclid=IwAR1ePriAz5kDNbhFtLk3x6FHHM7tk4xt_bVlbwPdgoQjCsI4UyM1PCv5G6I	GR

29	The Climate Change Makers interactive platform by the Worlds' Largest Lesson	https://climatechangemakers.worldslargestlesson.globalgoals.org/	EN
30	WWF Hellas Floor game on CC	https://www.contentarchive.wwf.gr/images/pdfs/pe/EpidapedioKanones.pdf	GR
31	WWF Hellas What can you do? Play and Learn	https://www.wwf.gr/ti_mporeis_na_kaneis/paikse_kai_mathe/	GR
32	WWF Hellas Climate Change and energy	https://www.wwf.gr/shmeio_gnosis/perivallontiki_ekpaideush/klimatiki_allagi_kai_energeia/	GR
33	WWF Hellas Travel to future city	https://www.contentarchive.wwf.gr/images/pdfs/pe/FrigoPerigrafi.pdf	GR
34	ΣΕΟΣ-Γωνιά του Δασκάλου	https://seos-project.eu/world-of-images/world-of-images-ws-list.gr.html	GR
35	Information about CC by the Cyprus Institute	https://www.cyi.ac.cy/index.php/ewrc/ewrc-research-projects/climate-change-and-impact.html	EN
37	Role-playing game "VADDI"	https://www.isprambiente.gov.it/it/attivita/formeducambiente/educazione-ambientale/progetti-ed-iniziativa-1/kit-va.d.di-1/copy_of_kit-va.d.di	IT
37	Video "Nami e Fibi, un mare da salvare"	https://www.youtube.com/watch?v=z--woH4dZOM	IT
38	Lesson Plans & Interactive Worksheets by Our Climate Our Future	https://ourclimateourfuture.org/resources/	EN
39	National Geographic videos	https://www.youtube.com/watch?v=G4H1N_yXBiA , https://www.wwf.org.uk/Richard-Attenborough's-videos/National-Geographic	EN
40	National Geographic Article	https://www.nationalgeographic.com/environment/article/global-warming-effects	EN
41	Board game on CC in Italian	https://learning-corner.learning.europa.eu/learning-materials/climate-action-board-game_it	EN
42	Video on CC prepared by a Secondary Greek School	https://www.youtube.com/watch?v=tPMad2A7zAA&list=PL0ULBW54ZzQcb077nEGbx5Ci52yQVoapU&index=11&t=38s	GR
43	European Climate Pact	https://climate-pact.europa.eu/about/climate-change_el	EN & more

44	Interactive ppts on CC topics for Cypriot schools	https://sway.office.com/D2wwP4ILJsCiPb_h8?ref=Link https://sway.office.com/RPL7xlmYaeHKiB3F?ref=Link https://sway.office.com/gTPsYd5cBSHCRd_vj?ref=Link	GR
45	UNESCO webpage on Culture and Climate Change	https://www.unesco.org/en/climate-change/culture?hub=761	EN
46	Sustainability Yes! Webplatform	https://www.sustainability-yes.ch/en/	EN
47	School Experiments and Activities by the Earth Sciences Teachers Association	https://www.earthlearningidea.com/English/Resources_and_Environment.html#climatechange	EN
48	UNESCO Climate Change Ready: A guide for Schools	https://unesdoc.unesco.org/ark:/48223/pf0000246740	EN, FR
49	Interactive web with a lot of video clips	https://planetnutshell.com/climate-science/	EN
50	Educational activities about CC (GR) (KPE Kordeliou)	https://kpekordeliou.wixsite.com/gamesclimatechange , http://www.kpe-thess.gr/download/ekdoseis/ekpaideytiko_yliko/Paixnidia_Klimatiki_Allagi.pdf	GR
51	The climate in our hands Lessons Plans	https://www.oce.global/en/resources/class-activities/climate-our-hands-climate-change-and-land	EN, FR, ES
52	Paper: "Teaching, Learning, and Climate Change: Anticipated Impacts and Mitigation Strategies for Educators" 2023	https://link.springer.com/article/10.1007/s42822-023-00129-2	EN
53	Paper: "Identifying gaps in climate change education - a case study in Austrian schools" 2023	https://www.tandfonline.com/doi/full/10.1080/10382046.2023.2214042	EN
54	Activity on Mitigation and Adaptation (KPE Kastorias);	http://kpe-kastor-old.kas.sch.gr/climate_change_mitigation_adaptation_activity.pdf	GR
55	Video on impacts (KPE Kastorias)	http://kpe-kastor-old.kas.sch.gr/climate_change_consequences.mp4	GR
56	Video on CC and biodiversity (KPE Kastorias)	http://kpe-kastor-old.kas.sch.gr/climate_change_and_biodiversity/index.html	GR
57	The Greta Project Erasmus project (platform with activities for schools)	https://www.gretaproject.org/el/educational-material	EN, GR, IT

58	Οδηγός Εκπαιδευτικών και Εκπαιδευτικό Υλικό για την Προσαρμογή στην Κλιματική Αλλαγή	https://www.adaptivegreece.gr	EN, GR
59	Formation Inventons Nos Vies Bas Carbone (INVBC)	https://www.nosviesbas carbone.org/	FR
60	Climate Fresk 3 hours workshop	https://climatefresk.org/world/	EN, FR
61	Fresque de la Biodiversité	https://fresquedelabiodiversite.org/	FR
62	ClimaThau (game developed by CPIE BT), Littoral stories (role plays-developed with the program life+ LAG Nature),	https://www.cpiebassindethau.fr/wp-content/uploads/2021/05/Evenements-CPIE-BT_-mai-juin-2021.pdf	FR
63	Risques (role pays developpes with the programme Life ADAPTO),	https://www.iodde.org/file/152736/Plaque-de-presente-Adapto.pdf	FR
64	LITTOSWAG (game developed by INRAE)		
65	EU videos 'Our Ocean', experimental tools to experiment different reaction with ice, water, acidity, ...		
66	Teachers training toolkit on ECC (2000)	https://drive.google.com/drive/folders/1ceFlqUwhZI-Klkupnf0avQ5ztKWetj-m	GR
67	Changement climatique, relevons le défi	https://www.cicodes.org/IMG/pdf/le_changement_climatique_vf.pdf	FR
68	Sensibilisation aux changements climatiques	https://reseauactionclimat.org/publications/panneaux-exposition-sensibilisation-changements-climatiques/	FR
69	Des outils pour sensibiliser sur les dérèglements climatiques et ses conséquences à travers le monde	http://www.recidev.org/IMG/pdf/guide_pedagogique_ssi_2015_bd.compressed.pdf	FR
70	“Ma planète à chaud” Guide pédagogique sur les outils de sensibilisation au dérèglement climatique et à la solidarité internationale	https://www.comprendrepouragir.org/pronduit/ma-planete-a-chaud/	FR
71	Utube Channel of CistudeNature with videos on CC	https://www.youtube.com/@CistudeNatureLeHaillan/search?query=changement%20climatique	EN
72	UNEP's video for kids on CC	https://www.youtube.com/watch?v=PqxMzKLYrZ4	EN
73	UNEP webpage on CC	https://www.un.org/en/climatechange/what-is-climate-change	EN
74	Le programme les Jeunes face aux changements climatiques développé		FR

	par l'URCPIE PACA		
75	Interactive simulations for teachers on CC	https://phet.colorado.edu/el/simulations/greenhouse-effect/about https://phet.colorado.edu/sims/html/energy-forms-and-changes/latest/energy-forms-and-changes_all.html?locale=el	GR, EN
76	The climate breakdown	https://resources4rethinking.ca/media/Climate%20Breakdown.pdf	EN
77	PLAY AND LEARN ABOUT NON-CONVENTIONAL WATER RESOURCES (NCWRS) / MEDIAS	https://ncwr-edu.net/	EN
78	NEROUPOLI, THE GREEK WATER-CITY	http://water-polis.gr/	GR