

Pedagogical guide EPRAL 2016-2019

Climate change in different areas of European Union



Hello, I am the mascot of EPRAL! I am on all the videos where I will present to you all the questions about climate change.

I. Presentation of the project :

EPRAL (Efficace Pedagogical Resource for an Active Learning) is an ERASMUS PLUS project funded by the European Commission.

It was because teachers lacked local educational resources on this theme, in order to teach students, that this digital teaching resource for teachers was created.

The end of 2015 was strongly marked by COP 21 and the theme of global warming. All the countries of the European Union that have participated in the EPRAL project are affected by this phenomenon. The need to raise students' awareness seemed obvious. However, teachers found it difficult to propose the study of this topic in class, because they did not have educational tools, adapted to the local specificities, helping them to implement sessions and actively involving the pupils by proposing them research situations that make them want to learn.

This educational resource aims to:

- to motivate students by allowing them to participate actively in the construction of their learning in science and language proficiency
- provide teachers with tools to teach science differently, to motivate learners
- to raise awareness of the impacts, at European level, of global warming,
- to enable students to integrate the notion of citizenship,
- to arouse pupils' interest in foreign languages,
- promote the use of information and communication technologies in teaching and learning.

We wanted to allow students to participate actively in the production of a digital teaching tool that would help teachers to teach in an investigation process. This approach, first put in place in the tough neighborhoods of Chicago, was proposed by Georges Charpak, Nobel Prize in Physics in 1992, to compensate for non-teaching of science at school. It favors the interaction between action and reflection, it develops in students the spirit of initiative, critical thinking, curiosity, creativity. Students feel empowered and thus more involved in the tasks. As Rolland Viau (1996) argues, "a research project or a team project are activities that are more likely to motivate students than lectures". This is exactly the spirit of the investigation process.

The fact that this project is carried out at European level was a necessity, since all the partner schools are located in different parts of the planet, the consequences of global warming are therefore not the same. The choice of partners was therefore made strategically. Moreover, working in collaboration with students from elsewhere, here in the European Union, has irreparably spawned the birth of a sense of belonging to the European Union, pointing out the responsibility of each and the need for Act together. Being isolated on both sides of the planet does not mean we have to live on our own. Students will have the opportunity to "participate in the democratic life of Europe" as underlined by the Lisbon Treaty.

II. Presentation of partners schools:

This educational resource is the result of three years of collaboration between different schools of the European Union:

- Raphaël CIPOLIN school (the coordinator), located in the city of Pointe-à-Pitre, Guadeloupe
- The CIEP Gloria Fuertes, located in the city Las dos hermanas, in Spain
- The Karmiczka School, located in Lublin, Poland
- ZSP School nr 2 located in Katowice, Poland
- St Sofronii School, located in Vratza, Bulgaria,
- The Compromise Institute of Marcellinara, Italy

which have received European Commission funding under an Erasmus Plus project.

The Raphael Cipolin public elementary school is located in Guadeloupe. It is located in the southeastern part of the city of Pointe-à-Pitre. It is composed of 102 students of various origins (Haiti, Guadeloupe, Dominican Republic, Dominica)

It is classified in REP + (Priority Reinforced Education Network). Indeed, 90% of the students attending it come from disadvantaged socio-professional categories, and 8 of them benefit from the support of the PRE (Educational Success Project) of the City of Pointe-à-Pitre Policy. Students are rather far from school requirements, they lack motivation, they have little access to ICT.

In addition, students at this school are direct witnesses to the effects of global warming. Effectively,

- The Raphaël Cipolin school is located two kilometers from the Pointe-à-Pitre bay where the water level continues to rise,
- the contribution of a Guadeloupe to climate change is of the order of 7 tonnes of CO₂ emitted per inhabitant per year
- the beaches are victims of erosion
- the number of tropical storms and hurricanes increased from an average of 8.5% per year over the 1982/85 period to an average of 15 per year over the period 1995/2012
- the temperature of surface marine waters has exceeded 29 ° C in 6 months
- coral bleaching has killed nearly 45% of the colonies
- average temperatures increased by around 1.2 ° C over the period 1951-2011.

The Primary School "St Sofronii Vrachanski" is an out-of-school school. The school wants to involve young children in partnership activities, such as Erasmus Plus. It welcomes around 407 students aged 7 to 11, from either fairly homogeneous socio-cultural backgrounds or from disadvantaged families.

The school is located in the city of Vratza, it is a region of northwestern Bulgaria that is particularly affected by global warming.

During the last 4 years,

- the region has suffered significant environmental problems

- the temperature differences have increased.
- winter has become an icy winter.
- nature has changed and plants are developing only slightly
- in summer, due to global warming, floods are present throughout the northern Balkan region. This situation has a negative impact on the working life and income of the population.

Karczmiska School is located in a large village in the rural area of Eastern Poland. The village was founded in medieval times, but the school was built fifteen years ago. It is a group of schools consisting of a kindergarten of three primary and secondary schools (this project is intended for primary school students). There are 80 teachers and 600 students. The area in which the group is located is quite poor - the unemployment rate is high and students often live with only one parent (because one of the parents works abroad). The teaching team would like students to be prepared for the challenges of the 21st century and, in particular, to combat the consequences of global warming:

- flooding
- hurricanes and tornadoes
- winters without snow
- hail in summer

The school Przedszkolny ZSP nr 2 is located in one of the oldest districts of Katowice - Piotrowice. She receives children from families of all generations, who represent a significant part of their school community.

Piotrowice is also an evolving neighborhood, where new developments are being built (consisting of detached houses, terraced houses and modern buildings). Their residents choose their district because of its proximity to the forest complex, they are in the city center, the main industrial center of Europe.

The fight against global warming concerns:

- plants, forests and crops that are in poor condition due to drought
- hurricanes, hail and storms
- forest fires
- rising temperatures that bring new species of insects.

IC "DON G. Maraziti" Marcellinara (CZ) is located in southern Italy, in Calabria. It comprises three different types of levels: preschool (children aged 3-5), primary (6-10) and high school (first level 11-13). Their school is committed to teaching students ethical values and developing social and civic skills. Students come from very heterogeneous backgrounds. They come from very different socio-cultural environments: Morocco, Tunisia, Italy ... and there are economic disparities between them. Their region has great environmental problems. The main consequences of global warming are: - an increased risk of floods - frequent fires destroying our Mediterranean maquis. - The process of desertification, which causes a change in the humidity of the air - coastal erosion due to sea level rise are other important aspects of climate change - In Calabria, with regard to the rise in temperature, the data collected between 2002 and 2016 indicate an increase of 1 ° C compared to the years 1971-2000. The Colegio Publico Gloria Fuertes School is located in a large district of a village called Dos Hermanas, very close to Seville. Most people work in Seville so the school is well served: bus, metro, car. The families who attend school are immigrants from different countries. In this school, there are 430

students in 18 classrooms. One of them is a specific class in which 6 students have a high level of disability. In ordinary classes, you can find some students with other disabilities such as Down syndrome, hyperactivity, language disorders ... Many students experience social, cultural and economic difficulties (single-parent families ...).

Due to global warming, the region is experiencing

- a resurgence of forest fires caused by global warming.
- temperature rises
- a very dry climate
- the contamination of the air due to a large number of car traffic
- a decrease in drinking water

There is an urgent need to educate students about global warming and its consequences for the environment, to instill the right attitudes to limit the damage and to ensure that these good attitudes are reflected in the families through their involvement in the project.

III. Survey :

Before beginning the experiment, each school passed this survey to the students and to the school's educational community.

SURVEY ABOUT CLIMATE CHANGE OR GLOBAL WARMING

1.- Have you heard about climate change or global warming?

- No
- Yes, by Internet /TV
- Yes, at the school
- Yes, by newspapers, magazines and books
- Yes, in others situations

2.- Answer True (T) or False (F)

- Climate change is the same as the greenhouse effect
- Climate change is caused by an increased greenhouse effect
- The greenhouse effect is caused by climate change
- Climate change is due to the reduction of the ozone layer

3.- Which of the following are fossil fuels?

- Oil
- Coal
- Natural gases
- All of the above

4.- What happens when we burn fossil fuels?

- Nothing
- A huge fire
- Oxygen is consumed and carbon dioxide is released into the atmosphere
- Carbon dioxide is consumed and oxygen is released in the air.

5.- Which it is the main greenhouse gas?

- Oxygen
- Carbon dioxide
- Ozone
- Methane

6.- What do you think is the most ideal (average) temperature for the Earth?

- 5 °C
- 0 °C

- 15 °C
- 30 °C

7.- Which country currently emits the most greenhouse gases?

- China
- United States
- Germany
- India

8.- Which of the following lightbulbs uses the least energy, and therefore results in fewer greenhouse gas emissions?

- Incandescent
- Compact fluorescent
- Halogen
- LED

9.- Select the false answer. The result of the greenhouse effect is:

- The raise of the water level in seas and oceans.
- Numerous earthquakes and the formation of tsunamis.
- The raise of the average temperature of our planet.
- The melting of glaciers in the Arctic and Antarctic.

10.- And what about rain? Mark the correct option.

- In many places it is increasing but becoming more torrential. And others are declining.
- In general it is declining across the Earth.
- No relationship between global warming and rain

11. Answer True (T) or False (F)

- Energy production from fossil fuels does not greatly influence in the global warming
- The production of renewable, solar or wind energy, helps to reduce the global warming.
- The use of electric power is not bad for the environment because it does not emit gases into the atmosphere
- The existence trees favors the reduction of carbon dioxide in the atmosphere through photosynthesis

12.- Have you ever done anything consciously to reduce the effects of climate change?

- No
- Yes, for example:

Thank you very much

Results before and after the experiment available on <http://mybooks43.webnode.com>

IV. Presentation of sessions :

How to access the videos:

- 1) You have an Internet connection, just go to <http://mybooks43.webnode.com>
- 2) You do not have an Internet connection, the resource is available on tablets, you can ask that they be lent to you.

To do this, simply contact the coordinator of one of the partner schools:

Ecole Raphaël Cipolin (Guadeloupe) : nicbilduh@yahoo.fr

Ecole St Sofronii (Bulgarie) : svet321@abv.bg

Ecole Gloria Fuertes (Espagne) : colegiopublicogloriafuertes@gmail.com

Ecole IC Don Mariziti (Italie) : giusipaonessa@gmail.com

Ecole de Przednolsky (Pologne) : dormon@interia.pl

Ecole de Katowice (Pologne) : monika_rom@wp.pl

The videos are subtitled in English and can be translated into the language of the country studying the resource (video example 3 of the Guadeloupe).

Session 1

Objective: Understand what is called global warming

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
Watching the movie "What is global warming?" Until "COP21, what is it?"	<p>The teacher asks the question: "What do you think is called global warming?"</p> <p>Students make assumptions, which are noted in the table as sentences or keywords..</p>	Students leave for investigation (Internet search, intervention of Météo France for example, science manuals ...). To complete their research, they will view the associated video. They work in groups of 3 or 4	Each group reports its results. These are discussed and validated or invalidated. The video that provides the answer is viewed.	The professor brings the following keywords: greenhouse effect, CO ₂ (carbon dioxide), atmosphere

Evaluations : see on the site <http://mybooks43.webnode.com>

Subsidiary Session

Objective: To determine the characteristics of the climate in Guadeloupe

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
The teacher asks students to call back the previous session.	<p>The professor asks the question: "What are the characteristics of the climate of Guadeloupe?"</p> <p>Students make assumptions, which are noted in the table as sentences or keywords.</p>	Students construct an ombrothermal diagram and determine the climate of the region using the temperature and rainfall of Guadeloupe in 2016 as well as the key to determining the main types of climate. They work in groups of 3 or 4.	Each group reports its results. These are discussed and validated or invalidated.	The answer is provided by a member of Meteo France.

Evaluations : see on the site <http://mybooks43.webnode.com>

Séance 2

Objective: To identify the repercussions of global warming on the environment in Guadeloupe, Bulgaria, Poland, Italy and Spain

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
The teacher asks students to recall the previous session.	<p>The professor asks the question: "What are the repercussions of global warming on the environment in Guadeloupe, Bulgaria, Poland, Italy and Spain?"</p> <p>Students are divided into groups of 3 or 4. Each group will study the question for a given country. To allow exchanges during the pooling phase, at least two groups will study the issue for the same country. The groups make assumptions, which are noted in the form of sentences, on an A3 sheet.</p>	Each group views the video of the country and answers the question.	Each group shares its results. These are discussed and validated or invalidated. Groups that have worked on the same country interact, others can intervene to ask for clarification. Each video is viewed to provide the final answers.	The teacher brings the keywords: forest fires, floods, bad weather, hurricanes, coral reefs

Evaluations : see on the site <http://mybooks43.webnode.com>

Session 3

Objective: To identify the consequences of global warming on forests and mountains in his country (in Guadeloupe, Bulgaria, Poland, Italy and Spain).

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
<p>The teacher asks students to recall the previous session.</p>	<p>The professor asks the question: "What are the consequences of global warming on forests and mountains?" (in the country where the school is located)</p> <p>Students make assumptions, which are noted in the table as sentences or keywords.</p>	<p>Students take a field trip in the forest, mangrove and / or mountain and write their response. They will be guided by an outside worker from an association working for the protection of forests and mountains and who will answer their questions. If this is not possible, students will watch the video of the country and answer the question. They work in groups of 3 or 4.</p>	<p>Each group reports its results. These are discussed and validated or invalidated. The answer is provided by viewing the corresponding video.</p>	<p>The teacher brings the keywords: forest fires, mangrove, snowmelt depending on the country studied</p>

Evaluations : see on the site <http://mybooks43.webnode.com>

Session 3b: Identify the consequences of global warming on forests and mountains in partner countries (Guadeloupe, Bulgaria, Poland, Italy and Spain).

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
<p>The teacher asks students to recall the previous session.</p>	<p>The professor asks the question: "What are the consequences of global warming on forests and mountains in Guadeloupe, Bulgaria, Poland, Italy and Spain?" (excluding the country where you are)</p> <p>Students are divided into groups of 3 or 4. Each group will study the question for a given country. To allow exchanges during the pooling phase, at least two groups will study the issue for the same country. The groups make assumptions, which are noted in the form of sentences, on an A3 sheet.</p>	<p>Each group views the video of the country and answers the question.</p>	<p>Each group shares its results. These are discussed and validated or invalidated. Groups that have worked on the same country interact, others can intervene to ask for clarification. Each video is viewed to provide the final answers</p>	<p>The teacher brings the keywords: forest fires, mangrove, snowmelt</p>

Evaluations : see on the site <http://mybooks43.webnode.com>

Session 4

*Objective: To identify the consequences of global warming on the sea, oceans, lakes and rivers **in his country** (in Guadeloupe, Bulgaria, Poland, Italy and Spain).*

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
<p>The teacher asks students to recall the previous session.</p>	<p>The professor asks the question: "What are the consequences of global warming on the sea, oceans, lakes, rivers (depending on the country where you are and what you want to study)?"</p> <p>Students make assumptions, which are noted in the table as sentences or keywords.</p>	<p>Students take a field trip to the sea or lake or river and write their response. They will be guided by an external participant of an association that works for the protection of the seas, oceans and lakes, and who will answer their questions. If this is not possible, students will watch the video of the country and answer the question. They work in groups of 3 or 4.</p>	<p>Each group reports its results. These are discussed and validated or invalidated.</p>	<p>The professor brings the key words: coral reefs, rising waters, floods, depending on the country in which the issue is studied.</p>

Evaluations : see on the site <http://mybooks43.webnode.com>

Session 4b : To identify the consequences of global warming on the sea, oceans, lakes and rivers **in the partner countries** (in Guadeloupe, Bulgaria, Poland, Italy and Spain).

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
<p>The teacher asks students to recall the previous session.</p>	<p>The professor asks the question: "What are the consequences of global warming on the sea, oceans, lakes, rivers in Guadeloupe, Bulgaria, Poland, Italy and Spain?" (excluding the country where you are)</p> <p>Students are divided into groups of 3 or 4. Each group will study the question for a given country. To allow exchanges during the pooling phase, at least two groups will study the issue for the same country. The groups make assumptions, which are noted in the form of sentences, on an A3 sheet.</p>	<p>Each group views the video of the country and answers the question.</p>	<p>Each group shares its results. These are discussed and validated or invalidated. Groups that have worked on the same country interact, others can intervene to ask for clarification. Each video is viewed to provide the final answers.</p>	<p>The professor brings the following keywords: coral reefs, rising waters, floods</p>

Evaluations : see on the site <http://mybooks43.webnode.com>

Séance 5 :

Objective: To identify measures implemented at the local level, to fight against global warming.

Phase 1 Starting situation	Phase 2 Question followed by hypothesis emission	Phase 3 Research	Phase 4 Pooling	Phase 5 Institutionalization
<p>The teacher asks students to recall the previous session.</p>	<p>The professor asks the question: "What can we do to fight against global warming?"</p> <p>Students are divided into groups of 3 or 4. Each group will study the question. To allow exchanges during the pooling phase, at least two groups will study the issue for the same country. The groups make assumptions, which are noted in the form of sentences, on an A3 sheet.</p>	<p>Each group watches the video and answers the question.</p>	<p>Each group shares its results. These are discussed and validated or invalidated. Each video is viewed to provide the final answers.</p>	<p>The professor brings the following keywords: renewable energies, solar panels</p>

Evaluations: see on the site <http://mybooks43.webnode.com>

V. Construction of mini-greenhouses and mini weather stations

In each partner school, students built mini-greenhouses and mini weather stations. The mini-greenhouses were used to better understand the concept of greenhouse effect. The mini weather stations made it possible to grasp the role of the various measuring instruments.

See the videos on the site : <http://mybooks43.webnode.com>

VI. Thanks :

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