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Progetto Erasmus+ KA1

a.s. 2021/2022

Unità di apprendimento CLIL

CLIMATE CHANGE

Subject: Chemistry

Prof.ssa Angela Antonietta Gaudio

CLASS: III A BIA

PERIOD: November 2021 – May 2022

TIME: 5 hours

LOCATION: ITC Lab; class; home

Months	Activities	Hours
Nov/Dec	Introduction <ul style="list-style-type: none">• Video YouTube (https://www.youtube.com/watch?v=G4H1N_yXBiA)• Kahoot!• Vocabulary (e-Book Creator)	3
	Final test	1
Jan/May	<u>Subject</u> : Global Warming <ul style="list-style-type: none">• Conversation, written exercises, speaking, power-point, word file, pair work, cooperative learning	8
	Final test	1
All months	Flipped/Student learning resources at home	2

Goals

At the end of this unit students will be able to:

- talk about the weather and climate change
- define the main causes and effects of climate change and global warming
- find out what ordinary people can do to help the environment

Low order thinking skills (LOTS)

- Knowing and defining the greenhouse effect
- Identifying different resources
- Classifying problems about climate change
- Listing and describing sustainable resources

High order thinking skills (HOTS)

- Discussing about the advantages of sustainable resources
- Comparing sustainable actions in different countries
- Discussing about the Kyoto Protocol
- Discussing about climate change protests and their advantages and disadvantages

Knowledge

- Climate change: causes and effects
- Global warming
- The Kyoto Protocol
- Actions to help the environment
- Vocabulary related to the topic of climate change (for example: Earth – climate – sky - atmosphere – greenhouse – sustainability - carbon emissions - ozone – methane – hydrogen – environment - water cycle – pollution –)
- Revision of the English grammar at level B1 of the CEFR (for example present simple and continuous, past simple and continuous, present perfect, present continuous as future, to be going to, future simple, first and second conditional, can/could, should, present simple passive, past simple passive)

Pre-requisites

Chemistry:

- Knowledge of the atmosphere
- Knowledge of carbon emissions
- Knowledge of renewable and non-renewable sources

English:

- Knowledge of the language at level B1 of the CEFR
- Writing of simple texts
- Speaking about familiar topics
- Comprehension of the main points of a standard speech

Cross – curricular links

- Biology
- Citizenship
- Mathematics
- English

Resources

- YouTube
- Zanichelli resources
- BBC Magazines
- Infographics

Tools

- Office 365 (Teams; Onedrive; Outlook; Forms)
- Search engine
- IWB

Final products

- Power-point
- Word file
- E-Book
- Video

Actions

Vocabulary learning

Students learn some words they will hear in a video about climate change.

The teacher introduces a simple vocabulary (Earth – Climate - Sky – Atmosphere, ...) using easy-to-understand definitions, engaging activities and repeated exposure. The goal of this teaching strategy isn't just to increase students' vocabulary. It's to make sure the words are meaningful and relevant to their lives. This strategy includes playing vocabulary games (Kahoot!), incorporating visual supports, and giving students the chance to see and use new words in real-world contexts.

It's hard for students to read and understand a text if they don't know what the words mean.

A solid vocabulary boosts reading comprehension for students of all ages. The more words students know, the better they understand the text. That's why effective vocabulary teaching is so important, especially for students who learn and think differently.

To learn vocabulary, choose with your students three to five new words to study per week.

Select words students will use or see more often, or words related to what they are interested in.

Exercise: match synonyms

Find resources you and your students can use to come up with a definition for each word. The definition should be easy to understand, written in everyday language, and explain the common meaning of the word. Your definition can include pictures, videos, or other multimedia options.

Exercise: write the definition

Topic presentation and practice

Students are asked to do the following activities:

- Watch the video at this link https://www.youtube.com/watch?v=G4H1N_yXBiA, then, in pairs, discuss about the issues or problems the video deals with.
- Do the exercises below (2-10).

- 2** Read the text below and answer the questions which follow in your own words.

climate change

What is climate change?

Climate change is a change in the “average weather” that a certain region experiences. Average weather includes all the features we associate with the weather such as temperature, wind patterns and precipitation. When we

speak of climate change on a global scale, we are referring to changes in the climate of the Earth as a whole. The rate and magnitude of global climate changes over the long term have many implications for natural ecosystems. A natural system called “the greenhouse effect” regulates the temperature on earth. Human activities have the potential to disrupt the balance of this system.

- 1 What do climatologists mean by “climate change”?
- 2 How do climatologists study average weather?
- 3 Which word in the text conveys the idea that the problem is not a local one?
- 4 How do experts evaluate the impact of climate changes? Do they consider short time periods or long ones?
- 5 What system is responsible for the regulation of temperature on our planet?
- 6 What is threatening this system?

3 Surf the net and find pictures showing evidence of climate change. Then pick out the three most interesting ones and write your own comment on them before presenting them to the class.

4 In pairs, surf the web to find the link between a greenhouse and the “greenhouse effect”. You can use any search engine and any site you like but to help you here are some useful websites:

www.enfo.ie

www.askforkids.com

www.wwf.org.uk

www.greenpeace.org

www.k12s.phast.umass.edu/connections/greenhouse.html

5 Browse the web again to answer the following questions:

- 1** What kind of human activities lead to an increase in the greenhouse effect?
- 2** What is the main greenhouse gas in the atmosphere?
- 3** What is the greenhouse gas mainly produced by human activity?
- 4** How does the greenhouse effect work?

6 Read the text and fill in the table below to summarize the content of the passage.

climate change

What CAUSES it and how do we fit in?

The way we use energy is contributing to a gradual but alarming change in the world's climate. To run our cars and provide heat and electricity for our homes, businesses and industries, every day we burn fossil fuels such as petrol, diesel, oil, coal, peat and gas. This leads to a release of carbon dioxide (CO₂, the main greenhouse gas that we can link to human activities) into the atmosphere.

The agricultural, industrial and waste sectors

give rise to the release of other gases.

"Greenhouse gases" is what scientists call gases that are able to trap heat in the atmosphere.

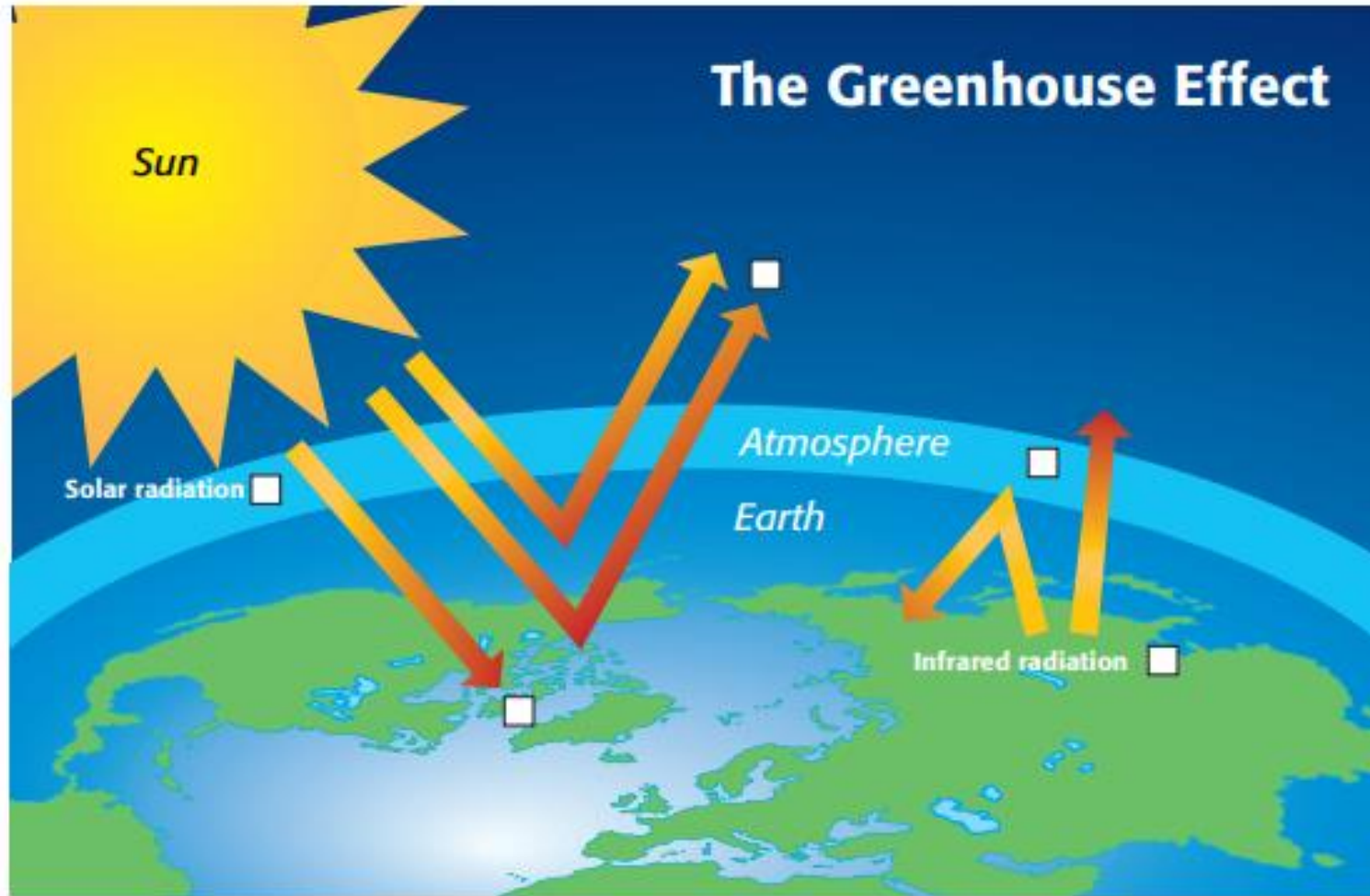
While some greenhouse gases, such as water vapour (H₂O(g)), carbon dioxide (CO₂), ozone (O₃), methane (CH₄), nitrous oxide (N₂O) and halocarbons, occur naturally in our atmosphere and prevent the Earth from cooling too much, emissions of greenhouse gases as a result of human activity are trapping extra heat in the atmosphere. The resulting rise in the Earth's temperature contributes to man-made climate change. This means extreme and unstable weather conditions, an increase in storms and floods, droughts and coastal erosion.

Greenhouse gases existing in the atmosphere	
Function of greenhouse gases existing naturally in the atmosphere	
Reasons for the increase in CO ₂ release	
Impact of the greenhouse effect	

7 In turns, explain to your partner the table you have filled in and compare yours to his or hers.

8 Look at the drawing on the next page and put the number of each of the captions below in the right place.

- 1** Infrared radiation is emitted from the Earth's surface.
- 2** Solar radiation passes through the clear atmosphere and arrives to the Earth.
- 3** Some of the infrared radiation passes through the atmosphere and some is absorbed and re-emitted in all directions by greenhouse gas molecules. The effect of this is to warm the Earth's surface and the lower atmosphere.
- 4** Most solar radiation is absorbed by the Earth's surface and warms it.
- 5** Some solar radiation is reflected by the Earth and the atmosphere.



9 Match the photos below with their captions.

- 1 Trees advancing
- 2 Penguin population decline
- 3 Florida drought
- 4 Comparison of the size of Grinnell Glacier
- 5 Early blooming in Southern England
- 6 Rapid thinning of Greenland ice sheet

(Montana): photo on the left taken in 1911, photo on the right in 2000.



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10 Talk about the effects of global warming and write a short explanation under each photo.