Sequence 4: The greenhouse effect

Fiches de synthèse mobilisée (collection en français) :

- Fiche n°10 ETLV Terminale PCM : Stockage et transfert d'énergie

Sommaire des activités ETLV :

- ACTIVITY 1: Greenhouse effect video (level 1)
- ACTIVITY 2: Greenhouse effect Quizlet (level 2)
- ACTIVITY 3: Greenhouse effect card game (level 3)

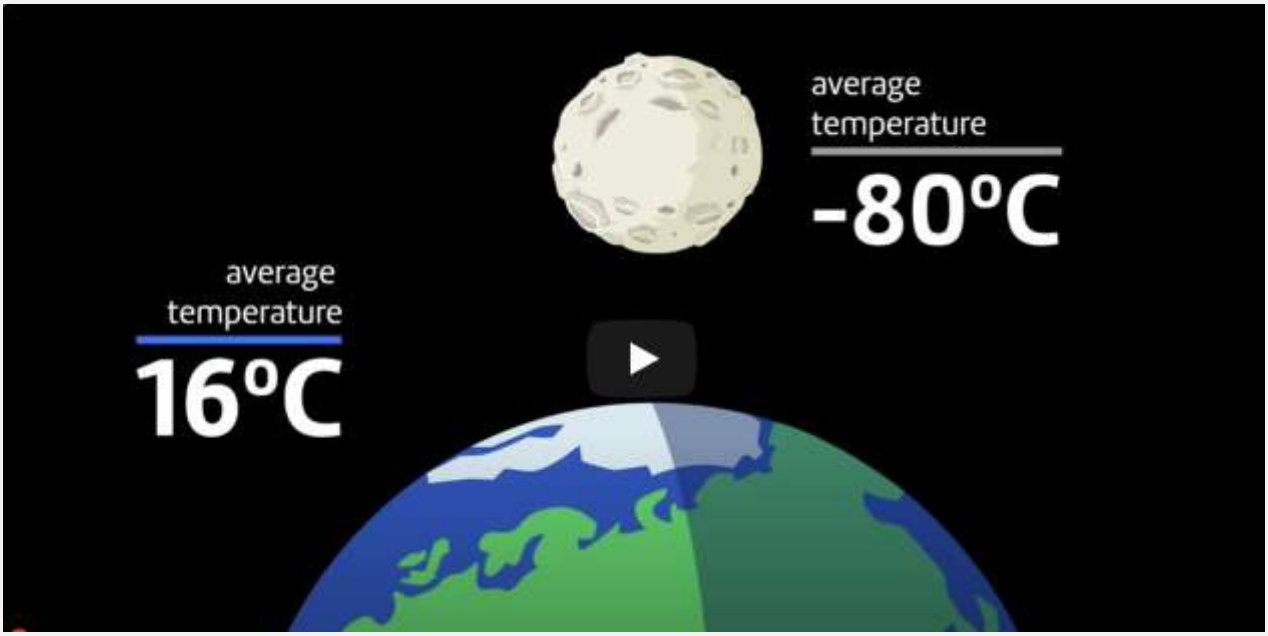
Layout of the sequence

1. Activity 1: Introduction (5 min). Watching a video and filling in the gaps on the sheet (20 min).
2. Activity 2: Quizlet (10 min).
3. Activity 3: Vocabulary recap by matching terms to definition using cards (10 min).

ACTIVITY 1: Greenhouse effect video (level 1)

Objective: Acquiring information on the greenhouse effect

DOCUMENT 1: What is the greenhouse effect and how does it work?



https://www.youtube.com/watch?v=ZlKWZmrNms4

Source: United Nations

Climate change refers to long-term shifts in temperatures and weather patterns. Human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas.

Gathering information:

Listen to the video carefully. Work as a pair and write down the keywords/expressions/definitions you heard on a piece of paper. Then write your answers on the board.

_____
_____
_____
_____
_____
_____

As a group, then summarize what you learned:

_____
_____
_____
_____
_____
_____

Going into details:

Watch to the video and find the missing words (numbered from 1 to 17):

When you see a beautiful fat full Moon, do you ever imagine what it'd be like to be up there standing on its surface?

Well for one thing hot, about 120 degrees Celsius hot but (1) days later at new Moon you'd be in the middle of the long lunar night and the temperature would have plummeted to around −170 degrees on average.

The Moon and Earth are the (2) distance from the sun, so they get the same amount of solar energy. But here the average temperature is 16 degrees Celsius while on the moon, it's more like (3). The earth has a much smaller range of temperatures too, minus 88 and plus 57 are the lowest and highest on (4).

So why the difference? The answer is the (5) It protects us from a lot of the sun's energy but also traps some that gets through. So that, for example, at night, temperatures don't fall that much especially if it's cloudy.

The energy that comes from the sun is (6) radiation in a broad range of wavelengths. The upper atmosphere absorbs most of these wavelengths. Visible light gets through, but a (7) of this reflects straight back out again mainly of clouds and ice. So only (8) of the energy heading for earth gets to warm its land and oceans.

Rock, soil and water heated by visible light, re-emit the energy as low energy (9) radiation: heat. This can pass through the oxygen and (10) in the air. But some gases the so-called greenhouse gases: carbon dioxide, methane, nitrous oxide and water vapor have molecules with structures that make them absorb the (11).

Struck by an infrared wave, they vibrate strongly before releasing the energy as a new infrared (12). This can shoot out in any direction towards space, down to Earth or out (13). But in every case, there's a good chance the wave will strike another (14) gas molecule and change course again. Although greenhouse gases typically make up less than (15). percent of the air, they're in a (16) of atmosphere six kilometres deep.
Not much escaping radiation makes it through without encountering at least one greenhouse gas molecule.

Over the entire planet, the result of this giant pinball game is, that heat stays close to the Earth's surface for longer than it otherwise would, keeping it (17).

This is the greenhouse effect, without it, Earth would have an average temperature of minus 18 degrees Celsius, which is better than the Moon but I think you'll agree not as good as what we've got.

- **Write your answers in a Google Form or below:**

1. _____	**2.** _____
3. _____	**4.** _____
5. _____	**6.** _____
7. _____	**8.** _____
9. _____	**10.** _____
11. _____	**12.** _____
13. _____	**14.** _____
15. _____	**16.** _____
17. _____	

ACTIVITY 2: Greenhouse effect, Quizlet (level 2)

Objective: Learning vocabulary to increase your knowledge on Greenhouse effect.

Learn the definition of the words using the online quiz https://quizlet.com/_3mll0d. Note down these definitions below.

The greenhouse effect:

Carbon dioxide:
A layer:
The atmosphere:
The climate:
Glass:
Warmth:
Sunlight:
Pollution:
Thick:
To absorb:
To reflect:
To rise:
To increase:
To melt:

ACTIVITY 3: Greenhouse effect, card game (level 3)

Objective: reinvesting the vocabulary you acquired in the two previous activities and testing yourself

Card game. Reorganize yourselves into groups of 4.

1. Each of you receives 4 cards; the cards remain face down.
2. One student starts by reading the definition on the first of their 4 cards (other players should not see it).
3. The first player to guess the word corresponding to the definition collects the card.
4. It is now that player's turn to take one of their own cards and read the definition.
5. At the end of the game (10 minutes), each student counts how many cards they have won.
6. In each group, the student with the most cards receives 3 points. The student with the second most cards receives 2 points. The student with the third most cards receives 1 point. The student with the fewest cards receives no point.

Activities summary

What you must remember:

- **Greenhouse effect**
- **Climate, carbon dioxide**
- **pollution, the atmosphere**

Skills linked to the curriculum**:**

Compétences	Capacités à maîtriser	Où dans cette séquence ?
APP	Utiliser du vocabulaire spécifique	Activités 1 à 3
	Lire et comprendre des documents scientifiques	Activités 1 et 3
COM	S'exprimer à l'écrit et à l'oral en utilisant le vocabulaire adapté	Activités 1 à 3