



BOOKLET 5

EDUCATIONAL SCENARIOS

**Lesson Plans, with hands-on
and online activities on
co-creation of comics on
climate change**





**L-Università
ta' Malta**



AGRUPAMENTO DE ESCOLAS TERRAS DO AVE



**Maria Regina College
St. Paul's Bay Primary**



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EDUCATIONAL SCENARIOS:

Lesson Plans, with hands-on and online activities on co-creation of comics on climate change

prepared by

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Primary

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Ave

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Scenario 1 (MRC)

Ms Alessia Deguara

Scenario Title: Understanding Climate Change

Developed by (author and school): Alessia Deguara - Saint Paul's Bay Primary School

Country: Malta

Students' Age: 10 - 11 years old

Grade: 6

Time: 45 min

Field: English lessons

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3
English Listening	English Comprehension	English writing: creating a poster

Lesson/Activity Number and Title	Lesson 1
Main focus	English Listening - What is Climate Change?
Educational Objectives	LV 6.2: I can understand audio/audio-visual text across a range of genres, identifying main ideas, specific information and key words.
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>As introduction, I will present a picture on the interactive whiteboard. At first the picture is going to be hidden and I will start revealing it, bit by bit. The children will be encouraged to describe what they're seeing, until eventually they guess the topic of these sessions: <u>Climate Change</u>. A discuss will follow this, where they will share what they know and what they would like to know.</p> <p>2. Main (35 min):</p> <p>Before proceeding to the listening part of the lesson, I will show a picture of the different layers of the atmosphere. They are going to discuss which part of the atmosphere is mainly linked with the weather that we experience on Earth (<i>Troposphere</i>).</p> <p>Afterwards, I will distribute a worksheet with some questions needed for the listening part of the lesson. Then, the children are going to watch a video on Youtube called '<i>Climate Change and Global Warming: Explained in Simple Words for Beginners</i>'. This is going to give the</p>
	<p>children information on climate change and the video (with the help of pictures and actions) will help them understand the term better.</p> <p>I will show the video twice, while the children are given the opportunity to complete the exercises. This is to be done individually.</p> <p>3. Summary (5 min)</p> <p>In groups, the children will be given a picture (<u>the pictures will be different for all the groups</u>). <u>The options are:</u> deforestation, burning of fossil fuel, agriculture - methane, fluorinated gases). As a group they have to guess which aspect they have that causes climate change. Once they figure it out, they will discuss some points on the given topic.</p>
Educational Materials to be used	<ul style="list-style-type: none"> • 2 pictures at the beginning of the lesson • Worksheet with the questions • Video on Youtube (<i>it could be downloaded as well</i>) https://www.youtube.com/watch?v=G9t_9Tmwv4 • Pictures for the conclusion part of the lesson (4 in all)
Evaluation	
Suggestions for further activities	

Literature:

- Climate change picture: <https://www.un.org/en/climatechange/what-is-climate-change>
- Layers of atmosphere picture: <https://sciencenotes.org/layers-of-the-atmosphere/>
- Deforestation flashcard: <https://education.nationalgeographic.org/resource/deforestation/>
- Burning of fossil fuel flashcard: <https://www.rutgers.edu/news/burning-fossil-fuels-poses-existential-threat-earth>
- Agriculture methane flashcards: <https://www.worldatlas.com/articles/countries-with-the-highest-methane-emission-contributions-from-agriculture.html>
- Fluorinated gases flashcard: <https://vivatraining.co.uk/blog/gas/understanding-f-gases/>

Lesson/Activity Number and Title	Lesson 2
Main focus	English Comprehension - What is Climate Change?
Educational Objectives	<p>SR 6.5: I can make use of language to make relatively plausible predictions, give vivid descriptions and answer a range of questions about an oral text.</p> <p>SR 6.11: I can share my opinion with others because I understand that my opinions are important.</p> <p>RV 6.5: I can use a range of strategies to aid comprehension and find the required information in the text.</p> <p>RV 6.8: I can understand the author's point of view and make evaluative comments about it.</p>
Step by step description of the activities	<p>1. Introduction (5 min): To start the lesson, I will write 'Climate Change' on the interactive whiteboard. In pairs, the children will discuss some points on the topic (points discussed during the previous lesson). After 1 minute, different children will come out and write some of the points discussed on the interactive whiteboard.</p> <p>2. Main (35 min): After the introductory part, I will start the comprehension lesson. I will distribute the worksheets (according to the level of the children). We will read the article as a class. This comprehension is going to have extra points on climate change and some effects of it.</p>
	<p>After reading the story, I will present a power-point with some questions based on the comprehension. The children will have the opportunity to share their answers. Finally, the children will complete the questions found on the worksheets, individually.</p> <p>3. Summary (5 min) To conclude the lesson, the children will participate in a quiz on the Kahoot application. (<i>Quiz details: What is Climate Change? Angry Birds - 11 questions</i>).</p>
Educational Materials to be used	<ul style="list-style-type: none"> • Worksheets with the comprehension and questions (<i>Twinkl</i>) • Kahoot quiz • Tablet
Evaluation	
Suggestions for further activities	

Literature:

Lesson/Activity Number and Title	Lesson 3
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Main focus	English Writing - creating a poster
Educational Objectives	<p>WR 6.11: I can write appropriately for an audience and with a purpose.</p> <p>WR 6.12: I can write to convey emotions and thoughts effectively.</p> <p>WR 6.13: I can add detail and interest to more complex sentence structures in a variety of ways.</p>
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>To introduce the lesson, I will give each child a worksheet with a word search. The word search is going to include a variety of key words which were mentioned during these lessons, related to climate change. Individually, the children need to find the words.</p> <p>2. Main (35 min):</p> <p>To start the writing lesson, I will first show a power-point which will explain the aim of the lesson. First, I will show them a poster with some missing information (that is, not a good / complete poster). In groups they have to discuss the points which are missing. They will then share the points discusses with the rest of the class. Then I will present them the success criteria of a poster and we will discuss each point. This will help them write a good poster, meeting the criteria.</p> <p>Finally, they will start working on their writing task. They will use their own tablets to create their own poster related to climate change. I will emphasise the points which they need to</p>
	<p>include (<i>the definition, what causes climate change, things to be done by everyone so as to help the situation</i>). Any children without the tablet will create and design their poster on a blank paper (using colours).</p> <p>3. Summary (5 min)</p> <p>To end the lesson, I will ask 5 children to share their work. I will present the work on the interactive whiteboard and they will be given the opportunity to discuss their own work with the rest of the class.</p>
Educational Materials to be used	<ul style="list-style-type: none"> • Power-point • Tablet • Word search worksheet (<i>Twinkl</i>)
Evaluation	
Suggestions for further activities	



CLIMATE CHANGE

COMPREHENSION LESSON

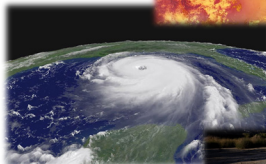
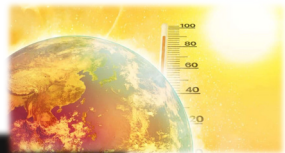
WHICH OF THE FOLLOWING ARE 2
EXAMPLES OF WEATHER EVENTS?

- Hurricanes
- Growing trees
- Rain
- Flowing rivers

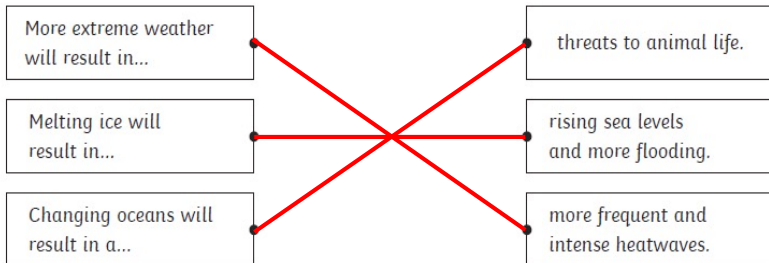


Name 2 of the effects of climate
change.

More extreme weather,
more intense heatwaves,
more powerful hurricanes,
more droughts,
disruptions to food chains
and so on.



DRAW **3 LINES** THAT EXPAND ON THE EFFECTS OF CLIMATE CHANGE.



WHAT IS THE NAME OF THE GREENHOUSE GAS THAT HAS CURRENTLY AT THE HIGHEST LEVELS?

The name of the greenhouse gas is carbon dioxide.



Climate Change

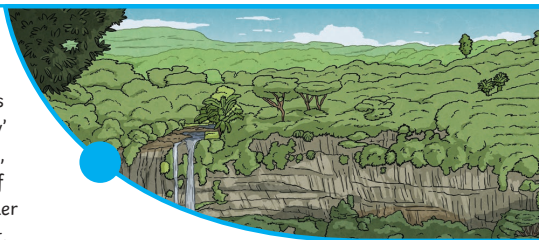


What Is Climate Change?

- Climate change is the long-term changes in temperatures and weather. Scientists, using special equipment including satellites, have noted that the
- Earth is warming up. In fact, some of the hottest years ever recorded have been in the last twenty years.

Weather vs Climate

Weather is only temporary. It refers to the conditions outside 'right now' in a specific place. Rain, hurricanes, snow and tornadoes are all types of weather events. Climate, on the other hand, is more than a weather event. It is not simply just rain for one or two days - climate describes the weather conditions that are expected in an area at a particular time of year, over a very long time.



What Are the Effects of Climate Change?

Climate change over time will result in many risks to both humans and wildlife. Some of these risks could include:

- More extreme weather – including more heatwaves, more powerful hurricanes and more extreme rainfall;
- Melting ice – resulting in rising sea levels, more flooding and increased threats to marine habitats;
- Changing oceans – including threats to animal life and disruptions to food chains.

What Can We Do to Help?

Everyone can play a part by making the following changes:

- choosing cleaner ways to power our homes and cars;
- turning off lights and appliances that are not in use;
- planting trees;
- walking or cycling if you can;
- recycling and reducing food waste.

What Causes Climate Change?

Climate change is caused by the release of greenhouse gases into the atmosphere. Human activities are responsible for releasing some of these gases, such as through driving cars, creating electricity and burning fossil fuels. These processes create extra greenhouse gases, which make our planet unnaturally hot. Plants, soils and the oceans can absorb these dangerous gases but they can't keep up with the amount being produced.

Did You Know...?

CO₂ (carbon dioxide) is one of the main greenhouse gases and levels are currently at their highest in two million years!

Questions

- What is climate change? Tick one.
 - ☐ the short-term changes in temperatures and weather
 - ☐ the long-term changes in temperatures and weather
 - ☐ the daily weather
 - ☐ the process of lakes freezing on our planet
- Climate change is caused by the release of greenhouse gases into the atmosphere. Which of the following greenhouse gases has the highest levels in two million years?
 - ☐ Carbon Dioxide (CO₂)
 - ☐ Methane (CH₄)
 - ☐ Nitrous Oxide (N₂O)
 - ☐ Hydrofluorocarbons (HFCs)
- Draw **three** lines that expand on the effects of climate change.

More extreme weather will result in...	threats to animal life.
Melting ice will result in...	rising sea levels and flooding.
Changing oceans will result in a...	more heatwaves and more extreme rainfall.

- Underline one word in the following sentence that means something does not last.

Weather is only temporary.

- Fill in the missing word.

Climate change over time will result in many _____ to both humans and wildlife.

- List **two** changes that people can make to reduce the effects of climate change.

- What, in your opinion, is the most severe effect of climate change?

Answers

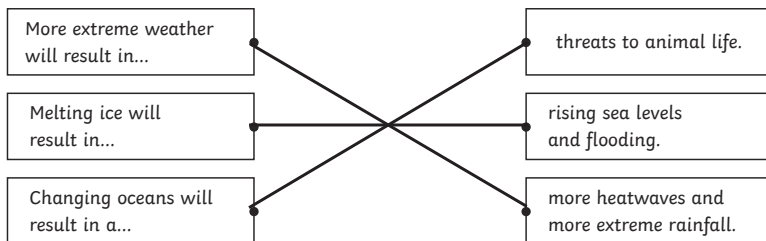
1. What is climate change? Tick one.

- ☐ the short-term changes in temperatures and weather
☒ **the long-term changes in temperatures and weather**
☐ the daily weather
☐ the process of lakes freezing on our planet

2. Climate change is caused by the release of greenhouse gases into the atmosphere. Which of the following greenhouse gases has the highest levels in two million years?

- ☒ **Carbon Dioxide (CO₂)**
☐ Methane (CH₄)
☐ Nitrous Oxide (N₂O)
☐ Hydrofluorocarbons (HFCs)

3. Draw **three** lines that expand on the effects of climate change.



4. Underline one word in the following sentence that means something does not last.

Weather is only temporary.

Award 1 mark for:

- **temporary**

5. Fill in the missing word.

Climate change over time will result in many **risks** to both humans and wildlife.

6. List **two** changes that people can make to reduce the effects of climate change.

Accept any two of the following: choosing cleaner ways to power our homes and cars; turning off lights and appliances that are not in use; planting trees; walking or cycling if you can; recycling and reducing food waste.

7. What, in your opinion, is the most severe effect of climate change?

Pupils' own responses, such as: I believe that the threat to animal life is the most severe effect of climate change as this could result in many of our wildlife species becoming extinct and once those animals are lost, we won't be able to get them back.

Climate Change

What Is Climate Change?

Climate change is the long-term changes in temperatures and weather. Scientists, using special equipment including satellites, have observed that the Earth is warming up. In fact, some of the hottest years ever recorded have been in the last twenty years.

Did You Know...?

CO₂ (carbon dioxide) is one of the main greenhouse gases and levels are currently at their highest in two million years!

Weather vs Climate

Weather is only temporary. It refers to the conditions outside 'right now' in a specific place. Rain, hurricanes, snow and tornadoes are all types of weather events. Climate, on the other hand, is more than a weather event. It is not simply just rain for one or two days - climate describes the weather conditions that are expected in an area at a particular time of year. A region's climate is determined by observing weather over a long period of time, usually about thirty years.

What Causes Climate Change?

Climate change is caused by the release of greenhouse gases into the atmosphere. These gases are released mostly because of human activities, such as through driving cars, creating electricity and burning fossil fuels. These processes create extra greenhouse gases, which make our planet unnaturally hot.

Plants, soils and the oceans can absorb these dangerous gases but they can't keep up with the amount being produced. Some greenhouse gases stay in the atmosphere for very long periods of time.

Climate Change

What Are the Effects of Climate Change?

Climate change over time will result in many risks to both humans and wildlife. Some of these risks include:

- More extreme weather – including more frequent and intense heatwaves, more powerful hurricanes, more intense rainfall leading to increased flooding and more droughts;
- Melting ice – resulting in rising sea levels, more flooding and increased threats to marine habitats;
- Changing oceans – including threats to animal life, disruptions to food chains and increased carbon dioxide levels in the atmosphere.



Did You Know...?

We are losing 1.2 trillion tons of ice each year.

What Can We Do to Help?

Everyone can play a part by making the following changes:

- choosing cleaner ways to power our homes and cars;
- turning off lights and appliances that are not in use;
- planting trees;
- walking or cycling if you can;
- recycling and reducing food waste.

Questions

1. Which of the following are **two** examples of weather events? Tick **two**.

- ☐ hurricanes
- ☐ growing trees
- ☐ rain
- ☐ flowing rivers

2. A region's climate is determined by observing what over a long period of time? Tick one.

- ☐ animal populations
- ☐ weather
- ☐ deforestation
- ☐ human activity

3. Look at the paragraph, **What Causes Climate Change?**

Number the events from 1-4 to show the order that they appear in the paragraph.

- ☐ These processes create extra greenhouse gases, which make our planet unnaturally hot.
- ☐ Climate change is caused by the release of greenhouse gases into the atmosphere.
- ☐ Some greenhouse gases stay in the atmosphere for very long periods of time.
- ☐ These gases are released mostly because of human activities.

4. Draw **three** lines that expand on the effects of climate change.

More extreme weather will result in...	threats to animal life.
Melting ice will result in...	rising sea levels and more flooding.
Changing oceans will result in a...	more frequent and intense heatwaves.

5. Fill in the missing words.

Climate change is caused by the _____ of greenhouse gases into the _____.

6. What is the name of the greenhouse gas that has currently has the highest levels in two million years?

7. What, in your opinion, is the most impactful effect of climate change?

8. Summarise what you have learnt about climate change using 25 words or fewer.

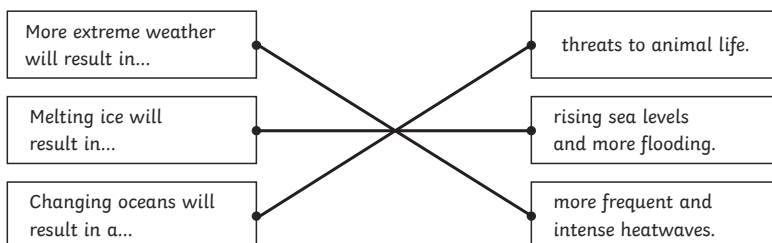
Answers

- Which of the following are **two** examples of weather events? Tick **two**.
 - ☒ **hurricanes**
 - ☐ growing trees
 - ☒ **rain**
 - ☐ flowing rivers
- A region's climate is determined by observing what over a long period of time? Tick one.
 - ☐ animal populations
 - ☒ **weather**
 - ☐ deforestation
 - ☐ human activity

- Look at the paragraph, **What Causes Climate Change?**
Number the events from 1-4 to show the order that they appear in the paragraph.

- 3** These processes create extra greenhouse gases, which make our planet unnaturally hot.
- 1** Climate change is caused by the release of greenhouse gases into the atmosphere.
- 4** Some greenhouse gases stay in the atmosphere for very long periods of time.
- 2** These gases are released mostly because of human activities.

- Draw **three** lines that expand on the effects of climate change.



- Fill in the missing words.

Climate change is caused by the **release** of greenhouse gases into the **atmosphere**.

6. What is the name of the greenhouse gas that has currently has the highest levels in two million years?

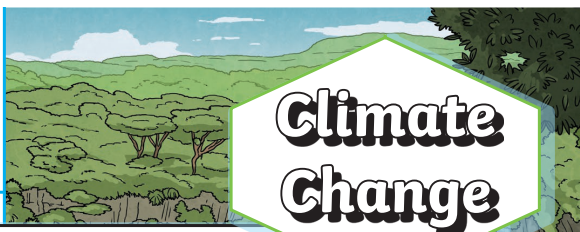
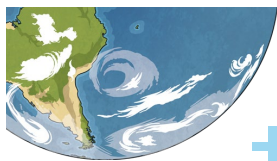
carbon dioxide (CO₂)

7. What, in your opinion, is the most impactful effect of climate change?

Pupils' own responses, such as: In my opinion, I believe that the threat to animal life is the most impactful effect of climate change as this could result in many of our wildlife species becoming extinct and once they become extinct, we won't be able to get them back.

8. Summarise what you have learnt about climate change using 25 words or fewer.

Pupils' own responses, such as: I have learnt that climate change is the long-term changes in temperature and weather. Human activity is causing Earth's climate to change.



Climate Change

What Is Climate Change?

Climate change is the long-term changes in temperatures and weather. Scientists, using special equipment including satellites, have observed that the Earth is warming up. In fact, some of the hottest years ever recorded have been in the last twenty years.



What Causes Climate Change?

The main causes of climate change are human activities, such as cutting down forests, driving cars, creating electricity and burning fossil fuels. These processes create extra greenhouse gases, which make our planet unnaturally hot. Plants, soils and the oceans can absorb these dangerous gases but they can't keep up with the amount being produced. Some greenhouse gases stay in the atmosphere for very long periods of time.

Weather vs Climate

Weather is only temporary. It refers to the conditions outside 'right now' in a specific place. Rain, hurricanes, snow and tornadoes are all types of weather events. Climate, on the other hand, is more than a weather event. It is not simply just rain for one or two days - climate describes the weather conditions that are expected in an area at a particular time of year. A region's climate is determined by observing weather over a long period of time, usually about thirty years.

Climate Change

Why Is the Earth Getting Warmer?

Throughout Earth's existence, temperatures have risen and fallen but it has never been too hot or too cold for life to exist. This is due to Earth being wrapped in its own protective blanket of air and a mixture of gases, known as the atmosphere. The atmosphere lets in energy from the sun.

The Earth's surface reflects some of the energy back into space and absorbs the rest, which is later expelled as heat energy. This heat energy is absorbed by certain gases (greenhouse gases) in the atmosphere, keeping Earth warm for life to survive.

However, more greenhouse gases present in the atmosphere results in more of the heat energy being absorbed, causing a rise in the temperature of the Earth's surface. We refer to this process as the 'greenhouse effect' because the atmosphere holds the heat like the walls of a greenhouse. The more the levels of these gases increase, the warmer our Earth will become.

What Are the Effects of Climate Change?

Climate change over time will result in many risks to both humans and wildlife. Some of these risks include:

- More extreme weather – including more frequent and intense heatwaves, more powerful hurricanes, more intense rainfall leading to increased flooding and more droughts;
- Melting ice – resulting in rising sea levels, more flooding and increased threats to marine habitats;
- Changing oceans – including threats to animal life, disruptions to food chains and increased carbon dioxide levels in the atmosphere.



What Can We Do to Help?

Everyone can play a part by making the following changes:

- choosing cleaner ways to power our homes and cars;
- turning off lights and appliances that are not in use;
- planting trees;
- walking or cycling if you can;
- recycling and reducing food waste.

Questions

1. Climate change refers to the long-term changes in which of the following? Tick **two**.

- ☐ tree growth
- ☐ temperatures
- ☐ weather
- ☐ mountain height

2. Earth is wrapped in a protective layer of air and gases.

What is this layer better known as? Tick one.

- ☐ ice sheets
- ☐ atmosphere
- ☐ space
- ☐ gravity

3. Find and copy one word which shows that the Earth is 'taking in' the sun's energy.

4. Fill in the missing words.

These processes create extra _____ gases, which make our planet _____ hot.

5. Name **two** of the effects of climate change.

- _____
- _____

6. Do you think we should be concerned about climate change?

7. Imagine you have been appointed Project Manager for the task of tackling global warming. Describe the first three steps you would take.

8. Summarise what you learnt about climate change using 25 words or fewer.

Answers

- Climate change refers to the long-term changes in which of the following? Tick **two**.
 - ☐ tree growth
 - ☒ **temperatures**
 - ☒ **weather**
 - ☐ mountain height
- Earth is wrapped in a protective layer of air and gases. What is this layer better known as? Tick one.
 - ☐ ice sheets
 - ☒ **atmosphere**
 - ☐ space
 - ☐ gravity
- Find and copy one word which shows that the Earth is 'taking in' the sun's energy.
absorbs
- Fill in the missing words.
These processes create extra **greenhouse** gases, which make our planet **unnaturally** hot.
- Name **two** of the effects of climate change.
Accept any two of the following: More extreme weather; more frequent and more intense heatwaves; more powerful hurricanes; more intense rainfall and flooding; more droughts; melting ice; rising sea levels leading to increased flooding; increased threats to marine habitats; changing oceans; threats to animal life; disruptions to food chains; increased carbon dioxide levels in the atmosphere.
- Do you think we should be concerned about climate change?
Pupils' own responses, such as: I think that we should be concerned about climate change as its effects are devastating. If we continue to ignore what is happening, we will cause irreversible damage for future generations. We need to all act together to make a change.
- Imagine you have been appointed Project Manager for the task of tackling global warming. Describe the first three steps you would take.
Pupils' own responses, such as: As Project Manager, my first three steps would be to raise awareness about climate change and the devastation it causes; to create 'How to Tackle Climate Change' promotional videos and advertisements; to create an award system for companies who use less packaging and for homeowners who use less electricity.
- Summarise what you learnt about climate change using 25 words or fewer.
Pupils' own responses, such as: I have learnt that climate change is the long-term changes in temperature and weather. Human activity is causing Earth's climate to change.

Climate Change Word Search

c l i m a t e n m j k o o p g a s
 a w n j f g g x c a s o k s l u i
 r a h u r r i c a n e s a d o n t
 b f l o m n x y t h g p l q b r e
 o d k d r o u g h t g r k y a i m
 n q y u p o i n j f f i k r l l p
 a t f l o o d i n g h s d m q z e
 n j n b c p x j k f d i v w a c r
 o s x v f g s b c u h n n a x x a
 a a r c c m e l t i n g r z e t
 d h c k m v a d v y i l m m r d u
 c t h l u e d s f t o r l i f b r
 z p a j y t r z m x t y p n c v e
 x e n v i r o n m e n t o g t g n
 m h g y l l m n h g r a u m r t e
 e k e d f f v b z n a s i j j y c
 s y x s c g r e e n h o u s e h i

climate change
 carbon
 greenhouse
 environment
 melting

global warming
 flooding
 hurricanes
 drought
 gas

rising
 temperature
 ice
 sea

Climate Change Word Search

e l i m a t e n m j k o o p g a s
 a w n j f g g x c a s o k s l u i
 r a h u r r i c a n e s a d o n t
 b f l o m n x y t h g p l q b r e
 o d k d r o u g h t g r k y a i m
 n q y u p o i n j f f i k r l l p
 a t f l o o d i n g h s d m q z e
 n j n b c p x j k f d i v w a c r
 o s x v f g s b c u h n n a x x a
 a a r c c m e l t i n g k r z e t
 d h c k m v a d v y i l m m r d u
 c t h l u e d s f t o r l i f b r
 z p a j y t r z m x t y p n c v e
 x e n v i r o n m e n t o g t g n
 m h g y l l m n h g r a u m r t e
 e k e d f f v b z n a s i j j y c
 s y x s c g r e e n h o u s e h i

climate change
 carbon
 greenhouse
 environment
 melting

global warming
 flooding
 hurricanes
 drought
 gas

rising
 temperature
 ice
 sea



<https://education.nationalgeographic.org/resource/deforestation/>



<https://www.rutgers.edu/news/burning-fossil-fuels-poses-existential-threat-earth>



<https://www.worldatlas.com/articles/countries-with-the-highest-methane-emission-contributions-from-agriculture.html>

<https://vivatraining.co.uk/blog/gas/understanding-f-gases/>



Layers of the Atmosphere

10000 km (6200 mi)

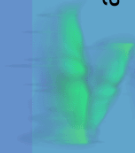
Exosphere



space
station

700 km (440 mi)

Thermosphere



aurora

80 km (262000 ft)

Mesosphere



meteors

50 km (164000 ft)

Stratosphere



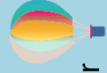
weather
balloon



jet

12 km (39000 ft)

Troposphere



hot air
balloon

0 km (0 ft)

sciencenotes.org

Scenario 1 (MRC)

Ms Chantelle Cilia

Scenario Title: Identifying Fake News

Developed by: Chantelle Cilia, Maria Regina College, St Paul's Bay Primary

Country: Malta

Students' Age: 8/9 years

Grade: 4 Time: 45 min

Field: English Oracy (First part)

Unit Panoramic View

Activity 1	Activity 2	Activity 3
1. The teacher shows posters on the interactive whiteboard of news that is not real. 2. Teacher asks students what the posters are about and tries to elicit the term fake news or hoax. A discussion will then follow.	1. Teacher continues by showing a video that explains 'What is fake news?' https://www.youtube.com/watch?v=D0Cd9-eJ-No 2. A discussion will follow.	1. The teacher presents a display showing 'Ten tips to spot Fake news!' and the students will be able to identify how news can be authentic or fake.
Lesson/Activity Number and Title	Lesson 1 - Identifying Fake News	
Main focus	Student will be able to use appropriate language and specific vocabulary fluently during the lesson while making relatively plausible predictions, describing posters and pictures.	
Educational Objectives	Student will be able to identify if news is authentic or fake by looking at examples and different posters.	
Step by step description of the activities	<p>1. Introduction (15 min): The teacher starts by showing different posters with news on them. The students are asked to look at them and analyse them in pairs. A class discussion is followed, and students are asked what they think of the shown posters. The students are encouraged to use appropriate vocabulary such as fake news, hoax and misleading information.</p> <p>2. Main (15 min): Then the teacher will show a video which describes what is fake news and what should be done to analyse whether it is fake or real. The students will discuss and can share their ideas and views.</p> <p>3. Summary (10 min):</p>	
	A poster with 'Ten tips to spot fake news' is given and teacher explains how fake news is identified. One should be able to look at the source and the website (URL), the spelling and grammar used, to identify whether the headline is authentic and to look at the facts in the news.	
Educational Materials to be used	<ul style="list-style-type: none"> Different posters of fake news. (Source from Twinkl) What is fake news? Video from https://www.youtube.com/watch?v=D0Cd9-eJ-No Ten tips to spot fake news poster from Twinkl 	
Evaluation	According to learners' progression during the lesson. Students will also help each other when they are discussing during the given task.	
Suggestions for further activities	Further activities can include reading comprehensions, creating a poster and writing.	

Scenario Title: Daily Article- Can you spot the Fake News?

Developed by: Chantelle Cilia, Maria Regina College, St Paul's Bay Primary

Country: Malta

Students' Age: 8/9 years

Grade: 4 Time: 45 min

Field: English Comprehension (Second Part)

Unit Panoramic View

Activity 1	Activity 2	Activity 3	Activity 4
This lesson will be a continuation from the previous lesson. To refresh the students' memory a poster called 'Stop Fake News' is shown and discussion in class is started.	Then the comprehension task - Daily Article: Can you spot the Fake News?' is given to the students.	The students are asked to do the comprehension task and answer the questions.	The students are asked to create a poster to Stop Fake News!
Lesson/Activity Number and Title	Lesson 2 - Daily Article: Can you Spot the Fake News?		
Main focus	To investigate and analyse which news is fake and which news is real.		
Educational Objectives	The students are learning to read and understand a given passage. They are also able to talk about the selected topic. The students are learning to use basic punctuation appropriately when reading the passage.		
Step by step description of the activities	<p>1. Introduction (5 min): The teacher shows the 'Stop Fake News' poster on the interactive whiteboard. The students are asked to think, pair and share.</p> <p>2. Main (25 min): Then then teacher advice the students that they will have a reading task. The passage is introduced, and the teacher reads it for the first time. Before reading, learners are given a reading focus: <ul style="list-style-type: none"> •Do you know any interesting facts on fake news? •Which kind of information is given through fake news? •What can be the consequences when spreading fake news? </p> <p>3. Summary (15 min): Students are asked to create a poster to stop fake news and the harm that it can cause when it is published.</p>		
Educational Materials to be used	<ul style="list-style-type: none"> • Stop Fake News Poster • Comprehension - Daily Article: Can you spot the fake news? Handout from Twinkl • School tablet to find information on the subjects. • Plain paper to create a poster. 		
Evaluation	According to learners' progression during the lesson. Students will also help each other when they are discussing during the given task. Students can understand a given task and are able to answer questions accordingly.		
Suggestions for further activities	Further activities can include a writing component.		

Scenario Title: Fake News Report!

Developed by: Chantelle Cilia, Maria Regina College, St Paul's Bay Primary

Country: Malta

Students' Age: 8/9 years

Grade: 4

Time: 45 min

Field : English Writing

Unit Panoramic View

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3
Moments of huh? - An introductory activity that shows humorous pictures of cats and dogs that are not real and AI generated. A discussion will follow.	Misinformation Wordsearch is then given to be used as a brainstorming activity for the writing task.	Then students are asked to write a Fake news report on a handout. Peer feedback follows.

Lesson/Activity Number and Title	Lesson 3 - Fake News Report
Main focus	Students can participate in writing for a range of purposes and write in some genres.
Educational Objectives	Students are able to write a report for a newspaper and have to be able to make it look real.
Step by step description of the activities	<ol style="list-style-type: none">1. Introduction (5 min): The teachers shows some funny pictures of animals doing comical things such as dogs riding a motorbike, cats eating popcorn at the cinema and dogs playing twister. This is a starter activity to remind students how pictures can be edited to show false facts and with the use of modern technology, things can be invented and generated to show fake news.2. Brainstorming Activity (5 min): A wordsearch is given as a brainstorming activity to prepare students for the main activity. This is used as a scaffolding technique so that words introduced can be used during the writing activity.3. Main (35 min): For the creative writing task students are asked to create a newspaper report that includes false and fake news. Students must be able to create news that might look real but is fake or not true. The use of tablet is allowed. They can draw as well to compliment the report.
Educational Materials to be used	<ul style="list-style-type: none">Funny edited pictures of animals - https://kids.nationalgeographic.com/moment-of/article/moment-of-huh-4Misinformation online wordsearch from TwinklNewspaper report template from Twinkl
Evaluation	Peer feedback is given on the report.
Suggestions for further activities	Research on the tablet.

Analysing Fake News

What clues are there to tell you that this is a fake news article?

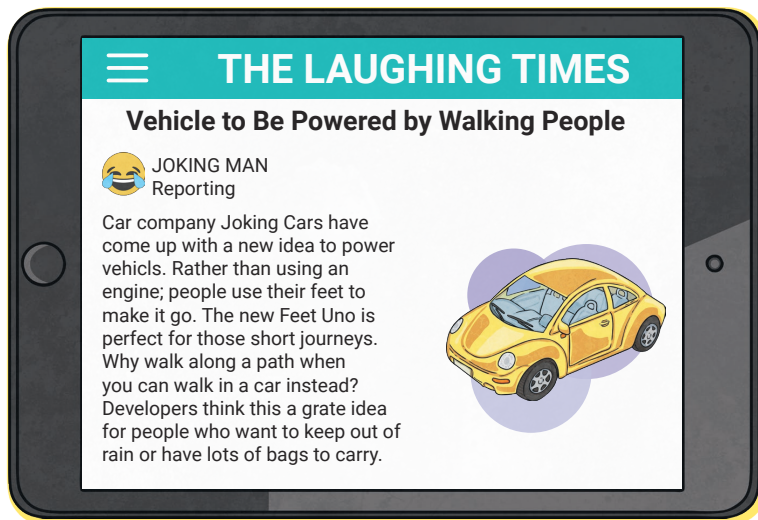
Highlight and comment on any parts that make it look fake.



Disclaimer: This resource contains 'fake' website URLs. These URLs should not be attempted to be viewed. These were 'fake' at the time of print. We do not accept responsibility should these websites become live in the future.

What clues are there to tell you that this is a fake news article?

Highlight and comment on any parts that make it look fake.



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What clues are there to tell you that this is a fake news article?

Highlight and comment on any parts that make it look fake.



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Analysing Fake News **Answers**

Non-Specific Language

The writer has used very generalised language, no specific numbers or facts have been included.

Reliable Source

This website is not a reliable source of information.

Correct Photo

This photo is a wasp not a bee. It could be being used to play upon the fears of the reader.



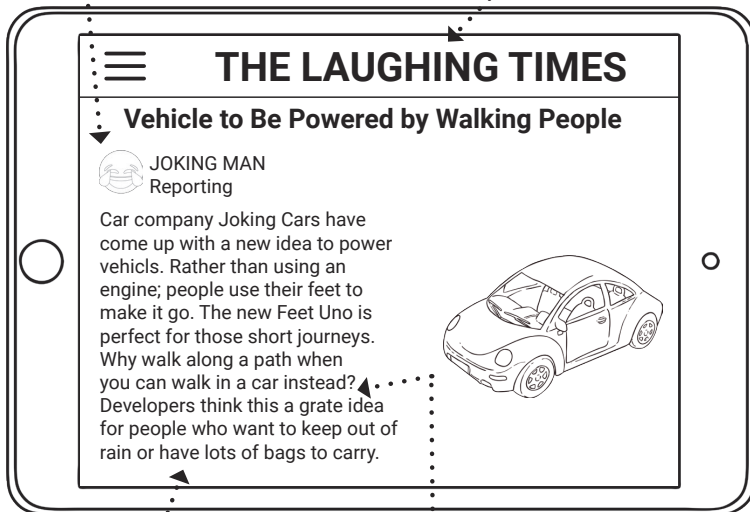
Disclaimer: This resource contains 'fake' website URLs. These URLs should not be attempted to be viewed. These were 'fake' at the time of print. We do not accept responsibility should these websites become live in the future.

A Real Person

The name seems to be fake and an emoji has been used instead a photo of the reporter.

Reliable Source

This online newspaper is not a reliable source of information.



Funny Content

We can tell (or make a sensible guess) that it's a joke because of how silly and unbelievable the idea of having cars powered by feet is.

Spelling Mistakes

There are some spelling mistakes in the report.

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A Real Person

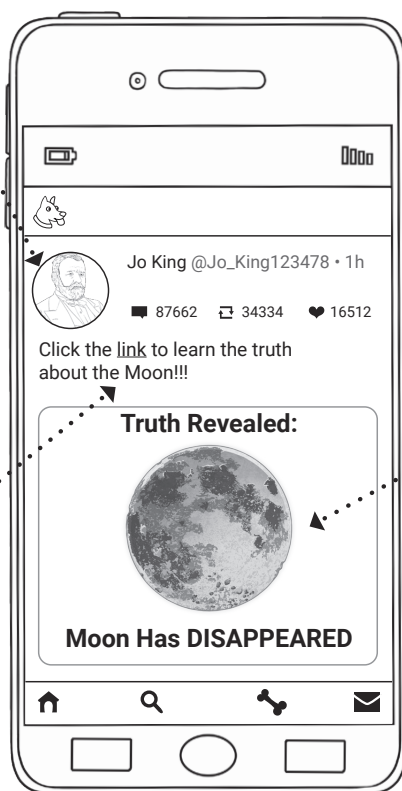
The name seems to be fake as it sounds like a pun.

Link

By clicking the link, you'll be taken to another webpage. When you view the fake article, the creator will receive money for advertising it.

Eye-catching

The more spectacular a piece of fake news is the more chance people will click on it.



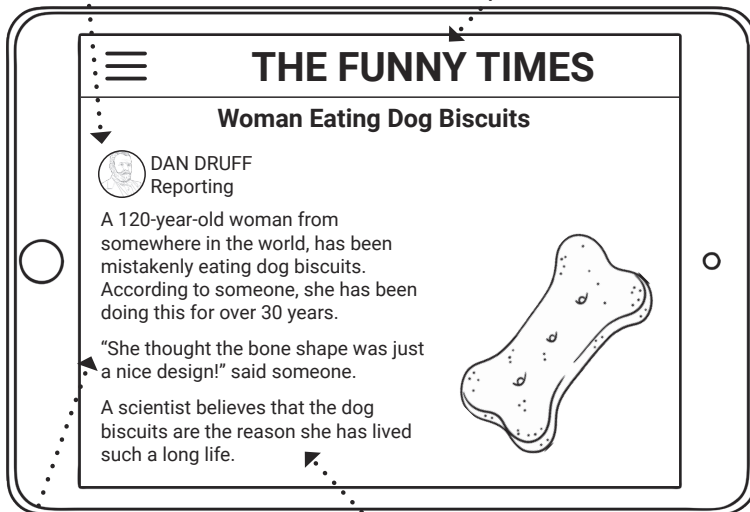
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A Real Person

The name seems to be fake as it sounds like a pun.

Reliable Source

This online newspaper is not a reliable source of information.



Funny Content

We can tell (or make a sensible guess) that it's a joke because of how silly and unbelievable the idea of eating dog biscuits by mistake for so long would be.

Non-Specific Language

The writer has used very generalised language. No specific locations or names have been included.

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Can You Spot the Fake News Story?

What is fake news?

- Fake news is a term used to describe false information or opinion that is mistaken for real information or fact. It can be created by accident but is sometimes created on purpose.
- We've got three news stories here but not all of them are real! Which of the following stories smells fishy to you?



Illustration: Rainbow sea slug.

3D-Printed Fish

A company called Steakholder Foods claims to have created the first **edible** 3D-printed fish fillet.

It says their printed fish can be cooked and seasoned to taste just like real fish and that it even flakes in the mouth too.

Their method begins with growing fish **cells** in a lab. These are added to a 'bio-ink' that goes in a special 3D printer. The 3D printer then squirts out a pattern to create the edible fish.

Many species of fish face extinction across the globe. The company hopes their 3D-printed fish can be a tasty alternative that's better for the environment.

Woman Spotted Walking a Walking Fish

Known as the Mexican walking fish, an axolotl is a strange-looking animal. They have glossy pale skin, frilly gills and, oh yes, legs.

The **critically endangered** species can only be found in the wild in Lake Xochimilco, Mexico.

So, it was with some surprise that one was seen being taken for a walk along Peckham high street in south London recently.

Photos on social media showed a woman going in and out of local shops with a pet axolotl sitting on her shoulder. As if that wasn't eye-catching enough, the curious creature seemed to be wearing a **leash**.

Maybe, after sitting down all day, they both just needed to stretch their legs.

Rainbow Sea Slug Found in Falmouth

An extremely rare rainbow sea slug has been spotted on a beach in Falmouth, England.

Vicky Barlow was exploring some of the rock pools at the seaside town when she made the discovery.

Rainbow sea slugs are normally found off the coast of Spain and Portugal. However, they were spotted for the first time ever in UK waters last year.

It's thought that these colourful creatures being repeatedly spotted in British waters could be a sign of rising sea temperatures due to climate change.

Glossary

- edible** Safe to be eaten.
- cells** The smallest parts of a plant or animal that can exist on their own.
- critically endangered** At high risk of going extinct.
- leash** A long thin lead attached to a pet when taking it for walks.

Questions

1. According to the article, what animal was seen in Peckham high street?

2. According to the article, a rainbow sea slug was recently spotted in a rock pool in which town?

3. Look at this sentence: **It says their printed fish can be cooked and seasoned to taste just like real fish and that it even flakes in the mouth too.** Which of the following definitions is closest in meaning to the word 'seasoned' as it is used in this sentence? **(tick one)**
☐ A professional; someone experienced at something.
☐ Have salt, pepper or spices added to change the taste.
☐ Left to dry during the summer.
☐ Spring, summer, autumn and winter.
4. Look at the story 'Rainbow Sea Slug Spotted in UK'. Find and copy one word which means 'something not seen very often, hard to find'.

5. Why do you think the author asked the question 'Which of the following stories smells fishy to you?'

6. Which story, or stories, do you think are made up? **(tick all that apply)**
☐ 3D-Printed Fish
☐ Woman Spotted Walking a Walking Fish
☐ Rainbow Sea Slug Found in Falmouth

Why do you think that?

Misinformation Online

Find all of the words relating to fake news and making safe choices. Afterwards, talk about the meaning of each word with a partner.

e z t s y e i r f a c t j c u
p j u u t t n e m s r y h m i
e k h f i a f s m u j o w i b
k b p a l l o p e p i l d s e
a s z l i u r o j c o q y i h
f t j s b p m n e f n g g n a
f k x e a i a s k h l n s f v
e r t s i n t i q g i p t o i
e x r a l a i b b e n o h r o
l a s f e m o i b g e t g m u
i s p e r m n l g x j s u a r
n s r m r n l i n h g r o t f
g e e s n e p t b v h j h i a
w s a n w f n y g n u e t o w
s s d l m o p i n i o n z n u

fake	false	safe	assess	behaviour
fact	information	choices	wellbeing	spread
opinion	reliability	manipulate	thoughts	stop
true	online	misinformation	feeling	responsibility

This resource is fully in line with the Learning Outcomes and Core Themes outlined in the PSHE Association [Programme of Study](#)



PSHE and Citizenship | UKS2 | Relationships | Digital Wellbeing | Fake News | Lesson 6

visit [twinkl.com](https://www.twinkl.com)



Answers Misinformation Online

e	z	t	s	y	e	l	r	f	a	c	t	j	u	
p	j	u	u	t	t	n	e	m	s	r	y	h	m	i
e	k	h	f	t	a	f	s	m	u	j	o	w	i	b
k	b	p	a	l	o	p	e	p	i	l	d	s	e	
a	s	z	l	i	u	r	o	j	c	o	q	y	i	h
f	t	j	s	b	p	m	n	e	f	n	g	g	n	a
f	k	x	e	a	i	a	s	k	h	l	n	s	f	v
e	r	t	s	i	n	t	i	q	g	j	p	t	o	i
e	x	r	a	l	a	i	b	b	e	n	o	h	r	c
l	a	s	f	e	m	o	i	b	g	e	t	g	m	u
i	s	p	e	r	m	n	l	g	x	j	s	u	a	r
n	s	r	m	r	n	l	i	n	h	g	r	o	t	f
g	e	e	s	n	e	p	t	b	v	h	j	h	i	a
w	s	a	n	w	f	n	y	g	n	u	e	t	o	w
s	s	d	l	m	o	p	i	n	i	o	n	z	n	u

fake	false	safe	assess	behaviour
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visit [twinkl.com](https://www.twinkl.com)



Ten Tips to Spot Fake News

Is it fake news? Is it too outrageous? Does it shock you?

Here are some points to help you decide if what you are reading is fake news or authentic!
If one clue indicates the news might be fake, check another clue to help you decide.

Is the story from a media outlet or website you know and can trust?	
Known = Authentic	Unknown = Most likely fake news
Does the story have facts in it? Try another source to check these facts are correct.	
Matching facts = Authentic	No matching facts = Most likely fake news
Does the headline match the content of the article?	
Match = Authentic	No match = Most likely fake news
Does it sound like it is advertising something?	
Not advertising = Authentic	Advertising = Most likely clickbait
Does the story have a negative viewpoint about a political party? Or is the perspective neutral about different parties?	
Neutral = Authentic	Biased = Most likely propaganda
Does it have a journalist or writer's name on it?	
Named = Authentic	Unnamed = Most likely fake news
Does the story show the date that it was written?	
Dated = Authentic	Not dated = Most likely fake news
Does the story have correct spelling and grammar?	
Grammatically correct = Authentic	Spelling and grammatical errors = Most likely fake news
Does the URL domain look right? Is the correct news outlet logo used?	
Correct = Authentic	Not correct = Most likely fake news
Is it on Social Media? Does it link to the source of origin?	
Links to the original source = Authentic	No original source clues = Most likely fake news



Scenario 1 (MRC)

Ms Maria Dolores Borg

Scenario Title:
Developed by: Maria Dolores (Dorielle) Borg, St Paul's Bay Primary
Country: Malta
Students' Age: 10 years
Grade: 5/6
Time: 45 min
Field:

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4
<u>Living in a Better World</u> Brainstorming ideas about climate change. TED-ed Video introduction on climate change. Reading comprehension from the National Geographic Kids site. Quiz about the reading on Kahoot. Exit ticket: Write 1 thing you liked... Write a suggestion...	<u>Creating a Better World</u> Brainstorming ideas about what we can do to reduce Global Warming. Video on YouTube. Working in groups – creating a new world. Students discuss what they can include in their world to help reduce Global Warming. Presenting ideas in the form of a drawing and a web. Students can choose to use Simpleminds for their web.	<u>Creating a Better World Part 2</u> Recap of previous lesson and looking at webs. Working in groups – Students use kidgeni.com on their tablets to create their planned world using AI. Sharing with the rest of the class. Extra activity: Playing Climatopia.	<u>Map Navigation</u> Video about how to use a compass. Quiz creation – Students create a quiz about their maps (of the world they have previously created). This quiz can also be created using Kahoot or Quizizz. The students share their quiz with their peers, who must navigate the maps and answer the questions.

Lesson/Activity Number and Title	Lesson 1: Living in a Better World.
Main focus	English: Speaking, Reading Comprehension and Writing (Poster). Science: Can be used with Learning Outcome 7: How does Planet Earth Support Life?
Educational Objectives	Asking questions and making contributions in a discussion to clearly make a point and respond to the ideas of others. Reading and understanding and knowing how to search online for age-appropriate and relevant texts across genres.
Step-by-step description of the activities	<ol style="list-style-type: none"> Introduction (15 min): The students will use their tablets to access menti.com, where they must write down up to 3 words or phrases about what they know about Climate Change. The students will then watch a short TED-ed video about Climate Change. The teacher then asks open-ended questions to encourage discussion. <u>Questions such as:</u> What causes the increase in Carbon dioxide? Why is the sea level rising? What happens if the sea level rises? Main (25 min): The students will find the online article on National Geographic Kids on their tablets, which will be read in class. During the reading, the teacher will go around the class to support and ask questions to ensure the students understand what they are reading. After the reading, the students will access Kahoot on their tablets to play the online quiz about the article prepared by the teacher. Summary (5 min) Exit ticket – Suggestions: The students are given an exit ticket where they will write 1 thing they enjoyed about the lesson and suggest what they can do to help reduce Climate Change.
Educational Materials to be used	<ul style="list-style-type: none"> TED-ed video on Youtube: Climate change: Earth's giant game of Tetris - Joss Fong (youtube.com) Learnpad tablets Online article on National Geographic Kids:

	https://www.natgeokids.com/uk/discover/geography/general-geography/what-is-climate-change/#~:text=Climate%20change%20won't%20just,increase%20rain%2C%20floods%20and%20droughts. <ul style="list-style-type: none"> • Kahoot Quiz: https://kahoot.it/ • Exit ticket - Suggestions
Evaluation	
Suggestions for further activities	To further explore the subject, the students are invited to choose one of the suggestions in the article - 'What can we do about it?' and create a poster to promote the idea.

Lesson/Activity Number and Title	Lesson 2: Creating a Better World.
Main focus	English – Speaking, listening, writing and creativity.
Educational Objectives	Listening to others, understanding their point of view and asking for clarification when I don't understand. Sharing my opinion with others because I understand that my opinions are important. Presenting ideas in a written format.
Step by step description of the activities	<ol style="list-style-type: none"> 1. Introduction (10 min): The students will watch a video (3 minutes) about what we can do to help reduce Global Warming. Brainstorming activity: Students will write points on what they can do to create a better world on their mini whiteboards. The teacher then writes all these ideas on the large whiteboard as a web. This activity can also be done on Mentimeter. 2. Main (30 min): Students will work in groups. They must discuss and create their own country to promote a better environment to help reduce global warming and climate change. They need to think of the following important points: <ul style="list-style-type: none"> • What can you do to have more trees? • What can you do to promote recycling?
	<ul style="list-style-type: none"> • What can you think of to reduce emissions? • What can you think of to improve electricity consumption? <ol style="list-style-type: none"> 3. Summary (5 min) The students have to present a drawing of their world and their plans in a written format on a mindmap. If the teacher wishes, the students can use the app Simplemind on their table to produce a web.
Educational Materials to be used	<ul style="list-style-type: none"> • YouTube video: https://www.youtube.com/watch_popup?v=-tawdcP4w • Mindmap template from Twinkl: https://www.twinkl.com/mt/resource/mind-map-templates-ar-en-1685201458 • Learnpad tablets • Mini whiteboards and markers • Paper and drawing material • Simplemind app
Evaluation	
Suggestions for further activities	Students can read more about the Greenhouse effect on Nasa Climate Kids: What Is the Greenhouse Effect? NASA Climate Kids Students can also have fun learning about the Greenhouse Gases: https://climatekids.nasa.gov/greenhouse-cards/

Lesson/Activity Number and Title	Lesson 3: Creating a Better World Part 2
Main focus	Creativity and using the tablets and Kidgeni.com
Educational Objectives	
Step by step description of the activities	<ol style="list-style-type: none"> 1. Introduction (5 min): The lesson starts with a recap of the previous lesson and the students' plans for their new world. 2. Main (35 min):


	<p>The teacher explains to the students that they will work in groups to create their own world using AI. The students open Chrome on their tablets and type kidgeni.com. This AI generator app allows kids to explore and create anything they imagine. They can create Art, stories, books and doodles.</p> <p>The students are invited to choose the ART or DOODLE option on the site. Here, they need to type what they wish to include in their world; they have to include what they previously planned, e.g., a Forest to have more trees, wind farms or rivers to improve energy usage, etc. They are given some time to explore and create. In the DOODLE option, students can first draw their worlds and also write what they wish to include.</p> <p>3. Summary (5 min) When they finish, their creation is saved and shared among their group. This is also shared with the teacher for evaluation.</p>
Educational Materials to be used	<ul style="list-style-type: none"> • Learnpad tablet • Online AI generator site: https://kidgeni.com/ • Climatopia game: https://climatopia.eu/results/33-gamebasic
Evaluation	
Suggestions for further activities	<ul style="list-style-type: none"> • Once the AI creation is ready, students can have an art lesson in which they create a map of their country. This is done on card paper or brown paper using markers and colours. • The students can also practice on their own at home. They can plan a new country and then create it on their tablets. • The students are also encouraged to create a comic. They can either draw it themselves or use kidgeni.com to promote the fight against climate change. This can be given as a weekend task.

Lesson/Activity Number and Title	Lesson 4: Map navigation
Main focus	<p>Maths: Maps - Grid location and Compass directions</p> <p>English: Speaking, writing and reading</p> <p>Coding</p>
Educational Objectives	<p>Practising grid location and compass directions as part of the Maths learning outcomes.</p> <p>Writing a set of quiz questions and instructions.</p>

Step by step description of the activities	<p>Collaborating in a group.</p> <p>1. Introduction (5 min): The lesson starts with a video explaining how a compass works. The teacher can demonstrate how to use a compass on our mobile phones.</p> <p>2. Main (25 min): (Before this activity, the students would have created the map for their new country during an art lesson, and the teacher would have guided them in drawing a grid over it. The students would also have decided which part is North, and a compass is either drawn or stuck to the map in the bottom left corner.)</p> <p>As a group, the students need to create a set of quiz questions about their map. They are given 15 minutes to write their questions. These must include examples of finding grid locations and using the compass; see examples below.</p> <ul style="list-style-type: none"> • What is the grid location of the forest? • What do you find in the grid location G5? • What do you find if you move one place East of the forest? • What do you find if you move 180° West of the windmill? Etc. <p>Students can also create a quiz using Quizizz or Kahoot, which is then shared with the other students.</p> <p>3. Summary (15 min) As lesson closure, the other groups are assigned a map and must answer the quiz questions.</p>
Educational Materials to be used	<ul style="list-style-type: none"> • YouTube video about compasses: https://www.youtube.com/embed/Aq8s25F17zY • Maps of countries created by the students • Learnpad tablet • www.kahoot.com • www.quizizz.com
Evaluation	
Suggestions for further activities	<ul style="list-style-type: none"> • Students can answer a quiz about a different map for homework. • Using a Floor Robot, students can further practice grid locations and programming the robot. https://www.twinkl.com/mt/resource/floor-robot-maps-with-coordinates-at-the-camping-ground-lesson-pack-au-st-1656476262
	<ul style="list-style-type: none"> • Using a Floor Robot, students can write instructions about their own map for other students to try and work out. • The teacher can create an online quiz on Kahoot or Quizizz to recap the topic and practice reading maps further. The quiz can include questions related to the maps created by the students.

Scenario 2 (OST)

Ms Iva Hladik



How to make a comic?

Guide for students

M.Franković, M. Sokač; based on Mallila, G. (2023).
Creating Comics for Digital Augmentation

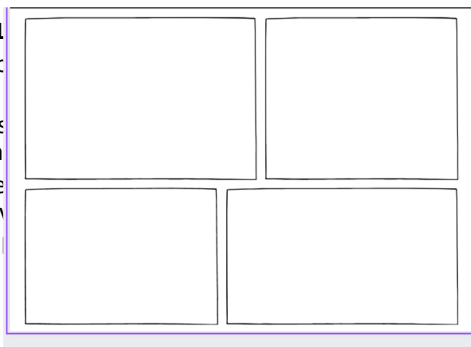
The project "MIRACLE" is co-funded by the Erasmus+ programme of the European Union. The content of MIRACLE is the sole responsibility of the project partners and the European Commission is not responsible for any use that may be made of the information contained therein. Project Number: KA220-SCH-766FGEAB

Co-funded by the European Union



THE PANEL

- Each panel is called
- Panels are various
- The relevance of each panel takes




angular frames

their contents

on – which can
something actually



THE GUTTER

- Each gutter is the space called the
 - The gutter is the space
 - This is the space in
 - The gutter is the space in
- 
- ...ence from the
... that is missing
... t for them-



THE BALLOON

- The balloon is probably the element that most people associate with comics. It is the space in which most of the verbal text is contained.
- Balloons are used to report speech or thought, and that is why the terms **speech balloon** and **thought balloon** are used.
- Usually balloons are of oval or cloud-like shape, but variations are possible.
- The tail of the balloon indicates the character who is speaking (or thinking). Normally the tail looks like a small pointed projection, but it can sometimes be a simple line. An important variation is when the tail is formed of a series of small bubbles, which indicate that the balloon is a thought balloon.



Different shapes balloons can take as part of comics language.

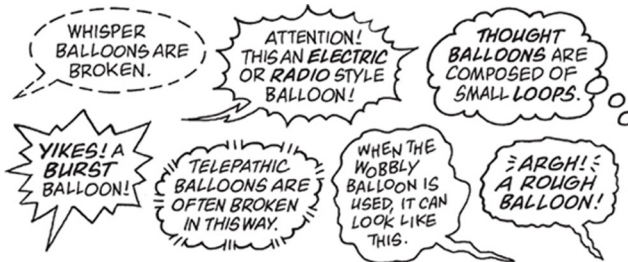


Figure: Balloons by Tod Klein



It is extremely important that balloons are in the correct order for speaking.

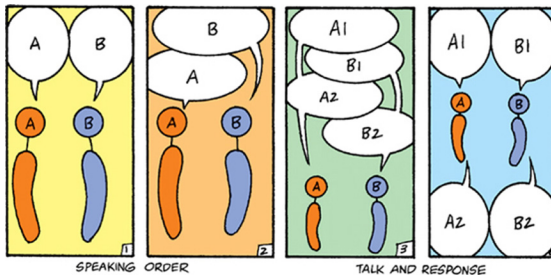


Figure: Todd Klein illustrating balloon sequencing

Scenario Title: CO2 goes on diet

Developed by (author and school): Iva Hladnik, Elementary School Tituš Brezovački, Zagreb, Croatia

Country: Croatia

Students' Age: 12 years

Grade: 6th grade elementary school, Time: 45 min

Field: English (1st foreign language)

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Greenhouse effect	Deforestation	-	-	-
Lesson/Activity Number and Title	1. Greenhouse effect			
Main focus	1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE 2. DIGITAL COMICS CO-CREATION			
Educational Objectives	<p>'GREEN' SKILLS</p> <ol style="list-style-type: none"> 1. Creating a cohesive learning "green" culture 2. Raising awareness about greenhouse effect and climate change 3. Promoting eco-friendly discussion and concrete steps to change the process 4. Changing the negative mindset of pupils who have negative outlooks on climate <p>DIGITAL SKILLS</p> <ol style="list-style-type: none"> 1. Improving pupil digital skills; using interactive tools both for learning and fun 2. Generating learning resources for pupils themselves, thus tailor-making them to their needs 3. Exploring CC through art and digital technology, developing an understanding of the concepts <p>LANGUAGE SKILLS</p> <p>Annual Implementation Curriculum English language 6th grade Elementary school (GIK Engleski jezik 6.r osnovne škole)</p> <ol style="list-style-type: none"> 1. Student understands a short text when s/he listens and reads it. 2. Student takes part in a short conversation on a familiar topic. 3. Student writes a short, structured text on a familiar topic and s/he uses simple linguistic structures and applies basic rules of English language. 			
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>1.1 Teacher shows photos of a greenhouse (Greenhouse 1 and Greenhouse 2) and elicits from the pupils the basic information about this photo: <i>What is the name of this place? What do we use it for? Which plants can you see on the photo? What do the plants need to grow in a greenhouse? Which gases are produced in the greenhouse?</i></p> <p>2. Main (30 min):</p> <p>2.1. Pupils watch the cartoon on the Greenhouse effect (the video focuses on gasses with negative impact on the Earth's atmosphere) https://www.youtube.com/watch?v=SN5-DnOHQmE&ab_channel=NASASpacePlace</p> <p>2.2. Teacher explains the following words and gives translation to Croatian: <i>greenhouse gases, to trap, heat, sunrays, Sun's radiation, positive gases vs. negative gases to warm, to absorb, to reflect, controlled growth.</i></p> <p>2.3. Pupils are asked to watch the video again and list positive and negative greenhouse gasses. Good guys: O2 Oxygen</p>			

	<p>Bad guys: CO₂ carbon dioxide, CH₄ methane, N₂O nitrous oxide, NF₃ nitrogen trifluoride, HFCs hydrofluorocarbons, SF₆ sulphur hexafluoride, PFCs perfluorocarbons</p> <p>2.4. Pupils write sentences using the new vocabulary.</p> <p>2.5. Teacher shortly explains how to make a comic (5 min presentation) and hands out the Worksheet 1 based on Booklet 2 ("Make a comic - Step by step guide for students").</p> <p>2.6. Pupils are invited to make a storyboard for a short comic (either a digital one, in Pixton/Canva/Augmented by Clever Books or drawn by hand). The title of the storyboard is <i>Good guys vs bad guys</i>. Main characters are different greenhouse gases and pupils. Additional characters may be added. Some key words for comic storyboard are: <i>climate change, CO₂, global warming, sunrays, deforestation, coal, oil, fuel, plants, and forests</i>.</p> <p>2.7. Pupils make the <i>Good guys vs bad guys</i> comic (using the technique they are most comfortable with).</p> <p>3. Summary (10min):</p> <p>3.1. Pupils read and act out each other's comics aloud.</p>
Educational Materials to be used	<p>Greenhouse photo 1, Greenhouse photo 2 from https://unsplash.com/ (free photos)</p> <p>https://www.pixton.com/</p> <p>https://www.canva.com/</p> <p>https://kahoot.it/</p> <p>https://wordwall.net/</p> <p>Presentation: "How to make a comic?"</p> <p>Worksheet 1 ("Make a comic - Step by step guide for students")</p>
Evaluation	<p>1. Self-assessment questionnaire/ Exit cards</p> <p>2. Peer review questionnaire</p> <p>3. Summative assessment</p> <p>4. Short quiz (at the beginning of next class)</p>
Suggestions for further activities	<p>1. Listen to the song Pocahontas: Colors of the Wind</p> <p>https://www.youtube.com/watch?v=O9MvdMqKvpU&ab_channel=Disney</p> <p>2. Watch these additional videos and make short presentations</p> <p>https://www.youtube.com/watch?v=x_sJzVe9P_8&ab_channel=It%27sAumSumTime</p> <p>https://www.youtube.com/watch?v=7lwPFxzLH8c&ab_channel=SmileandLearn-English</p> <p>3. Pupils revise new vocabulary in Wordwall/Kahoot.</p>

1. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
2. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template
3. GUIDELINES FOR BOOKLET CREATION
4. https://en.wikipedia.org/wiki/Greenhouse_effect, accessed 2nd January 2024
5. <https://climatekids.nasa.gov/greenhouse-effect/>, accessed 2nd January 2024
6. <https://education.nationalgeographic.org/resource/greenhouse-effect/>, accessed 2nd January 2024
7. Unit 1 Make a difference Hello, world!6, Profil Klett





Lesson/Activity Number and Title	2.Deforestation
Main focus	1.THE BASIC SCIENCE BEHIND CLIMATE CHANGE 2.DIGITAL COMICS CO-CREATION 3.DIGITAL AUGMENTATION OF COMICS
Educational Objectives	<p>'GREEN' SKILLS</p> <ol style="list-style-type: none"> 1. Creating a cohesive learning "green" culture 2. Raising awareness about greenhouse effect and climate change 3. Promoting eco-friendly discussion and concrete steps to change the process 4. Changing the negative mindset of pupils who have negative outlooks on climate <p>DIGITAL SKILLS</p> <ol style="list-style-type: none"> 1. Improving pupil digital skills; using interactive tools both for learning and fun 2. Generating learning resources for pupils themselves, thus tailor-making them to their needs 3.. Exploring CC through art and digital technology, developing an understanding of the concepts <p>LANGUAGE SKILLS</p> <p>Annual Implementation Curriculum English language 6th grade Elementary school (GIK Engleski jezik 6.r osnovne škole)</p>

	<ol style="list-style-type: none"> 1. Student understands a short text when s/he listens and reads it. 2. Student takes part in a short conversation on a familiar topic. 3. Student writes a short, structured text on a familiar topic and s/he uses simple linguistic structures and applies basic rules of English language.
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>1.1. Pupils watch Google Earth Deforestation Animation</p> <p>https://www.youtube.com/watch?v=b4eLTYUcJ7k&ab_channel=GoogleEarth</p> <p>Teacher asks about what they could see on the video, where was the video taken etc; the teacher elicits a short discussion on the impact this process has on the environment and how they feel about it.</p> <p>2. Main (35 min):</p> <p>2.1. Pupils watch a video on Deforestation.</p> <p>https://www.youtube.com/watch?v=-01T9e6VDWU&ab_channel=learningjunction</p> <p>or</p> <p>https://www.youtube.com/watch?v=Nc7f5563azs&ab_channel=ChristieTodd</p> <p>2.2. Teacher explains the following words, their meaning and translation to Croatian:</p> <p><i>resources, land use, agriculture, to harvest, ecosystem, ecosystem function, to effect, to impact, carbon cycling, photosynthesis, greenhouse gas, to burn forest, global warming, to absorb, cooling, precipitation, transpiration, to evaporate, to uptake, to disrupt (the cycle), contribution, to degrade, to rely on, to degrade, a habitat, endangered species, to make a difference, principle of 3Rs, to dispose (waste)</i></p> <p>2.3. Teacher asks the pupils to watch the video again and to list causes, effects, and solutions of deforestation:</p> <p><u>Causes</u>: cutting down trees for production of furniture and paper as well as cattle breeding</p> <p><u>Effects</u>: carbon dioxide doesn't get absorbed, light does not get absorbed, water does not get absorbed, degraded environment → cycle is disrupted → Global Warming, Albedo</p> <p><u>Solutions</u>: cut down selectively, protecting sensitive areas/endangered species habitats, 3Rs: reduce, reuse, recycle</p> <p>2.4. Teacher asks pupils to repeat which gases are good and which are bad in the atmosphere for the climate change process (that the deforestation is a part of). Pupils are invited to imagine CO₂ gas as a character in a comic. Teacher asks pupils to come up with some characteristics of the CO₂: Let's imagine CO₂ as a character in a story! How does he look like? Is he bold and old or is he young and strong? Does he have a beard and a moustache? How is he dressed?</p>

	<p>2.5 Pupils draw their version of CO₂ gas as a character in Pixton/Canva, any other similar digital tool or by hand.</p> <p>3. Summary (5min):</p> <p>3.1. Pupils shortly present their CO₂ character.</p>
Educational Materials to be used	<p>https://augmented-classroom.com/arc/geography</p> <p>https://www.pixton.com/</p> <p>https://www.canva.com/</p> <p>https://kahoot.it/</p> <p>https://wordwall.net/</p>
Evaluation	<p>1. Self-assessment questionnaire/ Exit cards</p> <p>2. Peer review questionnaire</p> <p>3. Summative assessment</p> <p>4. Short quiz (at the beginning of next class)</p>
Suggestions for further activities	<p>1. Pupils make a Causes -Effects-Solutions of Deforestation poster (to be printed) in Canva/Pixton.</p> <p>2. Pupils create their FOREST ECO SYSTEM in ARC Create or Canva.</p> <p>3. Pupils revise new vocabulary in Kahoot/Wordwall.</p>

Literature:

1. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE, Project Miracle
2. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template, Project Miracle
3. GUIDELINES FOR BOOKLET CREATION, Project Miracle
4. <https://en.wikipedia.org/wiki/Deforestation>, accessed 2nd January 2024
5. https://earthwatch.org/stories/save-forest-trees?gclid=Cj0KCQiAhc-sBhCEARIsAOVwHuQjGg9TKFXNt8Urtomg607GiFgDjYJQOWjVy4WTG6POHKuRyzuefPwaAs5HEALw_wcB, accessed 2nd January 2024
6. https://www.rainforesttrust.org/our-impact/rainforest-news/devastating-truths-of-deforestation-and-how-you-can-help/?utm_source=google-grant-uk&utm_medium=search&utm_campaign=our-impact-uk&utm_term=rainforest%20deforestation&gad_source=1&gclid=Cj0KCQiAhc-sBhCEARIsAOVwHuTTB2AtsX1FKpl-WOTHGp4M7RMxb7e-CdotwEAP3ud5hEG6piMK2-UaAnC_EALw_wcB, accessed 2nd January 2024
7. Unit 1 Make a difference; Hello, world!6, Profil Klett

Scenario 2 (OST)

Ms Kristina Kordina

Scenario Title: CO2 goes on a diet

Developed by (author and school): Kristina Kordina, Elementary School Tituš Brezovački, Zagreb, Croatia

Country: Croatia

Students' Age: 10 - 13 years

Grade: 4th - 8th grade elementary school, Time: 90 mins

Field: Critical thinking, Civic education, Science and Technology, Art

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Super cookbook- recipes for Humanity		-	-	-
Lesson/Activity Number and Title	1. Fake News			
Main focus	1. CRITICAL THINKING THROUGH INQUIRY-BASED LEARNING 2. CIVIC EDUCATION 3. THE BASIC SCIENCE BEHIND CLIMATE CHANGE 4. DIGITAL COMICS CO-CREATION			
Educational Objectives	CRITICAL THINKING SKILLS 1. Developing critical and creative thinking in investigating geographical information, concepts and ideas through inquiry-based learning 2. Logical thinking when evaluating and using evidence, testing explanations, analysing arguments and decision making 3. Identifying, exploring and clarifying technologies information and using that knowledge in a new range of situations 'GREEN' SKILLS 1. Creating a cohesive learning "green" culture 2. Promoting patriotic knowledge and deepening historical roots awareness 3. Raising pupil awareness through preservation of important historical sites CIVICS SKILLS			
	1. Promoting tolerance and solidarity 2. Developing human values based on acceptance and inclusion of diversity and respect of human rights on understanding life in civil society DIGITAL SKILLS 1. Improving pupil digital skills; using interactive tools both for learning and fun 2. Generating learning resources for pupils themselves, thus tailor-making them to their needs 3. Exploring CC through art and digital technology, developing an understanding of the concepts			
Step by step description of the activities	1. Introduction (10 min): Teacher tells the students their Superhero travelled to the future to see how Earth has changed. He sent a secret message for them to read and help him. He is now stuck in the future, a prisoner of CO2. 2. Main (60 min): 2.1. Teacher reads our Superhero's message from the future: CO2 uses disinformation to go off his diet (Addendum 1.) Students freely offer their opinion on the message. 2.2. Teacher explains the concept of Disinformation as deliberate intention to disseminate content or information which are false. 2.3. Students brainstorm solutions to the problem. Together, they make a screenplay of a comic where all the people on Earth give a recipe to CO2 so he doesn't get bored in the future and			

	<p>go off his diet. The goal is to make students realise that they have to work out a solution on a macro level. One way is for them all to become superheroes who can influence people's actions and decisions.</p> <p>2.4. Students make their own superhero characters who travel to the future and help mankind save the Earth and slim CO2 down using Canva/Pixton/Storyboardthat/AvatarMaker. The requirement is that the story has a happy ending - the superhero students manage to save the Earth and band mankind together.</p> <p>2.5. 3. Summary (12 min):</p> <p>3. 1. Students present their comics.</p>
Educational Materials to be used	<p>Comic creation: www.canva.com, www.pixton.com, www.storyboardthat.com</p> <p>Avatar creation: www.avatarmaker.com</p> <p>Research: www.google.com www.e-sfera.hr</p> <p>Assessment: www.kahoot.com www.wordwall.com www.genially.com</p>
Evaluation	<p>1. Peer review assessment</p> <p>2. Short quiz (at the beginning of next class)</p>
Suggestions for further activities	<p>1. Creating a comic screenplay on how their avatars/superhero can help CO2 lose weight and diet</p> <p>2. Creating a comic using the screenplay and created avatars/superhero.</p>

Literature:

1. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
2. GUIDELINES FOR BOOKLET CREATION
3. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
4. Booklet 4. FAKE NEWS AND DISINFORMATION
7. National Referential Curriculum - Civic Education/Critical Thinking (accessed 20/1/24)

Addendum 1.

A hundred years ago in 2024, a Superhero was created to help CO2 go on a diet. The children of Earth helped our Superhero making recipes for CO2s diet. Everything was going according to plan. CO2 was posting pictures of himself getting fitter and slimmer using tips and tricks our Superhero taught him. The children wrote excellent tips: use recyclable materials, walk to school/work, lower plastic intake, save electrical energy and water in households and install solar panels.

But, after a few decades, researchers found out that CO2 was not getting slimmer and fitter, despite his pictures and posts on social media, but on the contrary, he was fatter than ever. Scientists couldn't explain why this was happening, so they decided to investigate. What they found was shocking. CO2 was deliberately spreading disinformation to get bigger and fatter. Our Earth is in great danger. CO2 made a device to strip me of my powers and I can't come back to the past to change things. I used the last of my strength to send you this message. My only hope is that you receive this message and help me in the past (well - your present) so I can be set free.

Please, help me.

Scenario Title: CO2 goes on a diet

Developed by (author and school): Kristina Kordina, Elementary School Tituš Brezovački, Zagreb, Croatia

Country: Croatia

Students' Age: 10 - 13 years

Grade: 4th - 8th grade elementary school, Time: 90 mins

Field: Critical thinking, Civic education, Science and Technology, Art

Unit Panoramic View

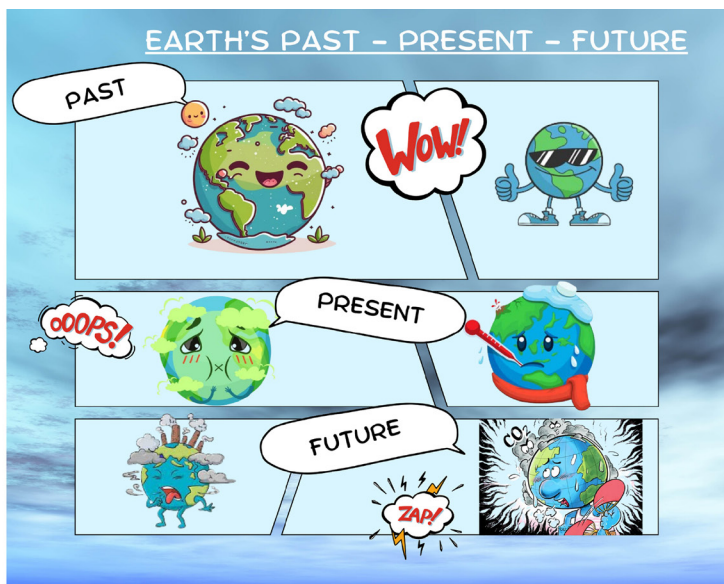
Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Superhero to the rescue		-	-	-
Lesson/Activity Number and Title	1. Fake News			
Main focus	1. CRITICAL THINKING THROUGH INQUIRY-BASED LEARNING 2. CIVIC EDUCATION 3. THE BASIC SCIENCE BEHIND CLIMATE CHANGE 4. DIGITAL COMICS CO-CREATION			
Educational Objectives	CRITICAL THINKING SKILLS 1. Developing critical and creative thinking in investigating geographical information, concepts and ideas through inquiry-based learning 2. Logical thinking when evaluating and using evidence, testing explanations, analysing arguments and decision making 3. Identifying, exploring and clarifying technologies information and using that knowledge in a new range of situations 'GREEN' SKILLS 1. Creating a cohesive learning "green" culture 2. Promoting patriotic knowledge and deepening historical roots awareness 3. Raising pupil awareness through preservation of important historical sites CIVICS SKILLS			
	1. Promoting tolerance and solidarity 2. Developing human values based on acceptance and inclusion of diversity and respect of human rights on understanding life in civil society DIGITAL SKILLS 1. Improving pupil digital skills; using interactive tools both for learning and fun 2. Generating learning resources for pupils themselves, thus tailor-making them to their needs 3. Exploring CC through art and digital technology, developing an understanding of the concepts			
Step by step description of the activities	1. Introduction (10 min): Teacher shows students six earth illustrations. Students examine the illustrations and explain what is represented on them (from literal to complex context exploration). 2. Main (60 min): 2.1. Teacher gives the assignment to arrange the illustrations by twos from actual - probable - exaggerated. Students discuss and give explanations why they arranged the illustrations in a particular order. 2.2. Teacher explains the concept of fake news: Fake news is information deliberately created to mislead the reader. It does not have to be entirely fabricated; it can be based on a truth or contain parts that are real, but ultimately build a story that is not true. Teacher reveals that the Earth illustrations are divided into past - present - future CO2 gas emissions.			

	<p>Student watch two videos:</p> <p>a) A video of yearly CO2 emissions referred to as 'Breathing Earth': https://www.youtube.com/watch?v=8uDYfpw1gg0</p> <p>b) A video of yearly graphic CO2 emissions representation. https://www.youtube.com/shorts/422XLPSl-8Q</p> <p>2.3. Teacher provides students with a challenge - to investigate and determine which source of information is factual and which is fake news using the following criteria: source, date of publication, video elements (altered, animated or real) and purpose. Using the rubric, they present their conclusions.</p> <p>2.4. Students categorise Earth illustrations using Canva/Pixton Comic creation into past - present - future. They present their comics (Figure 1.) and a short discussion ensues. Students try to find solutions to CO2 reduction and solving the climate problem on a micro (family - local community - city) and macro (country - continent - world) scale. The solutions are written down in brainstorming form.</p> <p>2.5. Teacher suggests creation of a superhero who would solve the climate change crisis by helping CO2 to go on a diet. Student create their superhero in Canva/Pixton/Storyboardthat/AvatarMaker.</p> <p>3. Summary (15 min):</p> <p>3. 1. Students present their superhero and describe its powers.</p>
Educational Materials to be used	<p>Comic creation: www.canva.com, www.pixton.com, www.storyboardthat.com</p> <p>Avatar creation: www.avatarmaker.com</p> <p>Research: www.google.com www.e-sfera.hr</p> <p>Assessment: www.kahoot.com www.wordwall.com www.genially.com</p>
Evaluation	<p>1. Peer review assessment</p> <p>2. Short quiz (at the beginning of next class)</p>
Suggestions for further activities	<p>1. Creating a comic screenplay on how their avatars/superhero can help CO2 lose weight and diet.</p> <p>2. Creating a comic using the screenplay and created avatars/superhero.</p>

Literature:

1. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
2. GUIDELINES FOR BOOKLET CREATION
3. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
4. Booklet 4. FAKE NEWS AND DISINFORMATION
5. <https://www.youtube.com/watch?v=8uDYfpw1gg0> (accessed 20/1/24)
6. <https://www.youtube.com/shorts/422XLPSl-8Q> (accessed 20/1/24)
7. National Referential Curriculum - Civic Education/Critical Thinking (accessed 20/1/24)



Scenario 2 (OST)

Ms Maja Franković

Scenario Title: Climate change

Developed by (author and school): Maja Franković, Elementary School Tituš Brezovački, Zagreb, Croatia

Country: Croatia

Students' Age: 11,12 years

Grade:6th elementary school, Time: 45 min

Field: science

Unit: Acid rain

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
	Acid rain			

Lesson/Activity Number and Title	1. Acid rain
Main focus	THE BASIC SCIENCE BETWEEN CLIMATE CHANGE
Educational Objectives	<p>Students explain relations between living organisms on the common habitat.</p> <p>Students discuss the importance of maintaining balance in nature and the causes of its disturbance.</p> <p>Students explain the meaning of the life cycle in the nature using examples from nature.</p> <p>Students interpret observed processes and relations based on observation of nature and simple research.</p> <p>Students explain the basic principles of science and relations between science, technology, and social progress.</p>
Step by step description of the activities	<p>1. Introduction (10 min): Teacher discusses the water cycle with students. Teacher shows them a picture (e.g. https://www.shutterstock.com/image-vector/water-cycle-infographic-ecosystem-concept-recycle-2121569294) and talks about each new concept from the picture (<i>evaporation, condensation, precipitation, and collection</i>).</p>
	<p>2. Main (33 min): Teacher explains the formation of ACID RAIN. Acid rain occurs because of air pollution, for e.g. when fossil fuels are burnt from cars or factories, harmful gases are dispersed into the atmosphere. These gases react with tiny droplets of water in the air and dissolve in them, therefore creating acid. Liquid which is created in the atmosphere falls in the form of rain and affects the environment. Apart from anthropocentric causes of acid rain, it can also be of natural origin, like a volcanic eruption. However, most acid rains do not originate from volcanic smoke. The harmful effects of acid rain were particularly visible in the 70s. Forests were dying, and many freshwater fish were endangered, affecting birds and fish-eating animals. Since the 70s a lot has been done: governments have set serious limits on some gas emissions. Acid rain has many ecological effects, especially on lakes, streams, wetlands, and other aquatic environments. The only way to fight acid rain is by curbing the release of the pollutants that cause it. This means burning fewer fossil fuels and setting air -quality standards.</p> <p>Now teacher demonstrates or shows a video of an acid rain experiment: https://youtu.be/l8NcptpWVw?si=c_NeZjsWvwSLaw5R. Teacher discusses the change of pH and how they think it effects the environment with students.</p> <p>For homework students can make this experiment at home to show effect of acid rain on plants, animals and building materials. https://youtu.be/r3_Sym_G4Vs?si=82X_pMC1YKa74gho</p>

	<p>3. Summary (2 min): Teacher shows this video to students to summarize today's topic: https://youtu.be/1PDjVDlrFec?si=XMjjJkYsVzW3h202</p>
Educational Materials to be used	<p>Photo of water cycle (eg. https://www.shutterstock.com/image-vector/water-cycle-infographic-ecosystem-concept-recycle-2121569294)</p> <p>Acid rain experiment: https://youtu.be/l8NcptqPWWv?si=c_NeZjsWvwSLAw5R (Material used in experiment: 6 test tubes, universal indicator, distilled water, pipetes, sodium bicarbonate - NaHCO_3, hydrochloric acid - HCl, sodium metabisulfide - $\text{Na}_2\text{S}_2\text{O}_5$, sodium nitrate - NaNO_3)</p> <p>Effect of acid rain: https://youtu.be/r3_Sym_G4Vs?si=82X_pMC1YKa74gho (Material used in experiment: 2 jars with a lid, two pieces of egg shell, two paper clips and two leaves and some white vinegar and some water).</p> <p>Acid rain video: https://youtu.be/1PDjVDlrFec?si=XMjjJkYsVzW3h202 https://www.pixton.com/ or https://www.canva.com/ Worksheet 1 ("Make a comic - Step by step guide for students")</p>
	Presentation: "How to make a comic?"
Evaluation	Exit cards.
Suggestions for further activities	Create a comic about effect of acid rain. Discuss homework experiment.

Literature:

1. Nature 6, Students' book for the 6th grade Elementary,
2. <https://www.nationalgeographic.com/environment/article/acid-rain>
3. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
4. Booklet 2. CREATING COMICS FOR DIGITAL AUGMENTATION
5. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template

Scenario Title: Climate change, Digital augmentation of comics

Developed by (author and school): Maja Franković, Elementary School Tituš Brezovački, Zagreb, Croatia

Country: Croatia

Students' Age: 11,12 years

Grade:6th elementary school, Time: 90 min

Field: science

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Climate change and biodiversity				
Lesson/Activity Number and Title	1. Climate change and biodiversity			
Main focus	THE BASIC SCIENCE BETWEEN CLIMATE CHANGE			
Educational Objectives	<p>Raising awareness about acid rain.</p> <p>Students explain relations between acid rain and nature.</p> <p>Students discuss the importance of maintaining balance in nature and the causes of its disturbance.</p> <p>Students explain basic principles of science and relations between science, technology, and social progress.</p>			
Step by step description of the activities	<p>1. Introduction (10 min): Teacher shows students a picture of Earth climate zones. Ask questions: <i>Which climate zone has most plants and animals? What do you think is the main reason for that? Can animals change climate zones without consequence? Why not?</i></p> <p>2. Main (65 min): Teacher explains the term BIODIVERSITY (e.g. all the different kinds of life found in one area - the variety of animals, plants, fungi, even microorganisms like bacteria that make up our natural world). Teacher asks questions: <i>Which climate zone has the greatest biodiversity? Why is climate changing?</i></p> <p>Teacher divides students in 4 groups and lets them explore the Internet and associate the consequences of man-made climate change with biodiversity. Each group explores one species or ecosystem that is affected with climate change and is in danger of extinction or is already extinct.</p> <p><i>Group 1: Explores effect on polar bears.</i></p> <p><i>Group 2: Explores effect on coral reefs.</i></p> <p><i>Group 3: Explores effect on rainforest.</i></p> <p><i>Group 4: Explores effect on wetlands.</i></p> <p>After research, each group is invited to make a storyboard for short digital comic in Pixton/Canva/Augmented by Clever Books about its topic.</p> <p>Title of each scenario is CO₂ is getting fat and its effects _____ (each group has its title depending on their research).</p> <p>Main characters to be used are students, CO₂, polar bears, coral reefs, animals in rainforests, birds in wetlands....</p> <p>Some key words for comic storyboard are: climate change, CO₂, global warming, polar bears, coral reefs, rainforest, wetlands... Teacher shortly explains how to make a comic (5 min presentation) and hands out the Worksheet 1 ("Make a comic - Step by step guide for students") based on Booklet 2 to students. They make a comic using their preferred technique: drawing, using Pixton or Clever book augmented comic (whatever makes them comfortable). Students work in groups.</p>			

	<p>3. Summary (15 min)</p> <p>Teacher connects groups inputs into one digital comic. Each group presents its part of comic.</p>
Educational Materials to be used	<p>Photo of Earth climate zones (eg. https://www.shutterstock.com/image-illustration/map-world-climate-zones-2118521531)</p> <p>https://www.pixton.com/ or https://www.canva.com/</p> <p>https://www.kahoot.it/</p> <p>Worksheet 1 ("Make a comic - Step by step guide for students")</p> <p>Presentation: "How to make a comic?"</p>
Evaluation	Exit cards.
Suggestions for further activities	Kahoot quiz at the beginning of next class to repeat key words.

Literature:

1. Nature 6, Students' book for the 6th grade Elementary, Zagreb, Profil, 2020.
2. <https://prilagodba-klimi.hr/prilagodba-zivotinjskog-svijeta-klimatskim-promjenama/>
3. <https://www.ft.com/content/8eabe848-3597-11e9-bd3a-8b2a211d90d5>
4. <https://neefusa.org/story/climate-change/how-climate-change-changing-animal-habits>
5. <https://www.un.org/en/climatechange/science/climate-issues/biodiversity>
6. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
7. Booklet 2. CREATING COMICS FOR DIGITAL AUGMENTATION
8. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template

Scenario 2 (OST)

Ms Maja Sokač

Scenario Title: CO2 goes on diet

Developed by (author and school): Maja Sokač, Primary school Tituš Brezovački, Zagreb

Country: Croatia

Students' Age: 11, 12

Grade: 6th

Time: 45 min

Field: history, science and technology, environmental history

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Innovations: Medieval renewable energy resources				

Lesson/Activity Number and Title	1. Innovations in agriculture: Medieval renewable energy resources
Main focus	Explain the impact of science, invention and technology on the development of society in the Middle ages. Compare medieval and modern renewable energy resources.
Educational Objectives	<ul style="list-style-type: none"> -analyse the relationship of medieval man to nature -compare agriculture before and after 11th century - analyse how the innovations in agriculture and farming affected the number of population in Europe - compare medieval and modern source of energy - develop pupils green, STEAM and digital skills at the co-creation environment - enhance visualization of concepts through elements of virtual and real images
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>Teacher shows the picture "September Château de Saumur" (Très Riches Heures du Duc de Berry) to pupils and explains that it is a book of hours with daily prayers and the most famous medieval illumination. Teacher explains that the picture shows dominant worldview of the time and ask pupils to describe the picture: <i>Who can you see? What are peasants doing? Where do you see the nobility and what are they doing? Where is God in picture and how does he look like? Who is close to the God - peasant or nobility? Why?</i> Discussion about picture is opportunity for repeating terms feudalism, manor, non-free peasant, and his obligations.</p> <p>2. Main (30 min):</p> <p>While still analysing the picture "September Château de Saumur" teacher will ask students: <i>What is the relationship of medieval man and nature? Does he respect the wildness or does he try to do something else? What are animals, field and plants for? Who is dominant in this relationship? Is this different from the relationship of gather-hunters and nature? How?</i></p> <p>Teacher should help pupils to conclude that human relationship with the rest of the nature changed during history in the moment when humans learned agriculture and farming in the neolithic. In palaeolithic humans respected animals as ghosts and gods and were thankful for earth gifts and surviving. From the neolithic, humans started to feel dominant and exploited nature for food and resources. Medieval people started deforesting and drying out swamps for agriculture land so already in 17th century deforestation become an issue.</p> <p>Teacher will explain that the medieval agriculture was primitive. People didn't know how to fertilize, so they split land in 3 parts always leaving one to rest. They used wooden plough that didn't plough deep enough. Teacher will ask students how this primitive agriculture affected food supply, human health, and population. Teacher will show pupils the graph of number of</p>

	<p>people in Europe from 6th and 13th century (Klio 6, pg. 45) and ask students to read when the middle age innovation started and how can we recognize it in the Graph. Around the year 1000 number of population in Europe doubled and historians split the Middle Age into the Early Middle Age (before the year 1000) and High Middle Age (after the year 1000).</p> <p>Teacher will explain that medieval people started to fertilize land more often and developed better tools. Teacher will demonstrate illustrations of medieval innovative tools. Pupils will describe and discuss.</p> <p>a) Using iron instead of wood plough “ March Château de Lusignan “(Très Riches Heures du Duc de Berry)</p> <p>Using iron instead of wood sick July Palace of Poitiers (Très Riches Heures du Duc de Berry)</p> <p>Why is it better to use iron instead of wood as material? How come iron tools cultivate land better?</p> <p>b) Watermill “A Watermill”, Meindert Hobbema, c. 1664</p> <p>How does water mill work? Have you seen any? Teacher explains that watermill was used for grinding grain. What kind of landscape is ideal for building watermills? Do we use something similar today? What kind of energy is produced by hydropower today?</p> <p>c) Windmill “The Windmill at Wijk bij Duurstede”, Jacob Isaacksz van Ruisdael, c. 1668 - c. 1670</p>
	<p>How does a windmill work? What does windmill produce? Have you seen anything similar today? What kind of landscape is ideal for building windmills? What kind of energy is produced in a wind farm?</p> <p>3. Summary (10 min)</p> <p>Teacher explains that climate change is similar to the way our planet's temperature and weather patterns are gradually changing as if over time, as if our Earth was having its own "mood swings." During history, humans become dominant over nature and started to affect it. For example, when we burn things like fossil fuels (oil, gas, and coal) for energy, it releases extra gases into the atmosphere, especially the gas called carbon dioxide. A life which has energy and doesn't effect nature is called sustainable life.</p> <p>Pupils will explore and compare (digital 3d or 4d models of) windmill and wind turbine (in augmented classroom). Teacher asks students to discuss in groups and prove that medieval windmill and water mill were sustainable and renewable source of energy.</p>
Educational Materials to be used	<ol style="list-style-type: none"> 1. Illuminations “September Château de Saumur”, “ March Château de Lusignan and July Palace of Poitiers ” (Très Riches Heures du Duc de Berry) 2. Painting “A Watermill”, Meindert Hobbema, c. 1664 3. Painting “The Windmill at Wijk bij Duurstede”, Jacob Isaacksz van Ruisdael, c. 1668 - c. 1670 4. Clever Books Augmented classroom 5. historiana.eu 6. Encyclopedia Britannica Britannica
Evaluation	Short online evaluation form
Suggestions for further activities	<p>Students are split in teams. They make digital comic in augmented classroom named “Back to medieval time”. They explore articles how wind and water were used for work in middle age (Historiana). They explore use of hydro and wind power in modern time (Britannica). Teacher can translate articles and make worksheets for teams. After comparison, students make digital comics in Pixton or Clever Books augmented classroom where the main characters are medieval boy or a girl and pupil's avatars. Key words for comic storyboard are: medieval agriculture, 11th century, windmill, water mill, hydropower, wind power, climate change, sustainable living and renewable energy resources.</p>

Literature:

1. Povijest 6, history textbook for the 6th grade of elementary school. Zagreb: Alfa, 2021
2. Klio 6, history textbook for the 6th grade of elementary school. Zagreb: Školska knjiga, 2019
3. Hawkey, K. 2023. History and the Climate Crisis: Environmental history in the classroom. London: UCL Press.
4. <https://historiana.eu/>
5. <https://www.britannica.com/>
6. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
7. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template

Scenario Title: CO2 goes on diet

Developed by (author and school): Maja Sokač, Primary school Tituš Brezovački, Zagreb

Country: Croatia

Students' Age: 11, 12

Grade: 6th

Time: 90 min

Field: history, science and technology, environmental history, art

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
The life of the stone age people	Comic: Time when CO2 was slim			
Lesson/Activity Number and Title	1. The life of the stone age people - What can Palaeolithic man teach us?			
Main focus	Explain the dynamics and changes in certain societies in prehistory. Find the elements of sustainable living in paleolithic time.			
Educational Objectives	<ul style="list-style-type: none"> -analyse the relationship of the stone age man to nature -describe palaeolithic society -describe the difference between a life of a hunter gatherer and modern man, especially in a context of sustainable living -explain how climate change has affected people's way of life in palaeolithic -develop pupils green, STEAM and digital skills at the co-creation environment -enhance visualization of concepts through elements of virtual and real images -interactive and immersive experience with Augmented Reality of the co-created digital comics 			
Step by step description of the activities	<p>1. Introduction (10 min):</p> <p>Activity 1</p> <p>Teacher will repeat the timeline of prehistory and the first human ancestors, Australopithecus and Homo Erectus. Students can watch the video Compare Homo habilis, H. erectus, H. neanderthalensis, and H. sapiens to determine the first human species too.</p> <p>Teacher shows the picture of palaeolithic daily life (or the illustration of it from the history textbook he used) to pupils and ask students to describe it. Teacher asks students to have a look at the early stone age people and try to conclude what was the weather like in palaeolithic. How can we see that it was cold? (clothes)</p> <p>2. Main (80 min):</p> <p>Teacher explains that during the palaeolithic time climate became colder. Throughout time, the earth has experienced several ice ages. The weather becomes cold, and then the weather warms up again. Each ice age takes many thousands of years to cycle and the reason of it wasn't any human impact. Today, human activities are the major driver of climate change because the greenhouse gasses (CO2 specially) increase the global temperature.</p> <p>The palaeolithic man is usually called Neanderthal man because of the archaeological site of the Neanderthal valley in Germany. The Neanderthal man lived between 200 000 years B.C. to 28 000 years B.C. during new ice age. Teacher will show the Neanderthal valley and some national palaeolithic archaeological sites (Croatia: Hušnjakovo brdo and Vindija) on a history map. The Neanderthal man lived in Europe.</p>			

	<p>Teacher will divide students in groups. Students will look at the picture palaeolithic daily life and will discuss and collaboratively fill in the worksheet "Learn from Palaeolithic man!". Students will answer first 7 questions.</p> <ol style="list-style-type: none"> 1. <i>Where did palaeolithic man live? With whom?</i> 2. <i>What tools did he use and from what material?</i> 3. <i>What did he use fire for?</i> 4. <i>What did he eat? Was that a healthy diet?</i> 5. <i>What was a hunted animal used for?</i> 6. <i>How were jobs in the family divided? What did the man, woman, elderly, and children do? How did children play?</i> 7. <i>Could he draw on the wall? What did he draw?</i> <p>After answering first seven questions, students will read their answers and discuss different opinions. Teacher will explain that the Neanderthal man lived in groups around 20 members. The animals during palaeolithic were giant (like woolly mammoth, cave bear etc.). Teacher will ask students to explain how hunt could be efficient in those times. Living in larger groups was essential for humans during difficult time.</p> <p>He used stone atool, so that's why Stone Age is another name for the Palaeolithic period. Teacher shows picture of palaeolithic tools and ask students to describe them and their purpose. Neanderthal used to bury the dead and looked after the sick, so he did probably had sense of his family. Teacher</p>
	<p>will also emphasize that Palaeolithic man lived like a nomad- outside, in nature, and not in a cave. He looked for shelter or made a shelter only during the night or in bad weather. He ate meat and probably drew animals because he believed in animal spirits. His drawings were probably aimed at thanking for the good hunt or praying to have a good one. He used stones (minerals) he found in nature for colouring. He ate what he found in nature. He used animals for eating, dressing, jewellery and maybe even instruments (bones).</p> <p>Students will complement their answers and draw their Palaeolithic (Neanderthal) man (they can use it late on when working on a comic).</p> <p>Activity 2</p> <p>After explaining the facts about the life of the palaeolithic man, teacher will start a discussion about the sustainability of the life of the Palaeolithic man and that will serve as an introduction to comic making. Teacher will explain that living, which has energy and does not effect the nature is called sustainable. Teacher will ask students to think: What was the relationship between Palaeolithic man and nature? Was he respecting wildlife? Was he producing everything he needed for life by himself? Did he affect the nature by his living? Did he use fuel for energy? Did he produce CO2 footprint that could affect the climate?</p> <p>Students should write answers of the last 2 questions in worksheet "Learn from Palaeolithic man!":</p>
	<ol style="list-style-type: none"> 8. <i>Was Paleo life sustainable? How?</i> 9. <i>What are differences and similarities between of your life and life of a palaeolithic boy/girl?</i> <p>Teacher will ask students to think: <i>Can we learn anything from paleo way of living? What could he teach us about sustainability, preserving nature or stopping to much CO2 footprint? If the CO2 is a person, would he be fat or slim during palaeolithic period?</i></p> <p>Teacher will give students the Worksheet 2 and explain that they will make a comic titled "Time when CO2 was slim?". Main characters are Neanderthal (Palaeolithic) man, students themselves (avatars if digital comic will be made) and CO2 gas.</p> <p>Students will find a time machine and travel to the palaeolithic time. They will meet Neanderthal man and interview him.</p> <p>Worksheet 1 will be used for comic's storyboard. Key words for comic storyboard are: palaeolithic, 1200 000 years B.C. to 28 00 years B.C., Neanderthal valley, ice age, stone tool, fire, cave, gatherer hunters, cave painting, climate change, sustainable living, CO2 gas and recycling.</p> <p>Teacher will shortly explain how to make a comic (5 min presentation) and will give to the students Worksheet 2 ("Make a comic - Step by step guide for students") based on Booklet 2. Students will make a comic in preferred technique: drawing, using Pixton or Clever book augmented comic, whatever they are comfortable with. Students can work on it individually, in pairs or even in groups if they like.</p>

	<p>3. Summary (10 min)</p> <p>Students will have the classroom exhibition of their comics.</p>
Educational Materials to be used	<ol style="list-style-type: none"> 1. https://www.englishwithsophia.com/revealing-life-at-a-paleolithic-camp-poster/ 2. https://www.amnh.org/exhibitions/permanent/human-origins/neanderthal-tools 3. Worksheet 1 ("Learn from Palaeolithic man!") 4. Worksheet 2 ("Make a comic - Step by step guide for students") 5. Presentation: "How to make a comic?" 6. Clever Books Augmented classroom 7. Encyclopedia Britannica Britannica 8. Pixton 9. Historical map (or Google map)
Evaluation	Short online evaluation form
Suggestions for further activities	Making a longer comic episode by adding a Superhero as character. Making a school and online exhibition. Making a Comic book in Book creator with all episodes of "CO2 goes on diet".

Literature:

1. Povejst 5, history textbook for the 5th grade of elementary school. Zagreb: Alfa, 2021.
2. Klio 5, history textbook for the 5th grade of elementary school. Zagreb: Školska knjiga, 2019.
3. Hawkey, K. 2023. History and the Climate Crisis: Environmental history in the classroom. London: UCL Press.
4. <https://www.britannica.com/>
5. <https://earlyhumans.mrdonn.org/iceage.html>
6. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
7. Booklet 2. DIGITAL AUGMENTATION OF COMICS

Worksheet 1 "Learn from palaeolithic man!", Sokac M.

ANSWER THE QUESTIONS

LEARN FROM PALAEOOLITHIC MAN!

1. WHERE DID PALAEOOLITHIC MAN LIVE? WITH WHOM?

2. WHAT TOOLS DID HE USE? WHAT MATERIAL?

3. WHAT HE USED FIRE FOR?

4. WHAT WAS HE EATING? WAS IT HEALTHY?

5. WHAT WAS HUNTED ANIMAL. ALL FOR?

DRAW YOUR PALAEOOLITHIC MAN HERE

LEARN FROM PALAEOOLITHIC MAN!

6. HOW WERE JOBS IN FAMILY DIVIDED? HOW DID CHILDREN PLAY?

7. COULD HE DRAW ON THE WALLS? WHAT?

8. WAS PALEO LIFE SUSTAINABLE? HOW?

9. WHAT ARE DIFFERENCES AND SIMILARITIES OF YOUR AND PALEO BOY/ GIRL LIFE?

Scenario 2 (OST)

Ms Sanda Mašina

Scenario Title: CO2 goes on diet

Developed by (author and school): Sanda Mašina, Primary school Tituš Brezovački, Zagreb

Country: Croatia

Students' Age: 11, 12

Grade: 6th grade elementary school

Time: 90 min

Field: Geography, Use of communication and information technology, Mathematics, Nature

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Climate diversity on Earth				
Lesson/Activity Number and Title	1. Climate diversity on Earth			
Main focus	1.THE BASIC SCIENCE BEHIND CLIMATE CHANGE 2.DIGITAL COMICS CO-CREATION 3.DIGITAL AUGMENTATION OF COMICS			
Educational Objectives	<ul style="list-style-type: none"> Pupils can interpret and analyse a climate diagram. Pupils can name climate classes according to Koppen. Pupils can differentiate between different climate classes and how to analyse them on a climate map. Pupils develop green, STEAM and digital skills in the co-creation environment. Pupils develop communication skills and respectful relationships. Pupils communicate well with others, cooperate successfully in different situations and are ready to ask for and offer help. Pupils can explain basic components of nature. 			
Step by step description of the activities	1. Introduction (10 min): At the beginning of the class pupils work in pairs to solve a short quiz using LearningApps or Wordwall digital tool https://learningapps.org/watch?v=pymz6vxuc20 https://wordwall.net/resource/516300/science/weather-and-climate 2. Main (70 min): Teacher discusses weather and climate with pupils: <i>What is difference between weather and climate? How many types of climates are there on Earth? What weather elements are needed to create a climate diagram?</i> Teacher divides pupil into 5 groups and each group gets to create a climate diagram for a certain type of climate. 1st group: Tropical rainy climate 2nd group: Moderately warm rainy climate 3rd group: Dry climate 4th group: Snow-forest climate 5th group: Snowy climate Pupils work in groups. <ul style="list-style-type: none"> They read a text about climate diversity on the Earth (textbook GEA 2.), pp. 36-42. and write key words for each climate (weather elements, biodiversity) They use a map with the distribution of climates on Earth (use suitable material for creating climate diagrams) http://www.unizd.hr/Portals/6/nastavnici/Sanja%20Lozic/Klima%2011.pdf https://en.wikipedia.org/wiki/K%C3%B6ppen_climate_classification			

	<ul style="list-style-type: none"> • After research, each group creates a climate diagram in digital form with https://climatecharts.net/ • Each group analyses climate diagrams. • Each group describes the characteristics of climate. • Each group representative gives a presentation of his group's notes and conclusions. <p>3. Summary (10 min)</p> <p>Pupils play the digital game Climate Types to repeat about climate diversity.</p> <p>https://learningapps.org/22076810</p> <p>https://wordwall.net/resource/63536811/types-of-climate</p>
Educational Materials to be used	<ol style="list-style-type: none"> 1. Gea 2, geography textbook for the sixth grade of elementary school, Zagreb: Školska knjiga, 2022. 2. https://learningapps.org/watch?v=pymz6vxuc20 3. https://www.google.com/intl/hr_HR/forms/about/ 4. https://climatecharts.net/
Evaluation	Pupils evaluate their work with an assessment sheet/exit cards
	<p>Short online evaluation form</p> <p>https://docs.google.com/forms/d/e/1FAIpQLSc_TZe0sOrVTXuFvJcRHJNADxnvx9bbyMwa0KJFI0rKltag/viewform?usp=sf_link</p>
Suggestions for further activities	<p>Pupils can use ARC Geography App to explore continent specific weather and discuss the difference between continents. They can explore plants and discover how they differ in each continent.</p> <p>Pupils can make a storyboard for short digital comic in Pixton/Canva/Augmented by Clever Books about its topic. Some key words for comic storyboard can be deforestation, rise in temperature, rising sea level, climate change, CO₂, global warming....). They can watch a video about Greta Thunberg and her speech about climate change and use it for a making a storyboard.</p> <p>https://www.youtube.com/watch?v=EAmnUIEsN9A</p>

Literature:

1. Gea 2, geography students' book for 6th grade elementary school. Zagreb: Školska knjiga, 2022.
2. <https://wordwall.net/resource/516300/science/weather-and-climate>
3. <https://worldweather.wmo.int/en/home.html>
4. <http://www.unizd.hr/Portals/6/nastavnici/Sanja%20Lozic/Klima%2011.pdf>
5. https://en.wikipedia.org/wiki/K%C3%B6ppen_climate_classification
6. <https://climatecharts.net/>
7. <https://learningapps.org/watch?v=pymz6vxuc20>
8. <https://learningapps.org/22076810>
9. <https://wordwall.net/resource/63536811/types-of-climate>
10. <https://www.youtube.com/watch?v=EAmnUIEsN9A>
11. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
12. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template
13. GUIDELINES FOR BOOKLET CREATION, Project Miracle

Scenario Title: CO2 goes on diet

Developed by (author and school): Sanda Mašina, Primary school Tituš Brezovački, Zagreb

Country: Croatia

Students' Age: 11, 12

Grade: 6th grade elementary school

Time: 90 min

Field: Geography, Nature, Use of communication and information technology

Unit Panoramic View

Add or delete columns and rows as appropriate.

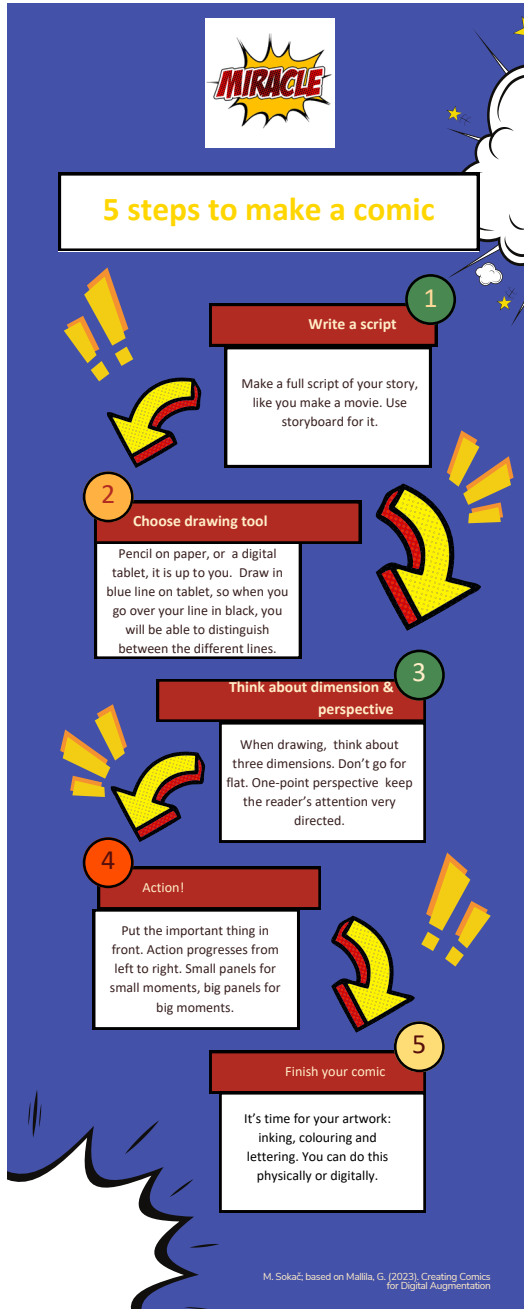
Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
	Human influence on the environment			
Lesson/Activity Number and Title	Human influence on the environment			
Main focus	Pupils explain the interdependence of climate, soil and the living organisms, and the influence of man on the environment. Pupils learn ways how man can preserve the environment.			
Educational Objectives	<ul style="list-style-type: none">• pupils can explain the impact of man on the soil and the living organisms• pupils can describe the importance of separating and recycling waste• pupils can list examples of environmental pollution at the local and global level• pupils can distinguish between waste and garbage• pupils develop communication skills and respectful relationships among others• pupils communicate with others, cooperate successfully in different situations and they are ready to ask for and offer help.• pupils improve digital skills; pupils can use interactive tools both for learning and fun			
Step by step description of the activities	<p>1. Introduction (10 min):</p> <p>Teacher shows a photo and asks pupils a few questions for the introduction.</p> <ol style="list-style-type: none">1. What <u>can</u> you see on the picture?2. Which materials are on the picture?3. What is waste and what is garbage?4. What does recycling means? <p>2. Does man change the environment? Why?</p> <p>3. List positive and negative examples of environmental change. https://edutorij-admin-api.carnet.hr/storage/extracted/4440905/img/shutterstock_1398683594-2023_07_20_03_34_55-jpg-1696421259365.jpg</p> <p>2. Main (70 min):</p> <p>Teacher asks pupils to create a digital comic. Teacher divides pupils into several groups and shortly explains how to make a comic (5 min presentation) and gives to pupils a Worksheet 1 based on Booklet 2 ("Make a comic - Step by step guide for students"). Pupils can choose the main characters and a possible story.</p> <p>Possible characters can be pupils themselves and the Earth. In a potential scenario, the Earth and the pupils are talking. The earth is sad, crying, and pupils ask what is wrong why is she so sad. She answers that she is sad because of the people (pupils) who threw plastic waste, garbage into the sea and who polluted the air. The pupils ask how they can help her feel better. The Earth gives advice to plant trees, to reduce toxic pollution in factories, cars and to reduce the use of plastic. The last scene can include pupils saying that together they will do something to make the Earth feel better.</p> <p>Pupils work in groups and make a comic using their preferred technique, Pixton or Clever book augmented comic.</p> <p>3. Summary (10 min)</p> <p>Pupils read and act out each other's comics aloud.</p>			

	<p>Pupils also can take a quiz about proper classification of waste.</p> <p>https://wordwall.net/en-gb/community/recycle (in English)</p> <p>https://wordwall.net/hr-hr/community/razvrstavanje-otpada (in Croatian)</p>
Educational Materials to be used	<ol style="list-style-type: none"> 1. Gea 2, geography students' book for 6th grade elementary school. Zagreb: Školska knjiga, 2022. 2. https://www.pixton.com/ 3. https://wordwall.net/ 4. https:// canva.com/ 5. Worksheet 1 ("Make a comic - Step by step guide for students") 6. Presentation: "How to make a comic?"
Evaluation	<ol style="list-style-type: none"> 1. Self-assessment questionnaire/ Exit cards 2. Peer review questionnaire 3. Summative assessment
	<ol style="list-style-type: none"> 4. Short quiz (at the beginning of next class) <p>https://edutorij-admin-api.carnet.hr/storage/extracted/4440905/html/38637_Mislilim_zeleno_zivim_zeleno.html (in Croatian)</p>
Suggestions for further activities	<p>Pupils can play "Climate action board game" (in English)</p> <p>https://climate.ec.europa.eu/system/files/2017-03/board_en_0.pdf</p> <p>Pupils can watch the video "Planet of pollution and plastic".</p> <p>https://www.youtube.com/watch?v=0NtoL5mfizc</p>

Literature:

1. Gea 2, geography students' book for 6th grade elementary school. Zagreb: Školska knjiga, 2022.
2. <https://wordwall.net/en-gb/community/recycle>
3. https://edutorij-admin-api.carnet.hr/storage/extracted/4440905/img/shutterstock_1398683594-2023_07_20_03_34_55-jpg-1696421259365.jpg
4. <https://wordwall.net/hr-hr/community/razvrstavanje-otpada>
5. https://edutorij-admin-api.carnet.hr/storage/extracted/4440905/html/38637_Mislilim_zeleno_zivim_zeleno.html
6. https://climate.ec.europa.eu/system/files/2017-03/board_en_0.pdf
7. <https://www.youtube.com/watch?v=0NtoL5mfizc>
8. Booklet 1. THE BASIC SCIENCE BEHIND CLIMATE CHANGE
9. Booklet 3. DIGITAL AUGMENTATION OF COMICS Content_Development_Template
10. GUIDELINES FOR BOOKLET CREATION

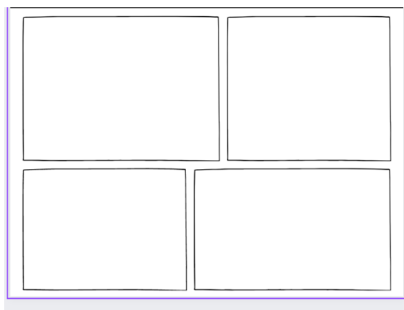
Scenario 2 (OST)





THE PANEL

- Each page is normally composed of six to nine rectangular frames called **panels**.
- Panels display single instants of action or 'stills' and their contents are varied.
- The reader of comics considers the panel as a portion – which can be of various lengths – of the narrative, where something actually takes place and takes time.



THE GUTTER

- Each panel is separated from the others by a blank space called the **gutter**.
- The gutter is a very important element, since it is the space containing all that happens between the panels.
- This means that the reader has to guess the missing elements in order to reconstruct the flow of the story.
- The gutter is similar to the space that divides one sentence from the next: there is always a certain amount of information that is missing from the narrative and the readers have to provide it for themselves.





THE BALLOON

- The balloon is probably the element that most people associate with comics. It is the space in which most of the verbal text is contained.
- Balloons are used to report speech or thought, and that is why the terms **speech balloon** and **thought balloon** are used.
- Usually balloons are of oval or cloud-like shape, but variations are possible.
- The tail of the balloon indicates the character who is speaking (or thinking). Normally the tail looks like a small pointed projection, but it can sometimes be a simple line. An important variation is when the tail is formed of a series of small bubbles, which indicate that the balloon is a thought balloon.



Different shapes balloons can take as part of comics language.

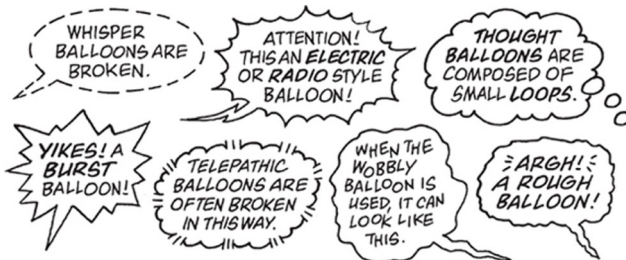


Figure: Balloons by Tod Klein



It is extremely important that balloons are in the correct order for speaking.

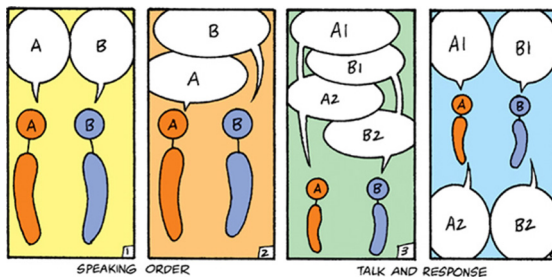


Figure: Todd Klein illustrating balloon sequencing

Scenario 3 (AETA)

Abiotic Factors

Scenario Title: **UPCYCLING- a way to care for the Environment and combat climate change**

Developed by (author and school): Céu Brandão / Elisa Pimenta (Escola Básica Terras do Ave)

Country: Portugal

Students' Age: 10/11

Grade: 5.º / 6.º, Time: 45 min

Field: Science/ Citizenship Education

Unit Panoramic View :

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3/4
<p><u>Abiotic Factors: through the control of variables, in the laboratory.</u></p> <p>Introduction to the topic and leading the students through an experimental activity.</p> <p>Carrying out an experimental activity to observe the effect of water and light on plant growth.</p> <p>See the video https://youtu.be/NDzpP2efexY to think about the question: how can pollution affect living organisms?</p>	<p><u>Preservation of Abiotic Factors: Fundamentals and Importance</u></p> <p>Relating abiotic factors with living beings.</p> <p>Use of tools involving Artificial Intelligence (AI) and Augmented Reality (AR) to demonstrate the impact of human activities and waste production on abiotic factors</p> <p>Presentation of strategies and practices to preserve and protect abiotic factors</p> <p>Group discussion on how these strategies can be implemented at local, national and global levels.</p> <p>Reflection to adapt the knowledge acquired to everyday reality.</p>	<p><u>Researching: Community Waste Management</u></p> <p>brainstorm about the local reality</p> <p>In small groups collect data on the waste present in the community.</p> <p>Presentation of the data collected to the class and identification of common patterns and problems</p> <p>Students propose solutions and practical actions to improve waste management in the community.</p>
Lesson/Activity Number and Title	Lesson 1: Abiotic Factors: through the control of variables, in the laboratory.	
Main focus	Know the influence of abiotic factors	
Educational Objectives	<p>Learn about the influence of abiotic factors on the morphological adaptations of plants;</p> <p>Give examples of anthropogenic actions that can affect plant biodiversity.</p> <p>Propose measures to promote plant biodiversity.</p> <p>Conclude on the importance of protecting plant biodiversity.</p>	
Step-by-step description of the activities	<p>1. Introduction (5 min):</p> <p>Talk to the students: What do you know about abiotic factors? Record ideas on the board.</p> <p>Students will be conducting an experimental class to observe the effect of water and light on chive growth. Materials will be organized accordingly.</p> <p>2. Main (25 min):</p> <p>The students are given a protocol which they must read carefully and then carry out the experiment accordingly. The students must document their expectations in advance and keep a record of the results. With the teacher's help, the variables that remain constant throughout the experiment are identified. The table is updated weekly. The students will carry out an experimental activity to observe the effect of water and light on the growth of spring onions.</p> <p>3. Summary (15 min)</p>	

	Following a comprehensive group discussion, a conclusion is put forward for consideration. See the video https://youtu.be/NDzp2gfeXy to think about the question: how can pollution affect living organisms?
Educational Materials to be used	-Experimental protocol -Materials for the experiment: ruler, pots, soil, chive root, squirt, water, labels, markers, and cupboard.
Evaluation	Observe student behavior and participation: adherence to standards, commitment, cooperation, conjecture-making, critical thinking
Suggestions for further activities	Working together with the school management, teaching staff and other students to implement the proposed strategies. Creating awareness campaigns, installing paper recycling bins throughout the school.

Lesson/Activity Number and Title	Lesson 2: Preservation of Abiotic Factors: Fundamentals and Importance
Main focus	Recognize the impacts of human activities on abiotic factors and biotic communities.
Educational Objectives	To understand the concept of abiotic factors and their importance in ecosystems. Identify the main abiotic factors and their role in sustaining life. Explore strategies for preserving and protecting abiotic factors.
Step-by-step description of the activities	<p>1. Introduction (15 min): Background on the importance of abiotic factors in ecosystems. Definition of abiotic factors and their relationship with living beings. Recall the main abiotic factors</p> <p>2. Main (25 min): Presentation of the main types of human activities that generate waste, such as agriculture, industry, transport and consumption, using visual resources and concrete examples. Use of tools involving Artificial Intelligence (AI) and Augmented Reality (AR) to demonstrate the impact of human activities and waste production on abiotic factors. For example: Presentation of computer simulation models illustrating urban sprawl and its effects on air and soil quality. Demonstration of AR applications that superimpose information about polluted areas or environmental degradation on a real environment, highlighting the impacts on communities and abiotic factors. Presentation of strategies and practices to preserve and protect abiotic factors, such as conservation of natural areas, sustainable use of natural resources and adoption of clean technologies.</p>

	<p>Group discussion on how these strategies can be implemented at local, national and global levels.</p> <p>3. Impacts of Human Activities Summary (5 min)</p> <p>Recap of the main points covered in class, emphasizing the importance of preserving abiotic factors for the sustainability of ecosystems and human well-being.</p> <p>Encouraging students to reflect on their own actions and how they can contribute to the preservation of abiotic factors in their daily lives.</p>
Educational Materials to be used	<p>interactive dashboard</p> <p>Computer with Internet access</p> <p>Slides or visual aids</p> <p>Paper and pens for written activities</p>
Evaluation	Observe student behavior and participation: adherence to standards, commitment, cooperation, conjecture-making, critical thinking
Suggestions for further activities	Invite students to develop awareness-raising projects or practical actions to preserve abiotic factors in their local communities. - follow up for upcycling.

Lesson/Activity Number and Title	Lesson 3/4: Researching: Community Waste Management
Main focus	Carry out research in the community to identify needs and areas for intervention in waste management.
Educational Objectives	<p>Understand the importance of proper waste management for the environment and human health.</p> <p>Identify the different types of waste generated in the community and their possible consequences.</p> <p>Propose solutions and practical actions to improve waste management in the community.</p>
Step by step description of the activities	<p>1. Introduction (15 min): Based on the work of the previous lesson, brainstorm about the local reality and the importance of dealing with waste properly to protect the environment and public health.</p> <p>Identify, as a group, the different types of waste that can be found in the community (examples: plastic, paper, glass, organic, electronic, etc.).</p> <p>2. Main (60 min): Divide the class into small groups and assign each group an area of the community to observe and analyse the waste present.</p> <p>Instruct the groups to observe the types of waste, their quantity, disposal sites and possible environmental impacts.</p> <p>Take photographic records and notes of the data collected.</p> <p>3. Summary (15 min): Bring the students together to share their findings.</p>

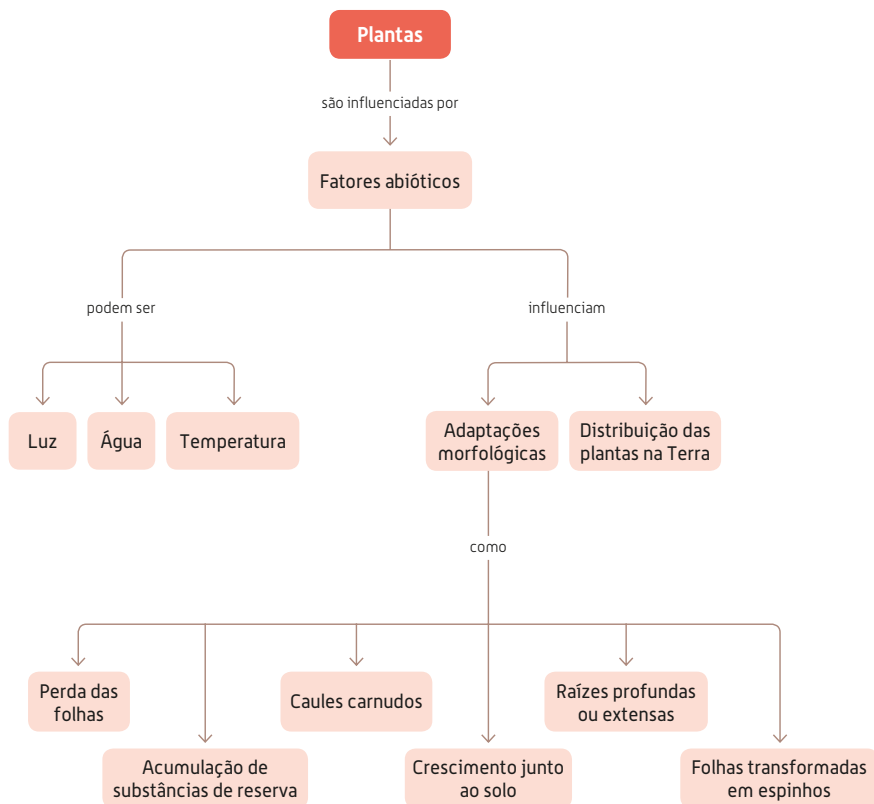
	<p>Identification of common patterns and recurring problems in community waste management.</p> <p>Guided by the previous discussion, ask students to propose solutions and practical actions to improve waste management in the community.</p> <p>Encourage creativity and critical thinking in the search for viable and sustainable solutions.</p>
Educational Materials to be used	<p>Interactive panel</p> <p>Internet access for research</p> <p>Camera or mobile phone to record observations in the community</p>
Evaluation	<p>Contribution to the discussion of research results, students' ability to communicate their ideas in a clear and organised way during class discussion and when presenting their proposals.</p> <p>The student's ability to contribute relevant questions and actively participate in the proposed activities.</p>
Suggestions for further activities	<p>The students can work on proposals for intervention in the community, developing awareness-raising materials or proposing improvements to the community's waste management infrastructure.</p>

Literature:

<https://www.frontiersin.org/articles/10.3389/frsc.2023.1281430/full>

National Geographic Kids. (2021). *Human Footprint: Everything You Will Eat, Use, Wear, Buy, and Throw Out in Your Lifetime*. Washington, DC: National Geographic Children's Books. ISBN: 978-1426303325

Fatores abióticos e adaptações das plantas



Scenario Title:

Developed by (author and school): Maria do Céu Brandão / Elisa Pimenta (Escola Básica Terras do Ave)

Country: Portugal

Students' Age: 10/11

Grade: 5.º / 6.º , Time: 45 min

Field: Science

Unit Panoramic View : Influence of abiotic factors

Activity/Lesson 1	Activity/Lesson 2	Activity/Lesson 3	Activity/Lesson 4	Activity/Lesson 5
Lesson/Activity Number and Title	Describe the influence of water and light on plant growth, through the control of variables, in the laboratory.			
Main focus	Know the influence of abiotic factors			
Educational Objectives				
Step-by-step description of the activities	<p>1. Introduction (5 min): Students will be conducting an experimental class to observe the effect of water and light on chive growth. Materials will be organized accordingly.</p> <p>2. Main (25 min):</p> <p>The students are provided with a protocol which they need to read attentively and then perform the experiment accordingly. It is important for students to document their expectations in advance and then keep a record of the results. With the help of the teacher, the variables that remain constant throughout the experiment are identified. The table is updated on a weekly basis. Students will be conducting an experimental class to observe the effect of water and light on chive growth. Materials will be organized accordingly, with the latest results.</p> <p>3. Summary (15 min)</p> <p>Following a comprehensive group discussion, a conclusion is put forward for consideration.</p> <p>See the video https://youtu.be/NDzpP2gfexY to think in the question: how can pollution affect living organisms?</p>			
Educational Materials to be used	<p>-Protocolo experimental</p> <p>-Material para a experiência: régua, vasos, solo, raiz de cebolinha, esguicho, água, etiquetas, marcadores e armário.</p>			
Evaluation				
Suggestions for further activities				

Name: _____ Classe: _____ Date: ____ / ____ / ____	Experimental Activity 5.º Grade
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Experimental Activity: Investigate the influence of water and light on plant growth

Problem Question:

To what extent do abiotic factors, water, and light, affect biodiversity?

Material:

4 clay pots, some soil, chives, a squirt bottle, tap water, labels, markers, a ruler, and a cabinet.

Instructions:

1. Identify each pot (Vase A - plant with water and light; Pot B - plant with only water; Pot C - plant with only light; Pot D - plant without water and light).
2. Add soil and a chive root to each pot.
3. Measure the height of each plant and record it in the table below.
4. Water pots A and B, then store pots B and D in a closed cupboard.

Predicted results:

(state what you expect to happen)

Vases		Desenvolvimento do cebolinho		
		1. st. Week	2. nd Week	3.rd Week
		Data: 1. st measurement	Data: 2.nd measurement	Data: 3.rd measurement
Vase A (plant with water and light)	Size (cm)			
	Color			
Vase B (plant with only water)	Size (cm)			
	Color			
Vase C (plant with only water light)	Size (cm)			
	Color			
Vaso D (plant without water planta and light)	Size (cm)			
	Color			

Observation:

(One way to describe the activity is by observing it or creating a diagram with a caption.)

Conclusion:

(Please provide a response to the question presented.)

Nome: _____

Nº ____ Turma: ____

Data: ____ / ____ / ____

Atividade Experimental
Ciências da Naturais – 5.º Ano

Atividade Experimental: Investigar a influência da água e da luz no crescimento das plantas

Questão Problema:

Em que medida é que os fatores abióticos, água e luz, afetam a biodiversidade?

Material:

Procedimento:

Previsão dos resultados:

(enuncia o que esperas que aconteça)

Vasos		Desenvolvimento do cebolinho		
		1.ª semana	2.ª semana	3.ª semana
		Data: 1.ª medição	Data: 2.ª medição	Data: 3.ª medição
Vaso A (planta com água e luz)	Tamanho (cm)			
	Cor			
Vaso B (planta só com água)	Tamanho (cm)			
	Cor			
Vaso C (planta só com luz)	Tamanho (cm)			
	Cor			
	Tamanho (cm)			
Vaso D (planta sem água e sem luz)	Cor			

Observação:

(indica o que é possível observar no decorrer da atividade ou faz um esquema e a respetiva legenda)

Conclusão:

(deverás dar uma resposta à questão problema)

Scenario 3 (AETA)

Fabrics

Scenario Title: UPCYCLING- a way to care for the Environment and combat climate change

Developed by (author and school): Elisa Pimenta and Maria do Céu Brandão

Country: Portugal

Students' Age: 10-14

Grade: 5.º - 9.º, **Time:** 45´ + 45´

Field : Arts + Citizenship Education

Unit Panoramic View

Sustainability

Activity/Lesson 1	Activity/Lesson 2
Exploring Fabric /clothes Upcycling: Sustainable Understanding the difference between upcycling and downrecycling Realise the reality of fabric accumulation Make comics with proposals for upcycling fabrics. Presentation of the comics to the class.	From theory to practice: let's parade! Presentation of different techniques for upcycling fabrics working on upcycling projects. Students can make fashion using the fabrics available. - (<i>invite the parents.</i>) Conclusion of the practical activity and preparation for the presentation of the projects.

Lesson/Activity Number and Title	Lesson 1: Exploring Fabric /clothes Upcycling: Sustainable
Main focus	Wanting to learn more; developing reflective, critical and creative thinking.
Educational Objectives	Introduce the concept of upcycling and its importance for sustainability. Explore different fabric/ clothes upcycling techniques.
Step by step description of the activities	1. Introduction (5 min): Presentation of the concept of upcycling, explaining how it differs from conventional recycling: https://youtu.be/4NboJ3-NVAU 2. Main (25 min): Through brainstorming, emphasize the importance of upcycling to reduce waste and promote sustainability. Watch the video demonstrating part of the current situation regarding fabric accumulation: https://youtu.be/pirmWhJQdIA Based on the phrase: Upcycling is the new fashion , the students (as a group 2-3 members) have to create a comics slogan in which the possibilities of upcycling fabrics can be seen. 3. Summary (10 min): Presentation to the class of each group's comic strips and the environmental and economic benefits that each one mentions.
Educational Materials to be used	- Interactive panel

	<ul style="list-style-type: none"> - Internet access for research - Paper and pencil for sketching and planning.
Evaluation	<p>Student involvement during the practical activity of producing comics</p> <p>Creativity and originality of the projects developed by the students.</p> <p>Collaboration and teamwork.</p>
Suggestions for further activities	Organise a fashion show where you can see fabric upcycling

Lesson/Activity Number and Title	Lesson 2: From theory to practice: let's parade!
Main focus	Looking for new solutions and applications.
Educational Objectives	<p>Develop new ideas and solutions, imaginatively and innovatively, as a result of as a result of interaction with others or personal reflection, applying them to different contexts and areas of learning.</p> <p>To raise awareness of textile waste and the importance of reusing materials.</p> <p>Encourage students' creativity and sustainable thinking.</p>
Step by step description of the activities	<p>1. Introduction (5 min): Presentation of different techniques for upcycling fabrics, such as patchwork, customizing clothes and transforming T-shirts into bags, among others. https://youtu.be/Sf8tC8Ysqz0</p> <p>2. Main (30 min):</p> <p>Quick demonstrations of how to apply some of these techniques, highlighting the versatility and creativity involved: https://youtu.be/NY-xF5l3Nb4</p> <p>Divide the class into small groups or pairs.</p> <p>Distribution of materials and instructions for students to start working on their upcycling projects.</p> <p>Students can choose between creating a fashion accessory, a decorative piece or another idea using the fabrics available.</p> <p><i>NOTE: This part of the lesson can involve students' parents who work in textile factories.</i></p> <p>Students are encouraged to work together, share ideas and experiment with different techniques.</p> <p>3. Summary (10 min):</p> <p>Conclusion of the practical activity and preparation for the presentation of the projects.</p> <p>Each group or pair presents their project to the class, explaining the concept behind the creation, the techniques used, and the materials reused.</p>
Educational Materials to be used	<p>Visual inspiration (videos, samples of upcycling projects)</p> <p>Various fabrics (scraps, old T-shirts, scarves, etc.)</p> <p>Scissors</p>
	<p>Needles and thread</p> <p>Buttons, zips, ribbons and other trims</p> <p>Sewing machines (optional)</p>
Evaluation	<p>Quality of the upcycling costumes produced based on predefined criteria such as creativity, originality, effective use of reused materials, and aesthetic quality.</p> <p>Students' ability to apply upcycling techniques learned during the lesson.</p> <p>Collaboration and teamwork.</p>
Suggestions for further activities	<ul style="list-style-type: none"> - share photos of their upcycling projects on the school's online platform or in a physical exhibition at the school to inspire their classmates and raise awareness about the importance of reusing fabrics. - Invite the community to take part and organise a competition to choose the upcycling costume.

Scenario 3 (AETA)

Metal

Scenario Title: **UPCYCLING- a way to care for the Environment and combat climate change**

Developed by (author and school): Céu Brandão & Elisa Pimenta EB Terras do Ave

Country: Portugal

Students' Age: 10-14

Grade: 5th - 9th grade, Time: 45' + 45'

Field: Science, Citizenship, Arts, Technological education

Unit Panoramic View

Add or delete columns and rows as appropriate.

Activity/Lesson 1	Activity/Lesson 2
Where does metal come from and where does it go?	Let's scare... the birds away
Powerpoint presentation: the origin of metal and its applications	Selection of the materials needed to implement bird deterrent techniques using recycled metals.
Research: bird deterrent techniques using recycled metals.	Building a sparrow deterrent
Continue a comic strip by presenting a solution involving the construction of a metal artefact to scare birds away.	Presentation of the device to the class
Presentation of conclusions on bird deterrent techniques using recycled metals.	Evaluation of the work produced.

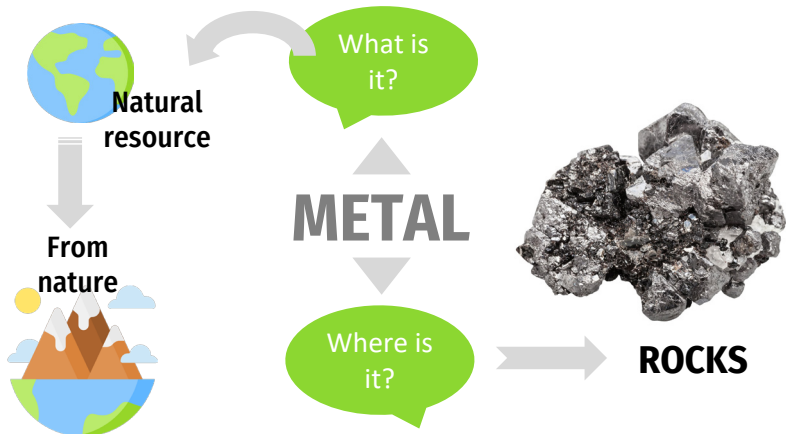
Lesson/Activity Number and Title	Lesson 1: Where does metal come from and where does it go?
Main focus	Learning about the origin of metal and its applications Know some consequences of pollution
Educational Objectives	Consequences of pollution Footprint
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>Talk to the students: Where does metal come from and where does it go?</p> <p>Powerpoint presentation about the topic.</p> <p>https://docs.google.com/presentation/d/1elpL4Sc1AjmwLpfopseHRJaEJ1iYw9ktMmylpv86zeo/edit#slide=id.p1</p> <p>1. Main (35 min):</p> <p>Divide the class into groups (4 elements) and assign different bird deterrent techniques using recycled metals for each group to research (examples: metal scarecrows, wire fences, wind blades made from cans, etc.).</p> <p>The teacher shows the beginning of a comic strip. It depicts a real problem: birds attacking crops. To the question: What can you do? Each group of students is asked to continue the comic strip by presenting a solution involving the construction of a metal artifact to scare the birds away.</p> <p>2. Summary (5 min)</p> <p>Each group presents its findings on bird deterrent techniques using recycled metals.</p>

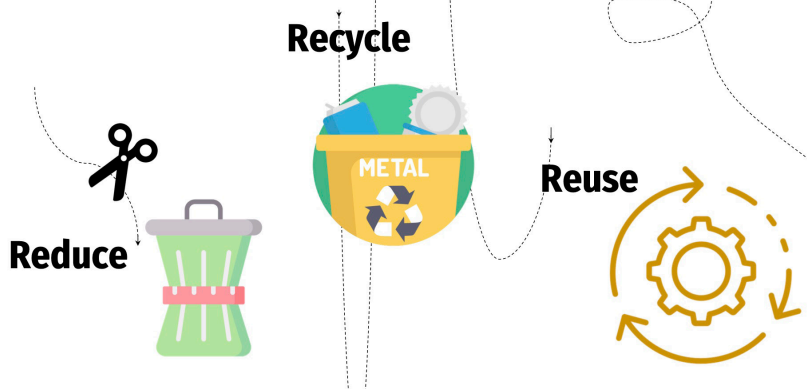
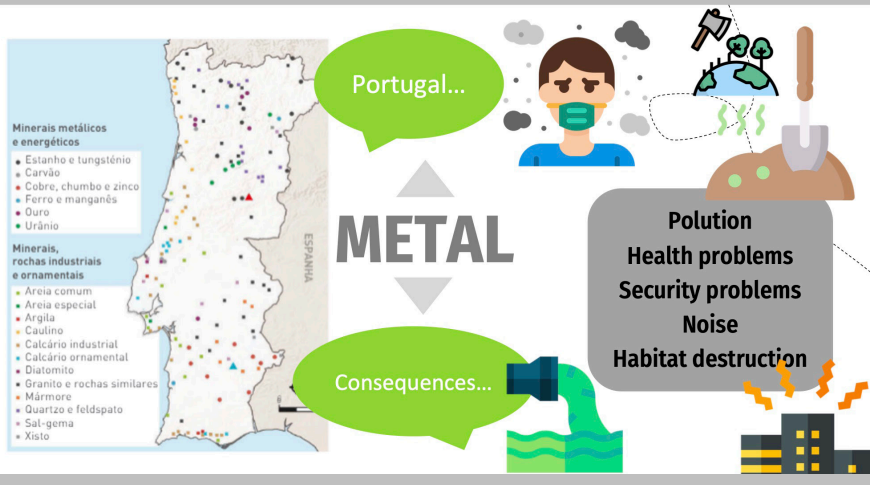
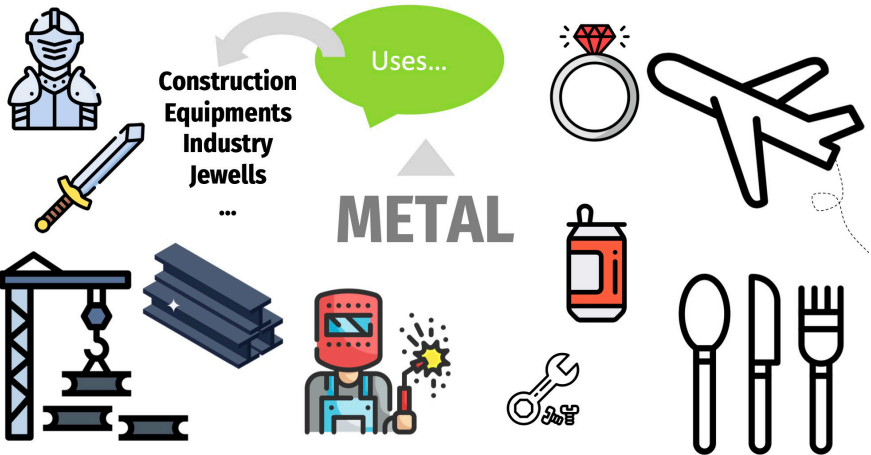
	Students share information on the effectiveness, cost and feasibility of the different techniques.
Educational Materials to be used	Interactive panel Internet access for research Paper and pencil for sketching and planning.
Evaluation	Student involvement during the practical activity of producing comic strip Creativity and originality of the projects developed by the students. Collaboration and teamwork.
Suggestions for further activities	Establishing contact with local metalworking companies so that they can support the projects developed in practice.

Lesson/Activity Number and Title	Lesson 2 - Let's scare... the birds away
Main focus	Giving a new and useful life to metallic waste
Educational Objectives	Develop new ideas and solutions, imaginatively and innovatively, to turn used metal into a sparrow scare Put into practice the bird deterrent techniques using recycled metals learned in the previous lesson. Evaluate the effectiveness of the techniques in protecting crops. Reflect on the results and make adjustments as necessary.
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>Revision of the bird deterrent techniques using recycled metals researched in the previous lesson. Dividing the class into groups to implement the techniques in different growing areas.</p> <p>2. Main (35 min):</p> <p>The groups select the materials needed to implement bird deterrent techniques using recycled metals.</p> <p>Each group builds a device: metal scarecrows, wire fences, wind blades made from cans, among other techniques.</p> <p>3. Summary (5 min)</p> <p>Presentation of the built mill to the class. - Evaluation of functionality and materials used.</p> <p>Reflection on the challenges faced, lessons learnt and possible improvements for future constructions.</p>
Educational Materials to be used	Recycled metals as researched in the previous lesson. Tools for installing the techniques (e.g. hammers, nails, wire, etc.).
Evaluation	Ability to work in a team, follow instructions and use tools safely and effectively. peer evaluation, where students provide each other with constructive feedback on their constructions. Highlighting positive points, encouraging creativity and improving students' skills.
Suggestions for further activities	Share the results with local farmers, municipal authorities or nature conservation organisations to promote sustainable practices in agriculture.

METAL

... is everywhere







UpCycle

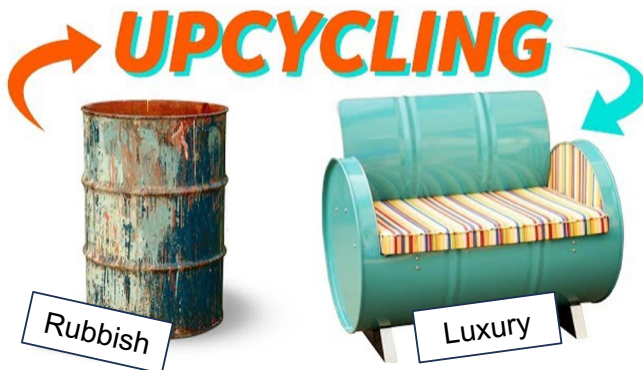




Brian Mock, artista responsável pelas esculturas (Foto: Divulgação)



Esculturas de gato e cachorro, feitas por Brian Mock (Foto: Divulgação)



And **you...**
What are you going **to do?**



Images from:
Freepik Company

Scenario 3 (AETA)

Paper

Scenario Title: **UPCYCLING- a way to care for the Environment and combat climate change**

Developed by (author and school): Céu Brandão & Elisa Pimenta EB Terras do Ave

Country: Portugal

Students' Age: 10-14

Grade: 5th - 9th grade, Time: 45' + 45'

Field: Math, Citizenship, Arts, Technological education

Unit Panoramic View

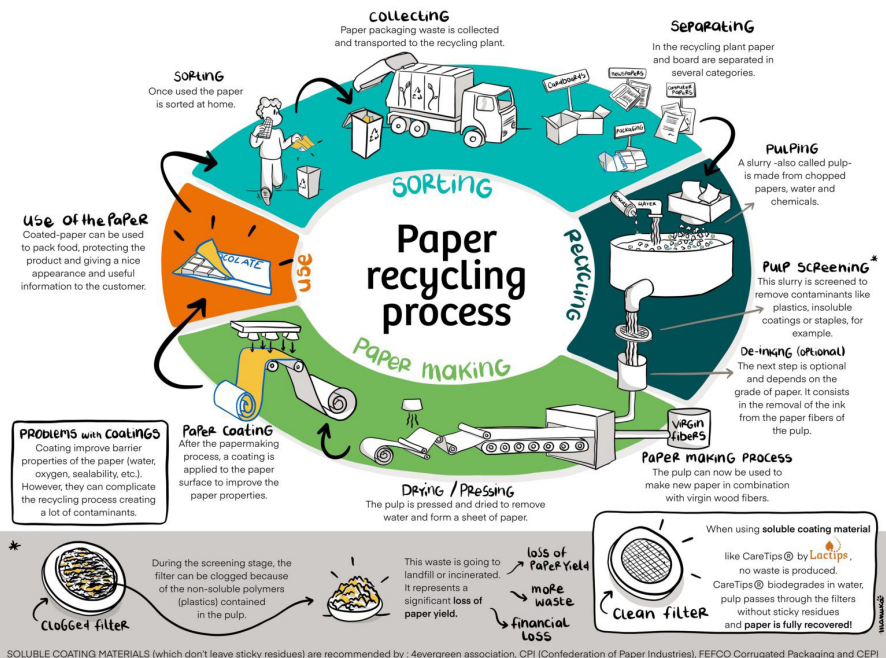
Activity/Lesson 1	Activity/Lesson 2
<u>Are we an ECO school? Evaluating paper waste</u>	<u>The image of the school: Planting the future.</u>
Analysing data showing paper waste at school	Demonstration of different paper recycling techniques Presentation of the device to the class
Processing the data (excel) to verify the high percentage of waste.	Divide the class into 3 teams to do differentiated work to produce recycled paper with seeds and create a comic strip to include on a school business card.
Group work to present solutions for reducing paper waste.	Presentation of the final work, explaining the design choices, the materials and the importance of sustainability in the creation of the cards.
Analysis of the solutions presented and discussion of their dissemination.	

Lesson/Activity Number and Title	Lesson 1: Are we an ECO school? Evaluating paper waste
Main focus	Challenge students to identify and propose creative solutions to reduce paper waste at school.
Educational Objectives	<p>Enable students to apply mathematical concepts, such as percentages, to analyze real data on paper consumption at school.</p> <p>Reinforce the importance of mathematics as a powerful tool for analyzing and solving everyday problems.</p> <p>To develop skills in analyzing and interpreting data, allowing students to understand the scale of the paper waste problem.</p> <p>Stimulate critical thinking and problem-solving as students develop effective strategies for dealing with a relevant environmental issue.</p>
Step by step description of the activities	<p>This lesson requires previous work, in which weekly records are kept of paper waste in the school (this work can be done by the pupils or by operational assistants).</p> <p>1. Introduction (5 min):</p> <p>Introduction to the topic and discussion with the students to get them to estimate the waste of paper produced at the school. Presentation of real data.</p> <p>1. Main (35 min):</p> <p>In groups (2-3 elements), the data will be processed in Excel so that it can be analyzed and conclusions drawn. Reflection on the question: Since our school has an ECO label, how can we reduce this waste? Each group should come up with solutions to reduce paper consumption (implementing</p>

	<p>double-sided printing, using digital devices for communication and collaboration, and encouraging the reuse of paper for drafts, among other ideas).</p> <p>Based on their discussions, the groups should create detailed action plans to implement the paper waste reduction strategies at the school.</p> <p>They should include specific targets, actions to be taken, assigned responsibilities and a timeline for implementation.</p> <p>Summary (5 min)</p> <p>Each group presents its action plan to the class, explaining the proposed strategies, the expected benefits, and how they intend to evaluate the success of their initiatives.</p> <p>Self- and hetero-evaluation of the plans presented to select the most effective one.</p>
Educational Materials to be used	<p>Interactive panel</p> <p>Internet access for research</p> <p>Paper and pencil for sketching and planning.</p>
Evaluation	<p>Ability to organize, analyze, and draw conclusions from data.</p> <p>Collaboration and teamwork.</p> <p>Self-evaluation to reflect on what they have learnt about waste, how this can influence their future choices, and how they can apply what they have learnt outside the classroom. Filling in a form.</p>
Suggestions for further activities	<p>Students can broaden their focus beyond paper waste and explore other environmental issues relevant to the school and community.</p>
	<p>They can carry out research into renewable energy, waste management, water conservation or local biodiversity and develop proposals for action to address these issues.</p>

Lesson/Activity Number and Title	Lesson 2 - The image of the school: Planting the future.
Main focus	Creating a school business card that is fully recycled and plantable.
Educational Objectives	<p>To sensitize students to the importance of sustainability and caring for the environment, highlighting the impact of paper waste at school.</p> <p>To enable students to take concrete steps to reduce paper waste, promoting a more sustainable and responsible school culture.</p> <p>Explore paper recycling techniques and their application in the creation of sustainable products.</p>
Step by step description of the activities	<p>1. Introduction (5 min):</p> <p>Explanation of the benefits of paper recycling in terms of saving natural resources and reducing pollution.</p> <p>Demonstration of different paper recycling techniques, such as shredding, maceration, pressing and drying: https://drive.google.com/drive/u/0/folders/1XzOh5Zl11fKkiaPJvUU7hOEYGFcrniP4</p> <p>2. Main (30 min):</p> <p>Divide the class into 3 teams to do differentiated work.</p>

	<p>team 1: watch the video: https://youtu.be/H8zkeybyHcI make the moldings to make the recycled paper. NOTE: Use old picture frames and replace the canvas shown in the video with old fabric.</p> <p>Team 2: after watching the video: recycle the paper.</p> <p>Team 3: Using the Pixton program, they produce a designed border to be included on a business card. This should draw attention to the importance of sustainability and refer to the procedure for planting the card.</p> <p>3. Summary (10 min)</p> <p>The 3 groups present and evaluate the final work so that they can move on to producing the business cards.</p> <p>Discussion of design choices, materials and the importance of sustainability when creating the cards.</p>
Educational Materials to be used	<p>Recycled paper (newspapers, old magazines, used writing paper, etc.)</p> <p>old mold, old fabric</p> <p>Frame, water, Scissors, Glue, seeds(autochthonous)</p> <p>Computer, internet access, Pixton</p>
Evaluation	<p>Ability to follow instructions, work as part of a team and use techniques effectively.</p> <p>Design: effective use of recycled materials, legibility of information and originality of the cards.</p> <p>Creativity of the business cards produced</p>
Suggestions for further activities	<p>The school business cards can be used at school events, parent meetings, project presentations and other occasions to promote the school's image and raise awareness of the importance of sustainability.</p>



THE TOOLKIT

includes five booklets

1) **THE BASIC SCIENCE BEHIND CLIMATE CHANGE** aims to empower educators to teach the elements of CC inside and outside their classrooms. It is guided by four principles: contextual relevance, knowledge-based learning, action-oriented learning, and curriculum links. It combines elements from the five types of learning (UNESCO's CCE for SD), the New European Bauhaus initiative; the Council Recommendation on learning for environmental sustainability; and the "GreenComp" to incorporate rigorous scientific knowledge and ethical reflection into CC adaptation and mitigation approaches and measures in small communities.

2) **DIGITAL COMICS CO-CREATION** aims to explore CC through art and digital technology, developing an understanding of the concepts of visual narrative-creating stories with images and words that tell stories in ways that the two cannot say separately.

3) **DIGITAL AUGMENTATION OF COMICS** aims to provide a series of design guidelines to assist teachers and pupils in the development of digitally-augmented print media. With the advances of affordable mobile AR hardware and off the-shelf AR libraries, the focus will shift from technical development to the effects of the technology on pupils.

4) **FAKE NEWS AND DISINFORMATION** discusses a truly global problem, extending beyond the political sphere to all aspects of information, including climate change.

5) **EDUCATIONAL SCENARIOS**, each including Lesson Plans, with hands-on and online activities on co-creation of comics on climate change.



BOOKLET 5

EDUCATIONAL SCENARIOS: Lesson Plans, with hands-on and online activities on co-creation of comics on climate change

Three schools in three different countries (Croatia, Malta and Portugal) experimenting with innovative lesson plans in order to convey to pupils the many ramifications of climate change. To do this, they help the children co-create comics that, when enhanced, provide an excellent learning tool for them.

This booklet collects the lesson plans and materials from the different teachers in the three schools.