Lesson SP2 | What is climate change doing to the atmosphere and ocean around Cayman.

Prior Requirements:

This lesson should be taught at the end of the Atmosphere Mini Unit after completing AUSP1 and learning about what we can do. This lesson requires students to combine their knowledge of atmospheric effects and ocean effects into the form of a poster and or infographic to show their understanding in the context of Cayman.

Learning Objectives:

Students will identify and explain the key factors contributing to climate change, such as the greenhouse effect, ocean acidification, and more.

Students will create an infographic/poster that visually represents the effects of climate change on the Cayman Islands' atmosphere and oceans.

Students will illustrate or describe potential solutions or actions that can be taken to mitigate the effects of climate change.

NC Links:

Science

Students are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Social Studies

Students are able to participate in a changing society as informed, confident, and responsible citizens.

Students have an awareness of global issues affecting life in the 21st century.

Success Criteria. In "child friendly' language:

Understanding the Topic:

- All the important words like "Greenhouse Effect" and "Ocean Acidification" are on the poster.
- The student can tell or show what each word means and how it affects the Cayman Islands.

Using the Map:

- The map of the Cayman Islands is in the middle of the poster.
- Drawings or symbols on the map show how climate change affects the islands.

Thinking About Solutions:

- The poster has three squares that tell or show things people can do to help the environment.
- The ideas in the squares are related to the important words and the map.

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Making the Poster Look Good:

- The poster is neat and colorful.
- The important words, drawings, and the map are easy to see and understand.

Being Creative:

- The poster has fun drawings or symbols that help explain the important words.
- Students have added their own special touch or idea to the poster.

Talking About the Poster:

- The student can explain what's on their poster and why they put certain things on it.

Key Language:

Greenhouse Effect, atmospheric temperatures, ocean temperatures, ocean acidification, sea level rise, energy use, emissions, carbon dioxide, storms, ocean temperatures, weather

Anticipated learning misconceptions / difficulties:

It may be hard for students to recall all the various impacts and actions they can add to their posters, they may require a refresher to help them place it in the context of Cayman.

Project Description:

In this project-based learning activity and assessment, students will explore the profound impact of climate change on the Cayman Islands, with a keen focus on its atmosphere and oceans. Through the creation of a visually compelling infographic, students will not only shed light on the challenges brought about by climate change but also propose actionable measures to address these challenges.

This activity serves as a culminating assessment tool at the end of the unit, offering students an open-ended platform to showcase their grasp of the content. Instead of traditional testing methods, this project-based approach encourages students to synthesize and apply their knowledge creatively, allowing for a deeper demonstration of understanding. By constructing an infographic, students not only recall key concepts but also connect them to real-world contexts, specifically the Cayman Islands. The open-ended nature of the task ensures that students can highlight areas they feel most confident about, while also allowing educators to identify areas of strength and potential gaps in understanding. Through this activity, assessment becomes a dynamic, interactive, and reflective process, capturing the depth and breadth of each student's learning journey.

Project Description:

Infographic Components:

Key Term Circles: Students will receive pre-made circles, each labeled with a pivotal term related to climate change. These terms include:

Greenhouse Effect
Ocean Acidification
Atmospheric Temperature
Weather Patterns
Storm Intensity
Coral Health
Ocean Temperature
Sea Levels
Energy Use

These terms will act as the foundation of their infographic, guiding their research and visualization process.

Cayman Islands Map: Central to the infographic is a blank map of the Cayman Islands. This map will be the canvas on which students illustrate the tangible effects of climate change on the region.

Action Squares: To emphasize proactive measures, students will be given blank squares where they will depict or describe actions that individuals, communities, or governments can adopt to combat the adverse effects of climate change.

Creating the Infographic:

Visualizing Key Terms: For each term in their **circle**, students can choose (based on differentiated learning needs) to either draw an illustrative image or write a description. This representation should summarize the term's significance and its specific ramifications for the Cayman Islands.

Integrating the Map: The Cayman Islands map is an integral part of the narrative. Students should incorporate symbols, scenes, or pathways on the map to showcase how climate change is and will continue to influence various parts of the islands. For instance, they might illustrate coastal areas affected by rising sea levels, the overall impact of increased temperatures on people or wildlife or demonstrate the overall impact on our sea life.

Highlighting Solutions: Using the three blank **squares**, students will emphasize solutions. They can illustrate renewable energy initiatives, depict conservation strategies, or suggest community-driven efforts. These squares underscore the potential for positive change amidst challenges.

Bringing it All Together: The final infographic should be a cohesive blend of visuals and text. The key term circles should be thoughtfully placed around the map, ensuring a logical and intuitive flow of information. The action squares can be situated on or near areas of the map where those solutions might be most pertinent or effective.

Introduction (5-10 minutes) 1. Begin with a brief discussion on the importance of understanding climate change and its effects on local regions like the Cayman Islands. 2. Introduce the objectives of the lesson and the activity they will be undertaking. 3. Hand out necessary supplies	**Materials:** • Large sheets of paper or poster boards • Pre-made circles with key terms related to climate change. • Blank maps of the Cayman Islands • Markers, colored pencils, crayons • Three blank squares for each student or group • Reference materials or fact sheets about each key term

Main Activities (40 minutes)

Exploring Key Terms

- Hand out the pre-made circles with key terms to each student or group.

If working in pairs:

- For each term, ask students to discuss with their partner the meaning and effect it might have on Cayman.
- Encourage students to discuss the terms with their partner, sharing their understanding and knowledge about each term within their groups.

If working individually

- For each term, ask students to think about its meaning, connection to other terms and impact on The Cayman Islands.
- It might be helpful to read through each term and give students a moment to think about each one individually.

Planning the Infographic/Poster:

- Distribute the blank Cayman Islands maps and other drawing materials.
- Guide students in brainstorming how they might visually represent the impact on the Cayman Islands.
- Encourage them to think about where each circle will be placed on their poster and how they can integrate the map into their design.

Constructing the Infographic/Poster:

- Students begin by sketching or writing brief notes within the provided circles, detailing each term's impact, or meaning.
- They should then arrange these circles around the map on their poster, ensuring a logical flow of information.

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- On the map, students can draw symbols or scenes that depict climate change effects, such as rising sea levels or increased storm activity.
- Using the three blank squares, students should illustrate or note down potential solutions or proactive measures. These might include renewable energy sources, conservation efforts, or community initiatives.

Conclusion: (10 mins)

1. Allow students to contrast and compare their posters before handing them in.
2. After looking over posters and providing helpful feedback and praise, give back their posters at a later date and encourage them to take them home and share them with family and friends.

Levelled Version of Assessment:

In a simplified version of the project for emerging learners, students will be given pre-made circles labelled with key terms related to climate change. They will also receive matching pictures for each term. Their task is to match the correct picture with its corresponding term. This visual approach helps students understand complex concepts in a more tangible manner.

Once they've matched the terms with the pictures, students will be given a blank map of the Cayman Islands. They will place the matched circles around the map, creating a visual representation of how climate change affects the Cayman Islands.

To emphasize solutions, students will be provided with three blank squares. In these squares, they can draw or describe simple actions that can be taken to help the environment, such as planting trees, recycling, or using less water.

This activity is designed to be more visual and hands-on, catering to the learning needs of emerging learners. It allows them to engage with the topic of climate change in a way that's accessible and meaningful to them.