Global Climate Change Module LIGHT

Overview
Students analyze data to identify the locations that they believe will be most impacted by global climate change using information gathered from Google Earth. Each student provides a justification for her/his choice using information gathered using Google Earth. Justifications are presented to the class.

Guiding Questions
- What is climate change?
- How is/will global climate change affecting the Earth’s physical environment?
- What locations will be most impacted by climate change?
- Why will these locations be impacted?

Objectives
1. Students will identify factors that geographers consider when exploring the impacts of global climate change.
2. Students will be able to navigate in Google Earth, turn data layers on and off, and analyze data layers.
3. Students will create a GeoPack consisting of locations and justifications.

National Geography Standards

Essential Element I. The World in Spatial Terms
Standard 1. How to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.

Essential Element III. Physical Systems
Standard 7. The physical processes that shape the patterns of Earth's surface.

Essential Element VI. The Uses of Geography
Standard 17. How to apply geography to interpret the past.
Standard 18. How to apply geography to interpret the present and plan for the future.

Key Terms
- Weather
- Climate
- Greenhouse effect

Handouts
- Climate Change LIGHT Activity
- Google Earth Navigation
- Global Climate Change
Follow these steps to help your students prepare for and complete the tasks:

1. Have students **watch the “Breaking News” video** within the GeoThentic environment (they should click on the *Your Mission* tab).

   In order to respond to the video’s challenge, students will gather data to help them make them make decisions using Google Earth. However, before looking at the data in Google Earth, students need to understand the concept of climate change and explore how it is currently affecting some locations.

2. Pass out the *Climate Change LIGHT Activity*. Students use the web links and questions provided for them on this worksheet to **understand the basics of climate change**.

3. After this activity, pass out the *Google Earth Navigation* handout. Using this sheet and the resources in Geothentic, briefly discuss with students how to navigate in Google Earth and turn layers on and off.

4. Pass out the *Global Climate Change* handout. Remind students of the module’s challenge -- that by using data layers in Google Earth, they are going to look at different information to **determine the five locations they believe will be most impacted by climate change**. Students can use this handout to take notes on as they look through different layers in Google Earth. These notes will help them compose their justifications.

5. In GeoThentic, **students gather and analyze data** to help them make informed decisions. Assist students in downloading and loading this module’s Google Earth KMZ files from the Resources section in Geothentic. Encourage students to explore the different layers of data in Google Earth.

**Global Climate Change Module LIGHT Tasks:**

Students will have three main tasks in this module:

- Complete Climate Change Light Activity
- Gather and analyze Google Earth data
- Determine top five locations that will be most affected by climate change, and justify each location decision in their GeoPacks
6. After students have gathered and analyzed data, they should **decide on the five locations they believe will be most impacted by climate change**. The most important aspect for students to focus on is **why** a location made the top five list. The quality of each justification is more important than the location. Again, there are no “right” answers.

7. Once students have identified the top five locations, ask them to review their notes and justifications. Then, direct students to **select one location** of the five they identified to submit in their GeoPacks for class review.

8. Assist students in **saving and submitting their GeoPacks**. Each student’s GeoPack will consist of latitude and longitude coordinates and justification for **ONE** location.

9. Using an LCD projector, display all students’ locations and justifications. After reviewing their classmates’ justifications, have students **vote on the top location that will be most impacted by climate change**.

10. Access the **Professional Geographer** video in the resources section. Play for students to see how a professional geographer would have approached this module’s challenge.

### Assessment Ideas

**Formative Assessment:**
- GeoPack submission (location coordinates and justification)

**Informal Assessment:**
- Student participation in class discussions
- Judging from students’ notes, teacher will determine student understanding and effort
- Teacher uses exit slip as an informal student assessment