Ice Hop

Relay/Roleplay Game

KNOWLEDGE

- Familiarize students with animals in Arctic/Antarctic ecosystems
- Describe pollution and its effect on polar ecosystems (beginner climate change)
- Identify various changes they can make in their everyday lives to lessen negative impacts on the environment

ACTIVE

- Players must travel across ice floes to stay alive, which will become increasingly difficult as climate change melts and reduces pack ice available.

TIME	GROUP SIZE	LOCATION	GRADE LEVEL	EQUIPMENT
20-30 minutes	**6+**	**Quiet classroom**	**K-5**	Paper Tarps Hula hoops

DEBRIEF/REFLECTIVE COMPONENT	HELPFUL TIPS

• Ask questions to facilitate assessment of knowledge gained from game
  • How was it to travel when the ice floes were intact?
  • Did it get easier or harder as the temperature warmed?
  • Why?
  • What were some of the difficulties?
  • Do you think the challenges that you faced are being faced by the animals in Polar Regions?	

OCEAN LITERACY PRINCIPLES

2 – The ocean and life in the ocean shape the features of the Earth.

b. Sea level changes over time have expanded and contracted continental shelves, created and destroyed inland seas, and shaped the surface of the land.

6 – The ocean and humans are inextricably interconnected.

a. The ocean affects every human life. It supplies freshwater (most rain comes from the ocean) and nearly all of Earth's oxygen. The ocean moderates the Earth's climate, influences our weather, and affects human health.

e. Changes in ocean temperature and pH due to human activities can affect the survival of some organisms and impact biological diversity (coral bleaching due to increased temperature and inhibition of shell formations due to ocean acidification).

f. Much of the world's population lives in coastal areas. Coastal regions are susceptible to natural hazards (tsunamis, hurricanes, cyclones, sea level change, and storm surges).

g. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.

Setup

1. Lesson – start with questions that explore the topic to lead inquiry into which animals live at the poles before game
   a. Polar Ice caps – What are they?
      Polar ice caps are huge ice sheets of ice that life at the North and South poles. The caps don't melt and refreeze seasonally so they can be 3-4 metres thick at the North Pole and even thicker at the South. Polar ice caps get less exposure to the sun than the rest of the Earth, which results in lower surface temperatures.

   b. Do you know why the poles get less sun?
      Briefly explain the rotation of the Earth around the Sun and seasons; seasons are a result of the tilt of the Earth's axis related to the sun with summer occurring when the Earth leans towards the Sun and winter occurs 6 months later when the Earth leans away. The polar circles (both the Antarctic Circle at 66°33' S and Arctic Circle at 66°33' N) mark the latitude beyond which the sun remains completely below the horizon throughout the day on Midwinter's Day and completely above the horizon on Midsummer's Day. As you move closer to the poles, the periods of winter darkness and summer daylight increase.
   c. Polar Ice caps – size matters
      Polar ice caps can grow and shrink due to climate variation. During ice ages, the polar caps expanded to cover much more than the area they cover now. Currently the polar ice caps are shrinking, as a result of climate changes. What does this

mean? Fewer niches for groups to fill → increased competition over resources → fewer animals? Melted polar ice also changes the temperature of the oceans, which may lead to the destruction/degradation of marine plant and animal life.

d. What kinds of animals live on or under the ice?
   Polar bears, walrus, sea lions, seals, penguins, belugas, fish, sea birds, whales, sharks

2. Game Instructions
   a. Network of “ice floes” (large sheets of paper cut into iceberg shapes) placed on ground
   b. Explain to students that many animals such as polar bears rely on block ice to travel from outer edge of the polar region back to land during spring/summer
   c. Students must hop from ice floe to ice floe to reach other end of room.
   d. As climate change causes ocean temperatures to rise in the Arctic Circle, ice is melting faster than animals can travel; To symbolize climate change, every round a few blocks are removed until students can’t jump far enough to reach the next one
   e. Ask students “what kinds of things make the Earth warmer?”, “What can we do to stop this from happening?”
   f. Illustrate the difficulty for animals, which rely on sea ice to reach land in summer.