



Reach the World and The Weddell Sea Expedition 2019

This is designed to act as a guide for you to adapt and use to meet your students' needs. We would love to hear how you adapt and use it with your students!

<p>Journey: Weddell Sea Expedition 2019 https://www.reachtheworld.org/weddell-sea-expedition</p>	<p>Title: Observe and Design, Learning from the Animals of Antarctica</p>
<p>Article: Album: Animals of the Weddell Sea</p>	<p>Essential Question:</p> <ul style="list-style-type: none"> - What is biomimicry and why is it important? - What makes places like Antarctica so difficult for people to live and work? - How can you design equipment to help people work in Antarctica?
<p>Learning Objectives:</p> <ul style="list-style-type: none"> - Students will be able to name challenges humans face while working in Antarctica - Students will be able to make observations of Antarctic wildlife - Students will synthesize the challenges faced and observations of wildlife to design solutions for humans working in Antarctica 	<p>Materials: OceanX "Filming on Thin Ice" Frank Hurley's photos from the Trans-Antarctic Expedition 1914-1916 Reach the World Article: Animals of the Weddell Sea</p>
<p>Outline</p>	<p>Directions</p>
<p>Introduction</p> <ul style="list-style-type: none"> - Background knowledge gathering 	<ol style="list-style-type: none"> 1. What do you know about Antarctica as an environment? 2. What do you know about how humans work in Antarctica? 3. What do you know about animals that live in Antarctica?

<p>Video</p> <ul style="list-style-type: none"> - "Filming on Thin Ice" 	<ol style="list-style-type: none"> 1. Prepare students that they will watch a video about working in Antarctica. Have them pay close attention to the challenges that the people are facing while working in the environment. 2. Watch the video "Filming On Thin Ice In Antarctica". 3. What were the problems/challenges that they faced? <ol style="list-style-type: none"> a. (Main problem is the cameramen falling through ice)
<p>Articles Research</p> <ul style="list-style-type: none"> - Album: Animals of the Weddell Sea - Frank Hurley's photos from the Trans-Antarctic Expedition 1914-1916 	<ol style="list-style-type: none"> 1. Ask the students "How can you design something to help the cameramen or other people working in the harsh environments of Antarctica?" 2. Research what people have done in the past as well as examine the wildlife and what adaptations they have for surviving in the harsh environment. <ol style="list-style-type: none"> a. Show images of Antarctic wildlife from the Weddell Sea Expedition. b. View the Scott Polar Research Institute photo gallery of Frank Hurley's photos from the Trans-Antarctic Expedition 1914-1916.
<p>Brainstorm and Design</p>	<ol style="list-style-type: none"> 1. What do the animals have that help them survive? <ol style="list-style-type: none"> a. For example, guide them to think about penguin feet and how they are similar and different from human feet. What could they add to human feet to make them more like penguin feet? 2. Ask students what they observed people wearing? What type of technology do you see? How has the clothing and technology changed over time? 3. After doing research, students will design equipment for the cameramen to use while walking on the ice.
<p>Share</p>	<ol style="list-style-type: none"> 1. Have students share out the designs that they came up with to help humans work in the harsh environment of Antarctica.

Extension questions and activities:

- Research and conduct experiments about ice thickness, surface area, weight, and sea ice versus land ice. Experiments can help students understand and test their ideas.
- How far would you go to take a photo or record video? What would be your limit?
- [For older learners] How does temperature affect the battery life of technology? What does this mean for using technology in places like Antarctica? What are some solutions to this problem?