Kenny Broad: Exploring the Invisible

Bring Students Grades 3-5 on a Learning Adventure!

For the complete special collections with media resources, visit:
http://nationalgeographic.org/media/kenny-broad-exploring-invisible/

Kenny Broad, National Geographic's Explorer of the Year for 2011, is an expert cave diver. He pursues this extreme recreation to gain valuable scientific insights. Doubling as an accomplished, and quite funny, environmental anthropologist, Broad uses his research to solve problems of climate change and freshwater resource management. Join him for a fantastic voyage into the beautiful but dangerous "blue holes" of the Bahamas—a potential treasure trove of scientific knowledge, captured in incredible images and video.

Use the resources in this collection to prepare your students for their upcoming National Geographic Live student matinee experience. Use the ideas before the show to introduce students to Kenny Broad and the topics (marine biology, geology, underwater caves) that he will discuss during the show. Use the ideas after the show to extend the learning.

Before the Show

- Have students review Kenny Broad’s biography using the links in the Explore More tab on this page.
- Download and print the provided Water Planet map or use the MapMaker Interactive to explore the areas where Kenny Broad works.
• Show students the Cave Diving photograph. Ask: *Where do you think this photo was taken?* Ask students to explain their reasoning. Explain that the photo was taken of a diver in an underwater cave. Familiarize students with the sinkholes that the speaker will describe using the provided sinkhole encyclopedic entry.

• Engage students further with the provided Blue Holes: Being an Explorer lesson, a set of activities built around Kenny Broad’s work and what it takes to build an expedition.

• Provide each student with a KWL Chart. Introduce the program they will attend, who the speaker is, and a brief description of what the speaker’s topic(s) will be. Have students fill out the What I Know and What I Want to Know columns of the KWL Chart. Have them fill out the What I Learned column after the show.

• Use the **graphic organizer collection** to select a graphic organizer to help your students organize their questions and new knowledge before, during, and after the program. For example:

  • Download and print the T Chart. Have students label the left column with Questions I Have and the right column with Answers and then conduct research about the speaker and speaker topic ahead of the program. Have students record answers to their questions during or after the program. Have students conduct research to complete any unanswered questions for homework.

  • Download and print the provided Five Ws Chart. Have each student bring their copy to the matinee program and take notes.

**After the Show**

• Use the Explorer Comparisons worksheet and have a class discussion to help students make connections between themselves and Kenny Broad. Distribute the worksheet to students before the presentation and review the directions with them. Review any terms that they are unfamiliar with. After the presentation, have students share the notes that they took during the show. Have a class discussion about attitudes and skills and how students demonstrate them in their everyday lives. Have students record their personal examples on the worksheet.

• Review the continents, countries, or areas that the speaker presented. Ask: *What continents, countries, or areas does the speaker work in?* Have younger students imagine that these places were characters in the stories that Kenny
Broad shared. Ask: What role did place play in Kenny Broad’s story? Why was location important to the story? How did the characteristics of the place influence the story?

- Discuss and define any unfamiliar terminology that the speaker used. Ask: What vocabulary words did Kenny Broad use that were new to you? Invite volunteers to write the words on the board, and have the class define them as a group using information they learned from the speaker or through research. If desired, have students record unfamiliar terminology during the show on one half of a T Chart. Then, have them write the definitions on the other side following this class discussion.

- Have a class discussion about the attitudes National Geographic explorers embody. Ask: What attitudes did Kenny Broad talk about today? In what ways does Kenny Broad demonstrate curiosity, responsibility, empowerment, and persistence in his work? Why do you think these attitudes are important for explorers? Students can use their Five Ws Chart for reference and a graphic organizer to organize their ideas.

- Have a whole-class brainstorm on how students can make changes or support the speaker’s work. Ask: What, if any, call to action did the speaker ask you to make? How can you implement any changes in your day-to-day life? What can we work on together as a group?

**Vocabulary**

<table>
<thead>
<tr>
<th>Term</th>
<th>Part of Speech</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>anthropology</td>
<td>noun</td>
<td>science of the origin, development, and culture of human beings.</td>
</tr>
<tr>
<td>cave</td>
<td>noun</td>
<td>underground chamber that opens to the surface. Cave entrances can be on land or in water.</td>
</tr>
<tr>
<td>climate change</td>
<td>noun</td>
<td>gradual changes in all the interconnected weather elements on our planet.</td>
</tr>
<tr>
<td>dive</td>
<td>verb</td>
<td>to descend beneath the surface of water.</td>
</tr>
<tr>
<td>fossil</td>
<td>noun</td>
<td>remnant, impression, or trace of an ancient organism.</td>
</tr>
<tr>
<td>limestone</td>
<td>noun</td>
<td>type of sedimentary rock mostly made of calcium carbonate from shells and skeletons of marine organisms.</td>
</tr>
<tr>
<td>reservoir</td>
<td>noun</td>
<td>natural or man-made lake.</td>
</tr>
<tr>
<td>Term</td>
<td>Part of Speech</td>
<td>Definition</td>
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<td>---------</td>
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<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>sinkhole</td>
<td>noun</td>
<td>hole formed in a rock or other solid material by the weight or movement of water.</td>
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</tbody>
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**Articles & Profiles**

- National Geographic Explorers: Bio—Kenny Broad
- National Geographic Environment: Freshwater Hero—Kenny Broad
- National Geographic Magazine: Bahamas Caves

**Video**

- National Geographic Education: Mapping the Labyrinth

**Websites**

- National Geographic Explorers: Blue Holes Project

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