

NARWHAL

REVEALING AN ARCTIC LEGEND

Activity for Students

How the Narwhal Uses Its Tusk

Created and field tested by: Smithsonian's National Museum of Natural History

Purpose: To encourage participants to use the exhibition to gain answers to their questions and develop an understanding of the concept of scientific hypothesis.

Target Ages: 4th – 8th grade students

Note: This activity can be used as a pre-/during-/post-visit activity or completed entirely in the exhibition. A follow-up discussion is likely needed for younger students to complete the post-visit activity.

Content Standards: *NGSS*

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates and reproducing.

Goals: In this activity, participants will:

- Observe the narwhal tusk
- Hypothesize how narwhals use their tusks
- Examine evidence for testing this hypothesis
- Use information in the exhibition to learn about the tusk
- Compare their hypotheses with those of scientists



Materials:

- Student handout
- Teacher handout
- Narwhal models in the exhibition
- Video of narwhal using its tusk to stun fish - <https://www.youtube.com/watch?v=OoTjLIN67Bw>

Script

- Before visiting the exhibition, use what you know about narwhals to hypothesize how narwhals use their tusks. For each hypothesis, give 1-2 examples of evidence that could be used to test the hypotheses.
- When you visit the exhibition, look for information to test your own hypotheses from the pre-visit portion of the activity. While in the exhibition, complete the section titled “existing evidence” to test your hypotheses.
- After your visit, you will compare the different hypotheses and determine what the most likely uses for the tusk are based on the evidence observed and information collected. What does the evidence suggest about the uses of narwhal tusks?
- Write a brief paragraph that explains:
 - What were your original hypotheses?
 - How were your hypotheses impacted by the visit to the exhibition? Were they supported, changed, did you get new ideas?
 - Why did your hypothesis stay the same or change?

Student Handout

Hypothesis (pre-visit)	Potential Evidence (pre-visit)	Existing Evidence (during visit)	Is There Evidence? (post-visit)
<p>The narwhal uses its tusk to fight other narwhals or animals.</p>	<p>1. 2.</p>		
<p>The narwhal uses its tusk to sense its environment.</p>	<p>1. 2.</p>		
<p>The narwhal uses its tusk to catch food.</p>	<p>1. 2.</p>		
<p>The narwhal uses its tusk to attract mates.</p>	<p>1. 2.</p>		
<p>The narwhal uses its tusk to poke through ice.</p>	<p>1. 2.</p>		

Teacher Handout

Using this guide, the education resources, and the reading list, students will use the scientific method to hypothesize and draw conclusions on uses of the narwhal's tusk.

Hypothesis	Potential Evidence (pre-visit)	Existing Evidence (during visit)	Is There Evidence? (post-visit)
<p>The narwhal uses its tusk to fight other narwhals or animals.</p>	<p>1. Witness narwhals fighting</p> <p>2. Tusk would be stiff, not flexible</p>	<p>The exhibition discusses how scientists and Inuit have not witnessed fighting.</p> <p>Narwhal tusks are flexible.</p>	<p>No – Have students answer why.</p>
<p>The narwhal uses its tusk to sense the environment.</p>	<p>1. Observe narwhals using their tusks and responding to the environment.</p>	<p>Dr. Martin Nweeia's research on the narwhal tusk is evident in the exhibition.</p>	<p>Some – Have students explain the evidence.</p>
<p>The narwhal uses its tusk to catch food.</p>	<p>1. Observe the narwhal hunting and catching food with its tusk.</p>	<p>Video images of narwhals hunting, and stunning fish surfaced in 2017.</p> <p>No evidence for spearing. Ask: how would the narwhal get the food off the tusk?</p>	<p>Yes – show students the video and let them make this conclusion.</p> <p>Note: You may want to show this video PRIOR to the visit.</p>

<p>The narwhal uses its tusk to attract mates.</p>	<p>1. Observe females choosing partners based on appearance of tusks</p>	<p>All males have tusks, where only 5% of females do.</p> <p>In other animals, males have enhanced, enlarged, or more colorful features used to attract females.</p>	<p>Maybe – Explain that there is not enough evidence, so it requires more observations and testing.</p>
<p>The narwhal uses its tusk to poke through ice.</p>	<p>1. Watch narwhals doing this</p> <p>2. Find holes in the ice that match narwhal tusks</p>	<p>No one has witnessed narwhals using their tusks in this fashion or found holes that would be related to a narwhal tusk.</p>	<p>No – there is no observable evidence to make this claim.</p>