

Overview:

During this activity, students read stories about two groups of people who survived the December 26, 2004 Indian Ocean tsunami event. One group survived because of an oral tradition warning that an earthquake and a sudden recession of seawater from the shore are forewarnings of a tsunami. The other group survived because a young girl learned about tsunami warning signs in school and was able to recognize these signs as she played on the beach. Students will understand that oral tradition and science are methods of gaining knowledge through careful observation. Both can provide people with the knowledge needed to save lives during a devastating tsunami.

Targeted Alaska Grade Level Expectations:

Science

[5-6] SF1.1- 3.1 The student demonstrates an understanding of the dynamic relationships among scientific, cultural, social and personal perspectives by telling a local or traditional story that explains a natural event (e.g., animal adaptation, weather, rapid changes to Earth's surface) and relating it to a scientific explanation.

Reading

[5-6]2.2.1 The student comprehends literal or inferred meaning from text by locating information stated in narrative and informational text to answer literal comprehension questions.

[5-8]2.4.1 The student restates/summarizes information by restating and summarizing main ideas or events in correct sequence after reading a text or identifying accurate re-statements and summaries of main ideas or events or generalizations of a text.

[5-8]2.5.2 The student demonstrates an understanding of main idea by locating information in narrative and informational text to answer questions related to main ideas or key details.

[7-8]3.4.4 The student demonstrates an understanding of main ideas/arguments by explaining connections among main ideas/concepts (text to self, text to text, text to world).

Objectives:

The student will:

- read two survival stories of the December 26, 2004 tsunami;
- identify key details in two stories;
- understand the similarities between oral tradition and scientific knowledge; and
- recognize that oral tradition and science education are methods of passing on knowledge gained through careful observation.

Materials:

- Student Information Sheet: "Tsunami Survivors"
- Student Worksheet: "Oral Tradition and Science"

Science Basics:

Tsunamis are a constant threat for communities on Alaska's Pacific Coast. Understanding the warning signs of a tsunami is important to the safety of the residents and survival of the communities. There are several noticeable signs that may warn of an approaching tsunami:

- A strong earthquake is a natural warning of the possibility of an impending tsunami. People in low-lying coastal areas should move to higher ground.
- A noticeable rise or fall of coastal waters can sometimes precede a tsunami. In some cases the water draws back, exposing an expanse of sea floor just before the tsunami strikes.
- A loud roar usually accompanies an approaching tsunami. Many have described the roar as sounding like a jet engine.
- Some tsunamis approach the coast as a visibly enormous wave. Others arrive as a rising surge in sea level. If the wave is visible, it may be too late to escape. Get to higher ground as quickly as possible.

Activity Procedure:

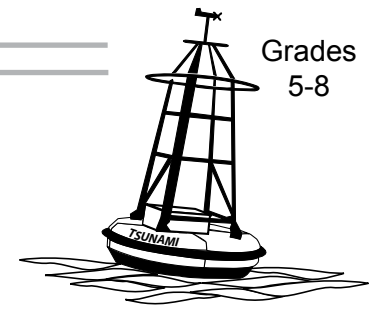
1. Explain to students that knowledge is often passed from generation to generation through oral tradition, or telling historical stories and legends. Ask students to share examples of knowledge they have gained in this way (such as family relationships, history, how to do things etc.)
2. Explain that on December 26, 2004 a devastating series of tsunamis struck many Indian Ocean coastlines. The tsunamis were generated by an earthquake, which occurred off the coast of Sumatra, Indonesia. The sea floor along the fault line of this earthquake rose dramatically, displacing a tremendous amount of water and triggering the tsunami waves. The result was one of the deadliest natural disasters ever recorded. Explain that students will read two survival stories. Introduce the stories by explaining that oral tradition and science education are methods of passing on knowledge gained through careful observation. Both methods saved lives when tsunamis struck Indian Ocean coastlines in 2004.
3. Distribute the Student Information Sheet: "Tsunami Survivors" and the Student Worksheet: "Oral Tradition and Science." Ask students to read the two articles on the Student Information Sheet, and then review the Student Worksheet instructions.
4. After the activity, ask students how oral tradition and scientific reasoning are similar and how they differ. Create a Venn diagram to illustrate.
5. As a homework activity, ask students to ask a parent or family member to share a story of something they learned from an older member of their family.

Critical Thinking:

Venn Diagram Method: Create a Venn diagram with students to illustrate the differences and similarities between oral tradition and science education.

Answers:

Oral Tradition	Scientific Reasoning
Who? The Andamanese people	Who? Tilly Smith and other beachgoers
When? December 26, 2004	When? December 26, 2004
Where? Andaman and Nicobar Islands	Where? Maikhao Beach, Thailand
<p>What happened? (number events 1-4 in proper sequence)</p> <p><u>2</u> The Andamanese people saw the water recede, revealing the sea floor.</p> <p><u>1</u> The Andamanese people felt the earthquake.</p> <p><u>4</u> The Andamanese people fled to higher ground.</p> <p><u>3</u> The Andamanese people thought a huge wave would come.</p>	<p>What happened? (number events 1-4 in proper sequence)</p> <p><u>4</u> Tilly alerted her family and other beachgoers, and fled to her hotel.</p> <p><u>2</u> Tilly saw the water recede suddenly from the beach.</p> <p><u>1</u> Tilly saw the seawater become bubbly.</p> <p><u>3</u> Tilly thought there was going to be a tsunami.</p>
<p>How did the Andamanese learn to recognize the signs of a tsunami?</p> <p>They had passed an oral tradition, from generation to generation, which described tsunami signs.</p>	<p>How did Tilly Smith learn to recognize the signs of a tsunami?</p> <p>Tilly's geography teacher taught a lesson about tsunamis, which included a video of a Hawaiian tsunami.</p>
<p>Why did the Andamanese have an oral tradition about tsunamis?</p> <p>Their ancestors wanted to educate future generations about the danger of tsunamis in the hopes that future generations would survive these devastating events.</p>	<p>Why do students learn about tsunamis in school?</p> <p>Teachers and schools seek to educate students about tsunamis so that students are prepared if they see the signs of a tsunami and so that they will understand the dynamic processes that shape Earth.</p>



Oral Tradition Saves Island Tribes

A week after the December 26, 2004, Indian Ocean Tsunami, the fate of the Jarawa, Sentinelese, Great Andamanese, Onge, and Shompen people was unknown. These ancient tribes, known collectively as Andamanese, have lived on the Andaman and Nicobar Islands along the eastern edge of the Bay of Bengal for tens of thousands of years. Outsiders feared the catastrophic wall of water had wiped out the estimated 500 remaining Andamanese. The Andamanese, however survived the devastating tsunami that claimed the lives of so many of their neighbors. In fact, not one Andamanese person is known to have died that December morning.

Nau, a woman of the Great Andamanese tribe, attributed their survival to traditional knowledge. "It's happened before," she explained. "Our forefathers said, if the earth shakes, the sea will rear up and thrash onto the ground."³ Shortly after the ground shook, many Andamanese saw the water draw back from the shore, revealing an expanse of the sea floor. Nau's group heeded the warning of her forefathers, and fled to higher ground. Other groups of Andamanese had similar experiences, relying on these events as cues to seek safety.

The survival of the Andamanese people is rooted in oral tradition. Ancient knowledge passed from generation to generation, often in the form of legends and folklore, advised these indigenous people of what to do if they saw the signs of a tsunami. Thanks to the prudence of their ancestors, the Andamanese live on.

Sources:

¹ Mukerjee, Madhusree. "Lessons on Island Living." *South Asian Magazine for Action and Reflection*, Issue 19 (2005).

Bhaumik, Subir. "Tsunami Folklore Saved Islanders." *BBC News* (2005).

Devraj, Ranjit. "Tsunami: Andaman Tribes Have Lessons to Teach Survivors." *Independent Media TV* (2005).

Schoolgirl's Scientific Reasoning Saves Beachgoers

On December 26, 2004, Tilly Smith was vacationing with her family on Maikhao Beach in Thailand, unaware that the fate of her family and fellow beachgoers would soon rest on her ten-year-old shoulders.

As she played on the beach, Tilly noticed the seawater "go funny."² Tilly noticed bubbles, and soon after, the tide suddenly went out. Two weeks before, at her school near London, England, Tilly had studied tsunamis and learned that this change in the seawater might mean a catastrophic wave was on its way. Says Tilly, "I recognized what was happening and had a feeling there was going to be a tsunami. I told my mummy."³

Tilly's parents alerted others and 100 people were evacuated from the beach just before the devastating wave struck. Tilly and her family sought refuge in their hotel, which withstood the onslaught of water. Maikhao Beach is one of only a few in the area where no one was killed or seriously injured during the tsunami.

Tilly attributes her quick assessment of the situation to geography teacher Andrew Kearney, who taught her class about tsunamis. The seawater changes Tilly witnessed were exactly the same as those in a Hawaiian tsunami video that Kearney showed Tilly's class. Thanks to Tilly's conscientious attention to her studies, and her quick scientific reasoning, 100 beachgoers returned to their families.

Sources:

² Associated Press, "Schoolgirl Saved Family and Others by Recognizing Signs of Coming Tsunami," *eNew Mexican* (1.02.2005). <http://www.freenewmexican.com/news/8752.html> (accessed January 24, 2007).

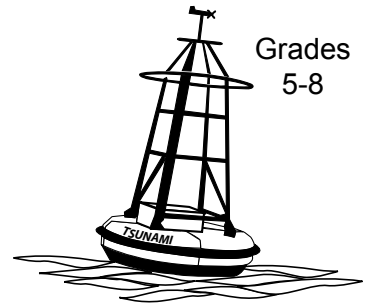
³ Ibid.

McGrory, Daniel. "Girl's Sea Warning Saved a Hundred." *Times Online* (1.01.2005) <http://www.timesonline.co.uk/>.

Owen, James. "Tsunami Family Saved by Schoolgirl's Geography Lesson." *National Geographic News* (1.18.2005).

Name: _____

Grades
5-8



Student Worksheet

Oral Tradition and Science

Directions: Oral tradition and science are methods of gaining information through careful observation. They are two different ways of understanding an event or formation. Use the information from the articles on the Student Information Sheet: “Tsunami Survivors” to complete the chart below.

Oral Tradition	Scientific Reasoning
Who?	Who?
When?	When?
Where?	Where?
<p>What happened? (number events 1-4 in proper sequence)</p> <p>___ The Andamanese people saw the water recede, revealing the sea floor.</p> <p>___ The Andamanese people felt the earthquake.</p> <p>___ The Andamanese people fled to higher ground.</p> <p>___ The Andamanese people thought a huge wave would come.</p>	<p>What happened? (number events 1-4 in proper sequence)</p> <p>___ Tilly alerted her family and other beachgoers, and fled to her hotel.</p> <p>___ Tilly saw the water recede suddenly from the beach.</p> <p>___ Tilly saw the seawater become bubbly.</p> <p>___ Tilly thought there was going to be a tsunami.</p>
<p>How did the Andamanese learn to recognize the signs of a tsunami?</p>	<p>How did Tilly Smith learn to recognize the signs of a tsunami?</p>
<p>Why did the Andamanese have an oral tradition about tsunamis?</p>	<p>Why do students learn about tsunamis in school?</p>