

Shackleton's Antarctic Adventure

3rd – 5th Grade

Learning to Give lessons incorporate National, State and Philanthropy curriculum standards. See the end of each lesson for specific benchmark detail.

National Content Standards Key Words/Concepts:

- SOC:** Exploration; *Sir Ernest Shackleton*; Common Good; Climate; Disaster; Natural
- SCI:** Weather; Water; Environment; Cause and Effect
- PHIL:** Common Good; Selflessness; Problem Solving;

Focus Question(s):

In what way does the physical environment effect human existence and interactions?
What motivates selfless acts?

Before Viewing the Movie

One 45 minute class period

Preview Lesson Purpose:

In preparation for viewing “Shackleton’s Antarctic Adventure,” learners will be introduced to the climate and geography of the continent of Antarctica. They will examine the sacrifices made by individuals for the good of the others and the common good, and explore motivations.

Objectives:

The learner will:

- explore the physical changes of freezing water
- identify the relative location of the continent of Antarctica.
- describe the motivations and characteristics of someone who volunteers or contributes for the common good.

Materials:

- two small sailing ship models or toys (preferably wood).
 - container of water that the ship will fit into and that will fit into a freezer.
 - chart paper to record student responses.
 - internet availability or student copies of a map of Antarctica and of Shackleton’s journey. Copy from the web site and print copies for students. See **Bibliographical References**.
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Instructional Procedure:

Teacher Note: Prior to the lesson obtain two small toy or model boats. Place one in a container of water and freeze.

Anticipatory Set:

Ask students to indicate if they have ever been on a boat in a large body of water. Have them relate some of their experiences. Display one of the toy boats in a container of unfrozen water. Discuss with the students what they think will happen if you move the water around simulating waves. Ask them what they think will happen if the water around the ship freezes. Show them the boat in the frozen water. Ask them to brainstorm what it might be like to be on a boat frozen in place and what might happen to the framework of the boat as the water freezes and the ice shifts in response to the movement of the ocean.

- Explain to students what happens to water molecules as they freeze. (Because ice is less dense than water at 0°C (32°F) a mass of ice occupies 9% more volume than an equal mass of water. The expansion upon freezing comes from the fact that water crystallizes into an open hexagonal form. This hexagonal lattice contains more space than the liquid state of the molecule. As a result, ice takes up more room than the water from which it forms. Most substances contract when they change state from liquid to solid; water is one of the few that expands.) Ask the learners to conjecture on the effects this expansion would have on a ship.
 - Ask them to think about how they might feel if they were on a ship that is being slowly crushed by the expansion and movement of ice. What might they do to survive? Lead them in a discussion with plausible answers. If possible show the students pictures of the Endurance from <http://www.nationalgeographic.com/explorer/shackleton.html>.
 - Tell them that they are going to see a movie of the true account of a famous explorer, Sir Ernest Shackleton, and his ship, The Endurance, and the crew. (Some of the movie is a re-enactment and some, particularly the black and white pictures, are actual photographs.) It is a story of survival and cooperation. Give them the following background information. Shackleton volunteered to go on his first Antarctic expedition. Discuss: What does it mean to volunteer and why someone would volunteer to do something so potentially dangerous? Are some of these reasons selfish and some selfless?
 - Tell the students that the Antarctic adventure portrayed in the movie was funded by private individuals, the British government and the Royal Geographical Society, a nonprofit organization. School children raised funds to purchase the sled dogs that were then named after the schools who contributed. If they had attended school in England in 1914, would they have wanted to support this venture in this way? Can they think of any cause in recent history that has united school children across our nation in a similar way? (Flights of the space shuttle, restoration of the Statue of Liberty, relief efforts after September 11, 2001)
 - Have the students study a map of Antarctica and a map of Shackleton's course while trying to return to the Stromness whaling station. (See **Bibliographical References** for these resources.)
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Instructional Procedure (Continued):

- While viewing the movie, ask the students to note the sacrifices that were made by Shackleton for his crew.

Bibliographical References:

- National Geographic Web site – contains pictures of the expedition from the Royal Geographic Society. <http://www.nationalgeographic.com/explorer/shackleton.html>
- South Pole.com: www.south-pole.com/p0000098.htm
- Information on the physics of water: <http://hyperphysics.phy-astr.gsu.edu/hbase/chemical/waterdens.html#c1>; <http://www.iapws.org/faq1/freeze.htm>
- Map of Antarctica: http://quest.arc.nasa.gov/antarctica/main/s_index.html

Michigan Curriculum Framework:

	Strand	Standard	Benchmark
SCI.	IV. Using Physical Science Knowledge	2. Changes in Matter	<p>E. 1. Describe common physical changes in matter—size, shape; melting, freezing (K-2); dissolving, evaporating (3-5). <i>Key concepts:</i> States of matter—solid, liquid, gas. Changes in size and shape—bending, tearing, breaking. Processes that cause changes of state: heating, cooling. See SCI.V.2.E.1 (water in three states). <i>Real-world contexts:</i> Changes in size or shape of familiar objects, such as making snowballs, breaking glass, crumbling cookies, making clay models, carving wood, breaking bones; changes in state of water or other substances, such as freezing of ice cream, or ponds, melting wax or steel, puddles drying up.</p>
SCI.	V. Using Earth Science Knowledge	2. Hydrosphere	<p>E. 1. Describe how water exists on earth in three states. <i>Key concepts:</i> Liquid (K-2)—visible, flowing, melting, dew. Solid (K-2)—hard, visible, freezing, ice. Gas (3-5)—invisible, water vapor, moisture, evaporating. See SCI.IV.2.E.1. <i>Real-world contexts:</i> Examples of water in each state, including dew, rain, snow, ice, evidence of moisture in the air, such as "fog" on cold bathroom mirrors; examples of melting, freezing, and evaporating.</p>
SOC.	I. Historical Perspective	2. Comprehending the Past	<p>LE. 4. Identify and explain how individuals in history demonstrated good character and personal virtue.</p>
SOC.	II. Geographic Perspective	1. People, Places & Cultures	<p>LE. 2. Locate and describe diverse kinds of communities and explain the reasons for their characteristics and locations.</p>
SOC.	II. Geographic Perspective	2. Human/Environment Interaction	<p>LE. 4. Explain how various people and cultures have adapted to and modified the environment.</p>

Philanthropy Theme Framework:

	Strand	Standard	Benchmark
PHIL	I. Definitions of Philanthropy	DP01. Define Philanthropy	MS. 1. Define philanthropy as individuals and organizations providing their time, talent, and/or treasures intended for the common good throughout history and around the world. Give examples.
PHIL	I. Definitions of Philanthropy	DP02. Roles of Government, Business, and Philanthropy	MS. 1. Describe how different needs are met in different ways by government, business, philanthropy, and family.
PHIL	II. Philanthropy and Civil Society	PCS01. Self, citizenship, and society	MS. 4. Describe the characteristics of someone who helps the community.

After Viewing the Movie

One to two 50 minute class periods.

National Content Standards Key Words/Concepts:

SOC:	Common Good; Adaptation; Good Character; Human/environmental interaction; <i>Sir Ernest Shackleton</i> ; <i>Antarctica</i> ; <i>The Endurance</i>
ELA:	Journaling; Group Discussion; Teamwork; Expository Writing
MAT:	Data collection/Organization; Graphs/Charts/Tables
PHIL:	Common Good; Community; Leadership; Heroes

Post-view Lesson Purpose :

Students will explore the role of an effective leader through a simulation.

Objectives:

The learner will:

- engage in and evaluate leadership roles in a cooperative simulation.
- write a short essay about the characteristics of leadership.
- reflect on their dreams, goals and

Materials:

- student copies of **Attachment One: “If You Were the Captain”**
 - student copies of **Attachment Two: Supply List**
 - self-stick notes, four for each student in one color, and four for each student in a second color.
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Instructional Procedure:

Anticipatory Set:

In preparation for the lesson the teacher should prepare a Venn diagram. Entitle the entire diagram “Leadership Qualities,” label the left circle “School/Community Leaders”. Ask the students to name some good leaders in their school and community. These can be both adults and children. Write these names under the title, above the left circle. Have the students brainstorm a list of qualities of leadership these people possess that make them effective leaders? List these characteristics in the left circle. Write the name Shackleton above the right circle. Now have them remember the qualities of leadership modeled by Sir Ernest Shackleton during his Antarctic adventure and write these in the right circle. Ask the children to observe those characteristics of leadership that are the same or similar between the two circles. Cross those out in both circles and place them to the center where the circles intersect.

- Tell the class that they will participate in a survival simulation.
- In order to prepare for the game, give each group a copy of **Attachment One: “If You Were the Captain”**. Read the scenario together and allow time for the students to write a plan of action.
- Ask students to share their plans. Listen for, point out, and encourage examples of leadership in the plans.
- Give each group a copy of the supplies list (**Attachment Two**).
- **Teacher Note:** There are 16 items on the list. The list is not intended to be historically accurate to the time of Shackleton’s adventure. It is only for simulation purposes. The students choose and rank 10 of them. Accept any ranking of these items as long as each student can justify why it is an important item to keep. For example, wood from the ship could be use for fuel to cook or keep warm. Others might point out that the ice would melt with from the heat, therefore would not be a good choice. A cell phone would probably not be a good choice because it more than likely wouldn’t work at the South Pole.
- Read the attachment with the class. Independently, have each student decide what supplies s/he thinks they need to keep and then rank them in importance with **1** (one) being the most important. Ask them to be ready to explain their top four choices.
- Have a class discussion about their choices. After the discussion, students may change their priorities if desired.
- Give each student 4 self-stick notes. Have them write their top four ranked survival items (numbers 1-4) on the notes, one survival item on each note.
- Create an outline of a ship in the floor with masking tape. Ask the students to bring their notes and sit in the ship outline.
- Create a large wall bar graph by listing the supply items and asking the students to place their self-stick notes in the correct line. Ask students to draw conclusions from the graph. Remind the students that to survive the crew would need food, water and shelter (in this case indicated by a sufficient number of tents and blankets).

Instructional Procedure (Continued):

- Have the students calculate if they have enough tents and blankets for the “crew,” their class. (They would need sufficient tents and blankets to survive for even one day.) Have them calculate the number of days of food available for the crew and the number of days of water, assuming one gallon of water per crewmember per day. For how many days do they think they could survive with the supplies on the graph?
- Distribute four self-stick notes (a different color) to each student and repeat the simulation. Remind students that cooperation and sharing for the common good are important to enhance their chances of survival. Ask for a volunteer as “Captain” to organize the choice of supplies. Help the “Captain” facilitate discussion about what supplies are needed and their priority.
- When the self-stick notes are completed, ask students to place them in the proper category adjacent the original row. Have the students compare the different colored rows for each supply. Do they think having the leadership of a “Captain,” cooperating, and keeping in mind the common good in the selection of supplies helped the crew survive longer?
- Tell the students that although mail service was not available to the crew of the Shackleton, they must have yearned for the opportunity to send word to their families and friends. Ask the students to pretend they are a member of the crew of the Endurance. They are to write a letter home to their families describing their Sir Ernest Shackleton. The letter should cite two of the characteristics that made him a successful leader. It should also include at least one incident from the trip that was particularly memorable. Remind the students to write in the first person, as a crewmember.

Assessment:

The teacher may subjectively observe the groups and assess each student in the group regarding their participation in the activity.

Assess the letter according to the scoring rubric or create your own to suit your needs.
(Attachment Three)

Extensions:

Read aloud the book “Trapped by the Ice!: Shackleton’s Amazing Antarctic Adventure. Ask the students to discuss how it is the same and different from the movie.

Bibliographical References:

- <http://www.nationalgeographic.com/explorer/shackleton.html>
- McCurdy, Michael. *Trapped by the Ice!: Shackleton's Amazing Antarctic Adventure*. 2002. Walker & Company. ISBN# 0802776337

Michigan Curriculum Framework:

	Strand	Standard	Benchmark
SOC.	I. Historical Perspective	2. Comprehending the Past	LE. 4. Identify and explain how individuals in history demonstrated good character and personal virtue.
SOC.	II. Geographic Perspective	2. Human/Environment Interaction	LE. 4. Explain how various people and cultures have adapted to and modified the environment.
MAT.	III. Data Analysis and Statistics	1. Collection, Organization and Presentation of Data	E. 1. Collect and explore data through counting, measuring and conducting surveys and experiments.
MAT.	III. Data Analysis and Statistics	1. Collection, Organization and Presentation of Data	E. 2. Organize data using concrete objects, pictures, tallies, tables, charts, diagrams and graphs.
ELA	1. Meaning and Communication		LE 3. Employ multiple strategies to construct meaning, including the use of sentence structure, vocabulary skills, context clues, text structure, mapping, predicting, retelling, and generating questions.
ELA	8. Genre & Craft of Language		LE 1. Identify and use mechanics that enhance and clarify understanding. Examples include sentence structure, paragraphing, appropriate punctuation, grammatical constructions, conventional spelling, and relating in sequence an account of an oral or visual experience.
ELA	9. Depth of Understanding		LE 1. Explore and reflect on universal themes and substantive issues from oral, visual, and written texts. Examples include exploration, discovery, and formation of personal relationships.
ELA	10. Ideas in Action		LE 1. Identify how their own experiences influence their understanding of key ideas in literature and other texts.

Philanthropy Theme Framework:

PHIL	I. Definitions of Philanthropy	DP01. Define Philanthropy	E. 1. Define philanthropy as the giving and sharing of time, talent, or treasure intended for the common good.
PHIL	II. Philanthropy and Civil Society	PCS01. Self, citizenship, and society	E. 3. Describe a benefit of group cooperation.
PHIL	II. Philanthropy and Civil Society	PCS01. Self, citizenship, and society	E. 5. Identify one local citizen who has helped the community through giving and/or service.
PHIL	III. Philanthropy and the Individual	PI01. Reasons for Individual Philanthropy	E. 4. Give an example of how citizens acted for the common good.

Lesson Developed by:
 Clare Friend
Learning to Give Consultant

Attachment One
Shackleton's Antarctic Adventure
3rd – 5th Grade

If You Were the Captain

You and the crew have been shipwrecked on the continent of Antarctica. The only animal life there are penguins, a few sea birds, seals, some fish under the icepack. Your ship was crushed by the frozen water and eventually sank. Before it sank you ordered the crew to abandon ship and remove what supplies they could. It is the responsibility of the captain to keep the crew alive and to get them to safety if possible. How will you accomplish? Make a plan. Write this plan below.

Attachment Two
Shackleton's Antarctic Adventure
3rd – 5th Grade

Supply List

You are a crewmember of a ship that set out to explore the continent of Antarctica. Your ship has become frozen in the icepack and is being destroyed by pressure from the ice. The Captain has given the order to abandon ship and remove any supplies that you can. You and the other crewmembers comply.

Rank each item 1-10 in order of importance to your survival with "1" being of the highest priority.

You will need to choose which supplies are the most important from the list and be prepared to say why you think they are important.

- two 10 gal. barrels of non salt water
 - 10 thermal blankets
 - enough food to last ten people for three days
 - matches
 - 1 cell phone
 - 6 candles
 - 8 flashlights
 - 6 - four person tents
 - 7 bars of soap
 - 2 cameras with film
 - one inflatable raft for 6 people
 - flare gun
 - short wave radio
 - CD player
 - wood from the ship
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Attachment Three
Shackleton's Antarctic Adventure
3rd – 5th Grade

Scoring Rubric for Writing

- 10 points:** Included 6 (*or number you choose*) adjectives describing Shackleton.
Letter was written in the first person.
Two or more leadership qualities describing Shackleton.
Described in detail one memorable incident that happened on the trip.
- 8 points:** Included 3-5 adjectives describing Shackleton.
Letter was written in the first person.
One leadership quality describing Shackleton.
Mentioned one memorable incident but lacks specific detail.
- 6 points:** Student included 2 of the 4 criterion listed in the “10 points” list.
- 4 points:** Student included 1 of the 4 criterion listed in the “10 points” list
- 0 points:** Student failed to meet any of the criterion listed in the “10 points” list.
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