

Shackleton’s Antarctic Adventure

6th – 8th 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; Common Good; Climate; Disaster: Natural
ELA:	Letter Writing; Journaling;
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 sacrifices made by individuals for the good of the others and the common good, and explore their 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 what they experienced. Show 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 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 his 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. What does it mean to volunteer and why would someone 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
SOC.	I. Historical Perspective	2. Comprehending the Past	MS. 2. Identify and explain how individuals in history demonstrated good character and personal virtue.
SOC.	I. Historical Perspective	2. Comprehending the Past	MS. 4. Use historical biographies to explain how events from the past affected the lives of individuals and how some individuals influenced the course of history.
SOC.	II. Geographic Perspective	1. People, Places & Cultures	MS. 1. Locate and describe the diverse places, cultures, and communities of major world regions.
SOC.	II. Geographic Perspective	2. Human/Environment Interaction	MS. 2. Locate major ecosystems, describe their characteristics, and explain the process that created them.
SOC.	II. Geographic Perspective	4. Regions, Patterns & Processes	MS. 4. Compare major world regions with respect to cultures, economy, governmental systems, environment, and communications.
SCI.	IV. Using Physical Science Knowledge	2. Changes in Matter	MS. 1. Describe common physical changes in matter: evaporation, condensation, sublimation, thermal expansion, and contraction. <i>Key concepts:</i> States of matter—solid, liquid, gas. Processes that cause changes of state or thermal effects: heating, cooling. Boiling. Mass/weight remains constant during physical changes in closed systems. <i>Real-world contexts:</i> States of matter—solid, liquid, gas. Changes in state, such as water evaporating as clothes dry, condensation on cold window panes, disappearance of snow or dry ice without melting; expansion of bridges in hot weather, expansion and contraction of balloons with heating and cooling; solid air fresheners.

Michigan Curriculum Framework (Continued):

	Strand	Standard
SCI.	V. Using Earth Science Knowledge	2. Hydrosphere

	Benchmark
MS.	1. Use maps of the earth to locate water in its various forms and describe conditions under which they exist. <i>Key concepts:</i> Liquid water forms—lakes, rivers, oceans, springs. Frozen water forms—continental glacier, valley glacier, snow on mountains, polar cap. Gaseous water in atmosphere. <i>Tools:</i> Relief and elevation maps; satellite images. <i>Real-world contexts:</i> Local lakes, rivers, streams, ponds, springs; examples of frozen water, including snow, glaciers, icebergs, polar regions, frozen Great Lakes shorelines.

Philanthropy Theme Framework:

	Strand	Standard
PHIL	I. Definitions of Philanthropy	DP01. Define Philanthropy
PHIL	I. Definitions of Philanthropy	DP02. Roles of Government, Business, and Philanthropy
PHIL	II. Philanthropy and Civil Society	PCS01. Self, citizenship, and society

	Benchmark
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.
MS.	1. Describe how different needs are met in different ways by government, business, philanthropy, and family.
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; *Sir Ernest Shackleton; Antarctica; The Endurance*
- ELA:** Journaling; Group Discussion; Teamwork; Expository Writing
- 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 and goals.

Materials:

- student copies of Interview with Alexandra Shackleton (**Attachment One**)
- student copies of the Antarctic simulation activity for each group. (**Attachment Two**)
- student copies of the list of items the group will need. (**Attachment Three**)

Instructional Procedure:*Anticipatory Set:*

Hand out **Attachment One: Interview with Alexandra Shackleton**. Explain that this is an excerpt from an interview of Ernest Shackleton's granddaughter done by NOVA.

Assign students to read the interview questions and answers, and highlight or underline those words and phrases that describe Shackleton's leadership qualities.

As a class, create a list of the descriptive words and phrases. Add any others that the students may have observed about Shackleton that are not included in the interview script.

- As a class discuss what characteristics and qualities of leadership Sir Ernest Shackleton modeled.
- Tell the class that they will participate in a survival simulation. Divide the class into two groups. One person will be chosen by the teacher to be the Captain for round one and the rest of the students in the group will be the crew.
- Give each group a copy of the Antarctic simulation (**Attachment Two**).
- Give each group a copy of the supplies (**Attachment Three**).

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 from the heat, and 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.

- Tell each group to read carefully the simulation situation and the list of supplies.
 - 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. They should also write down the rationale for keeping each item and ranking it where they did.
 - Have a class discussion about their choices. After the discussion, students may change their priorities if desired.
 - Give each student 4 index cards. Have them write their top four ranked survival items (numbers 1-4) on the cards, one survival item on each card.
 - Put an outline of two ships on the floor with masking tape. The crews of each ship (each group) should sit within the markings. The crews pool their resources (items written on their cards) and make an inventory of supplies using a blank supply list, indicating the number of cards they have for each item.
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Instructional Procedure (Continued):

- Ask each crew to calculate how many days food they have for their ship based on the number in each crew with each supply card feeding ten people for three days. How many days of drinking water do they have based on 1 gallon a day for each crewmember? Have them calculate if they have enough tents to house their crews, a blanket for each person, fuel for warmth and cooking, sufficient life rafts if needed in an emergency. Ask each group to report about how long the group estimates they could survive with the supply items their group chose? (To survive even one day they need sufficient food, water and shelter – tents and blankets.)
- Gather as a class and discuss how the survival time could be lengthened. Promote ideas of cooperation, sharing and selflessness for the common good during the discussion.
- Have each group return to their boats. Students or the teacher may choose to appoint a new captain for this round of the game. Give the group a new blank supply list and each crewmember four cards on which to choose supplies. Allow the groups to cooperatively decide how each person’s cards should be completed. Have them again calculate how long they could survive. Compare the survival
- Hold a class discussion about the difference in the two rounds of the game and how the common good of the group (survival) was enhanced through cooperation, sharing and selflessness.
- The students will write an essay describing three characteristics of a good leader and explain how these characteristics helped Shackleton achieve his goal of survival for his entire crew. The essay will include one of their personal goals and a characteristic needed to reach it. (see Scoring Rubric, **Attachment Four**)

Assessment:

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

Students will write an essay about characteristics of a good leader.

Extension:

A variation of the simulation or extension.

- Round one: Each crew decides what other items they need for survival and what items they may have in excess and could exchange with the other “crew.”
- The teacher guides the crews in the exchange of cards with items listed. Remind them to cross off or add an item to the ships inventory as each round of exchange takes place.
- The crews continue to exchange cards until they are satisfied they can survive with what they have or not survive.

Students may create their own survival simulation scenario and give them to groups of students to role-play. They may also create a list of supplies that they think might be needed for survival. *Examples:* Spaceship Crashed on the Planet Mars; Stranded in the Sahara Desert or Amazon Rainforest.

Bibliographical References:

<http://www.nationalgeographic.com/explorer/shackleton.html>

Michigan Curriculum Framework:

	Strand	Standard	Benchmark
SOC.	I. Historical Perspective	2. Comprehending the Past	MS. 3. Select conditions in various parts of the world and describe how they have been shaped by events from the past.
SOC.	I. Historical Perspective	2. Comprehending the Past	MS. 4. Use historical biographies to explain how events from the past affected the lives of individuals and how some individuals influenced the course of history.
SOC.	II. Geographic Perspective	2. Human/Environment Interaction	MS. 4. Explain how humans modify the environment and describe some of the possible consequences of those modifications.
	Standard		Benchmark
ELA	1. Meaning and Communication		MS 1. Use reading for multiple purposes, such as enjoyment, clarifying information, and learning complex procedures.
ELA	1. Meaning and Communication		MS 5. Respond to a variety of oral, visual, written, and electronic texts by making connections to their personal lives and the lives of others.
ELA	2. Meaning and Communication		MS 1. Write fluently for multiple purposes to produce compositions, such as personal narratives, persuasive essays, lab reports, and poetry.
ELA	2. Meaning and Communication		MS 3. Plan and draft texts, and revise and edit their own writing, and help others revise and edit their texts in such areas as content, perspective, and effect.
ELA	2. Meaning and Communication		MS 4. Select and use appropriate language conventions when editing text. Examples include various grammatical constructions, subject-verb agreement, punctuation, and spelling.
ELA	3. Meaning & Communication		MS 3. Read and write fluently, speak confidently, listen and interact appropriately, view critically, and represent creatively. Examples include reporting formally to an audience, debating issues, and interviewing members of the public
ELA	11. Inquiry and Research		MS 3. Organize, analyze, and synthesize information to draw conclusions and implications based on their investigation of an issue or problem.

Philanthropy Theme Framework:

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	II. Philanthropy and Civil Society	PCS01. Self, citizenship, and society	MS. 4. Describe the characteristics of someone who helps the community.
PHIL	III. Philanthropy and the Individual	PI01. Reasons for Individual Philanthropy	MS. 4. Identify and describe the actions of citizens who acted for the common good.
PHIL	III. Philanthropy and the Individual	PI01. Reasons for Individual Philanthropy	MS. 10. Identify reasons why historic figures acted for the common good (1763 - 1815).

Lesson Developed by:
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Attachment One
Shackleton's Antarctic Adventure
6th – 8th Grade

Interview with Alexandra Shackleton

Excerpts from an interview with Alexandra Shackleton conducted by PBS TV producer Kelly Tyler

NOVA: What did your grandfather think were the most important qualities for a polar explorer to possess?

Shackleton: Well, he actually listed them. In order of priority, he said first optimism, second patience, third imagination (with which he coupled idealism), and fourth, courage. He thought every man had courage.

Now, those are very practical qualities, and yet Ernest Shackleton was a very romantic man who wrote poetry. This was an era in which fine words abounded, and I might have thought he would have chosen qualities such as self-sacrifice or going for glory. After all, the search for the pole was likened to the search for the Holy Grail. But his practical qualities did not war against his romantic aspects. They made a harmonious whole, which I think was one of his strengths.

NOVA: What qualities do you think he possessed that made him such a compelling leader and instill such loyalty in his crew?

Shackleton: I think that the fact that his men were so important. Leadership was a two-way thing for him. It wasn't a case of men following him just because he was the leader; he was devoted to them. It was a reciprocal, very close relationship. That's why any discord and disobedience he took personally. He was the ultimate leader because his men were his priority at all times. It took four attempts to rescue his men from Elephant Island and he visibly aged, particularly after the third one did not succeed. But when he got to Elephant Island, counted the heads frantically, and found all safe all well, well, the years rolled away.

NOVA: Now, on the journey to South Georgia aboard the *Caird*, how did your grandfather help the men cope with the horrendous conditions?

Shackleton: Well, he was well aware of the importance of a hot drink. Every man was fed every four hours, but if he noticed any member of the expedition failing slightly, he would order hot milk then and there, not just for him, but for everybody, so this man would not, as he put it, have doubts about himself. When he noticed one man suffering particularly from cold, he would rummage in the damp supplies and dig him out a pair of gloves.

NOVA: It's been said that your grandfather had an almost feminine concern for his men.

Shackleton: Yes, he was almost fussy at times in his care for them. Watching to see if anyone was succumbing to frostbite, making hot drinks for everyone whenever he saw that any one man was in need of one, and so on. He actually described this side of himself in a letter to his wife. Perhaps because he was part of a large family, this kind of concern came with the territory.

Interview conducted by Kelly Tyler, NOVA producer, "Shackleton's Voyage of Endurance" found at: <http://www.pbs.org/wgbh/nova/shackleton/1914/alexandra.html>

Attachment Two
Shackleton's Antarctic Adventure
6th – 8th Grade

Antarctic Survival Simulation

To the Captain

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

To the Crew

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

You will need to choose which supplies are the most important from the list with the rational for each item.

Attachment Three
Shackleton's Antarctic Adventure
6th – 8th Grade

Supply List

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

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

Scoring Rubric for Essay

- 4 points:** Described in detail 3 characteristics for a good leader. (Selfless, actions are in the interest of the majority for the common good, keep the up the moral, being nurturing but firm, promotes cooperation, perseverance, etc.) Made a connection to Shackleton's success.
Explained a personal goal and characteristic to reach it.
- 3 points:** Described in detail 2 characteristics for a good leader.
Explained a personal goal.
- 2 points:** Described in detail 1 characteristics for a good leader.
- 1 points:** Student mentioned/listed 3 characteristics for a good leader but did not elaborate on them.
- 0 points:** Student was not clear in the description of any characteristics of leadership.
-