BRRRRRR!!! It’s Cold Here! A Study of Antarctica

Grade Level: Kindergarten
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Length of Unit: Five Lessons (5-7 Days)

I. ABSTRACT
Join us as we travel to the bottom of the world and visit Antarctica. Meet Paul the Penguin, from Antarctica, as he shares information about his homeland, the animals who live there, and the scientists who work there. Students will also learn to make a snowflake, do math with penguins, and learn about various types of penguins.

II. OVERVIEW
A. Concept Objectives
1. The student understands the concept of location.  (TEKS SS K.4)
2. The student understands the physical and human characteristics of the environment.  (TEKS SS K.5)

B. Content from the Core Knowledge Sequence
1. An Overview of the Seven Continents
   a. Identify and locate Antarctica on a map and globe.  (p. 11)

C. Skill Objectives
1. The student is expected to use terms, including over, under, near, far, left, and right, to describe relative location.  (TEKS SS K.4a)
2. The student is expected to identify the physical characteristics of places such as landforms, bodies of water, natural resources, and weather.  (TEKS SS K.5a)
3. The student is expected to identify the human characteristics of places such as types of houses and ways of earning a living.  (TEKS SS K.5b)
4. The student is expected to obtain information about a topic using a variety of oral sources such as conversations, interviews, and music.  (TEKS SS K.15a)
5. The student is expected to obtain information about a topic using a variety of visual sources such as pictures, symbols, television, maps, computer images, print material, and artifacts.  (TEKS SS K.15b)
6. The student is expected to sequence and categorize information.  (TEKS SS K.15c)
7. The student is expected to express ideas orally based on knowledge and experiences.  (TEKS SS K.16a)
8. The student is expected to develop manipulative skills when drawing, painting, printmaking, and constructing artworks, using a variety of materials.  (TEKS ART K.2c)
9. The student communicates in oral and visual forms.  (TEKS SS K.16)

III. BACKGROUND KNOWLEDGE
A. For Teachers

B. For Students
1. Geography: Spatial Sense (p. 11)
   a. Maps and Globes: what they represent, how we use them.
   b. Locate the North and South Poles.

IV. RESOURCES

V. LESSONS
Lesson One: Where in the world is Antarctica?
A. Daily Objectives
1. Concept Objective(s)
   a. The student understands the concept of location. (TEKS SS K.4)
   b. The student understands the physical and human characteristics of the environment. (TEKS SS K.5)
2. Lesson Content
   a. An Overview of the Seven Continents
      1. Identify and locate Antarctica on a map and globe. (page 11)
3. Skill Objective(s)
   a. The student is expected to use terms, including over, under, near, far, left, and right, to describe relative location. (TEKS SS K.4a)
   b. The student is expected to identify the physical characteristics of places such as landforms, bodies of water, natural resources, and weather. (TEKS SS K.5a)
   c. The student is expected to identify the human characteristics of places such as types of houses and ways of earning a living. (TEKS SS K.5b)
   d. The student is expected to obtain information about a topic using a variety of oral sources such as conversations, interviews, and music. (TEKS SS K.15a)
   e. The student is expected to obtain information about a topic using a variety of visual sources such as pictures, symbols, television, maps, computer images, print material, and artifacts. (TEKS SS K.15b)
   f. The student is expected to sequence and categorize information. (TEKS SS K.15c)
g. The student is expected to express ideas orally based on knowledge and experiences. (TEKS SS K.16a)

h. The student communicates in oral and visual forms. (TEKS SS K.16)

B. Materials
1. Stuffed penguin named Paul (any size)
2. Contents for Paul’s suitcase (Appendix A)
3. Small coin purse (Paul’s suitcase) containing the items on Appendix A
4. Spiral notebook for Paul’s diary
5. Globe
6. Wall map of the world
7. Blank map of the world – one per student (available at teacher supply stores)
8. Continent book (Appendix B) – one per student
9. Glue stick
10. Die cut shape of Antarctica – one per student
11. Copy of the Antarctic Treaty (Appendix C) – one per student, reduced to desired size

C. Key Vocabulary
1. continent – any of the great divisions of land on the globe
2. Antarctica – one of the seven continents of the world
3. South Pole – the southern most point of the Earth
4. Antarctic Treaty – the treaty signed by many nations establishing rules for Antarctica.

D. Procedures/Activities
1. Tell the students that the night before you went to the airport and picked up a special visitor. Introduce Paul the Penguin to the class. Show the students his “suitcase” and its contents. Tell the students that they will be learning more about the contents of his suitcase later in the week. Explain that Paul will be spending the week with the class to teach about his homeland, Antarctica. The teacher will take him home every night this week and on Friday he will begin to visit each of the students at their homes for one night. He will record his nightly adventures in his diary. Show the students the spiral notebook that is his diary.
2. Locate Antarctica on the map and on the globe. Review North and South Poles and point out that the South Pole is located on the continent of Antarctica. Write the word “Antarctica” on the board. Pass out the blank maps of the world, and have each student locate and label Antarctica on their map. Take up maps and save for the next continent study.
3. Discuss the weather conditions of Antarctica.
4. Explain that there are no native humans there. Discuss scientific research stations and why people would go there.
5. Discuss the Antarctic Treaty.
6. Pass out Continent Books and have the students open them up to the designated page for Antarctica.
7. Pass out the die cut of Antarctica and have each student glue it into his book. Also have them label “Antarctica” on the shape.
8. Pass out the small copy of the Antarctic Treaty and have students glue it into their continent book. Pick up Continent books.

E. Assessment/Evaluation
1. Student’s completion of Antarctica page in the continent book and teacher observation of student participation in class discussion. Teacher listens for student’s understanding of the following: continent, Antarctica, South Pole, and Antarctic Treaty.

Lesson Two: Penguins of Antarctica

Daily Objectives

1. Concept Objective(s)
   a. The student understands the physical and human characteristics of the environment. (TEKS SS K.5)

2. Lesson Content
   a. An Overview of the Seven Continents
      1. Identify and locate Antarctica on a map and globe. (page 11)

3. Skill Objective(s)
   a. The student is expected to obtain information about a topic using a variety of oral sources such as conversations, interviews, and music. (TEKS SS K.15a)
   b. The student is expected to obtain information about a topic using a variety of visual sources such as pictures, symbols, television, maps, computer images, print material, and artifacts. (TEKS SS K.15b)
   c. The student is expected to sequence and categorize information. (TEKS SS K.15c)
   d. The student is expected to express ideas orally based on knowledge and experiences. (TEKS SS K.16a)
   e. The student is expected to develop manipulative skills when drawing, painting, printmaking, and constructing artworks, using a variety of materials. (TEKS ART K.2c)
   f. The student communicates in oral and visual forms. (TEKS SS K.16)

A. Materials
   1. Book – Tacky the Penguin
   2. Book – Penguins! By Gail Gibbons
   3. Book – Paper Tube Zoo, page 34
   4. Large piece of butcher paper for Venn Diagram
   5. Several light shirts and several sweaters
   6. Picture of Paul the Penguin, reduced to desired size, from Penguins and Mittens, pg. 58 – one per student

B. Key Vocabulary
   1. rookery – a large colony of penguins
   2. krill – small shrimp-like animals that live in the ocean
   3. chick – a baby penguin
   4. blubber – the fat of large sea animals

C. Procedures/Activities
   1. Read Tacky the Penguin to the class.
   2. Draw a Venn diagram on a piece of butcher paper with one circle labeled “Tacky” and the other circle labeled “The other penguins”. Compare and contrast Tacky with the other penguins in the book. Display the diagram in the classroom for the week.
   3. Read Penguins! Discuss the following as you read:
      a. Where do penguins live?
b. The different types of penguins
c. They are not fliers, but great swimmers. So why are they called birds, not fish?
d. What do penguins eat?
e. How are the young born and raised?
f. How do penguins stay warm in the cold air and water?

4. Demonstrate how penguins stay warm by putting on a light shirt and asking the students if that would keep them warm in the cold. Then, add several layers of shirts and sweaters over the shirt. Ask the students if these would keep them warm. Explain that penguins have layers just like these. First, they have a layer of blubber which is a layer of fat. Then, they have a layer of air. Last, they have a layer of tightly packed feathers. Together these layers keep the penguin warm in the extreme cold.

5. Add Paul the Penguin to Continent Book.

D. Assessment/Evaluation
1. Teacher observation of student participation in class discussion and completion of Venn Diagram. Teacher will listen for student’s understanding of rookery, krill, chick, and blubber.
2. Teacher observation of student’s ability to complete paper tube penguin.

Lesson Three: Other Life Forms in Antarctica

A. Daily Objectives
1. Concept Objective(s)
   a. The student understands the concept of location. (TEKS SS K.4)
   b. The student understands the physical and human characteristics of the environment. (TEKS SS K.5)

2. Lesson Content
   a. An Overview of the Seven Continents
      1. Identify and locate Antarctica on a map and globe. (p. 11)

3. Skill Objective(s)
   a. The student is expected to obtain information about a topic using a variety of oral sources such as conversations, interviews, and music. (TEKS SS K.15a)
   b. The student is expected to obtain information about a topic using a variety of visual sources such as pictures, symbols, television, maps, computer images, print material, and artifacts. (TEKS SS K.15b)
   c. The student is expected to develop manipulative skills when drawing, painting, printmaking, and constructing artworks, using a variety of materials. (TEKS ART K.2c)
   d. The student communicates in oral and visual forms. (TEKS SS K.16)

B. Materials
   1. Penguin Math (Appendix D)
   2. Antarctic Animals (Appendix E) – one copy per student
   3. Continent book
   4. Glue stick
   5. Book - Penguins! by Gail Gibbons

C. Key Vocabulary
   1. krill – small shrimp-like animals that live in the ocean

D. Procedures/Activities
1. Review previous day’s discussion on penguins.
2. Explain to the students that today they are going to do math with penguins! Give each student ten small penguin cutouts and a work mat (Appendix D). Do a math story using the penguins. For example: “Ten penguins were on the ice. Three went swimming to look for krill. How many penguins were left on the ice?” Continue with other math problems as time and interests allow.
3. Read Penguins! to the class.
4. Discuss other life forms found in Antarctica.
5. Pass out “Other Life Forms of Antarctica” (Appendix E) and continent books. Students will color, cut out, and glue into continent book on the Antarctica page.
6. Have students turn in their continent books as they finish. As each student turns in his continent book, the teacher should ask him questions about other life forms on Antarctica to assess his understanding of the lesson.

E. Assessment/Evaluation
1. Teacher will check for understanding of other Antarctica life forms through discussion and questions.

Lesson Four: Ice and Snow
A. Daily Objectives
1. Concept Objective(s)
   a. The student understands the physical and human characteristics of the environment. (TEKS SS K.5)
2. Lesson Content
   a. An Overview of the Seven Continents
      1. Identify and locate Antarctica on a map and globe. (p. 11)
3. Skill Objective(s)
   a. The student is expected to use terms, including over, under, near, far, left, and right, to describe relative location. (TEKS SS K.4a)
   b. The student is expected to identify the physical characteristics of places such as landforms, bodies of water, natural resources, and weather. (TEKS SS K.5a)
   c. The student is expected to sequence and categorize information. (TEKS SS K.15c)
   d. The student is expected to develop manipulative skills when drawing, painting, printmaking, and constructing artworks, using a variety of materials. (TEKS ART K.2c)

B. Materials
1. Book - The Snowy Day
2. 4” white die-cut square – two for each child
3. scissors – one for each child
4. Continent Book
5. Glue stick
6. Ice cube
7. Clear glass of water

C. Key Vocabulary
1. Iceberg – A large floating mass of ice

D. Procedures/Activities
1. Review previous day’s discussion of other life forms on Antarctica.
2. Tell the students that Antarctica is the coldest and windiest place on earth, and it is covered with ice up to 3 miles thick!
3. Introduce the word “iceberg” and explain that only the top of an iceberg can be seen in the ocean. Icebergs float in the water because air is trapped inside of them. Explain that most of the iceberg is below the water. Antarctica is NOT an iceberg, but pieces of ice have broken off to form many icebergs around the continent.

4. Explain that an iceberg is something like an ice cube. Demonstrate this by putting an ice cube in a clear glass of water. Notice how much of the ice cube sticks out above the water and how much stays under the water.

5. Explain to the students that in Antarctica, the snow has fallen on top of snow for many years. As the snow falls, it pushes down the snow underneath it and the bottom layers become hard as ice. Snowflakes are formed as water freezes high in the clouds. All snowflakes have 6 sides or arms, but no two have ever been seen that are exactly the same.

6. Read the book *The Snowy Day* to the class.

7. Pass out two 4” squares of paper to each child.

8. Following the directions on page 261 of *What Your Kindergartner Needs to Know*. Help the students make two snowflakes.

9. Pass out the continent books.

10. Let the children pick one of the snowflakes to glue into their continent book.

11. The other snowflake can be taken home or hung in the classroom.

E. Assessment/Evaluation

1. Student’s ability to complete a snowflake.

Lesson Five: Ice is Good!

A. Daily Objectives

1. Concept Objective(s)
   1. The student understands the concept of location. (TEKS SS K.4)
   2. The student understands the physical and human characteristics of the environment. (TEKS SS K.5)

2. Lesson Content
   1. An Overview of the Seven Continents
      a. Identify and locate Antarctica on a map and globe. (p. 11)

3. Skill Objective(s)
   1. The student is expected to identify the physical characteristics of places such as landforms, bodies of water, natural resources, and weather. (TEKS SS K.5a)
   2. The student is expected to identify the human characteristics of places such as types of houses and ways of earning a living. (TEKS SS K.5b)
   3. The student is expected to obtain information about a topic using a variety of oral sources such as conversations, interviews, and music. (TEKS SS K.15a)
   4. The student is expected to sequence and categorize information. (TEKS SS K.15c)

F. Materials

1. Appendix F – “Does It Belong?” – one copy per child
2. snow cone maker
3. ice
4. snow cone flavors
5. cups – one for each child
6. spoons – one for each child

G. Key Vocabulary
H. Procedures/Activities
1. Review information on Antarctica discussed this week.
3. Ask the students to look at the first set of pictures. Ask the students which picture shows the arrow pointing to the location of Antarctica. Instruct the students to circle the correct picture. The teacher continues with the remaining sets of pictures, asking the students to circle the picture that shows something that belongs in Antarctica. Reinforce the fact that we have discussed all these things this week.
4. When all the students are finished with Appendix F, set up the snow cone maker and make a snow cone for each child.

I. Assessment/Evaluation

VI. CULMINATING ACTIVITY (Optional)
A. To supplement the Antarctica unit, throughout the week read any of the following books:
B. Continue studying the other six continents, with Paul as the tour guide, completing a page for each continent in the continent book. Add a picture of Paul with a native costume from one of the countries on that continent. (See Penguins and Mittens.) After studying all seven continents, have an “International Feast”. Each child should select a country. He will share a little information about that country and bring some type of food to share with the class. The student is welcome to dress in a native costume and bring any artifacts he may have to share with the class. Parents are invited to attend. It is a very exciting day!

VII. HANDOUTS/WORKSHEETS
A. Appendix A Contents for Paul’s Suitcase
B. Appendix B Directions for Making a Continent Book
C. Appendix C The Antarctic Treaty
D. Appendix D Penguin Math
E. Appendix E Antarctic Animals
F. Appendix F Does it Belong?

VIII. BIBLIOGRAPHY


Appendix A

Paul the Penguin has a small suitcase (coin purse) which he takes with him as he travels. In the suitcase, he has a snowflake, a krill, and a picture of his family. Copy, color, and laminate the pictures and put them in Paul’s suitcase.
Appendix B

Directions to Make Continent Book

Supplies needed:
- 7 pieces of 11 x 17 construction paper in various shades of blue, purple, and green
- Glue sticks
- Picture of the world - one for each book
- Binders

Fold each piece of 11 x 17 construction paper in half to make two 8 1/2 x 11 pages. Place all folded edges together and bind. Glue the different colored sides together to make 7 pages. Each continent will be on a page that is all the same color. For example, the die-cut shape of Antarctica and the Antarctic Treaty can be glued on the left side of the light blue sheet, and then Paul, the snowflake, and the Antarctic Animals can be glued on the right side of the light blue sheet. When you turn the page there will be two dark blue pages for the next continent.

Here is an example of how we made our covers:

The Kindergarten Guide

To the Continents
Appendix C

The Antarctic Treaty

- No military use will be made of Antarctica, although military personnel and equipment may be used for peaceful purposes.
- There will be complete freedom of scientific investigation, and treaty nations will share their plans and scientific results.
- No nation can claim any part of Antarctica as its own.
- Nuclear explosions and nuclear waste disposal are banned from Antarctica.
- All Antarctic stations, and all ships and aircraft supplying Antarctica, shall be open to inspection by observers from any treaty nation.
- Treaty nations will meet at intervals to consider ways of improving the treaty and generally protecting Antarctica.

Treaty signees in 1959: Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, USA, USSR (now Russia/CIS), and the UK.

By 1991 these countries had also signed: Russia (replacing the USSR), Poland, India, Brazil, Germany, Uruguay, Italy, Peru, Spain, China, Sweden, Finland, North Korea, South Korea, Netherlands, Ecuador, Czech Republic, Denmark, Romania, Bulgaria, Papua New Guinea, Hungary, Cuba, Greece, Austria, Canada, Colombia, Switzerland, and Guatemala.
Appendix D

Penguin Math

Make your work-mat 8 ½ X 11 on light blue paper. The land can be cut out of white paper, and the water out of blue. Glue the land and water on top of the light blue paper as shown above. Laminate when finished.
### Antarctic Animals

<table>
<thead>
<tr>
<th>Penguins</th>
<th>Krill</th>
<th>Seals</th>
</tr>
</thead>
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<td><img src="image2.png" alt="Krill" /></td>
<td><img src="image3.png" alt="Seal" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Whales</th>
<th>Dolphins</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4.png" alt="Whale" /></td>
<td><img src="image5.png" alt="Dolphin" /></td>
</tr>
</tbody>
</table>
# Appendix F

## Does It Belong?

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Globe" /></td>
<td><img src="image2" alt="Globe" /></td>
<td><img src="image3" alt="Penguins" /></td>
<td><img src="image4" alt="Vulture" /></td>
</tr>
<tr>
<td><img src="image5" alt="Shrimp" /></td>
<td><img src="image6" alt="Hamburger" /></td>
<td><img src="image7" alt="Penguin" /></td>
<td><img src="image8" alt="Wombat" /></td>
</tr>
<tr>
<td><img src="image9" alt="Orca" /></td>
<td><img src="image10" alt="Swan" /></td>
<td><img src="image11" alt="Map of Antarctica" /></td>
<td><img src="image12" alt="Map of Antarctica" /></td>
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<tr>
<td><img src="image13" alt="House" /></td>
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