PROGRAM OVERVIEW

South American Adventures is an innovative program that uses geographical and cultural studies of South America to teach mathematics, social studies, music, and language arts to students in fourth and fifth grades.

Mountains! Your math lessons will come alive as students calculate mean, median, and mode using peaks of the Andes Mountain range. They will learn about the panpipe, a wind instrument played by the native people living in the Andes Mountains. They will measure the length of different PVC pipes and learn to calculate the radius, diameter, and circumference of a circle and use PVC to construct their own set of PVC panpipes.

Rainforest! Students will enhance their reading and public speaking skills as they dive head-first into a Reader’s Theater project about the Amazon Rainforest. With masks and props provided by this grant, students will dramatize the book “The Great Kapok Tree: A Tale of the Amazon Rainforest” by Lynne Cherry. This environmental stewardship and conservation tale lends itself to a Reader’s Theater drama, which your students will enthusiastically produce for younger students.

Flags! Students will bring out their inner artists by creating T-shirts with flags from different South American countries on the front. The countries of Colombia, Brazil, and Chile have flag designs that are very easy to reproduce on a T-shirt.

Movement! Students will learn about a traditional Brazilian mock stick-fighting dance called the “maculele”. After listening to Brazilian drummer Alex Acuna, they will learn a basic mock stick-fighting routine and perform for each other.

Over the Box

Service! After enjoying their South American Adventures, your students can then put on a South American Festival for young students, teaching them what they learned. There is no greater way to find out what your students have learned than to have them teach it to others.

OVERALL VALUE

This program takes education “outside the box” with hands-on activities that engage learners on all levels.

LESSON PLAN TITLES

- Geography of South America: Andes
- Geography of South America: Capitals
- Panpipes, Geometry, and the Amazon

MATERIALS

I have a small classroom with a sound system. Go outside for stick fighting activities. Most South American countries list Spanish as one of their national languages; many parents volunteered to teach some basic Spanish lessons. Our reading coach led the Reader’s Theater project. A hand-held PVC pipe cutter ($11) will make this project even more enjoyable!

SUNSHINE STATE STANDARDS

The following Sunshine State Standards are addressed when completing South American Adventures:

Mathematics

- MA.A.1.2.1 – The student understands the different ways numbers are represented and used in the real world.
- MA.A.3.2.1 – The student understands the effects of operations on numbers, and the relationships among these operations, selects appropriate operations, and computes for problem-solving.
- MA.B.1.2.1 – The student measures quantities in the real world and uses the measures to solve problems.

Social Studies

- SS.B.1.2.1 – The student understands the world in spatial terms.
- SS.B.2.2.2 – The student understands the interactions of people and the physical environment.

Language Arts

- LA.A.2.2.1 – The student constructs meaning from a wide range of texts.
- LA.C.3.2.3 – The student uses speaking strategies effectively.

Music

- MU.C.1.2.3 – The student understands music in relation to culture and history.

ABOUT THE DEVELOPER

Jessica Fredricks has a B.M.E. in Music Education from Florida Southern College. She has won the Disney Teacherific Award, the Bright House Networks STAR Teacher Award, and was named an Outstanding Young Educator by ASCD.

★★★
“South American Adventures” Jessica Fredricks
Lesson Plan No 1: Geography of South America: Andes

■ SUBJECTS COVERED
Mathematics, Social Studies, Music, and Language Arts

■ GRADES
Fourth - Fifth

■ OBJECTIVES
Students will:
• become familiar with physical maps and their functions by reading a physical map of South America and creating a color map of a portion of the Andes; and
• identify key mountain peaks of the Andes range of South America; and
• use algebraic thinking to solve equations using positive and negative numbers.

■ DIRECTIONS
1. Briefly discuss the geology of the Andes and how this mountain range has helped shape South America. Discuss how the Andes range is comprised of several small mountain ranges. Show students a physical map of South America, and demonstrate how to read the map — pointing out where the Andes mountains are higher or lower, and where they are wider or narrower.

2. Have a student pass out the South American Adventures: Andes teacher-generated cooperative learning task sheet. Divide the class into 6 teams of 4, making sure there is a mix of high-level and low-level learners in each team. Allow students to choose a team name and create a team handshake, then instruct them to complete the sheet.

3. When time is called, allow teams to share their answers.

4. Assign students the Flags of South America sheet for homework. Instruct them to read the directions carefully before beginning the assignment, and sketch out their shapes in pencil before adding color.

■ EVALUATION/ASSESSMENT
A four-point rubric will be used to evaluate students’ work during this lesson. See attached rubrics.

■ SUNSHINE STATE STANDARDS
See page one for information on the Sunshine State Standards that are addressed in these programs.

■ MATERIALS
• Geography texts and library resources, crayons, pencils
• Physical map of South America, South American Adventures: Andes sheet
**SUBJECTS COVERED**
Mathematics, Social Studies, Music, and Language Arts

**GRADES**
Fourth - Fifth

**OBJECTIVES**
Students will:
- become familiar with political maps and their functions by reading a political map of South America and creating a color map of countries in South America; and
- identify capital cities of South American countries and reviewing population data; and
- use algebraic thinking to solve equations using positive and negative numbers.

**SUNSHINE STATE STANDARDS**
See page one for information on the Sunshine State Standards that are addressed in these programs.

**MATERIALS**
- Geography texts and library resources, crayons, pencils
- Physical map of South America, South American Adventures: Capitals sheet

**DIRECTIONS**
1. Show students a political map of Chile and identify its capital, Santiago. Ask students to list characteristics that Santiago has in common with other large urban areas.
2. Tell students that 5 million people live in Chile’s capital, Santiago. Santiago is the sixth-largest city in South America. Ask them to estimate how many people live in our city, our state, our country.
3. Have a student pass out the South American Adventures: Capitals teacher-generated cooperative learning task sheet. Instruct the students to divide into their cooperative learning teams from the previous lesson and allow them to review their team name and handshake, then instruct them to complete the sheet.
4. Review the major mountain range in South America, (Andes), then tell students that the Andes may be broadly divided into three regional zones: the Northern Andes, which includes the mountains that run through Colombia, Venezuela, Ecuador, and parts of northern Peru; the Central Andes, which includes the part of the range that runs through Bolivia, the rest of Peru, northern Argentina, and Chile; and the Southern Andes, which includes the mountains that run through southern Chile and Argentina, through Patagonia, and down to the southernmost tip of South America, Tierra del Fuego.
5. Assign each team one of the Andes’ three regional zones: northern, central, and southern. (There will be two teams working on each zone). Explain that the groups will put together oral reports on their regional zones and then present them to the rest of the class. The reports must be five minutes in length and include these five criteria:
   - Information on the zone’s topography (Is this a wide section of the Andes? How high are the mountains? Etc.)
   - Typical climate by season
   - Vegetation
   - Animals found there
   - Unique geographic features (highest peaks, major rivers or volcanoes, archeological finds, etc.)
6. Talk about how best to divide the work among the group members. One easy way is to assign people specific topics to research and then present during the oral report. (For example, two people could be in charge of finding cultural information, one person in charge of determining climate, two people in charge of creating a physical map, and so on.)
7. Give students time in class and as a homework assignment to research and practice their presentations. Students may use travel magazines; geography texts, encyclopedias, and other library resources; and the Internet to conduct their research. The Web sites listed below have good information on the Andes.
8. Have the groups present their reports to the rest of the class. Allow time for students to ask the presenters questions after each report. Once all the reports have been given, discuss the differences and similarities among the regions.

**EVALUATION/ASSESSMENT**
A four-point rubric will be used to evaluate students’ work during this lesson. See attached rubric.

★★★★

**ADDITIONAL INFORMATION**
- http://www.blueplanetbiomes.org/andes.htm
- http://www.chilediscover.com/info/andes.htm
- http://www.andes.org/bookmark.html
- http://www.letus.northwestern.edu/projects/esp/top10/andespage/andes.html
SUBJECTS COVERED
Mathematics, Social Studies, Music, and Language Arts

GRADES
Fourth - Fifth

OBJECTIVES
Students will:
• improve creative skills by forming new words from mathematical terms, and
• identify key vocabulary terms used to calculate radius, diameter and circumference.
• use algebraic thinking to solve equations using positive and negative numbers.
• improve speaking skills by performing a Reader’s Theater about the Amazon Rainforest

SUNSHINE STATE STANDARDS
See page one for information on the Sunshine State Standards that are addressed in these programs.

MATERIALS
• Geography texts and library resources, maps of South America
• Task sheets: Panpipe Geometry, Panpipes: Add or Subtract, Panpipes: Multiply or Divide
• Paperback copies of The Great Kapok Tree: a tale of the Amazon Rainforest, by Lynne Cherry

DIRECTIONS
1. Show students a political map of Colombia and ask a student to recall its capital (Bogota) and its major mountain range (Andes) from the previous lessons. Show students a set of Bolivian panpipes and play a little for them. Hold the panpipes up and ask students to identify which geometrical shape they see (cylinder). Tell them that if they were to take a very thin slice off the top of the cylinder, they would have a circle. Display the Olympic rings and ask a student to identify what they are seeing. Tell them that today they will learn to calculate the radius, diameter and circumference of a circle.

3. After viewing, discuss what they saw. Write the key terms RADIUS, DIAMETER, and CIRCUMFERENCE on the board, then instruct students to divide into their teams. Give them 60 seconds to create as many words as possible using only the letters in the word RADIUS. When time is called, allow the teams to share. Then repeat using DIAMETER, and then CIRCUMFERENCE.

4. Have a student pass out the Panpipe Geometry teacher-generated cooperative learning task sheet. Instruct the teams to complete the sheet, then do the Panpipes: Add or Subtract page.

5. Instruct each team to pick up a paperback copy of the book The Great Kapok Tree by Lynne Cherry, which features rain forest animals of the Amazon. Have students identify the Amazon Rainforest on a map and the countries in which it resides. Assign students to create a Reader’s Theater skit using the book and give each team 15 minutes to practice acting out the book.

6. Assign each team to a kindergarten classroom, then allow each team a chance to perform their Reader’s Theater version of The Great Kapok Tree.

7. Assign students the Panpipes: Multiply or Divide sheet for homework.

EVALUATION/ASSESSMENT
A four-point rubric will be used to evaluate students’ work during this lesson. See attached rubric.

For additional Lesson Plans contact
Jessica Fredricks
# Materials Budget

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>ITEM DESCRIPTION</th>
<th>COST</th>
<th>QUANTITY</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon.com</td>
<td>Book: The Great Kapok Tree, by Lynne Cherry</td>
<td>5.00</td>
<td>1</td>
<td>5.00</td>
</tr>
<tr>
<td>Amazon.com</td>
<td>CD: Acuarela de Tam bores, by Alex Acuna</td>
<td>15.00</td>
<td>1</td>
<td>15.00</td>
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<tr>
<td>Lark in the Morning</td>
<td>Rondador panpipes #PAN034</td>
<td>21.00</td>
<td>1</td>
<td>21.00</td>
</tr>
<tr>
<td><a href="http://www.larkinthemorning.com">www.larkinthemorning.com</a></td>
<td>Mega Feather Mask assortment</td>
<td>50.00</td>
<td>1</td>
<td>50.00</td>
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<tr>
<td>Home Depot</td>
<td>PVC pipe, 1/2 inch x 10 foot</td>
<td>2.00</td>
<td>15</td>
<td>30.00</td>
</tr>
<tr>
<td>Wal-Mart</td>
<td>Cloth for jungle backdrop, yard</td>
<td>$5/yard</td>
<td>6</td>
<td>30.00</td>
</tr>
<tr>
<td>Wal-Mart</td>
<td>Fabric paint: red, yellow, blue</td>
<td>3.00</td>
<td>12 bottles</td>
<td>36.00</td>
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**Subtotal** | **$187.00**

**Tax if applicable** | **$13.00**

**Shipping if applicable** | **$200.00**

**TOTAL BUDGET AMOUNT** | **$200.00**

Teacher's Name: **Jessica Fredricks**

School: **Bethune Academy**
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mathematical Errors</strong></td>
<td>90-100% of the steps and solutions have no mathematical errors.</td>
<td>Almost all (85-89%) of the steps and solutions have no mathematical errors.</td>
<td>Most (75-84%) of the steps and solutions have no mathematical errors.</td>
<td>More than 75% of the steps and solutions have mathematical errors.</td>
</tr>
<tr>
<td><strong>Neatness and Organization</strong></td>
<td>The work is presented in a neat, clear, organized fashion that is easy to read.</td>
<td>The work is presented in a neat and organized fashion that is usually easy to read.</td>
<td>The work is presented in an organized fashion but may be hard to read at times.</td>
<td>The work appears sloppy and unorganized. It is hard to know what information goes together.</td>
</tr>
<tr>
<td><strong>Completion</strong></td>
<td>All problems are completed.</td>
<td>All but 1 of the problems are completed.</td>
<td>All but 2 of the problems are completed.</td>
<td>Several of the problems are not completed.</td>
</tr>
</tbody>
</table>
### Collaborative Work Skills: Teamwork

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
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</thead>
<tbody>
<tr>
<td><strong>Attitude</strong></td>
<td>Never is publicly critical of the project or the work of others. Always has a positive attitude about the task(s).</td>
<td>Occasionally is publicly critical of the project or the work of other members of the group. Usually has a positive attitude about the task(s).</td>
<td>Often is publicly critical of the project or the work of other members of the group. Often has a negative attitude about the task(s).</td>
<td></td>
</tr>
<tr>
<td><strong>Problem-solving</strong></td>
<td>Actively looks for and suggests solutions to problems.</td>
<td>Refines solutions suggested by others.</td>
<td>Does not suggest or refine solutions, but is willing to try out solutions suggested by others.</td>
<td>Does not try to solve problems or help others solve problems. Lets others do the work.</td>
</tr>
<tr>
<td><strong>Pride</strong></td>
<td>Work reflects this student’s best efforts.</td>
<td>Work reflects a strong effort from this student.</td>
<td>Work reflects some effort from this student.</td>
<td>Work reflects very little effort on the part of this student.</td>
</tr>
<tr>
<td><strong>Working with Others</strong></td>
<td>Almost always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.</td>
<td>Usually listens to, shares with, and supports the efforts of others. Does not cause “waves” in the group.</td>
<td>Often listens to, shares with, and supports the efforts of others, but sometimes is not a good team member.</td>
<td>Rarely listens to, shares with, and supports the efforts of others. Often is not a good team player.</td>
</tr>
</tbody>
</table>
Below is a map of South America. Use the map to answer the questions.

1. Which is the biggest country?  
   a) Colombia    b) Uruguay    c) Brazil    d) Chile

2. Which country is east of Argentina?  
   a) Bolivia    b) Uruguay    c) Peru    d) Chile

3. Which ocean is to the west of Chile?  
   a) Pacific Ocean    b) Arctic Ocean    c) Atlantic Ocean

4. To which country do the Galapagos Islands belong?  
   a) Peru    b) Uruguay    c) Paraguay    d) Ecuador

5. Which country is south of Ecuador?  
   a) Bolivia    b) Venezuela    d) Guyana    d) Suriname
Below is a list of the countries on the continent of South America. Use the list to answer the questions. Remember: spelling counts!

Venezuela
Columbia
Guyana
French Guyana
Suriname
Argentina
Chile
Brazil
Bolivia
Paraguay
Uruguay
Peru
Ecuador

1. Which country’s name has the most letters? _______________________
2. Which country’s name has the least letters? _______________________
3. How many countries begin with the letter P? _______________________
4. Write the countries that begin with the letter B:
   ________________________     ____________________________
5. Which country has three letter u’s in its name? _________________
6. How many countries have at least one letter I in their names? _________
Below is a list of the countries on the continent of South America. Use the list to answer the questions. Remember: spelling counts!

Venezuela
Columbia
Guyana
French Guyana
Suriname
Argentina
Chile
Brazil
Bolivia
Paraguay
Uruguay
Peru
Ecuador

Your job: put the countries into alphabetical order. Start with the country that begins with the letter A, then B. If there are two countries that start with letter B, look at the next letter to see which comes first in the alphabet! 😊

1. ______________________ 8. ______________________
2. ______________________ 9. ______________________
3. ______________________ 10. ______________________
4. ______________________ 11. ______________________
5. ______________________ 12. ______________________
6. ______________________ 13. ______________________
7. ______________________
South American Adventures: Capitals

1. The capital of Ecuador is Quito, population 1.4 million. Color Ecuador yellow.

2. The capital of Argentina is Buenos Aires, population 2.8 million. Color Argentina orange.

3. The capital of Brazil is Brasilia, population 2.1 million. Color Brazil red.

4. The capital of Venezuela is Caracas, population 1.9 million. Color Venezuela blue.

5. The capital of Peru is Lima, population 6.9 million. Color Peru green.

6. The capital of Paraguay is Asuncion, population 1.3 million. Color Paraguay brown.

7. The capital of Chile is Santiago, population 1 million. Color Chile purple.

8. The capital of Colombia is Bogota, population 6.4 million. Color Colombia black.

9. What is the population of Lima minus Asuncion? ________________ million

10. What is the population of Santiago plus Caracas? ________________ million

11. What is the population of Buenos Aires plus Quito? ________________ million

(Continued on next page)
South American Adventures: Capitals (Continued from previous page)

12. Which capital has the largest population? ____________________________

13. Which capital has the smallest population? ____________________________

14. List the populations in order from largest to smallest:

<table>
<thead>
<tr>
<th>Population (million)</th>
<th>Capital</th>
<th>Country</th>
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15. How many countries are there on the continent of South America? __________

16. Name the South American countries that are not listed in the chart above:

Extra Credit: What is the total population of all the capitals added together?

_____________ million

Super Extra Credit: What is the mean population? (divide total population by 8)

_____________ million
The Andes Mountains are the principal mountains of South America, and include some of the world’s highest peaks. The Andes are the longest system of high mountains on earth. The mountains reach into 7 countries: Venezuela, Colombia, Ecuador, Peru, Bolivia, Chile, and Argentina.

1. Aconcagua is 6,900 meters tall. It is in Argentina. Color Argentina yellow.

2. El Toro is 5,800 meters tall. It is in Peru. Color Peru orange.

3. Pico Bolivar is 4,900 meters tall. It is in Venezuela. Color Venezuela red.

4. Monte Darwin is 2,500 meters tall. It is in Chile. Color Chile blue.

5. Ancohuma is 6,400 meters tall. It is in Bolivia. Color Bolivia green.

6. Galeras is 4,200 meters tall. It is in Colombia. Color Colombia brown.

7. Cavambe is 5,700 meters tall. It is in Ecuador. Color Ecuador purple.

(Continued on next page)
South American Adventures: Andes (Continued from previous page)

8. What is the height of Aconcagua plus El Toro? ________________ meters

9. What is the height of Galeras plus Pico Bolivar? ________________ meters

10. What is the height of Cavambe minus Monte Darwin? ________________ meters

11. What is the height of Ancohuma minus El Toro? ________________ meters

12. Which country’s peak is the shortest? ___________________________

13. Which country’s peak is the tallest? ____________________________

14. List the peak heights in order from shortest to tallest:

<table>
<thead>
<tr>
<th>Height (m)</th>
<th>Peak</th>
<th>Country</th>
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15. What is the mode (middle)? ________________ meters

Extra Credit:

What is the total height of all the peaks added together?

_____________ meters

Super Extra Credit:

What is the mean height?

(divide total height by 7)

_____________ meters
South American Adventures: Ecuador

La Sierra means “of the sierra”. The area known as La Sierra is the Andes Mountain range, which runs like a vertical stripe through the center of the country. Draw a thick vertical stripe through the middle of Ecuador with brown.

El Oriente means “the east”. The area known as El Oriente contains the Amazon rainforest in the eastern part of the country. Color the right side of Ecuador green.

La Costa means “of the coast”. The area known as La Costa is the low-lying western part of the country. Its coast touches the Pacific Ocean. Color the coast of Ecuador red.

The Galapagos Islands, a chain of islands west of the mainland, also belongs to Ecuador. Color the Galapagos Islands yellow.

The Pacific Ocean surrounds the Galapagos Islands. Color the Pacific Ocean blue.

1. What is the western part of Ecuador called? _________________________________
2. What is the eastern part of Ecuador called? _________________________________
3. What is the middle part of Ecuador called?  _________________________________
4. What ocean touches Ecuador’s coast?  _________________________________
5. Name the islands that belong to Ecuador: _________________________________
6. What does La Costa mean? _____________________________________________
7. What does El Oriente mean? _____________________________________________
8. What does La Sierra mean? _____________________________________________
**Circle Geometry: the Galapagos Tortoise**

The Galapagos Islands are volcanic islands on the equator, off the coast of Ecuador. Because the islands were never connected to the mainland, many species of plants and animals are unique to the Galapagos.

The Galapagos Giant Tortoise eats great quantities of grass, leaves and cactus pads. There are only about 15,000 tortoises left in Galapagos, so there is plenty to eat.

Calculate the area each tortoise eats by FIRST, multiplying the radius by itself, and THEN multiplying that answer by 3.14.

1. The radius is 2 m. What is the area?

Multiply: radius x radius = _________ multiplied by 3.14 = _________________ sq m

2. The radius is 3 m. What is the area?

Multiply: radius x radius = _________ multiplied by 3.14 = _________________ sq m

3. The radius is 4 m. What is the area?

Multiply: radius x radius = _________ multiplied by 3.14 = _________________ sq m

4. The radius is 5 m. What is the area?

Multiply: radius x radius = _________ multiplied by 3.14 = _________________ sq m

5. The radius is 6 m. What is the area?

Multiply: radius x radius = _________ multiplied by 3.14 = _________________ sq m
Bolivia is named after Simon Bolivar, a man who fought for the independence of several South American countries. Bolivia is surrounded by land; however, it does have access to the Atlantic via the Paraguay River.

Lake Titicaca is located on the border of Bolivia and Peru. Color the lake blue.

Going south from Lake Titicaca towards Argentina is the Altiplano, a high plateau that is part of the Andes mountain range. Color the Altiplano brown.

Going north-east from Lake Titicaca towards Brazil is the Amazon rainforest. Color the Amazon rainforest green.

Going south-east along the border of Paraguay and Brazil is the Paraguay River. The river gives Bolivia access to the Atlantic Ocean. Trace the Paraguay River with purple.

Brazil borders Bolivia on the north and east. Color Brazil yellow.

Peru and Chile border Bolivia on the west. Color Peru and Chile orange.

Paraguay and Argentina border Bolivia to the south. Color Paraguay and Argentina red.

1. What river gives Bolivia access to the Atlantic Ocean? ________________
2. The Altiplano is part of which mountain range? ________________
3. Which countries border Bolivia to the west? ________________
4. Which countries border Bolivia to the south? ________________