

# “Maori Mysteries”



For further information contact...

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## 2006 - 2007 IDEA CATALOG OF EXCELLENCE

### ■ PROGRAM OVERVIEW

**Maori Mysteries** is an innovative project that combines math, geography, cultural studies, and music through a hands-on approach that invites students to explore their creative abilities while experiencing another culture. Students will discover circle geometry and learn how to calculate the radius, diameter, and circumference of a circle by immersing themselves in the culture of the Maori, the native people of New Zealand featured in the movie *Whale Rider*. Students will create working models of traditional Maori instruments such as the poi and the staff, out of recyclable materials.

After creating their own single short poi, students will learn how to spin the poi in traditional Maori style, and use their spinning activities to demonstrate the radius, diameter and circumference of a circle. They will measure PVC pipe into thirds to create Maori staffs and learn how to spin rotors, side rotors and helicopters before engaging their imaginations to create their own chants and dances set to traditional songs of the Maori people.

### ■ OVERALL VALUE

**Maori Mysteries** will spark your students' creativity and get them excited about math. Multiplying with decimals comes alive when students realize that if they multiply incorrectly, they could injure another student with their staff and lose the privilege of spinning. The social studies portion of this grant is a gateway to diversity – students learn tolerance as they develop appreciation for another culture.

### ■ LESSON PLAN TITLES

- Islands and People
- Poi and Circumference I
- Staff and Circumference II

### ■ MATERIALS

Materials for each lesson are listed with each lesson plan. Overall materials budget including pricing and vendors follows the lesson plans.

### ■ ABOUT THE DEVELOPER

Jessica Fredricks has been the music specialist at Bethune Academy in Haines City, for the past eight years. She enjoys collaborating with classroom teachers on multi-disciplinary projects involving math, science, social studies, and of course, music.

Her innovative programs have earned her many accolades, including the Bright House Networks STAR Teacher Award and the Disney Teacheriffic Award.



# “Maori Mysteries” Jessica Fredricks

## Lesson Plan No 1: Islands and People



### ■ SUBJECTS COVERED

Social Studies and Language Arts

### ■ GRADES

4<sup>th</sup> and 5<sup>th</sup>

### ■ OBJECTIVES

Students will:

- identify main geographical features of New Zealand on maps and globes
- develop character by working in cooperative learning teams
- improve creative writing and speaking skills by researching, writing and presenting a commercial about a specific region of New Zealand

### ■ SUNSHINE STATE STANDARDS

*Social Studies:*

SS.B.1.2.1 – Student uses maps, globes, charts, and graphs to gather data.

*Language Arts:*

LA.B.2.2.3 – Student writes effectively to communicate information.

### ■ MATERIALS

- *Maori: Islands and People* task sheets and pencils for each student
- Poster paper to make KWL chart
- Map of New Zealand and a globe
- Prop box for each team

### ■ DIRECTIONS

- 1 Show students a map of New Zealand and have a student identify the island nation on a globe.
- 2 Make a KWL chart about the country to identify what students know and what they want to know.
- 3 Lead students through the *People* side of the task sheet, pronouncing each Maori word and having them echo it several times.

Facilitate a discussion on the Maori culture – what factors influenced it?

- 4 Divide the class into 6 cooperative learning teams of 4 students each, 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 students to turn their task sheets over so they are looking at the side that says *Islands*.

Allow teams 5 minutes to complete the task sheet.

- 5 Assign each team one of the geographical features (Auckland, Wellington, Christchurch, Dunedin, Mount Cook, or Tasman Sea). Tell each team that they are a travel agency, and you want them to come up with a short 60-second commercial that details why vacationers should come to their region of New Zealand. Their brochure must answer the following questions:

- What is there to do?
- What is the history of their place?
- Which island is it located on and what's the weather like?
- How did their place receive its name?

- 6 Take teams to the library and/or Internet Lab and allow each team 20-30 minutes to locate answers to the questions.

- 7 Return to the classroom, and allow students to make use of the props box to prepare for their commercials.

Allow 5-10 minutes for students to prepare, then allow each team to present their short 60-second commercials to the class.

### ■ EVALUATION/ASSESSMENT

- 8 Tomorrow morning's story starter:

If you could travel to any place in New Zealand, where would you go and why?



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## Lesson Plan No 2: Poi and Circumference I



### ■ SUBJECTS COVERED

Social Studies and Mathematics

### ■ GRADES

4<sup>th</sup> and 5<sup>th</sup>

### ■ OBJECTIVES

Students will:

- calculate the diameter, radius and circumference of a circle
- develop character by working in cooperative learning teams
- construct a working poi ball from recyclable materials and learn to spin the poi in traditional Maori style

### ■ SUNSHINE STATE STANDARDS

*Mathematics:*

MA.A.3.2.3 – Student adds, subtracts, multiplies and divides whole numbers.

### ■ MATERIALS

- *Maori: Poi and Circumference* task sheet and pencil for each student
- Map of New Zealand and a globe
- Poi ball kit for each student (created by teacher prior to lesson)

### ■ DIRECTIONS

- 1 Review what students learned in the previous lesson about New Zealand geography and people.
- 2 Write the word “poi” on the board and have them echo you several times. Show them the set of poi balls and explain that poi are spun in pairs, and when you spin it, they will see a circle. Spin the poi, keeping them far apart so they don’t hit each other
  - then point out that the string of the poi is the radius of the circle. Tell them the radius is half the diameter of the circle, and it is the diameter that is important when spinning poi
  - don’t let the poi hit each other or anything else.
- 3 While holding the end of the string in one hand and the poi ball in the other, demonstrate how the string gives them a visual of the circle’s diameter and radius.

Tell them that they will learn how to calculate diameter, radius, and circumference before making their own poi!
- 4 Invite them to divide into their cooperative learning teams.

Allow students to review their team name and team handshake, then hand out the task sheet #3: *Poi*.

Allow teams 5 minutes to complete the task sheet, then review the answers as a class.
- 5 Instruct them to turn their task sheets to the side that says #4: *Circumference*, and do a sample problem.

Allow teams 5 minutes to work while you circulate.
- 6 Assign one student from each team to collect the papers, and another student to pass out poi ball kits for each student.

Instruct students to take out their 5 items and lay them out on the floor.

- 7 Tell them to watch, then act. Wrap the paper towel around one end of the woven strand of yarn and make a little ball. Take the cotton stuffing and wrap it around the paper towel ball, then wrap the black plastic bag around the cotton stuffing. Push any stray stuffing back into the plastic bag ball, then wind the single strand of yarn tightly around the opening of the black plastic bag and tie it as tight as you can so that you have a compact ball on a string.
- 8 Demonstrate basic poi spinning technique for the students, then invite them to join you.

Count to 8 in rhythm, practice stopping and starting together, and keeping a steady tempo.

### ■ EVALUATION/ASSESSMENT

- 9 Have students calculate (in teams) how long their diameter would be if they combined their strings end-to-end.
  - What would the radius of that circle be?
  - The circumference?



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## Lesson Plan No 3: Staff and Circumference II



### ■ SUBJECTS COVERED

Mathematics, Social Studies and Music

### ■ GRADES

4<sup>th</sup> and 5<sup>th</sup>

### ■ OBJECTIVES

Students will:

- calculate the diameter, circumference and radius of a circle
- create an original dance or chant pattern set to a traditional Maori song
- construct a Maori staff from recyclable materials and learn to spin the staff in traditional Maori style

### ■ SUNSHINE STATE STANDARDS

*Mathematics:*

MA.A.3.2.3 – Student adds, subtracts, multiplies and divides whole numbers.

### ■ MATERIALS

- *Maori: Poi and Circumference* task sheet, pencil, and PVC staff for each student
- Map of New Zealand and a globe, TV, VCR, *The Art of Staff* video
- Team packs: red permanent marker, black permanent marker, ruler

### ■ DIRECTIONS

- 1 Have students identify New Zealand on maps and globes.

Review what students learned during the previous lesson about spinning the poi.

- 2 Write the word “staff” on the board and have them echo you several times. Show them the staff and explain that the staff is spun individually, and when you spin it, they will see a circle.

Spin the staff in a circle (be sure to watch the staff video and practice a bit before the kids arrive) – then point out that the length of the staff is the diameter of the circle.

Call on a student to explain why knowing the diameter is important when spinning. (So you don’t hit anyone with your staff)

- 3 Demonstrate dividing the diameter in half by placing your hand at the center point of the staff.

Call on a student to measure the staff, and write the diameter on the board in inches. Call on another student to divide the diameter by 2 to calculate the radius.

Tell them that they will learn how to calculate the diameter, radius, and circumference of a circle before making their own staff!

- 4 Invite them to divide into their cooperative learning teams.

Allow students to review their team name and team handshake, then hand out the task sheet #5: *Staff*.

Allow teams 5 minutes to complete the task sheet, then review the answers as a class.

- 5 Instruct them to turn their task sheets to the side that says #6: *Circumference II*, and explain how to multiply with decimal numbers.

Allow teams 5 minutes to work while you circulate.

- 6 Assign one student from each team to collect the papers, another to pass out team packs of red and black permanent markers, and another student to pass out PVC staffs for each student.

Instruct students to measure three inches from the end of each staff and make a mark on their staff. Color one end of the staff red, the other black.

- 7 Tell them to watch, then act. Using technique learned from the *Art of Staff* video, demonstrate the basic spin technique known as “rotors”, then invite students to join you. Remind them to spread out.

Allow them to work until they can keep up rotors without dropping the staff.

- 8 Count to 8 in rhythm, and practice stopping and starting together. Show them the segment of the *Art of Staff* video that shows sideways rotors and helicopters and invite them to practice their skills.

### ■ EVALUATION/ASSESSMENT

- 9 Play a traditional Maori song from the CD provided in this grant and invite students to create their own staff routines using their new-found spinning skills.

Allow them to perform for the class.



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## Lesson Plans Materials Budget



### Materials Budget

SUPPLIER	ITEM DESCRIPTION	COST	QUANTITY	TOTAL COST	
Oriental Trading *	Mega poly lei assortment ZY-34/565	\$14.95	1		
	Neon sunglasses ZY-50/301	\$7.95/doz	1		
	Bandanna assortment ZY-15/100	\$7.95/doz	1		
	Foam neon visors ZY-5/544	\$3.95/doz	1		
	Plastic cowboy hats ZY-15/83	\$7.95/doz	1		
	Inflate World Globes ZY-49/1290	\$11.95/doz	1		
	Inflate microphones ZY-49/133	\$4.95/doz	1		
	Foam animal masks ZY-25/1340	\$4.95/doz	1		
	Plastic construction hats ZY-25/1615	\$3.95/doz	1		
	Plastic fire chief hats ZY-25/502	\$3.95/doz	1		
	Shipping	\$17.41			
	<b>TOTAL</b>				<b>\$89.86</b>
	Amazon **	Maori Tattooing, by H.G. Robley	\$10.36	1	
Whale Rider, VHS movie		\$8.95	1		
Maori Songs of NZ, CD		\$10.99	1		
<i>(Shipping is free) TOTAL</i>					<b>\$30.31</b>
Home of Poi ***	Bonus: VHS Art of Poi and Art of Staff video set	\$13.64	1		
	1 Pair corded fluffy poi	\$17.06	1		
	Shipping from NZ to USA	\$11.13			
	<b>TOTAL</b>				<b>\$41.83</b>
Wal-Mart	Paper lunch bags (pkg of 50)	\$1.00			
	Black plastic garbage bags (pkg of 20)	\$2.00			
	Red yarn, (2 skeins @ \$3 each)	\$6.00			
	Polyester pillow stuffing (5 lb bag)	\$5.00			
	Ziploc bags (box of 50)	\$1.00			
	Black permanent marker (box of 12)	\$4.00			
	Red permanent marker (box of 12)	\$4.00			
	<b>TOTAL</b>				<b>\$23.00</b>
Lowe's	materials to make staffs	¾-inch PVC pipe (\$1.50 for 10-foot section) (you will cut each staff into 3 sections; for a class of 30, buy 10 sections)	\$15.00		\$15.00
* (prop boxes) www.orientaltrading.com (1-800-228-2269) ** (print & media resources) www.amazon.com *** (poi resources) www.homeofpoi.com P.O. Box 6271, Christchurch, New Zealand Phone: +64 3 343 2078 Fax: +64 3 343 2072				<b>Subtotal</b> \$200.00 <b>Tax if applicable</b> <b>Shipping if applicable</b> (see above)	
Teacher's Name <u>Jessica Fredricks</u> School: <u>Bethune Academy</u>	<b>TOTAL BUDGET AMOUNT</b>			<b>\$200.00</b>	

