

When a Line Bends . . . a Shape Begins

Taught by Leyani von Rotz

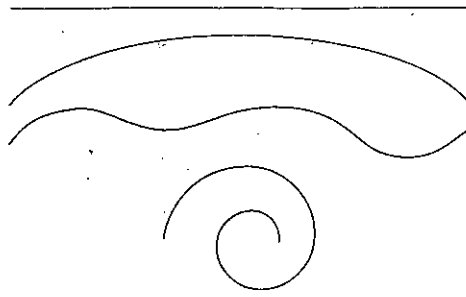
Rhonda Gowler Greene's *When a Line Bends . . . a Shape Begins* (1997) provides an imaginative and effective introduction to shapes. Using rhymes and illustrations of familiar examples, the book starts with a line and then shows how it can bend to form ten different shapes—square, rectangle, triangle, diamond, circle, oval, star, heart, crescent, and octagon. In this lesson, Leyani von Rotz reads the book to kindergartners and first graders and then has them use pipe cleaners to make their own shapes.

MATERIALS

pipe cleaners, at least 1 per student

Leyani gathered the kindergarten children on the rug to read aloud *When a Line Bends . . . a Shape Begins*. After reading the title, Leyani opened to the first page and read, “A line is thin. A line is narrow—curved like a worm, straight as an arrow.”

Leyani then drew on the board several types of lines—straight, curved, wavy, and curly. While Leyani knew that the mathematical definition of a line is a set of points that forms a straight path, she wasn't interested at this time in introducing or focusing on this formal mathematical interpretation. Rather, her goal was to give the children experience thinking about how lines and curves can form different figures.



Leyani turned the page to reveal a spread of illustrations of lines. Before reading the text, Leyani asked the students to identify the examples of lines shown.

“The fishing pole,” Jorge said, pointing to the boy in a boat.

“The worm’s going like this,” Hallie said, wiggling her finger.

“That’s yucky,” Kara commented.

“The kite has a line,” Jesus said.

“Where do you see a line?” Leyani asked, not sure if Jesus meant the kite string or the lines drawn on the kite.

Jesus pointed and said, “There, the string going there.”

After all the children who wanted to had a chance to share what they saw, Leyani read the text that identified a jump rope, black ants in a row, a tug-of-war game, the bow of a violin, a fishing pole, a leash, a kite string, a shoelace, and more. She again showed the children the illustrations and read the text, asking them to find each of the items mentioned. The children were interested in doing the search.

“Oh! The tail’s all curly,” Bobby said.

“I said the kite string!” Jesus said proudly.

“It’s a U,” Purna said, referring to the jump rope.

Leyani turned the page and showed the students the illustration of the circus performer bending a pipe into a circle.

Several students shouted, “It’s a circle!”

“He’s got muscles,” Aaron said, holding up his arms to show his muscles.

Leyani turned the page and pointed to the large red square that was featured prominently on the left page. “What’s this shape?” she asked the children.

“A square,” they answered in unison.

Before reading the text, Leyani said, “Talk with your partner about the squares you see in the illustration.” After giving the children a few moments to do this, she asked for volunteers to share their ideas.

“The squares make houses,” Daniela said.

“The blocks,” Danny said.

“The robot head,” Mansur said.

“The hopscotch thing,” Purna noticed.

“The cracker,” Gamil said.

Leyani then read the text and, as she did after reading the text about the lines, she asked the children to identify the items listed.

The next spread presents a rectangle, and Leyani again first asked the children to find examples of rectangles, then read the text, and then asked them to locate the items described.

After reading the page about rectangles, Leyani told the students, “I have a clue about what the next shape in the book is.” The children looked at her expectantly and Leyani continued, “Listen to my clue and see if you can guess: The next shape has three sides and three corners.” Leyani paused and then asked, “Can you guess what shape is on the next page?”

“A triangle!” Jorge predicted enthusiastically. Some of the other students looked at him quizzically.

“A circle?” Kaisha said tentatively.

“Let’s find out,” Leyani said and turned the page.

“Triangle,” several students said in unison.

As with the previous spread, Leyani asked the children to report what they noticed. After talking with them about the pyramids, trees, mountains, cat’s ears, eyes on the jack-o’-lantern, witch’s hat, and bird’s beak, she read the text and had them find the items described.

Leyani continued in this way for the rest of the book, giving them a hint first for a few of the shapes, choosing those she thought they could guess. For example, after discussing the circle page, Leyani asked the students to predict the next shape. She gave them a clue: “It’s a squished circle.” Leyani held her hands up to enclose a circular shape and then demonstrated squishing her hands together.

“Oval!” several students called out.

As she read, the children eagerly made many observations about the examples shown on each spread and also about the illustrations.

After finishing the book, Leyani said, “The title of the book we just read is *When a Line Bends . . . a Shape Begins*, so I thought about an activity that would help you think more about shapes that you can make from a line.” Leyani held up a pipe cleaner and said, “What could I do with my line?”

“You could bend it,” Acacia said.

“You could make it curly,” Eduardo said.

“Do you think I could make it into a circle?” Leyani asked. Several students nodded. Some looked like they weren’t sure. Leyani held the pipe cleaner at both ends and started to curve it.

“Keep going,” Mallika said. Leyani completed the circle, holding together the two ends of the pipe cleaner. The students clapped.

“What other shapes could I make?” Leyani asked. No one had a suggestion, so Leyani showed them how she could shape the pipe

cleaner into a rectangle. She straightened the pipe cleaner and then, as the children watched, she shaped it into an oval, then a triangle, then a square, and finally a heart.

“Can we do it?” Kaisha asked.

“Absolutely,” Leyani answered. “I’ll give you each your own pipe cleaner so you can explore making different shapes.” Leyani distributed a pipe cleaner to each student. The children worked in different ways. Some bent their pipe cleaners into curly or zigzag segments. Others tried making a circle and Leyani helped those who were having difficulty. When Raul became frustrated with trying to make a triangle, Leyani helped him complete the task. Fawziya and Acacia figured out by themselves how to make a heart, and they helped others who needed it. Leyani noticed that Jesus worked methodically, carefully straightening his pipe cleaner after making each shape before starting a new one. Children made creations other than the shapes introduced in the book: Christian made a mustache; Melody made a crown; Queenie formed one end of the pipe cleaner into a small circle and explained that it was for blowing bubbles. As the children explored, they talked with one another about what they were making.

When it was time to stop, Leyani asked the students to report the shapes they made.

“I made a circle,” Hallie said proudly.

“I made a triangle and a heart,” Bayard said.

“I made a heart, too!” Purna said.

Before ending the lesson, Leyani collected the pipe cleaners, assuring the children that they would be able to take them home at the end of the day. She told them, “The ends are sharp and I want to be sure that you won’t poke yourselves or anyone else.”

Leyani did the same lesson with first graders and found it went just as well. After teaching the lessons, Leyani commented that there was so much to discuss in the children’s book that she could read it multiple times to the children and they would still be involved. Leyani said, “It took a while for the kindergartners to sit and discuss every item on every page. It might make more sense for them to spread the reading over several days, reading only one or two pages at a time.”