A3: Children's Literature and Mathematics

<u>When a Line Bends…A Shape Begins.</u> By: R. Greene

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P/J 1

EDUC 4274

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A3: Children's Literature and Mathematics

Book Information:

When a Line Bends… A Shape Begins
By: Rhonda Gowler Greene
Illustrated by James Kaczman

ISBN 0-395-78606-1
Houghton Mifflin Company
222 Berkley Street
Boston, Massachusetts 02116

Summary

The selected text, "When a Line Bends… A Shape Begins", is a great text for young children when discovering and learning about shapes. The written text is very easy to follow and understand. The text is also not that long but it covers many shapes and explains each one in ways that children would easily comprehend. This book is illustrated in a way that would keep children interested in it because each page has so much going on in it. All of the pictures focus on one shape but in the background one can search for many other shapes. Throughout the book the illustrator uses a variety of bright colours and patterning. The illustrations are also creative and this may impede students' eyes from wondering off the page.

The text starts off describing a line and gives examples of where one could see a line in the world. It then states that "*A line is fine, but when a line swerves, when a line bends, watch what can happen… a shape begins*" (pg.2). This is when the book begins to discuss shapes and where they can be located in the world. The shapes covered in this book are squares, triangles, rectangles, circles, diamond, oval, star and octagon. Each page focuses on only one shape and the pictures depict the shape and where it can be found. The text is written in a rhyming format which flows nicely.

Critique

When critiquing this book based on the Hellwig, Monroe, and Jacobs article it scores very well. Accuracy, Visual and Verbal Appeal, Connections, Audience, and Wow-factor all play an important role in making this text a great teaching tool. This text was very accurate in its description of shapes and where they can be found. It will help children make the connection between drawn shapes and those found in the world because it gives many prime examples which help the children picture in the thoughts where else they can be found. This text would score a 6 out of 6 for accuracy.

Visual and verbal appeal looks at how a book is visually organized with the placement of text, and pictures and how the book is actually written. For the most part, this text is put together

in a visually appealing sense. The written words usually are located in the page's shape and therefore might be difficult for the children to follow when reading. The font for this book is a very basic style and is very easy to read. For beginning readers though, it might be a bit small. For visual and verbal appeal this book should get a 4.5 out of 6 because even though the illustrations are superb, the format of the text might be confusing for young readers.

This book ranks very well in the connections aspect. The author did a very good job of connected the math concept of shapes to the real world. She is able to list the shapes and where they are found in all aspects of a child's life. She is able to relate shapes to food, games, nature, buildings, animals and other fun things children are interested in. Greene is able to give examples which allow the children to dive into their thoughts and find more shapes in their lives. This category receives a 6 out 6 because of the ability for connections to be made between the book and real life. It does not act as a text book and lecture the audience but facilitates learning through discovery.

When Greene wrote this book she kept it in mind that a book should reach many different audiences. For the younger grades, it covers the basic shapes and describes them well. If older students were to read this they could easily learn different concepts from it. For the older students, they would not be learning math related concepts but more writing style techniques and formatting of text. This text would score 5 out of 6 for audience ranking because it can be utilized by different grades but I would only say it could span from grades 1-3 and would be to basic for any other grades above that.

Wow-factor is a category that is based upon the ability of a book to surprise the reader while conveying the intended message. The author is able to give new ideas and thoughts on previously covered material. In the studied text, the author presents her information in a somewhat exciting manner but does not offer a huge wow factor. The book is interesting and does give some original ideas of where these shapes can be found but the concept of richness is not the highest it could be. For wow-factor, Greene's book is given a 5.

****The specific curricular expectations, discussion questions, math task,** addressed in lesson plan.

Self-Assessment

This project was done fairly and equally by both partners in this group. We met several times to discuss the book and divide work between both parties. The work was split evenly and both individuals were quick to help edit and give their input into their partners quality work. If there was a mark out of twenty to be given to this partnership it should be a grade of 20/20 or 100%. The work was completed in a combined effort with ideas from each person taken and used to make the work the best it could be. The final product of this assignment attends to each expectation listed and would be easy to implement into the classroom. The written material is easy to interpret and understand and the prep work is minimal. The questions asked throughout the lesson can be used to lead great conversation in the class and more questions can be used to cue and prompt further discussion and learning. Also, this lesson idea seems like it would be well accepted by the students, keep them interested and hopefully teach the students the valuable lesson of locating and identifying shapes in their class, school and life. This assignment was easy to complete by this partnership because both individuals completed an equal share of the work quickly and efficiently.

Criteria

Level of Completeness (5/5)- We have met all the required components and feel we have displayed it using a good use of detail. We included the summary of the book, 3 curriculum expectations, higher-ordered questioning, and created an exploratory activity for students to do. We also met the criteria of critiquing the book and including this self assessment.

Questioning (5/5)- The questions we created in the lesson plan (before, during and after) were interesting and included both close and open-ended types of questioning. We believe the questioning was exploratory in nature and allowed students to make connections to the text and outside world.

Quality of Writing (4.5/5)- Overall, we believe the quality of our writing is quite clear and has made connections to the curriculum expectations. Although we have edited each other's work, it is probably that there are grammatical errors we did not pick up on.

Book Critique (5/5)- The book critique was based on HMJ article and we reflected on each of the five categories in detail.

Total: 19.5/20

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Direct Instruction Planning Format
2008-2009

1. Lesson Plan Information	
Subject/Course: Mathematics	**Name:** Adam Branchaud & Claire Wisniewski
Grade Level: Grade 1	**Date:** Thursday, February 5, 2009
Topic: Geometry and Spatial Sense	**Time and Length of Period:** 10:00-11:00 (60 mins)

2. Expectation(s) and Learning Skills
The students will:

- 1m46 – identify and describe common two-dimensional shapes (e.g., circles, triangles, rectangles, squares) and sort and classify them by their attributes (e.g., colour; size; texture; number of sides), using concrete materials and pictorial representations (e.g., "I put all the triangles in one group. Some are long and skinny, and some are short and fat, but they all have three sides.");
- 1m50– locate shapes in the environment that have symmetry, and describe the symmetry
- 1m51- Compose patterns, pictures, and designs, using common two-dimensional shapes (Sample problem: Create a picture of a flower using pattern blocks.);

Today, students will:
Manipulate tanograms (square, triangle, rectangles, circles etc) to compose pictures or patterns. Combining multiple shapes together, students will explore how different shapes can be used together to create a larger image (i.e., 4 little triangles can make a square). Prior to this activity we will read R. Greene's book When a Line Bends...A Shape Begins and create a list of 2-D shapes that exist in our environment.

3. Pre-assessment

A. (i) Students

- Students are able to sort and classify objects into sets according to characteristics (shape and size)
- Are able to identify and sort two dimensional shapes (e.g., circle, square, rectangle, triangle)

(ii) Differentiation of content, process, and/or product (may be accommodations and/or modifications)

- No modifications need to be made for this lesson

B. Learning Environment
Students gather on learning carpet for reading of When a Line Bends...A Shapes Begins. By R. Greene. Prior to reading of we will have a class discussion on two-dimensional shapes. After reading we will debrief the book and students will return to their desks to complete activity.

C. Resources/Materials

- When a Line Bends....A Shape Begins. By: R. Greene
- Chart paper
- Activity sheets
- Tanograms
- Pencils and erasers
- Pencil crayons

4. Content (The What)	Teaching/Learning Strategies (The How)
A. Introduction (motivational steps/hook/activation of students' prior knowledge) (5 mins) Prior to reading book When a Line Ends....A Shape Begins: • Students gather on learning carpet students are asked to stand in single file holding a long piece of string and are asked not to let go • Standing in a straight line, teacher asks students on far ends to find each other and tie ends together • Everyone steps outward, holding the string, to form a circle • Teacher asks students what shape they created and proceeds by asking them to create other two-dimensional shapes	
B. Content for New Learning 1. When a line ends a shape begins. Today we are going to be talking about two-dimensional shapes. Define what Two-dimensional shapes are. Examples of two-dimensional shapes are circles, squares, rectangles and triangles.	**B. Teaching/Learning Strategies for New Learning** (25-30 mins) BEFORE READING: Introduction of the book. Title: When a Line Ends...A Shape Begins Author: Rhonda Greene Show students the front cover and introduce the title and author. **Discussion Questions** 1. How does the title of this book related to what we learnt in the activity we just did? In other words, what happened when the two ends our line met?

	Teacher creates large chart with 2D shapes as headings and students are to justify why each object belongs under each category
2.Shapes have different names based on the number of points, sides, and length of sides it has. (ex: Although a rectangle and a square have the same number of sides they are not the same. A rectangle has two long sides and two short sides whereas the sides of a square are the same length.)	2. Raise your hand if you can locate a two-dimensional shape (a circle, square, rectangle, triangle, square) in the classroom and share where you can see this. • Why would the shape of this book go under the rectangle column and not the square column?
	DURING READING Teacher asks students to repeat key phrases "A square is four sides all the same" (p. 6) "A rectangle- "two sides are long and two are short" (p.8) "A triangle has three sides and three corners" (p.10) Teacher reads description of a diamond "A diamond sits upon a point. It's four sides are the same" (p. 12)
3. A diamond is similar to the shape of a square because it has the same number of sides and corners. If you turn a square so that a corner is facing down to the ground it can also look like a diamond.	3. "Hmmm, that sounds familiar. What other shape has four sides that are the same?" Come up and point to the class how you could turn a diamond that has the same sides into a square?
4. <u>Line of Symmetry</u> -If you place one line in the middle of a square you will see two rectangles. -If you place one line from a corner to the opposite corner you will see two triangles. If you place another line in the other corner you will see four triangles!	4. Predict and share what other shapes can be made from a square or diamond?
5. A rectangle is a special type of square. If you stretch the two sides you would see the shape of a rectangle. If you cut a rectangle in half, you would see a square!	5. What shape do you would see if I were to stretch the two sides of a square? 6. What shape would you see if you were to cut the rectangle in half?

	AFTER READING Class debriefs what they had learnt from the book by adding new objects to the list (specifically shapes that exist outside the classroom). Teacher leads a discussion and demonstrates how students can add shapes together to create a larger shape or design (i.e., 4 triangles made a square, 1 diamond+4squares+4 triangles makes a large square, 1pentagon+5 triangles could be a sun or flower, etc).

5. Consolidation/Recapitulation Questions (Check for understanding/scaffolded practice)

(5 mins)

What are two-dimensional shapes?
Describe the difference between these shapes.
How many shapes can be made with four sides and four corners? (square, rectangle, diamond)
Describe what happens when you draw a line through a shape?
Describe what happens if you add, or “stretch”, a square?

6. Application (Moving from guided, scaffolded practice to increasingly independent practice and understanding / gradual release of responsibility)

(25 mins)
Students apply what they have learnt through this lesson by constructing a picture or pattern using tanogram blocks (square, rectangle, triangle, pentagon etc).

Students are encouraged to explore how different shapes can be used together to create a larger image.

7. Lesson Conclusion

(2 mins)
Reintroduce the book and ask children what their favourite shapes were that were discussed in the book. Prompt the children that respond cues that require answers of why and where they can be found in the classroom or real life. Retell and give examples of how multiple shapes can be combined to create larger and different shapes.

8. Assessment (collection of data) / Evaluation (interpretation of data)

Picture will be assessed using a checklist with anecdotal. The children were to have used all shapes provided to construct a picture that depicts anything they would like, they must use a variety of shapes to create a larger different shape, their pictures must correlate to actual use of an object shaped that way in real life, and their tracing and colouring abilities will be evaluated as well.

