Using picture books to inspire a working mathematical approach

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Workshop Goal



- Discuss the benefits of using picture books to inspire mathematicians.
- Share some resources and activities that inspire mathematicians to work mathematically.

WARM UP









A picture book is defined as a book suitable for very young children, containing multiple visual images. It is often a simple narrative or descriptive text that is intended to be read aloud and shared between an adult and child or group of children (Muir, 1982)

Linking mathematics to children's literature



The main benefits for integrating children's literature into mathematics lessons are:

- to help children learn mathematical concepts and skills
- to provide children with a meaningful context for learning mathematics
- to facilitate children's development and use of mathematical language and communication
- to help children learn mathematical problem solving, reasoning, and thinking
- to provide children with a richer view of the nature of mathematics
- to provide children with improved attitudes towards mathematics.

Schiro (1997)

WORKING MATHEMATICALLY



When mathematicians become interested in a problem they:

- · Play with the problem to collect & organise data about it.
- · Discuss & record notes and diagrams.
- \cdot Seek & see patterns or connections in the organised data.
- \cdot Make & test hypotheses based on the patterns or connections.
- \cdot Look in their strategy toolbox for problem solving strategies which could help.
- · Look in their skill toolbox for mathematical skills which could help.
- \cdot Check their answer and think about what else they can learn from it.
- · Publish their results.

http://www.maths300.com/workmath.pdf

Working Mathematically







•How many ways can you make....?

Types of Picture Books



Marston (2010) identifies three different types of mathematical picture books:

1.Explicit: books purposefully written for teaching and learning in the mathematics classroom, e.g. <u>Counting on Frank</u> (Clements, 1990) or <u>How</u> <u>Big is a Foot?</u> (Myller, 1962);

2.Perceived: books with incidental mathematical concepts as perceived by the teacher e.g. Goldilocks and the Three Bears; and

3.Embedded: books that have embedded mathematical ideas but written to entertain rather than specifically for teaching and learning e.g. <u>Uno's</u> <u>Garden</u> (Base, 2013)

Catherine Attard (Engaging Maths, 2016)

MATHEMATICAL LANGUAGE







Make me an Odd or Even Monster





























A Math Adventure



Angeline Sparagna LoPresti • Illustrated by Phyllis Hornung





































Measurement and Geometry





Measurement and Geometry









Measurement and Geometry







The Bad-Tempered Ladybird Eric Carle



Statistics and Probabilty









• Work with a partner to create a lesson with a working mathematically focus based on a picture book.





- Schiro, M. S. (1997). Integrating children's literature and mathematics in the classroom: Children as meaning makers, problem solvers, and literary critics. New York: Teachers College Press.
- Muir, M. (1982). A history of Australian children's book illustration. Melbourne: Oxford University Press.
- Maths 300 (Working Mathematically) http://www.maths300.com/members/workmath.pdf
- Dunstan, D & swan, P. (204) Check The Clues: Cooperative Group problem solving cards for mathematics Perth: A Z Type
- Attard, C (March, 2016) <u>https://engagingmaths.co/2016/03/06/using-childrens-literature-for-mathematical-investigations/</u>

One Minute









Pure mathematics is, in its way, the poetry of logical ideas.

Albert Einstein