

# Reading in the Math Class: Selecting and Using Picture Books for Math Investigations

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**T**eachers and curriculum designers recognize the power of children's literature. In the past few years, children's literature has become an increasingly important component of mathematics curricula in early childhood programs. Good books provide a meaningful context for learning mathematics concepts. Stories spark children's curiosity about their world, serving as springboards for mathematics investigations.

Children's literature needs to be thoughtfully used in the early elementary classroom. Teachers of young children must be able to decide when it is appropriate to use trade books, and they must select books of high quality. This article identifies criteria for selecting children's books for math class, makes suggestions for effective use of literature in the teaching of mathematics to young children, and provides a cautionary note to consider when using literature.

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## **Selecting children's books for math class**

When selecting a children's book to use in a math lesson, teachers need to ask themselves several questions.

### **1. Would I read this book to the children even if I weren't choosing it for a math lesson?**

This is an important question. Books should be used in the classroom because they are enjoyable, not because they teach a lesson. According to Nodelman, adults and

children alike, whether reading for entertainment or information, "take pleasure in how and what our reading makes us think and feel" (1996, 20). Children should savor the words, get lost in the illustrations, and marvel at the photographs. For a book to promote interest in reading as well as be appropriate for math class, it must be memorable, use natural language, have captivating images, and stand up to multiple readings.

A book that meets this first criterion is *The Doorbell Rang* (Hutchins 1986). The story begins with Mag giving Sam and Victoria a dozen freshly baked cookies to share. But before the two children begin to eat, the doorbell rings several times and more children arrive to share the cookies. *The Doorbell Rang* is filled with natural language and rich illustrations. The mathematical concepts of *more*, *same*, and *fewer* are implicitly embedded in the story. The illustrations, though relatively simple, beg to be pored over. As Nodelman points out,

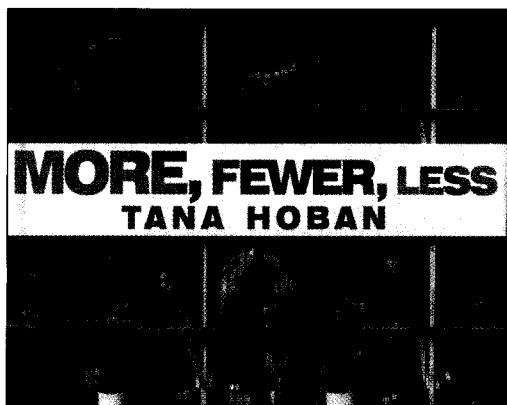
When we look at the pictures in picture books, we're meant not just to do that but also to think about how they relate to the accompanying words and also to the pictures preceding and following them. In other words, we must consider not only their beauty but also how they contribute to our unfolding knowledge of the story. (1996, 219)

Victoria's and Sam's disappointment over sharing cookies, their anxiety when the doorbell rings, the behavior of the family cat, and Mom's mopping up of muddy shoe tracks are some of the details that appear in the illustrations, making the story much richer than just the words. This is a story with a familiar theme of sharing that demands repeated readings.

Another captivating book about *more* and *less* is Tana Hoban's *More*,

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*Fewer, Less* (1998). Hoban captures everyday scenes in bold and colorful photographs. There is no hint of a textbook approach to presenting comparison concepts as children consider the lovely photographs of foods, dishes, clothing, animals, and more. Nowhere is the reader told the right answers (not even in the back of the book), and the possibilities for interpretation are many. This wordless book invites children to look at objects they encounter every day in a new way.

**2. Does the book stimulate curiosity and a sense of wonder? Are children inspired to do their own investigations?**

Books used in math lessons need to present the potential for learning something new based on personal investigation (Whitin & Wilde 1992). For example, a reading of *Jim and the Beanstalk* (Briggs 1970) may cause children to question the relative size of a giant. Just how big would eyeglasses be for a giant? The teacher can use the illustrations to stimulate children to create drawings of giant-size glasses, watches, shoes, and so on. In *Who Sank the Boat?* (Allen 1982), young readers are surprised to see that it is the mouse that upsets the boat.

Eager children will create simulations to prove or disprove that such a tiny creature could have such a major impact. *Breathtaking Noses* (Machotka 1992) presents wonderful photographs of animal noses. Readers will find themselves wondering why noses have the shapes they do, and they will soon find themselves making inquiries about other shapes in their world.

In the reading of these books, concepts that a teacher may be required to teach, such as proportion, measurement, weight, capacity, and shapes, become topics that children want to investigate on their own. Open-ended investigations in an inquiry curriculum fueled by children's interests must have primacy in today's education of young children (Edwards, Gandini, & Forman 1993; Bredekamp & Copple 1997; Helm & Katz 2001).

**3. Is the book meaningful to the children? Can they make personal connections?**

The teeter-totter or seesaw is a piece of playground equipment that most young children have experienced. In *Just a Little Bit* (Tompert 1993), an elephant and a mouse must solve a problem when their mismatched weights prevent them from using the seesaw. The use of this book for teaching balance "helps to break down the artificial dichotomy that sometimes exists between *learning* mathematics and *living* mathematics" (Whitin & Wilde 1992, 4).

In *And I Mean It, Stanley* (Bonsall 1974), a young boy builds a fanciful sculpture using found objects such as boxes, blocks, and toys, and discarded items such as shoes and hangers. This is an experience many children have had them-

selves, so they can relate to the story's mathematical concepts.

In addition, *And I Mean It, Stanley* and *Just a Little Bit* have layers of meaning, a criterion identified by Austin (1998) as necessary in outstanding books. Both books deal with emotions, a need to be accepted, and friendship. Inclusion of such books in the study of math provides the opportunity to address the needs of the whole child by recognizing the role of interpersonal relationships in learning (Bredekamp & Copple 1997).

**4. Are the math connections natural?**

When math connections are embedded in a story, the reader not only enjoys the book but also is intrigued by the math concepts. For example, in the wordless *Window* (Baker 1991), children witness a child grow from infancy to adulthood and watch how his neighborhood changes from a peaceful countryside to a bustling urban setting. The concepts of time, life

