

Preface

Many teachers enjoy integrating children’s literature throughout all or most curriculum areas. However, when integrating mathematics and children’s literature, they ask for support in implementing rich mathematical learning experiences that emanate from the literature and are sufficiently significant and meaningful to meet the learning expectations of the prescribed curriculum standards they are using.

Numbers and Stories: Using Children’s Literature to Teach Young Children Number Sense provides instructional support based on what is known from pedagogical research and practice related to integrating meaningfully mathematics and children’s literature and to creating purposefully mathematical learning experiences that originate from the literature. The book fosters children’s learning of important mathematics in a context that is “robust and relevant to the real world” (Common Core State Standards Initiative [CCSSI], 2012b). In this book such a context is provided mainly through children’s literature that relates in a real or fictional manner to their daily experiences.

The purpose of this book is to provide a professional teaching and learning resource to meet the above stated needs of teachers. It is intended for teachers of young children, kindergarten to Grade 2, and professional development consultants. A secondary audience is mentors and coaches, early childhood and primary education professors and students, and school district and department of education curriculum consultants and administrators.

HOW THE BOOK IS ORGANIZED

Numbers and Stories is divided into two parts—Part I: Here’s the Story: Fundamental Components for Developing Number Sense Using Children’s Literature and Part II: Children’s Literature and Number Sense Investigations. Part I, organized into five chapters, presents the design and special features of the instructional approach used in the Investigations (Part II), along with the pedagogical research and knowledge gleaned from best practices that support this approach.

Included in Part II are 21 Investigations, each introduced through a quality mathematics-related children’s book depicting the mathematics being explored that is revisited and used as a resource throughout each Investigation. The content of these Investigations focuses on the development of number sense for the young child (kindergarten to Grade 2), with clearly stated

learning expectations chosen from the Common Core State Standards (CCSS) for Mathematics (2012b) and in keeping with other mathematics curriculum documents across North America. Besides the mathematics content associated with number sense, the processes of mathematics, such as problem solving, reasoning, communicating, representing, and making connections, are integrated throughout the Investigations. As well, the Investigations include learning expectations from the CCSS for English Language Arts (2012a) related to literacy—in particular, reading standards for literature, informational text, and foundational skills; writing standards; speaking and listening standards; and language standards.

The Investigations are designed so that children are actively involved, physically and mentally, in rich problem solving tasks that support the development of mathematical understanding and procedures and where children are encouraged to use their own strategies and prior knowledge to find solutions to these tasks. These tasks include well-designed questions throughout to create an inquiry based environment where discourse provides the foundation for learning how to reason mathematically.

The Investigations may be experienced by various groups of children, at various age levels, at various times throughout the school year and may be revisited at any time. There is no set sequential order for their implementation since teachers know their children best and the mathematics they want them to achieve. The Investigations are not meant to be translated standard by standard but more woven as a lattice and “the order of the Standards neither implies a teaching sequence nor sets out connections among ideas in different topics” (CCSSI, 2012b).

SPECIAL FEATURES OF THE BOOK

Carefully Designed, Engaging, Interactive Mathematics Investigations Connected to Common Core State Standards Supported by Research—The learning expectations for the Investigations are selected from the CCSS for Mathematics (CCSSI, 2012b) and the CCSS for English Language Arts (CCSSI, 2012a) for children in kindergarten to Grade 2 (Learning Expectations Correlation Chart, Appendix F). As well, they are correlated with the learning expectations associated with the curriculum standards used in most schools in North America, even if schools have chosen not to use CCSS.

Formative Assessment Throughout Each Investigation—The main assessment tool in the Investigations is observation, providing support and guidance for the teacher while monitoring children’s learning. It is intended to determine how well the children are meeting the stated learning expectations as they work actively and in an inquiring manner on the problem solving tasks. It assists also the teacher in being more responsive to and flexible in making appropriate moment-to-moment decisions to meet the children’s needs.

Reflection and Discussion Questions and Prompts for Children and Teachers—At the end of each Investigation, questions and prompts are provided to guide children and teachers as they think consciously about and communicate their experiences and feelings while engaged in the Investigation. As the reflections are shared with peers and colleagues, learning is enhanced and teaching is improved to better meet the needs of all children.