

Writing to learn mathematics: strategies that work K-12

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Summary

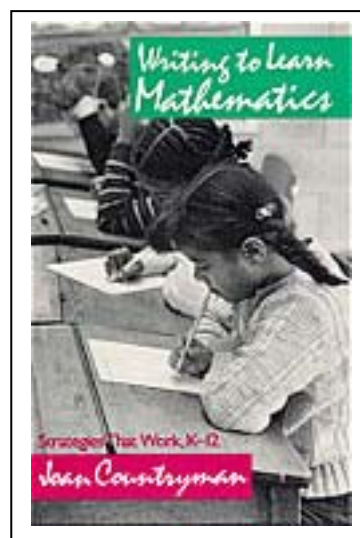
Writing to Learn Mathematics: Strategies that Work K-12 is a book that will help teachers use writing to enhance student learning in the mathematics classroom. Writing provides a way for students to make sense of mathematics. The strategies include using freewriting, learning logs, journals, letters, autobiographies, and research papers to gain deeper insights into students' reasoning, sense-making, and their disposition towards doing mathematics.

Purpose:

This book was written to share strategies to help teachers use writing in the mathematics classroom. Writing gives deeper insights into students' thinking and understanding of mathematical concepts.

Tool Description:

This book provides descriptions of writing activities that classroom teachers can use to enhance the learning of mathematics. It includes student examples from primary mathematics through calculus classrooms. The author shares a variety of strategies, ways to get started, and suggestions for how to develop writing as a tool for students to make sense of mathematics.



Background

In the preface to the book, Countryman states, "Writing can provide opportunities for students to construct their own knowledge of mathematics. The student work that appears in this volume shows learners interpreting unfamiliar texts, constructing arguments, struggling to understand complex systems, and developing new approaches to problems. The students pose questions and compose alternative responses to those questions. Writing has given them a chance to practice inferring, communicating, symbolizing, organizing, interpreting, linking, explaining, planning, reflecting, and acting. Writing helps students make sense of mathematics. Mathematics helps students make sense of the world." (p. vi-vii)

Design principles

This book is organized in chapters that highlight different writing genres. The author uses student work to add clarity to ideas and strategies that are presented throughout the work.

The materials

Contents:

1. Writing to Learn: (Teaching and Learning Mathematics; The Writing Process)
2. Getting Started: (Freewriting, Learning Logs, Other Strategies)

3. Autobiography
4. Journals: (Language, Cognition, Document Features, Journal Conversations, A Teacher's Journal, Some Practical Considerations)
5. Word Problems and Problems with Words: (The Emperor's Oats, Words in Mathematics)
6. Formal Writing: (The Writing Process, Papers)
7. Evaluation and Testing
8. Reflections in the Classroom: (The Classroom Climate, Habits of Learning)

Using the tool

Readers who are new to using writing in the mathematics classroom will find that Chapter 2 provides quick and easy strategies to get started. Learning logs provide a way for students to keep track of their learning over time. In Chapter 4, there are many practical suggestions given to teachers who may use journals. These suggestions include ways to get started, giving and managing feedback, prompts for students, and student reflections. Teachers might want to try out different forms of writing (e.g., reports and papers) periodically throughout the school year.

Evaluative evidence

Availability

In stock, Heinemann, <http://www.Heinemann.com>

Strengths

- Includes examples of students work
- Offers several strategies (journals, learning logs, letters, autobiographies, investigations, and formal papers) and ways to get started to gain deeper insights into students' understandings.
- Distinguishes formal and informal writing processes and purposes for each type of writing
- Helps teachers use writing as a tool to find out more about what their students understand
- Suggests evaluation strategies and testing strategies that use writing
- Includes summaries of key ideas for each chapter

Likely challenges

- Teachers may need additional information, grounded in research, about the value of writing as a tool for enhancing mathematical understanding.
- The strategies are described briefly, followed by specific examples of student work. Some teachers may need more detail and additional guidance.