

Teaching Math with Meaning

Cultivating Self-Efficacy Through Learning Competencies

Chapter 1: Promoting a Culture of Learning in Mathematics

Current Practice in Mathematics Education

Students' Perceptions of Mathematics

Our Current Understanding of Mathematics

Misconceptions About New Initiatives in Mathematics and the Teacher's Role

Misconception 1: Number Facts Aren't Valued

Misconception 2: Teachers' Roles Are Reduced

Misconception 3: Whole-Class Teaching Is No Longer Valuable

Changing Our Practice in Meaningful Ways

Uncovering Student Misconceptions

Infusing Meaningful Problem-Solving and Inquiry into Our Practice

Valuing Parent Voices in Mathematics Education

Chapter 2: The Focus of This Book: Self Efficacy and Learning Competencies

The Importance of Self-Efficacy in the Math Classroom

Cultivating Student Self-Efficacy

Cultivating Teacher Self-Efficacy

Learning Competencies

The Communication Competency

The Thinking Competency

The Personal and Social Competency

Chapter 3: Classroom Culture

Establishing a Classroom Culture That Values Student Voices

A Framework for Accountable Talk

1. Anticipating Student Thinking

2. Listening to Students with a Mathematical Focus and an Equity Focus

3. Posing Effective Questions

4. Monitoring and Providing Feedback

5. Selecting and Sequencing Work

Using Assessment and Feedback to Help Foster Self-Efficacy

Assessing Student Learning

Success Criteria in Mathematics

Effective Descriptive Feedback

Providing Effective Feedback

Adapting Feedback to Meet Student Needs

Chapter 4: The Role of Student Self-Efficacy in the Learning and Teaching of Mathematics

Our Developing Understanding of How Students Learn

The Importance of Student Beliefs and Behaviours
Fostering Self-Efficacy in Your Students
Encouraging Self-Efficacy in *All* Students
Students Who Experience Math Anxiety
Teacher Math Anxiety
Facilitating the Learning
English Language Learners (ELLs): Critical Voices in the Mathematics Classroom
In Their Own Words
Facilitating the Learning
Developmental Dyscalculia
Facilitating the Learning
Learners Who Struggle
Self-Regulation Skills in Mathematics and the Struggling Learner
Facilitating the Learning
Sample for Limiting Choices: Wanted Number Activity

Chapter 5: The Communication Competency

The Importance of Communication in Mathematics
Facilitating Mathematical Conversations
What are the Challenges?
Discourse Structures
Using Questions to Foster Conversation
Using Math Prompts to Guide and Support Discourse
Fostering Communication with Set Diagrams
What are Set Diagrams? (Venn, Euler)
Discourse Structures
Coding: Another Way to Communicate
Activities to Foster Communication in Mathematics
Structured Talk Prompts
Prompt Cards
Always, Sometimes, Never
Which One Doesn't Belong?
Introducing the Use of Set Diagrams
Introducing Classification with Set Diagrams
Choosing a Set Diagram
Getting Active with Codes
Pathway Coding
Coding Designs on a Grid
Coding Structures

Chapter 6: The Thinking Competency

Critical Thinking
Creative Thinking
What Is Mathematical Creativity?
The Importance of Creativity in Mathematics
Establishing a Creative Classroom Culture
How Can we Encourage Creativity in Mathematics

How Can We Encourage Critical Thinking in Mathematics?
The Importance of Making Thinking Visible in Mathematics
Using Self-Talk to Help Make Thinking Visible
Modelling the Thinking Process with Think-Alouds
What Is a Think-Aloud?
Mathematical Think-Alouds
The Concept of Proof in Elementary Mathematics
Why Include Argumentation in Your Mathematics Teaching
Strategies and Activities to Foster Thinking in Mathematics
Word List Connection
Introducing Thinking Journeys
Introducing Mathematical Think-Alouds
Making Connections
Less Is More
Mathematical Argumentation: A Sample Exploration

Chapter 7: The Personal and Social Competency

The Importance of Personal and Social Skills in Mathematics
Establishing a Collaborative Classroom Culture
Setting Up Your Classroom to Foster Social Skills
Fostering Personal and Social Growth with Open Mathematical Tasks
What Are Open Mathematical Tasks and Why Are They Important?
Choosing and Facilitating Open Mathematical Tasks
Fostering Personal and Social Growth with Concept Circles
Activities to Foster Social and Personal Development in Mathematics
Small-Group Conference
Sharing Ideas Using Mathematical Jot Notes
Any Questions?
Would You Rather Be...?
Concept Circle Collaborations
Using Thinking Bubbles to Record and Classify Self-Talk
Thinking Detectives
Student Generated Self-Talk Thinking Bubbles
Using Self-Talk to Create a Goal-Setting Chart
Chocolate Bar Sharing: An Open Mathematical Task