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Alberta Professional Learning Consortium

Unlocking the Secrets: The Ultimate Administrator Toolkit for Transforming Math Classrooms!

August 19, 2025

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AGENDA

- Welcome
- Rationale and Purpose
- Building a A Mathematically Rich School
- Principal Classroom Observation Checklist
- Ways to Implement

- Additional Resources

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Rationale and Purpose

Research indicates that a school changes when leadership leads that change and your influence has the power to transform classrooms and inspire lasting change.

Rationale

One of the most important areas where this transformation can occur is in the way math is taught.

We know that effective math instruction can unlock students' potential, foster critical thinking, and open doors to countless opportunities.

Inspiring Change in Math Instruction

Supporting every educator
in every classroom

In your role, you have the unique opportunity to lead this transformative effort. By leveraging the resource designed specifically for leadership, you can guide your teachers through this shift, creating a powerful, lasting impact on the way math is taught and experienced in your school.

Let’s take this journey together, inspiring both teachers and students to reach new heights in their mathematical understanding.

Together, we can make a change that truly matters.

Effective math instruction begins when educators have high expectations of students and believe that all students have the potential to learn and do math. It uses culturally relevant practices and differentiated learning experiences to meet individual students' learning needs. It focuses on the development of conceptual understanding and procedural fluency, skill development, communication, and problem-solving skills. And it involves educators choosing from and using a variety of high-impact instructional practices.

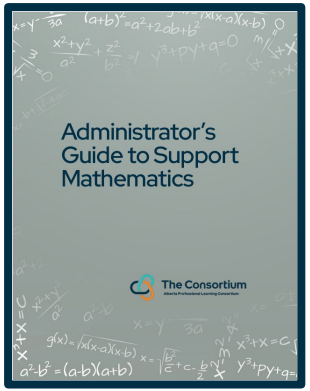
(Hattie, 2009; National Council of Teachers of Mathematics, 2014).

Purpose

This guide is conceived as a resource for principals, and other school leaders, who have identified math as an area for development based on evaluation feedback or the challenges they have diagnosed at their school.

It has been specifically designed to help guide change—empowering leadership to support and encourage teachers as they make shifts in their math teaching practices.

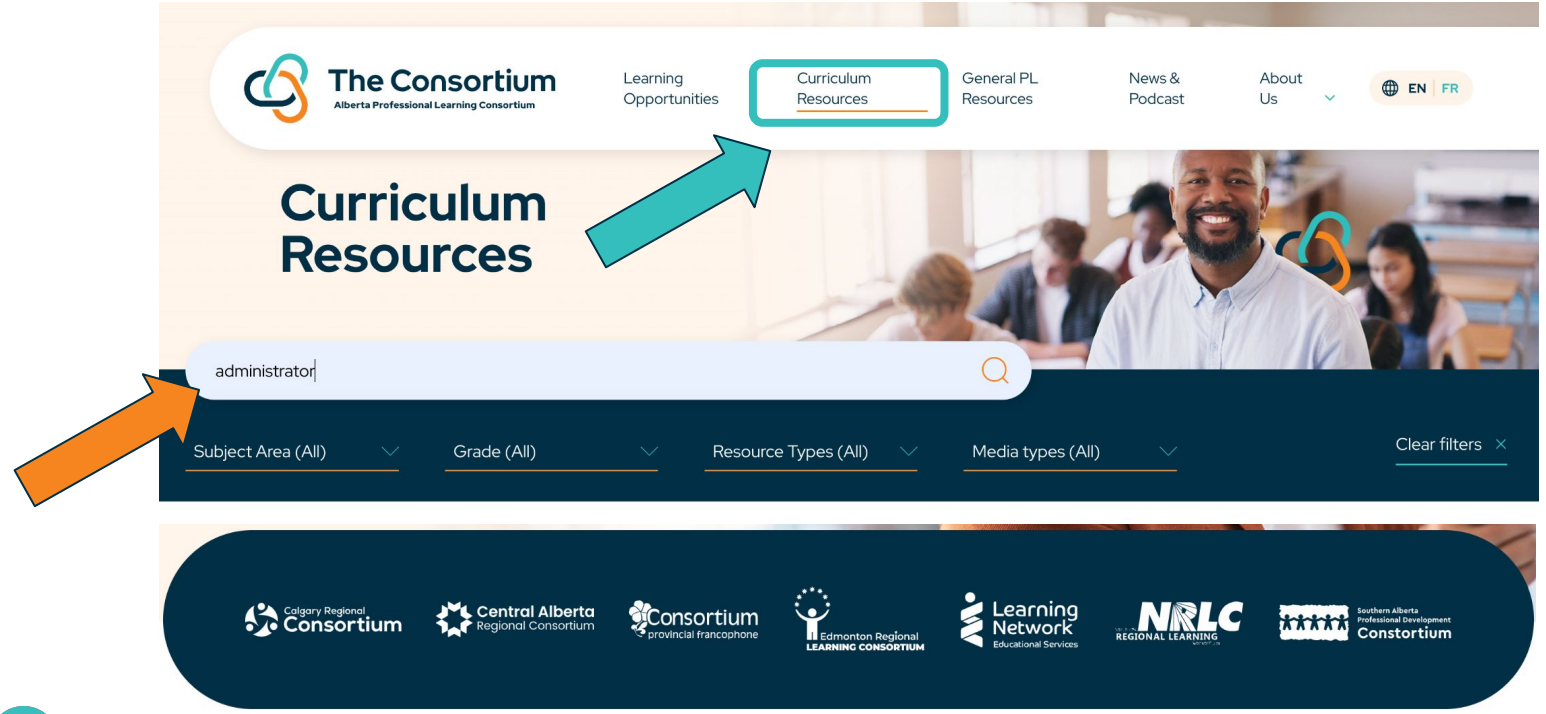
Designed to provide school administrators with guidance and ideas on ways to build a strong math culture that supports equity for all students, while encouraging positive attitudes towards mathematics.



Supports the LQS and TQS

To Access:

Go to aplc.ca



Administrator's Guide to Support Mathematics

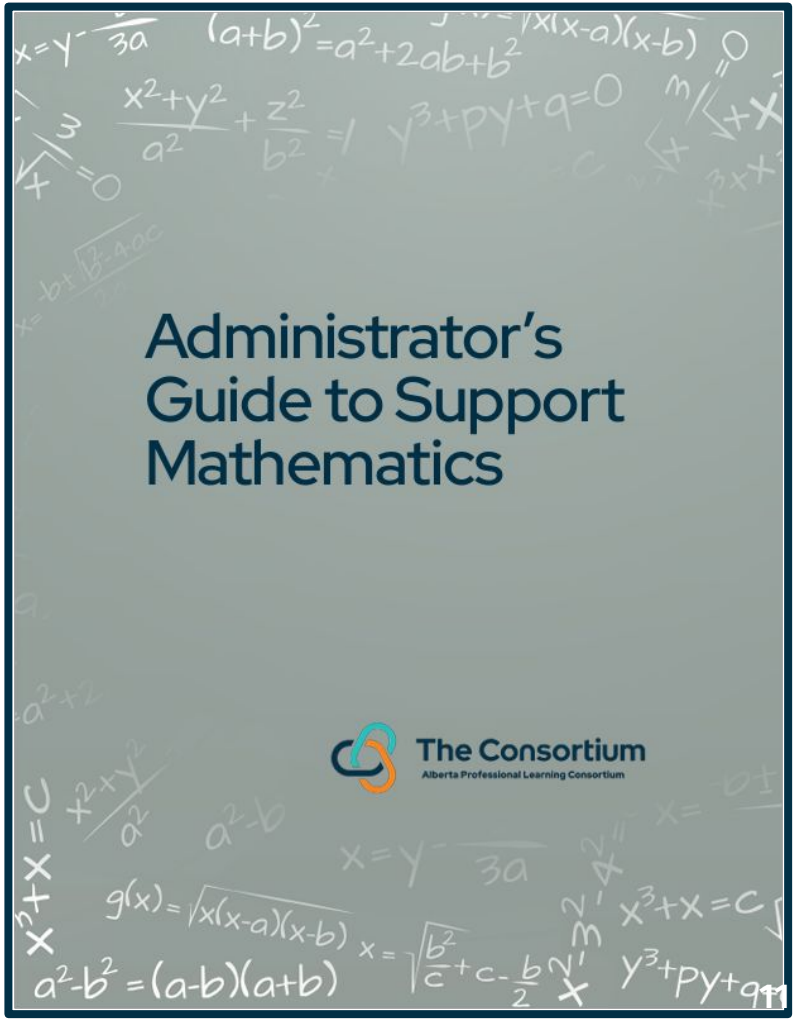
About this Resource

This document contains information on what is Mathematics and Numeracy, how to build a mathematical rich school environment, and strategies to successfully implement positive changes in your school. An observation checklist is included that will provide you with specific look-fors and guiding questions that may be used in your interaction with students and teachers. In addition, there are direct links to multiple resources that can support you in your mathematical journey.

Download Resource Files

Administrator's Guide to Support Mathematics

Principal Classroom Observation and Conversation Guide



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Math vs. Numeracy

Mathematics is a universal language that uses symbols and procedures to communicate ideas and solve real-life problems.

Numeracy involves acquiring and applying the mathematical knowledge and skills needed to engage with quantitative and spatial information in a variety of situations. (Ab Ed 2022)

Numeracy is embedded in learning experiences across all subject areas.

Edmonton Regional Learning Consortium 2016

EDMONTON Regional Learning CONSORTIUM

2016

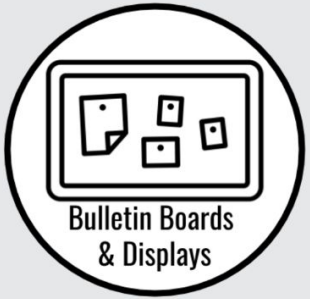
K-12 Numeracy Guiding Document

Edmonton Regional Learning Consortium

Alberta Regional Consortia

Creating Numeracy Rich Environments in Schools

Creating a numeracy rich environment involves a variety of strategies. One important strategy is making numeracy visible throughout the school. This resource is designed to provide ways to bring numeracy alive. The goal for all teachers is to make explicit connections to numeracy throughout the day, across subject areas, inside and outside of the classroom. Making a shift could be as simple as adding some explanations or numeracy connections to enhance our eye-catching visuals, but there is so much more we can do.



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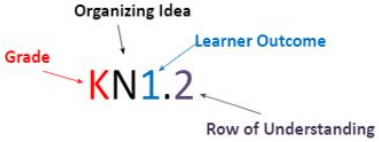
Math Vocabulary

"Students may excel in computation, but their ability to apply their skills will suffer if they do not understand the math vocabulary used in instructions and story problems." (Bruun, Diaz, Dykes 2015)

Alberta Regional Professional Development Consortia
Adult learning for students' sake

Mathematics Kindergarten to Grade 6 Curriculum & Financial Literacy for K-2



	Kindergarten			Grade 1			Grade 2		
Organizing Idea	Number: Quantity is measured with numbers that enable counting, labelling, comparing, and operating.								
Guiding Question	How can quantity contribute meaning to daily life?			How can quantity be communicated?			How can quantity contribute to a sense of number?		
Learning Outcome	KN1.1 Children investigate quantities to 10.			1N1.1 Students interpret and explain quantities to 100.			2N 1.1 Students analyze quantity to 1000.		
	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures	Knowledge	Understanding	Skills & Procedures
	Quantity can be represented using • object • pictures • words • numerals	Quantity can be the number of objects in a set .	Recognize a number of familiar objects as a quantity. Represent a quantity in different ways. Relate a numeral to a specific quantity.	A numeral is a symbol or group of symbols used to represent a number. The absence of quantity is represented by 0.	Quantity is expressed in words and numerals based on patterns. Quantity in the world is represented in multiple ways.	Represent quantities using words, numerals, objects, or pictures. Identify a quantity of 0 in familiar situations.	Any number of objects in a set can be represented by a natural number. The values of the places in a four-digit natural number are thousands, hundreds, tens, and ones. Places that have no value within a given number use zero as a placeholder. The number line is a spatial representation of quantity.	There are infinitely many natural numbers. Every digit in a natural number has a value based on its place. Each natural number is associated with exactly one point on the number line.	Represent quantities using words and natural numbers. Identify the digits representing thousands, hundreds, tens, and ones based on place in a natural number. Relate a number, including zero, to its position on the number line.

This resource has been created to support teachers in accessing terminology associated with the new Mathematics Curriculum. This document is a living document and will continue to be enhanced with additional links overtime.

Glossary for Student Action Verbs ~ Alberta's K-3 Math Curriculum

This interactive glossary and associated resources were developed to help provide clarification, context and support for teaching of the verbs in Alberta Education's K-3 Math Curriculum (2022).

Grades found as LO	Grades found within Ss & Ps	Verb	Definition *Indicates that there is a hyperlinked toolkit.
K		create*	To use knowledge, reasoning and understanding to put elements together to form a new pattern, structure, or idea.
	1, 2	decompose	To take apart or separate.
	K, 1, 2, 3	describe*	To communicate (orally or in writing) qualities, attributes, details and/or features of something.
	1, 2, 3	determine*	To find an answer using a reasonable strategy, procedure, and/or calculation.
	3	differentiate	To understand and identify the differences between.
	3	divide	To separate a total (quotient) into equal groups to determine the number of groups or how many are in each group.
	2, 3	estimate*	To come close, or be similar to, a number, calculation, quantity, or measurement.
1	3	examine*	To carefully and in detail consider the nature and characteristics of something to find out more about it.
1, 2, 3	2, 3	explain*	To describe the how or why of something; give the cause or reason for.
K		explore*	To consider an idea or concept in detail, both closely and broadly.
	1, 2, 3	express*	To convey knowledge and understanding.

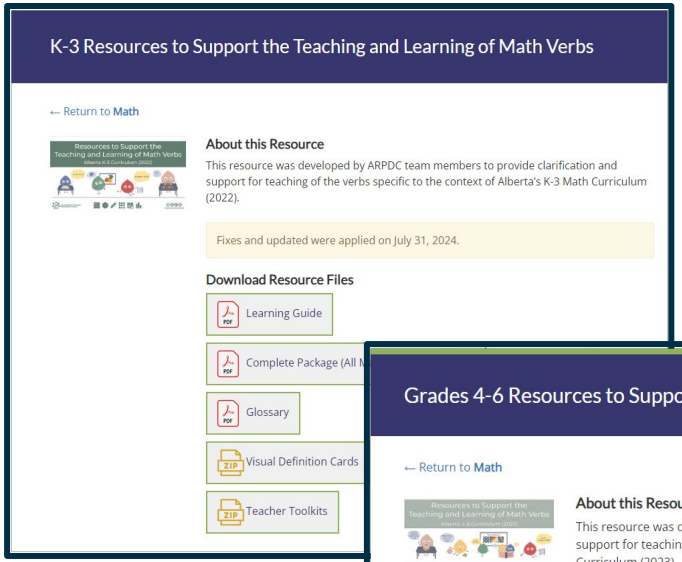
Glossary for Student Action Verbs ~ Alberta's 4-6 Math Curriculum

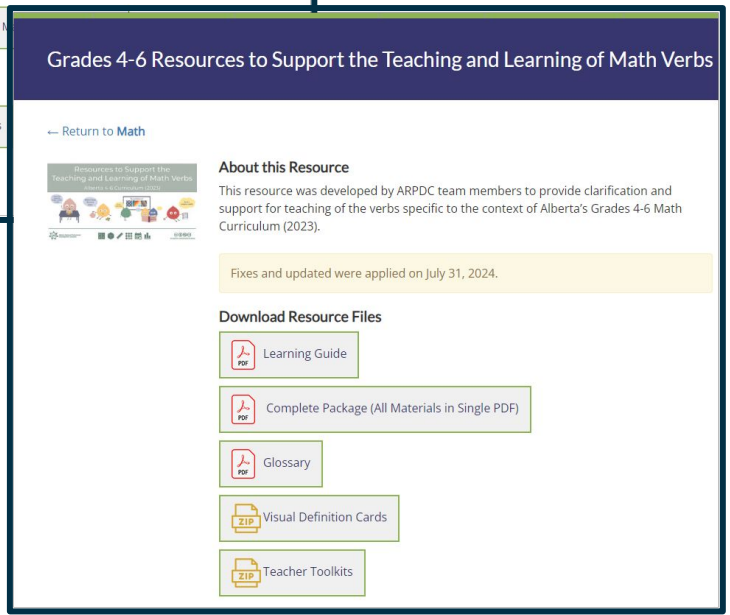
This interactive glossary and associated resources were developed to help provide clarification, context and support for teaching of the verbs in Alberta Education's 4 - 6 Math Curriculum (2022).

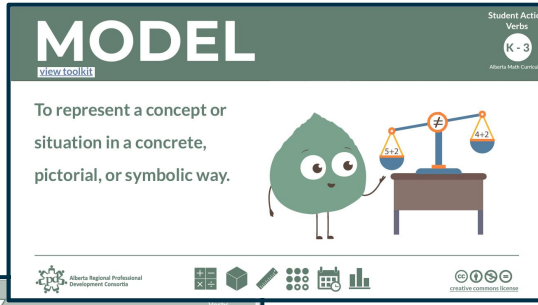
Grades found as LO	Grades found within Ss & Ps	Verb	Definition *Indicates that there is a hyperlinked toolkit.
4, 5, 6	4, 5, 6	add	To combine two or more addends (numbers/qualities) together to get a sum.
4, 5, 6	6	analyze*	To consider in detail in order to find meaning and determine relationships, patterns, similarities, differences, etc.
4, 6	4, 5	apply*	To use (mathematical knowledge).
	4, 5, 6	assess	To determine (or decide) something after consideration.
5		calculate	To determine (the amount or number of something) mathematically.
	5	categorize	To assign to a category.
	4, 5	classify	To arrange into groups based on one or more attributes or properties.
	6	collect	To gather data and/or information, etc., from people or sources.
4		communicate	To convey knowledge and understanding to another.
	4, 5, 6	compare	To consider the qualities of two or more things or sets, in order to discover similarities or differences.
	6	compose	To form, combine, or put together.
	4, 6	convert	To change a value or expression from one form to another.
	5	count	To name the numbers in a stable order and/or determine a quantity.

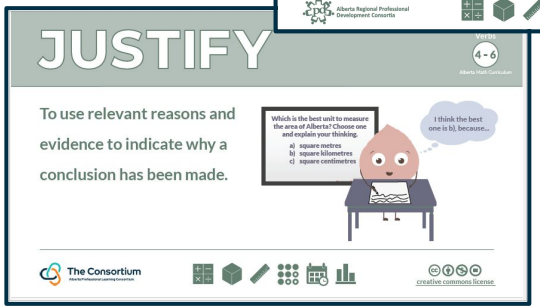
Defining the Student/Action Verbs within the Alberta Context

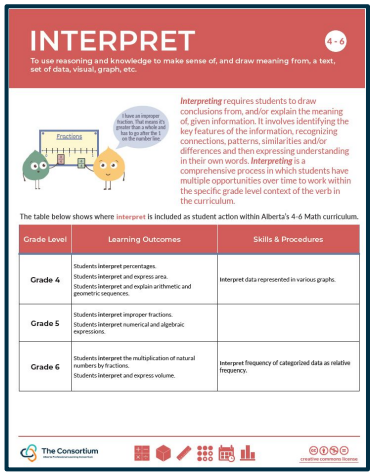
Resource Packages for K-3 and 4-6

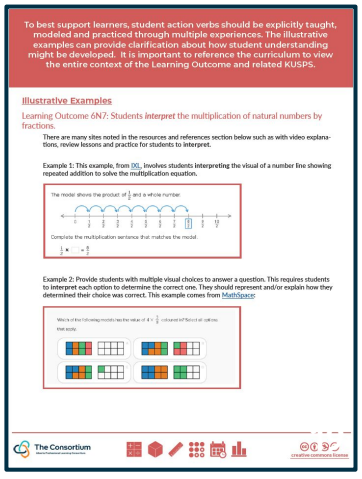












Decimal	Words	Fraction
0.1	1 tenth	$\frac{1}{10}$
0.01	1 hundredth	$\frac{1}{100}$
0.001	1 thousandth	$\frac{1}{1000}$

Decimal	Words	Fraction
0.2	2 tenths	$\frac{2}{10}$
0.35	35 hundredths	$\frac{35}{100}$
0.048	48 thousandths	$\frac{48}{1000}$

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Fluency vs. Automaticity

Automaticity is based on memorization of basic facts, but how useful is that?

45 x 16

5 x 26

“Procedural fluency is the ability to apply procedures efficiently, flexibly, and accurately; to transfer procedures to different problems and contexts;

to build or modify procedures from other procedures;

and to recognize when one strategy or procedure is more appropriate to apply than another “

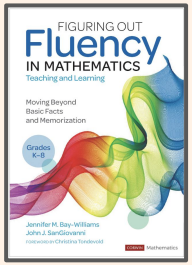
Procedural Fluency in Mathematics
(NCTM 2014, 2020; National Research Council 2001, 2005, 2012; Star 2005)

Real Fluency

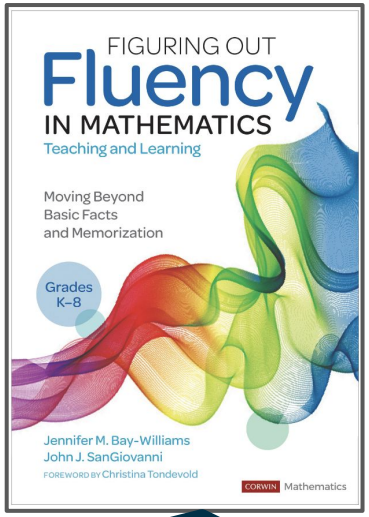
“The ability to select efficient strategies, to adapt, modify, or change out strategies, and to find solutions with accuracy.

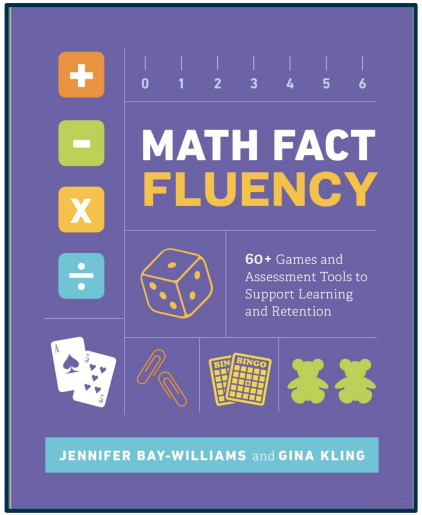
Real Fluency is not the act of replicating someone else’s steps or procedures for doing mathematics.

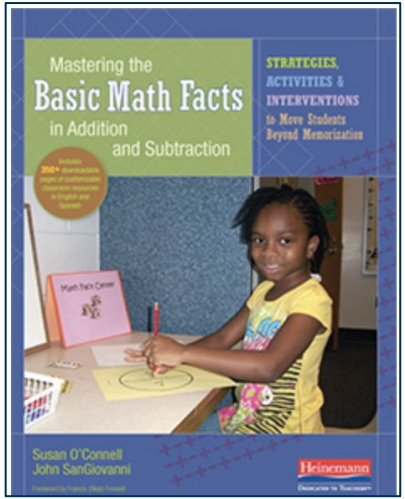
It is the act of thinking, reasoning, and doing math on one’s own.“

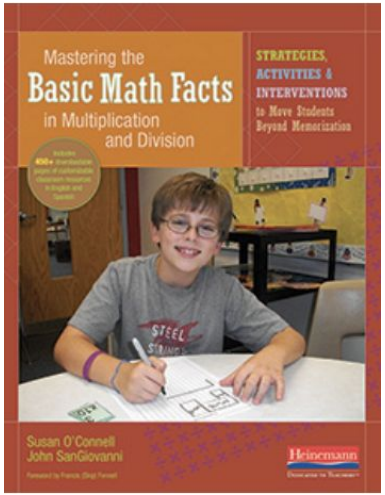


Great Books to Support Building Fluency









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Great videos for building strategies

ORIGO ONE

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Grades 3-6 mathematics
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The ORIGO Approach
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Multiplication and Division Strategies (Grades 3-6)
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Addition and Subtraction Strategies (Pre-K- 2)
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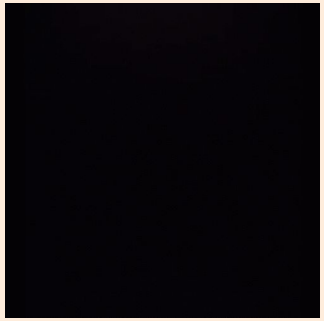
A Mathematically Rich School

Categories for Building a Mathematically Rich School

Reflecting on a Mathematically Rich School	
Equity	• Supportive relationships between students, teachers and the school community • Recognizing that we do not all start from the same place and must acknowledge and make adjustments to imbalances. • Achievement cannot be predicted by students' racial, ethnic, linguistic, gender, and socioeconomic backgrounds. • All students can learn math and have access to the tools and resources they need
Learning Environment	• Math learning is visible throughout the school • Welcoming and inclusive • Student voice and choice are evident • Resources, manipulatives and visuals are incorporated
Teaching and Assessment Practices	• Knowledge of and attention to Alberta curriculum • Supports the development of competencies, literacy and numeracy • Emphasis on vocabulary and fluency • Math is approached with a holistic view of the student • Differentiation of instruction and assessment • Ongoing assessment

Principal Classroom Observation Checklist



Remember....

- The Observation Checklist is meant to provide options for growth and to "start the conversation".
- Choose an area to focus on as a school staff, not the entire document.
- Incorporate into school growth/education plans,
- Share with staff and talk about strengths and areas of growth, as a school or as a teacher.

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Note: This observation checklist is meant to provide options for growth, with the idea of focusing on selected components within a category. Ideally, the selected components will align with your school's education plan.

Principal Classroom Observation and Conversation Guide

EQUITY

Questions to Consider	Look Fors	Conversation Starters
How are supportive relationships between students and the teacher being fostered during math class regardless of students' racial, ethnic, linguistic, gender and socioeconomic background?	• All students feel safe, welcome and comfortable in the classroom • Safe space for taking mathematical risks • Help students share, honor, listen and critique each other's ideas • Help students consider and discuss each other's thinking. • Highlights mathematical thinking and values mistakes	How do you intentionally create a community of trust in your classrooms?
How are learners meaningfully engaged and respected?	• The environment honors cultures, languages and world views • Students are provided with a meaningful connection to their learning. • Additional resources and supports are provided for a student where needed • Uses tasks that arise from home, community, and society.	How do you encourage students to show their unique perspectives? Do you feel that your students are comfortable giving unusual responses? How might you encourage it more?
How are students showing that they believe that everyone can learn and do math	• High expectations for all students • Willing to engage in collaborative learning • Accommodating differences of their peers • Open-ended teaching/learning strategies • Students' embrace challenges and struggles.	Take a moment and reflect: What are your own personal biases about students learning math? Do you believe that achievement cannot be predicted by students' racial, ethnic, linguistic, gender, and socioeconomic backgrounds.

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LEARNING ENVIRONMENT

Questions to Consider and Look Fors	Look Fors	Conversation Starters
How is learning visible in the classroom?	• Student made anchor charts • Math walls with student work • Erasable surfaces • Visuals that demonstrate mathematical thinking. • Using manipulatives to foster deeper understanding. • Encourage multiple solution pathways • Choose tasks with multiple entry points	How are some of the ways that you make math visible in your classroom ? In your classroom I see _____ (student work, or vocabulary, or anchor charts), can you tell me how students use these resources?
How are indigenous perspectives effectively and authentically embedded in math classes as per the curriculum?	• Curricular outcomes related to Indigenous perspectives are taught and modeled • Indigenous math literature is evident • Cross-curricular learning • Students are given opportunities to engage in activities involving Indigenous themes and topics	What are some examples of how you have embedded Indigenous perspectives in your math classroom?
What evidence is there of classroom routines that contribute to positive classroom culture?	• Norms and routines are well established • Students are engaged in the math • Maintaining and deepening prior skills and knowledge • Incorporating games and play in mathematics • Providing ongoing assessment information for the student and teacher. • Students show their thinking and are willing to discuss • Students and teacher look forward to math time	What norms (for interactions, lesson structures, task structure, particular resources, etc.) might expand students' access to meaningful participation? How/When do students have the opportunity to share, discuss, and explain their varied strategies, and justify their solutions?
How is the teacher communicating and supporting families in math and numeracy?	• Class newsletter with links • Sharing math games to play at home • Hosting Family Math night • Sharing student learning with feedback	How do you support and communicate with the parents/caregivers regarding math instruction and support for their children?

TEACHING AND ASSESSMENT PRACTICES

Questions for Consideration and Look Fors	Notes	Conversation Starters
Does the teacher show evidence that they plan, teach and assess utilizing the Alberta curriculum and ensure that students have access to the learning goals for each lesson?	• Goals are appropriate, challenging, and attainable. • Goals are specific to the lesson and visible to students. • Goals connect to other mathematics. • Goals are revisited throughout the lesson. • Students understand the math action verbs.	How and when do you communicate the goal of the learning to the students? How do you know that students understand the goal of the learning? How do you incorporate the math action verbs into your lesson plans?
Supports the development of competencies, literacy and numeracy	• work with a partner or small group • stick with a challenging problem • represent and communicate their thinking • use manipulatives • work independently • solve problems and reason logically • listen actively • give and receive feedback	Please choose one of the related bullets and describe how you support students in knowing what it "looks like, sounds like and feels like". During the observation today I saw students _____(one of the bullets). How do you support students in knowing what it "looks like, sounds like and feels like"? What exists that helps students justify their thinking rather than explain their answer?

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Remember....

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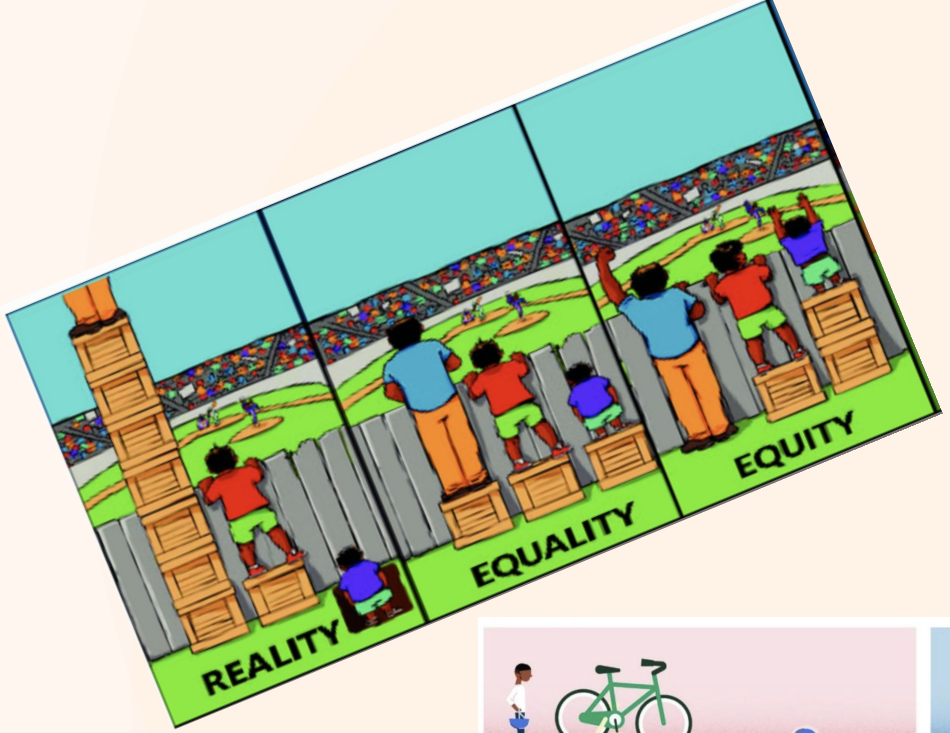
Promoting Equity

Is Equity the same as Equality?


REALITY
EQUALITY
EQUITY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Equality *is treating everyone the same. Everyone gets the same regardless if it is needed or right for them.*

Equity *is taking differences into account so that everyone has a chance to succeed, understanding the barriers, circumstances or conditions.*

Achievement cannot be predicted by students' racial, ethnic, linguistic, gender, and socioeconomic backgrounds.

All students can learn math and must have access to the tools and resources they need.

Equity should be focused on:

- Relationships
- Respect
- Belief that all children can learn math
- Mathematical Mindsets
- Access to support needed

Breaking through Biases and Beliefs to create Equitable Classrooms

- Acknowledge and Reflect on your own Biases
- Commit to Lifelong Learning
- Examine your expectations and Practices
- Build Relationships based on trust and respect
- Create a Culturally Responsive Classroom
- Confront Microaggressions and Discrimination
- HOLD YOURSELF ACCOUNTABLE

Equity

Supporting every educator in every classroom

Questions to Consider and Look Fors	Look Fors	Conversation Starters
How are supportive relationships between students and the teacher being fostered during math class regardless of students' racial, ethnic, linguistic, gender and socioeconomic background?	• All students feel safe, welcome and comfortable in the classroom • Safe space for taking mathematical risks • Help students share, honor, listen and critique each other's ideas • Help students consider and discuss each other's thinking. • Highlights mathematical thinking and values mistakes	How do you intentionally create a community of trust in your classrooms?
How are learners meaningfully engaged and respected?	• The environment honors cultures, languages and world views • Students are provided with a meaningful connection to their learning. • Additional resources and supports are provided for a student where needed • Uses tasks that arise from home, community, and society.	How do you encourage students to show their unique perspectives? Do you feel that your students are comfortable giving unusual responses? How might you encourage it more?

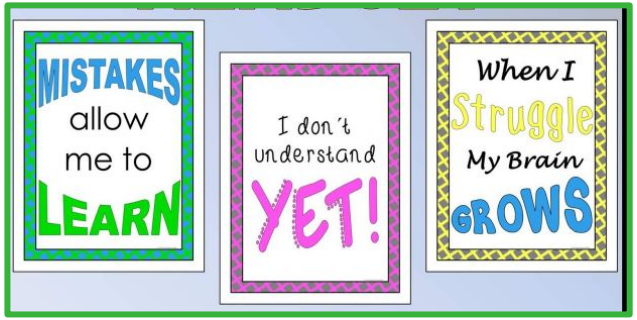
Learning Environment

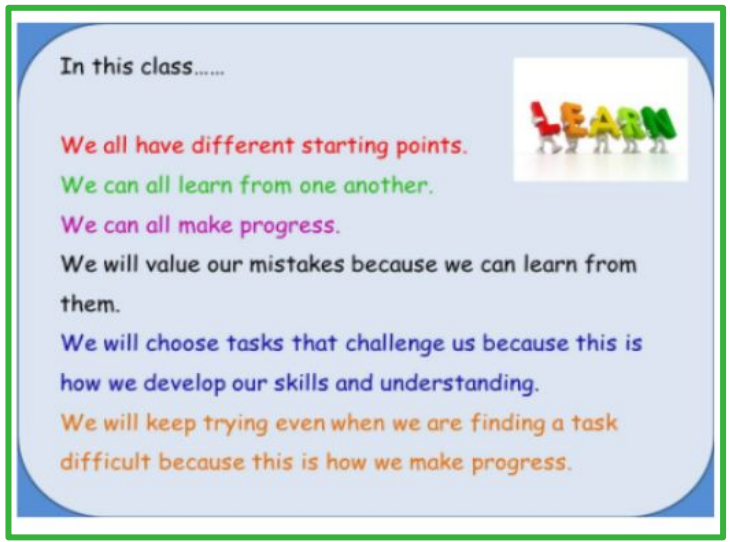
"It should be obvious upon entering the room that mathematics is being taught and numeracy valued." (Laney Sammons)

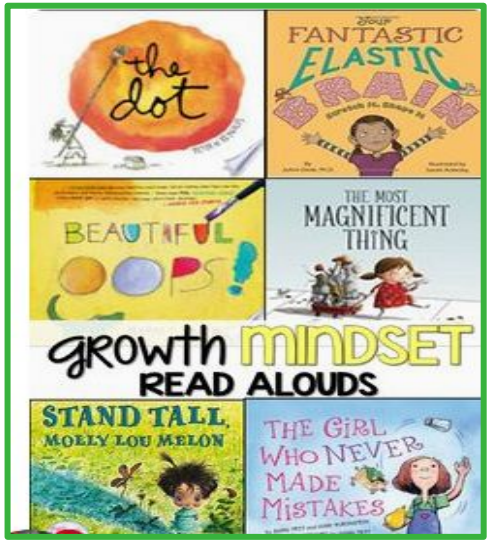
Learning Environments should focus on:

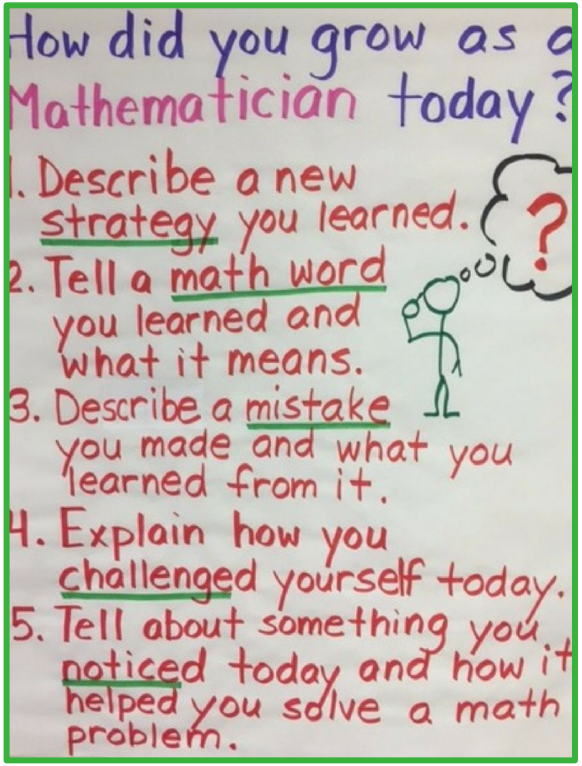
- Visible Learning
- Indigenous Perspectives
- Classroom Routines
- Communication with families
- Mathematical Discourse
- Productive Struggle
- Using Manipulatives

Classrooms Foster Mathematical Growth Mindsets

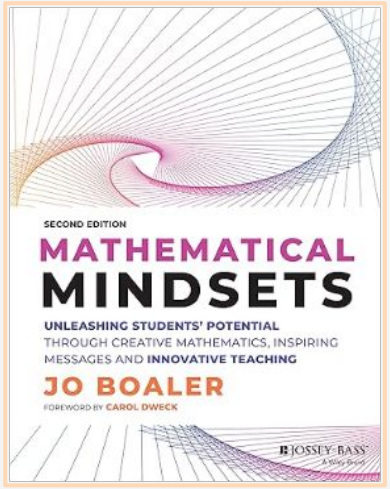


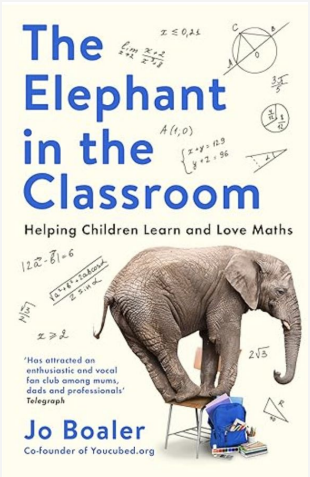


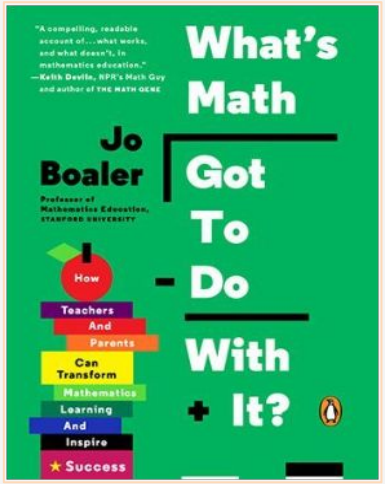




Fantastic Reads by Jo Boaler







For more information, click here.

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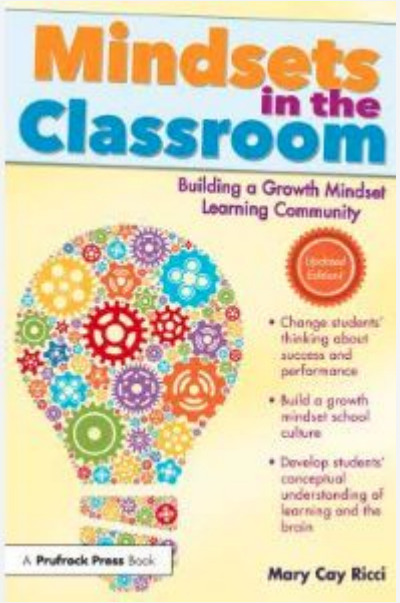
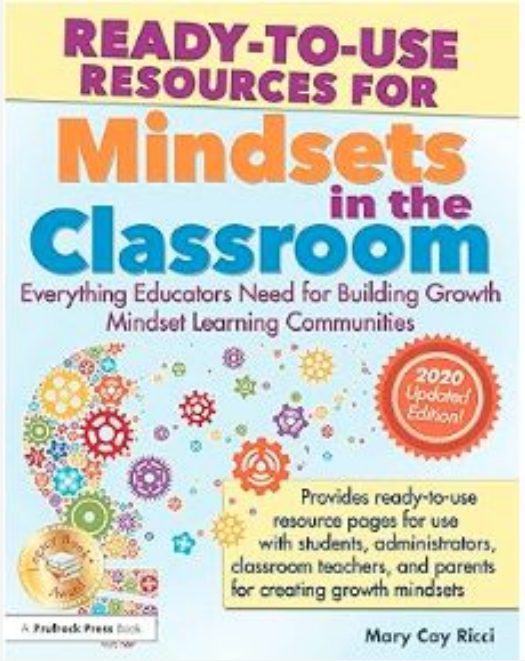
Fantastic Resource





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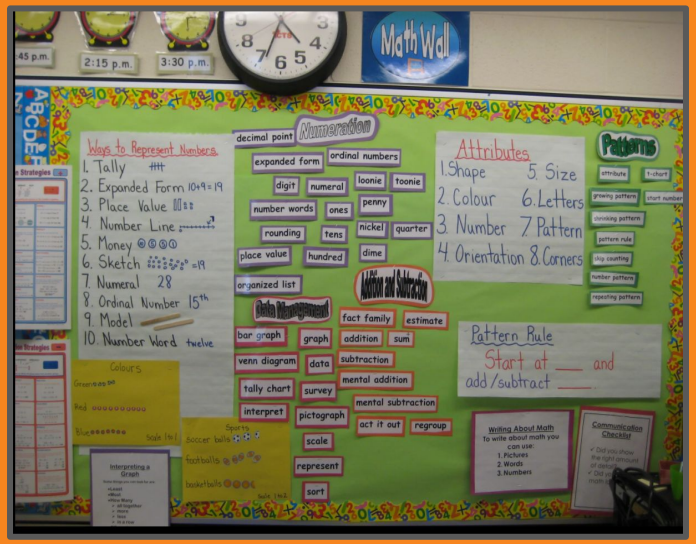
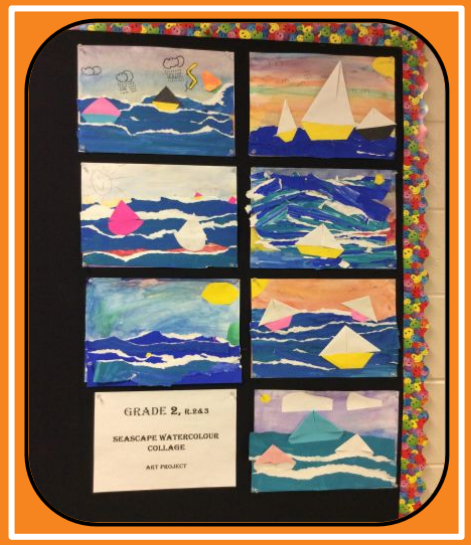
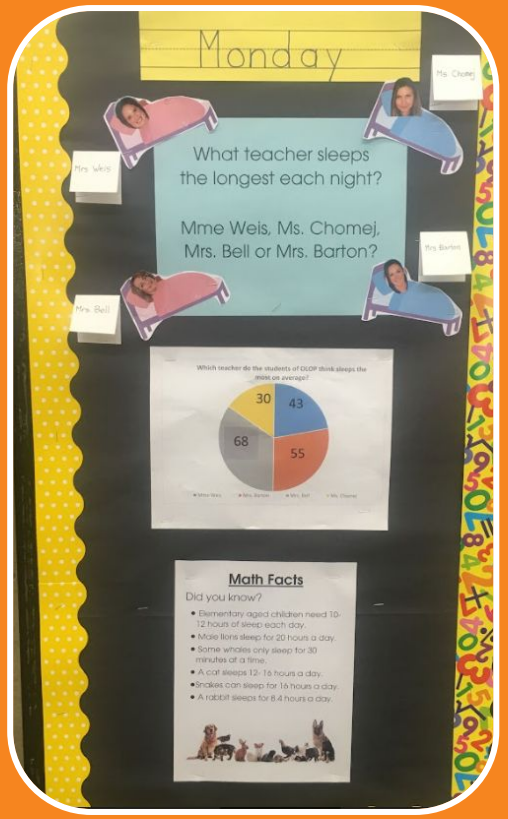
Math and Numeracy is visible throughout the school







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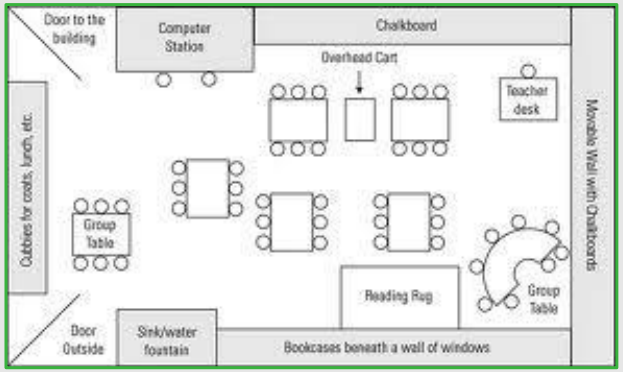
Students Provided with Voice and Choice

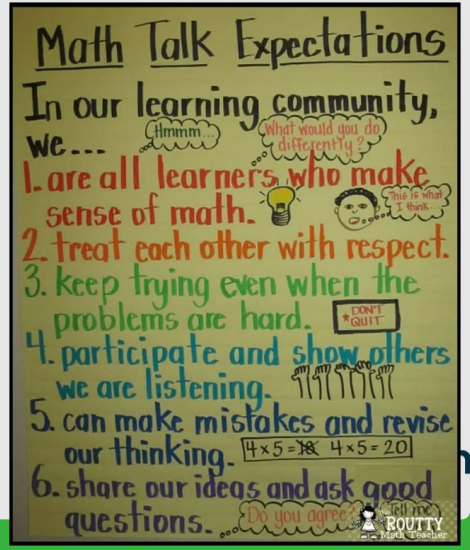
Small group instruction

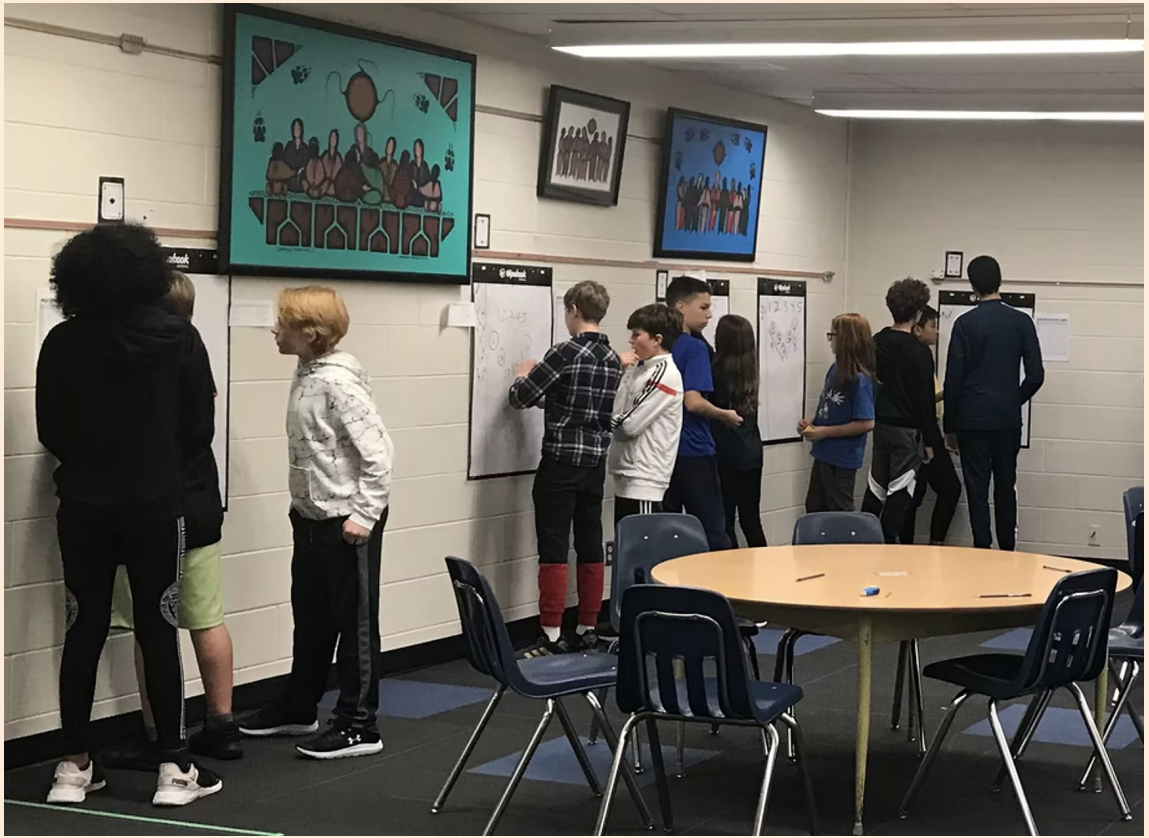


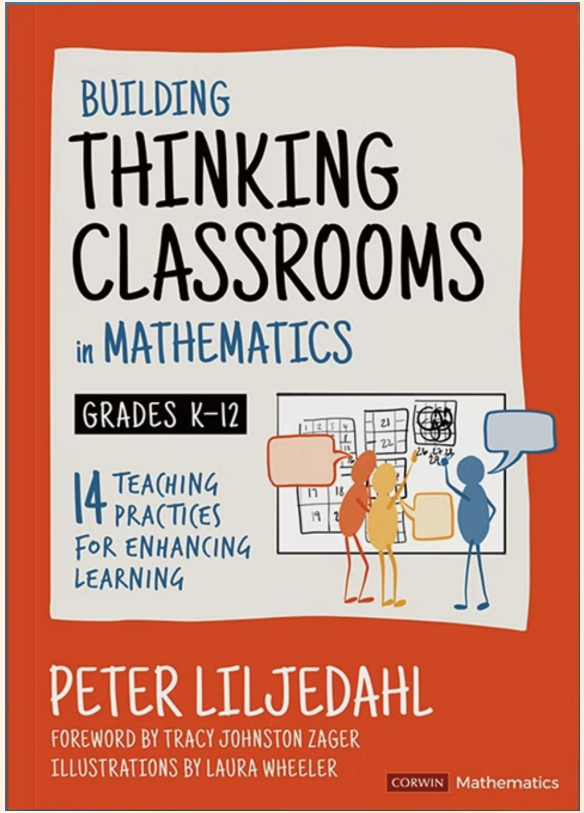
Variety of learning spaces

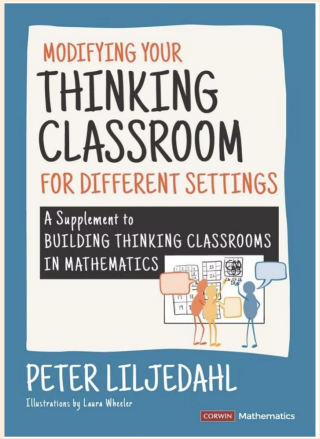
Math Stations

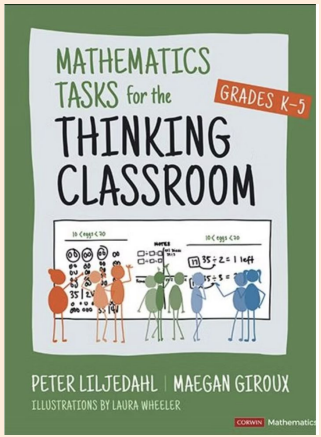
Mathematical conversations through Math Talks

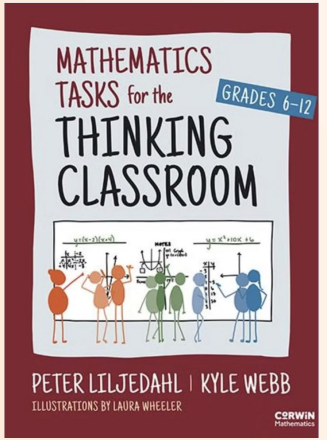




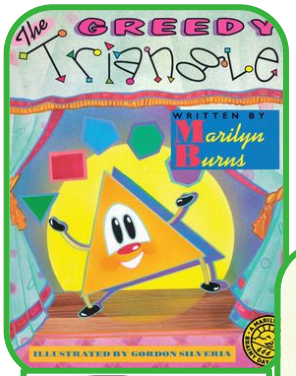

BUILDING
THINKING CLASSROOMS
in MATHEMATICS
GRADES K-12
14 TEACHING PRACTICES FOR ENHANCING LEARNING
PETER LILJEDAHL
FOREWORD BY TRACY JOHNSTON ZAGER
ILLUSTRATIONS BY LAURA WHEELER
CORWIN Mathematics

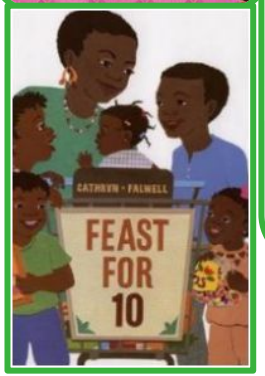

MODIFYING YOUR
THINKING CLASSROOM
FOR DIFFERENT SETTINGS
A Supplement to BUILDING THINKING CLASSROOMS IN MATHEMATICS
PETER LILJEDAHL
Illustrations by Laura Wheeler
CORWIN Mathematics

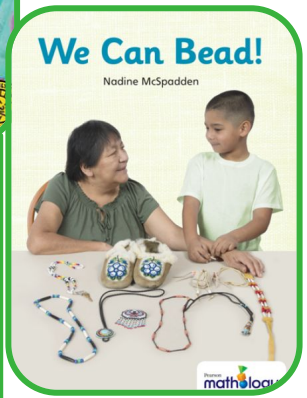

MATHEMATICS TASKS for the THINKING CLASSROOM
GRADES K-5
PETER LILJEDAHL | MAEGAN GIROUX
ILLUSTRATIONS BY LAURA WHEELER
CORWIN Mathematics

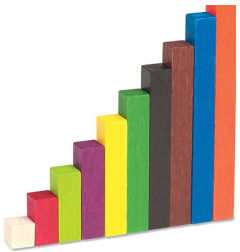

MATHEMATICS TASKS for the THINKING CLASSROOM
GRADES 6-12
PETER LILJEDAHL | KYLE WEBB
ILLUSTRATIONS BY LAURA WHEELER
CORWIN Mathematics

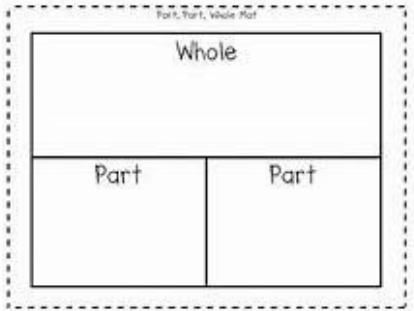
Access to resources, literature and math manipulatives











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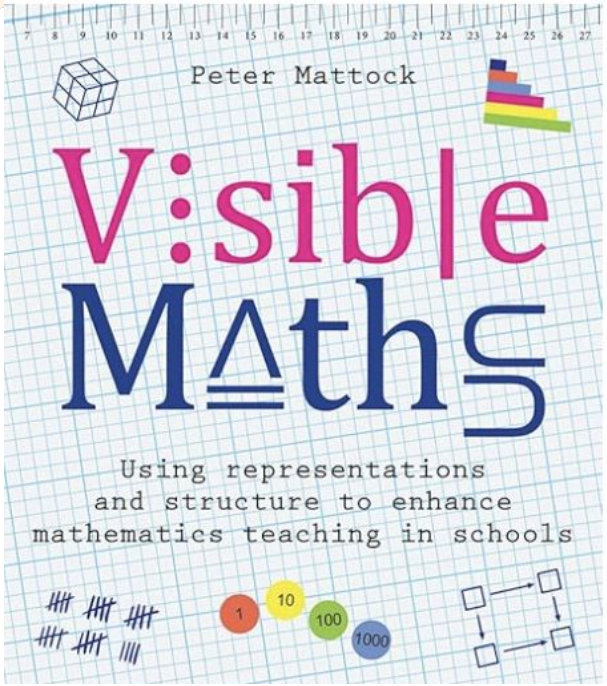
Visible Maths



Glossary of Manipulatives

Learning Environment

Supporting every educator in every classroom

Questions to Consider	Look Fors	Conversation Starters
How is learning visible in the classroom?	• Student made anchor charts • Math walls with student work • Erasable surfaces • Visuals that demonstrate mathematical thinking. • Using manipulatives to foster deeper understanding. • Encourage multiple solution pathways • Choose tasks with multiple entry points	How are some of the ways that you make math visible in your classroom ? In your classroom I see _____ (student work, or vocabulary, or anchor charts), can you tell me how students use these resources?
How are indigenous perspectives effectively and authentically embedded in math classes as per the curriculum?	• Curricular outcomes related to Indigenous perspectives are taught and modeled • Indigenous math literature is evident • Cross-curricular learning • Students are given opportunities to engage in activities involving Indigenous themes and topics	What are some examples of how you have embedded Indigenous perspectives in your math classroom?

Indigenous Ways of Knowing

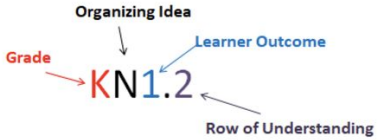
- Curricular outcomes related to Indigenous perspectives are taught and modeled

- Indigenous math literature is evident

Teaching and Assessment Practices

Teaching and Assessment Practices should focus on:

- Alberta Curriculum
- Competencies, Literacy and Numeracy development
- Building Reasoning Skills
- Mental Math and Fluency
- Math Vocabulary
- Manipulative Use for Conceptual Understanding
- Effective Questioning
- Formative Assessments and Responsive Teaching
- The Assessment Cycle



Numbered Curriculum Document - Please read first to understand the numbering in this document.
Please access the numbered curriculum document video instructions by clicking the hyperlinked title.

Alberta Mathematics K-6 Scope and Sequence

Number and Operations

Grade	K	1	2	3	4	5	6
Learning Outcome	**KN1 Children investigate quantity to 10.**	**1N1 Students interpret and explain quantities to 100.**	**2N1 Students analyze quantities to 1000**	**3N1 Students interpret place value within 100 000**	**4N1 Students apply place value to decimal numbers**	**5N1 Students analyze patterns in place Value**	**6N1 Students Investigate magnitude with positive and negative numbers**
Number Concepts	**KN1.1** Composition and Decomposition of Quantities to 10 **K1.4** Comparing Quantities using more. Less, same, enough, not enough	**1N1.1** Quantity to 100 using words, numerals, objects, pictures **1N1.3** Grouping and Partitioning numbers **1N1.5** Equality and unequal to 100 =and ≠	**2N1.1** Quantity to 1000 using place value understanding (natural numbers) **2N1.3** Odd and Even numbers (remainders) **2N1.5** Inequality comparing natural numbers using less than <, greater than >,not equal	**3N1.1** Quantity to 100 000 using place value understanding (base-10 system & natural numbers) less than <, greater than > $ sign in French and English Count money	**4N1.1** Decimal numbers including tenths and hundredths using place value understanding	**5N1.1** Numbers within 10 000 000 Decimal numbers to thousandths using place value understanding	**6N1.1** Integers additive inverses **6N1.2** Adding integers **6N1.3** Subtracting integers

Teaching and Assessment

Supporting every educator in every classroom

Questions to Consider and Look Fors	Look Fors	Conversation Starters
Does the teacher show evidence that they plan, teach and assess utilizing the Alberta curriculum and ensure that students have access to the learning goals for each lesson?	• Goals are appropriate, challenging, and attainable. • Goals are specific to the lesson and visible to students. • Goals connect to other mathematics. • Goals are revisited throughout the lesson. • Students understand the math action verbs.	How and when do you communicate the goal of the learning to the students? How do you know that students understand the goal of the learning? How do you incorporate the math action verbs into your lesson plans?
Supports the development of competencies, literacy and numeracy.	• work with a partner or small group • stick with a challenging problem • represent and communicate their thinking • use manipulatives • work independently • solve problems and reason logically • listen actively • give and receive feedback	Please choose one of the related bullets and describe how you support students in knowing what it “looks like, sounds like and feels like”. During the observation today I saw students _____ (one of the bullets). How do you support students in knowing what it “looks like, sounds like and feels like”? What exists that helps students justify their thinking rather than explain their answer?

High-Impact Instructional Practices in Mathematics

Ontario

Ways to Implement

Administrators who are effective instructional leaders:

- Make high achievement by all students a priority
- ***Recognize and value*** high quality instruction and assessment
- ***Expect all staff*** to engage in high level instruction and assessment.
- Create a learning community that supports teachers and administrators as they work to transform/improve instructional practice.
- Provide time for collegial work.
- Provide time for professional learning and attend with your teachers.

Look For

- What students are doing, as well as the teacher
- Content and tasks
- Learning Environment
- Equity
- Ongoing Assessment including ***formative assessment***

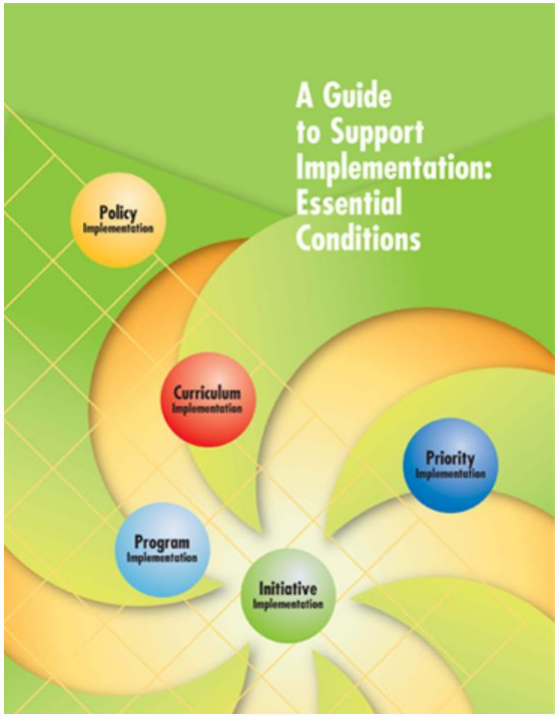
YOUR ROLE

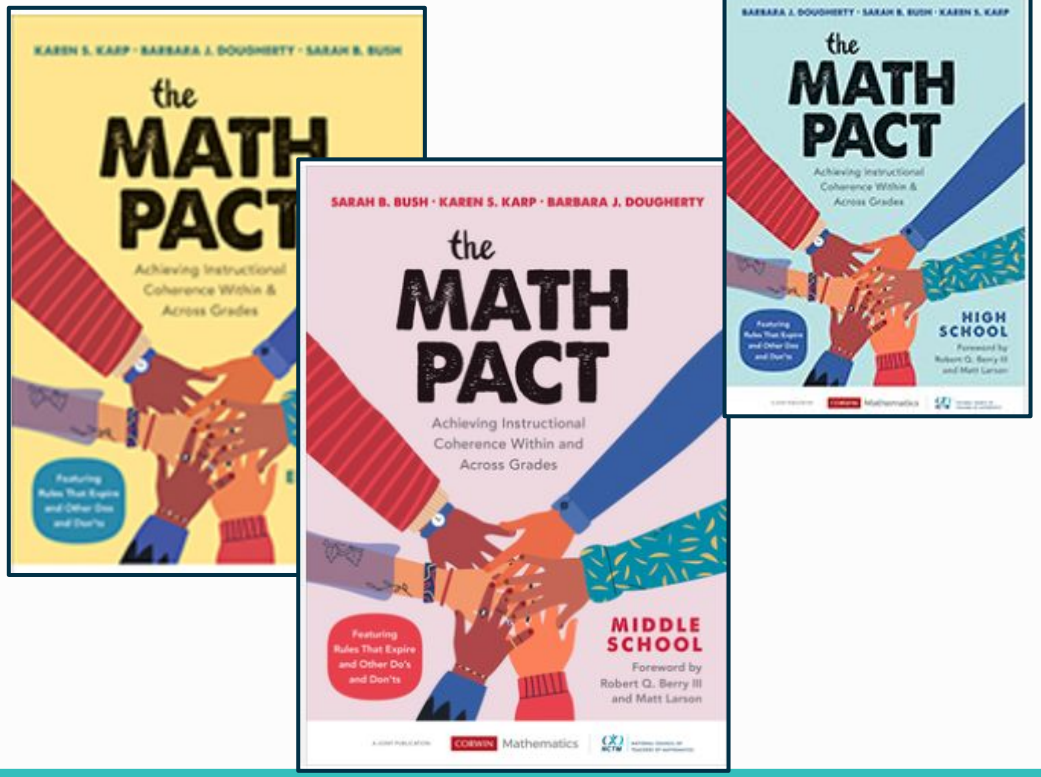
Expect and support ***all teachers*** in implementing high quality student-centered mathematics instruction.

Essential Conditions

Research shows that successful implementation:

- is a shared responsibility among stakeholders;
- is developmental and contextual;
- is systematically planned, systemic, and sustained;
- is meaningful, purposeful and focused on key priorities;
- involves learning opportunities that focus on enhancing professional practice and leadership capacity among educators
- involves a variety of learning opportunities by and for all education stakeholders including support staff, students, parents, school councils and community members; and
- involves change at both organizational and individual levels.


A Guide to Support Implementation: Essential Conditions
Policy Implementation
Curriculum Implementation
Priority Implementation
Program Implementation
Initiative Implementation


KAREN S. KARP · BARBARA J. DOUGHERTY · SARAH B. BUSH
the MATH PACT
Achieving Instructional Coherence Within & Across Grades
Featuring Rules That Expire and Other Dos and Don'ts
SARAH B. BUSH · KAREN S. KARP · BARBARA J. DOUGHERTY
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MIDDLE SCHOOL
Foreword by Robert Q. Berry III and Matt Larson
CORWIN Mathematics
BARBARA J. DOUGHERTY · SARAH B. BUSH · KAREN S. KARP
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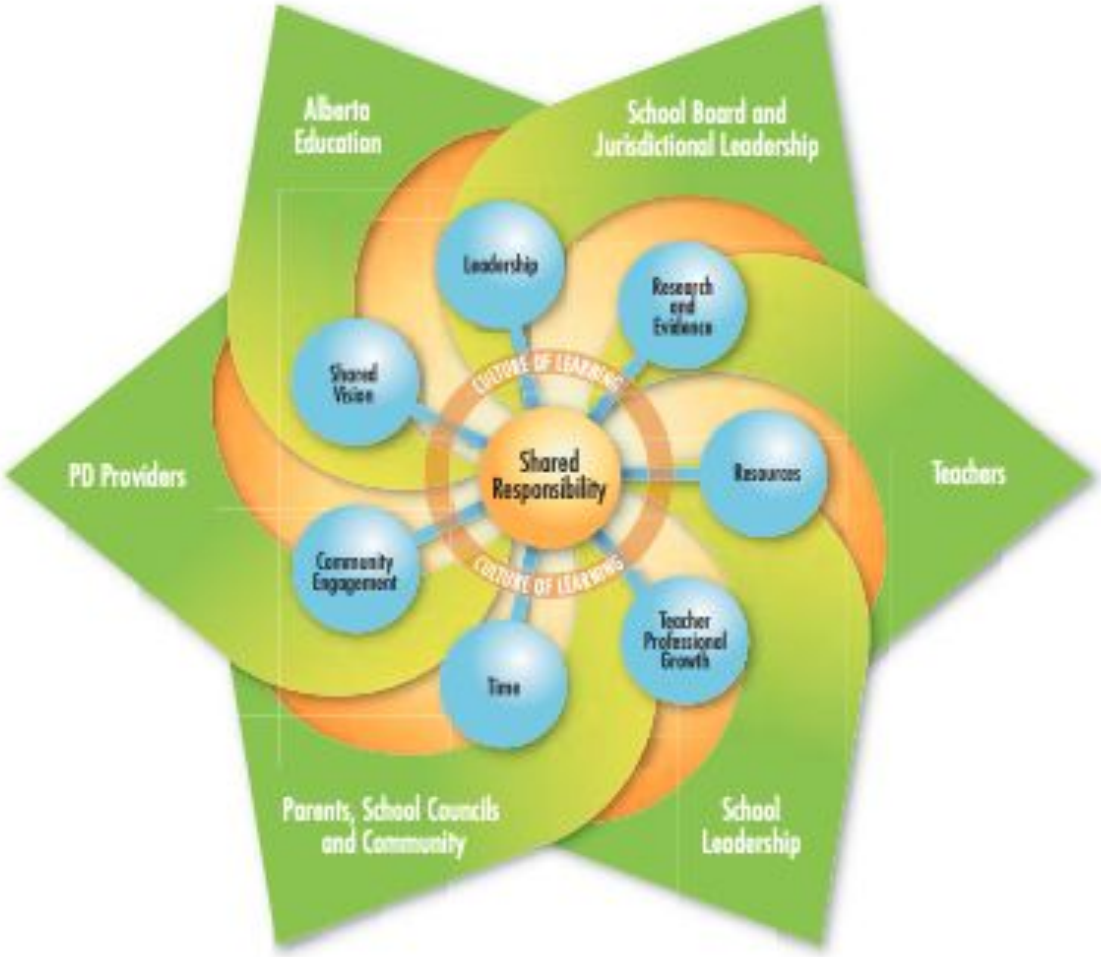
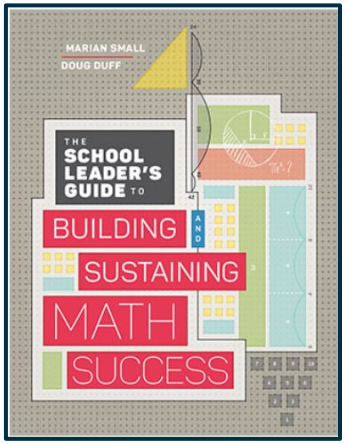
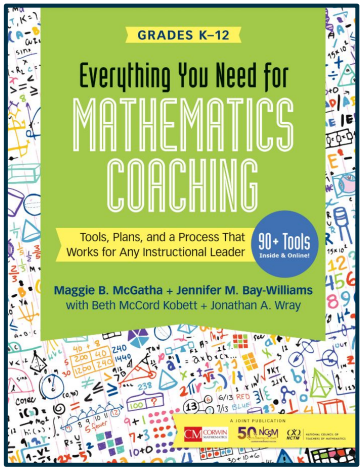
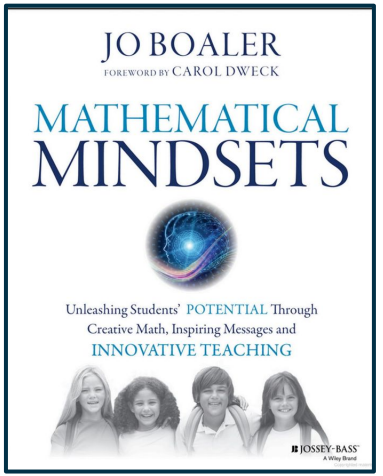
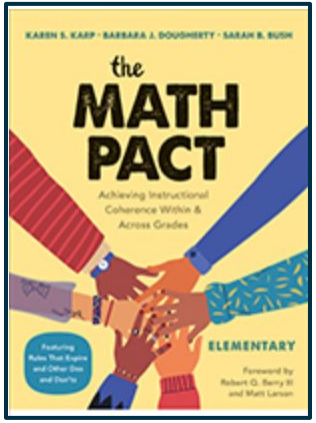
Mathematics


Alberta Education
School Board and Jurisdictional Leadership
PD Providers
Teachers
Parents, School Councils and Community
School Leadership
Leadership
Research and Evidence
Shared Vision
Shared Responsibility
Resources
Community Engagement
Teacher Professional Growth
Time
CULTURE OF LEARNING
CULTURE OF LEARNING


MARIAN SMALL
DOUG DUFF
THE SCHOOL LEADER'S GUIDE TO
BUILDING AND SUSTAINING MATH SUCCESS


GRADES K–12
Everything You Need for
MATHEMATICS COACHING
Tools, Plans, and a Process That Works for Any Instructional Leader
90+ Tools Inside & Online!
Maggie B. McGatha + Jennifer M. Bay-Williams
with Beth McCord Kobett + Jonathan A. Wray


JO BOALER
FOREWORD BY CAROL DWECK
MATHEMATICAL MINDSETS
Unleashing Students' POTENTIAL Through Creative Math, Inspiring Messages and INNOVATIVE TEACHING
JOSSEY-BASS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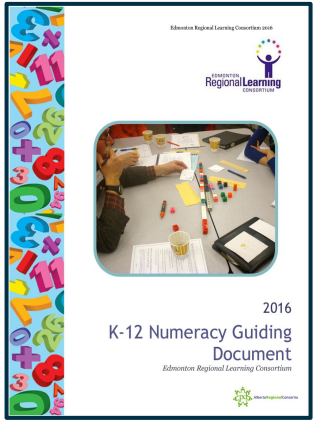
ELEMENTARY


Edmonton Regional Learning Consortium 2016
Edmonton Regional Learning Consortium
2016
K-12 Numeracy Guiding Document
Edmonton Regional Learning Consortium


A Guide to Support Implementation: Essential Conditions
Policy Implementation
Curriculum Implementation
Priority Implementation
Program Implementation
Initiative Implementation

** Must Reads **

Remember....

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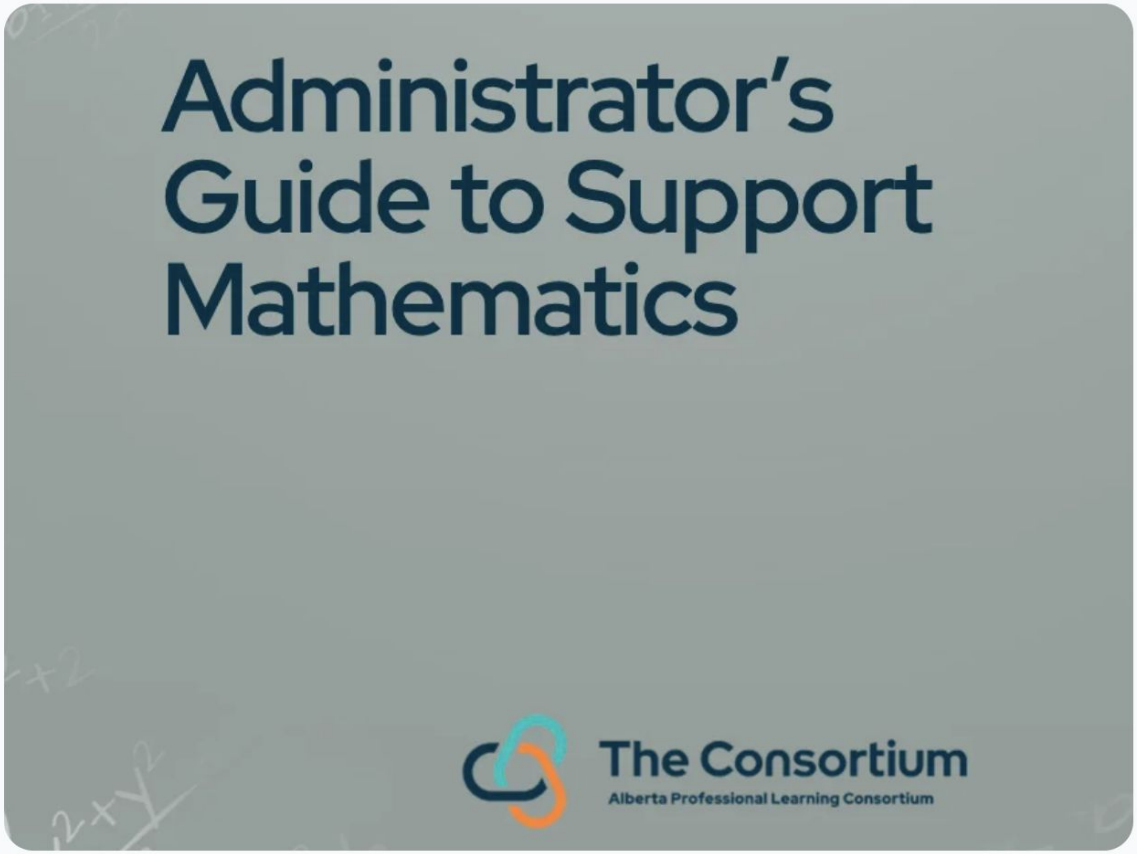
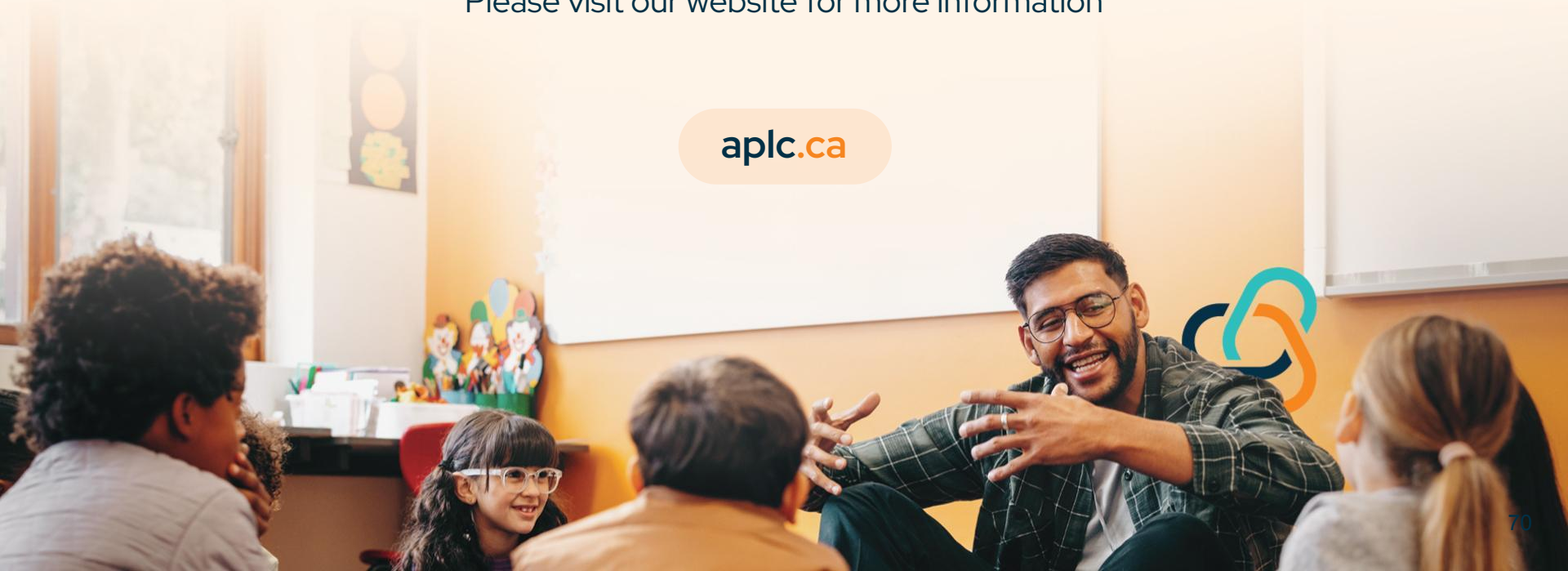


Administrator Look Fors in The Math Classroom

Thank you

Please visit our website for more information

aplc.ca



The Consortium

Alberta Professional Learning Consortium

Calgary Regional Consortium

Central Alberta Regional Consortium

Consortium provincial francophone

Edmonton Regional LEARNING CONSORTIUM

Learning Network Educational Services

Northwest NRLC REGIONAL LEARNING Consortium

Southern Alberta Professional Development Consortium