



New Math Curriculum: The First 90 Days

Land Acknowledgement

ADFO, CPCO and OPC would like to acknowledge the enduring presence of Indigenous peoples on the lands on which we gather today across Ontario and we thank the past, present and future caretakers of this land.

These lands are gathering points where age old ceremonies of celebration, initiation and renewal took place. The principals' associations are grateful to have the opportunity to work and learn on these lands in a community of sharing.

Please ensure the land acknowledgement is one that comes from the presenters heart which shares their own personal connection to the land they are situated on and invites participants to reflect on their own connection to the land they are on.

Ontario Leadership Framework



THE ONTARIO LEADERSHIP FRAMEWORK

A School and System Leader's Guide to Putting Ontario's Leadership Framework into Action

Revised: September 2013

Five Core Leadership Capacities

For the purpose of professional development, the ministry has identified five Core Leadership Capacities (CLCs). Each research-informed capacity is linked to a program, strategy or the province's current educational goals. These CLCs, described below, are embedded in all provincially approved professional learning and resources for school and system leaders. It is important to note that the CLCs need to work across domains rather than existing within a single domain of school leadership practice and they are supported by the use of the Personal Leadership Assessment.

1. Setting Goals

This capacity refers to working with others to help ensure that goals are strategic, specific, measurable, attainable, results-oriented and time-bound (SMART) and lead to improved teaching and learning.

2. Aligning Resources with Priorities

This capacity focuses on ensuring that financial, capital, human resources, structure and working conditions are aligned with the province's educational goals and program priorities.

3. Promoting Collaborative Learning Cultures
This capacity is about enabling schools, school communities and districts to work together and to learn from each other with a central focus on improved teaching quality and student achievement and well-being.

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4. Engaging in Continuous Improvement

This capacity focuses on building a culture of continuous improvement that will lead to improvements in student achievement and well-being.

Moving forward: an evolving process

The Ontario Leadership Framework continues to evolve as a result of ongoing research in Ontario and international jurisdictions, and ongoing consultation with a cross-section of stakeholders. Individuals and system leaders can provide feedback on the Framework to the ministry or to the Institute for Education Leadership through their professional associations.

NEW!

In its spring 2013, further research on the role of districts and district leaders was conducted by Research Council of Ontario through the Institute for Education Leadership with the Council of Ontario Districts. This research revealed changes to the System-level Leadership and District Education Framework, as well as the plan for the next cycle. In addition, there are research connections and recommendations in the report that are important for districts and district leaders to understand. The research findings provide advice for districts in reviewing their leadership development plans including recruitment processes.



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The Learning that we are about to embark upon today sits within

Promoting Collaborative Learning Cultures in the Ontario Leadership Framework-

This capacity is about enabling schools, school communities and districts to work together and to learn from each other with a central focus on improved teaching quality and student achievement and well-being.

Mindset

“Within an Indigenous worldview alternate answers and alternate solution strategies to a problem are not only recognized but valued for the wisdom that they share. Sharing is also an important part of an Indigenous worldview. A significant part of any relationship is seen to be the act of giving back of using the knowledge that is gained through relationships to strengthen those relationships and create new relationships. Knowledge is not to be sought for the sake of knowledge, but for the sake of how it can contribute to the wellbeing of the whole.”

Source: Russell, G.L. & Chernoff, E. J. (2013). The marginalisation of Indigenous students within school mathematics and the math wars: seeking resolutions within ethical spaces. *Mathematics Education Research Journal*, 25(1), 109-127

1. So how do we leverage the influence we have to maximize the implementation of this new curriculum? I'd like to challenge you to stay in the circle of influence for the remainder of this webinar. Up for the challenge?
2. Share Margaret Wheatley's quote. I love this quote as it pertains to education. And although Margaret Wheatley said this many years ago, it still resonates today after our experience with the Covid isolation and online classrooms this past spring.
3. If I could share some supportive beliefs and dynamics that this new curriculum is offering, I would highlight the following opportunities for you to also share with your staff.

The First 90 Days – Learning Goals

The slide contains a central diagram titled 'CIRCLE OF CONCERN'. It consists of three concentric circles. The outermost circle is yellow and labeled 'CIRCLE OF CONCERN'. The middle circle is green and labeled 'CIRCLE OF INFLUENCE'. The innermost circle is light green and labeled 'CIRCLE OF LEARNING'. Arrows point from the outer circle to the middle and inner circles, with labels: 'getting my hand in the game' (pointing to the middle circle), 'What do I need to know?' (pointing to the inner circle), and 'Where do I start?' (pointing to the inner circle). Below the diagram are three cartoon avatars of diverse people. A speech bubble from the woman on the left says: 'How do I learn and lead at the same time? What do I say?'. To the right is a large purple question mark graphic with the text: 'Evidence-based research – Next things to pay attention to other – Importance and Beauty'. Below the question mark is a table with three columns and three rows, labeled 'Notice', 'Engaging', and 'Reflecting'. The 'Notice' row contains the text: 'the chart. Does it remind you of anything?'. The 'Engaging' row contains the text: 'the strategies for confidence and Competence.'. The 'Reflecting' row contains the text: 'anchor charts in the classroom, modelling and highlighting during math'. To the right of the table is a cartoon man with a speech bubble saying: 'Whew! This is familiar! I can do this!'. At the bottom right are logos for 'LEADERSHIP IN ACTION' and 'PRINCIPAL ASSOCIATION OF TEXAS'.

Our work today will enhance your stance

This is the outline-

1. Mindset

Circle of influence

Circle of concern

--What do I need to know?

2. **Expert:** Evidence-based research – Next things to pay attention to other; Importance and beauty

--Where do I start?

3. SEL

Notice the chart

Notice that it looks like learning goals and success criteria (Phew! This is familiar! I can do this.)

Name the strategies for confidence and competence

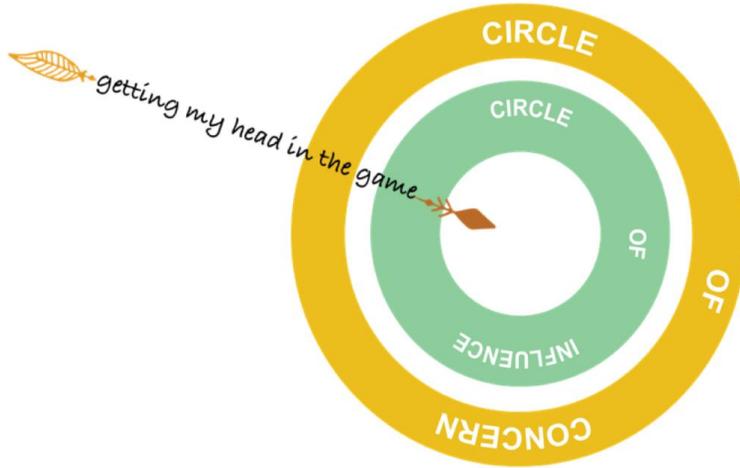
Note Anchor charts in the classroom (what do we see – hear – feel) Modelling and highlighting during math

--How do I lead?

4. Conversation Starters – How do I lead and learn at the same time? What do I say?

Chat box – use ideas to feed resources

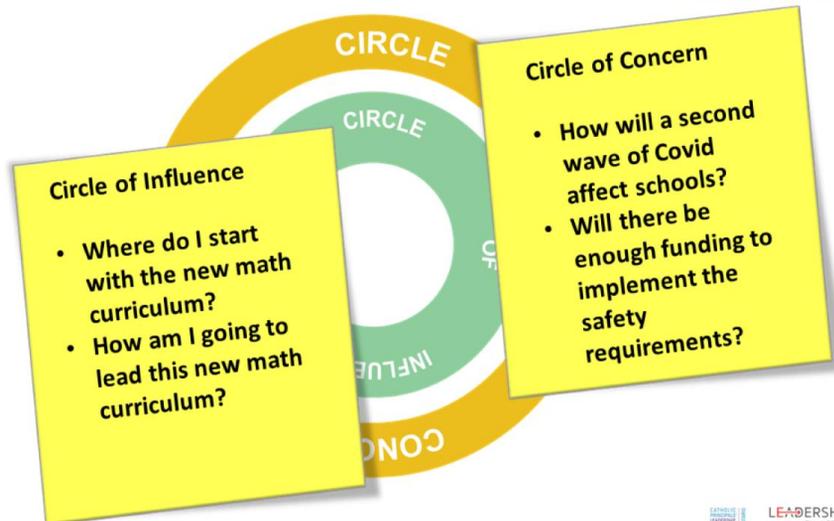
Mindset



List things I am juggling and trying to make sense of in education right now

- How will a second wave of Covid affect schools?
- Will there be enough funding to implement the safety requirements?
- Where do I start with the new math curriculum?
- How am I going to lead this new math curriculum?

1. Let's look at our own mindset at this moment and apply a little Stephen Covey exercise from his book "The 7 Habits of Highly Effective People".
 2. Take about 2 minutes to list everything on your phone or on a scrap piece of paper that you are juggling or thinking about right now within your role in education. For me, this includes things thinking about how a second wave of Covid will affect school, implementing a new math curriculum etc.
- "Covey in the time of covid"



1. Now that you've made that list, I'd like to ask you to look at it in a different way. Draw a circle (PPT image) on the centre of a page. Label it the circle of influence. In this section lies all the things we can do something about. Take a look at your list and determine which of your list can be added to your circle of influence. On mine it includes where to start with the new math curriculum and how to lead the implementation of the new curriculum.
2. Draw a second circle around the first circle (PPT image). Label it the circle of concern. In this section lies a wide range of concerns such as government funding for Covid safety measures, the possibility of another wave of Covid.
3. I would like to invite you to **share the items from your list in the circle of influence on mentimeter** in regards to math so that we can tailor our resources and future webinars to your needs

Mindset

Good leaders:

- are proactive people
- focus on issues within their circle of influence
- use their energy on things they can do something about and end up increasing their circle of influence

Reactive people:

- neglect issues under their control and influence
- focus on things they do not have influence over and as a result, their circle of influence shrinks



1. The key part of taking the time to draw out these circles and organize our thoughts into the sections is that the more we focus on our circle of influence, it helps us be more proactive “being responsible for our own lives.....our behaviour is a function of our decisions, not our conditions. Proactive people focus on issues within their circle of influence. They work on things they can do something about. The nature of their energy in doing this is positive, enlarging, and magnifying. They increase their Circle of Influence.
2. Reactive people tend to neglect those issues that are under their control and influence. Their focus is elsewhere and their Circle of Influence shrinks.
3. Many actions are part of the OLF. We might give a couple of examples.(Plusieurs de ces actions se retrouvent dans le CLO. Par exemple, le leadership appuie et encourage plutôt que de persuader et manipuler. Offrir du soutien selon les besoins et nous avons des discussions sur les pratiques innovatrices.)
4. How might you use this mindset or exercise with your colleagues and staff?
(add to the chat box)

Mindset

Opportunities available from the new curriculum:

- a) **Cross strand math opportunities and mathematical modelling**
- a) **One mark reporting for math**
- a) **Experimentation where we learn from our mistakes without the high stakes of EQAO**
- a) **Closing the gaps over a few years for the new curriculum content such as coding and financial literacy**
- a) **Explicit focus on Social Emotional Learning and Processes (SEL)**

a) Cross strand math opportunities and mathematical modelling given that we only need to report one mark for math.

b) experimentation where we learn from our mistakes without the high stakes of EQAO - We can PLAY with the new curriculum!!

c) closing the gaps over a few years (not necessarily this year for our intermediate students) for the new curriculum content such as coding and financial literacy

d) Explicit focus on Social Emotional Learning and Processes-so important given the Covid interruption of the school year.

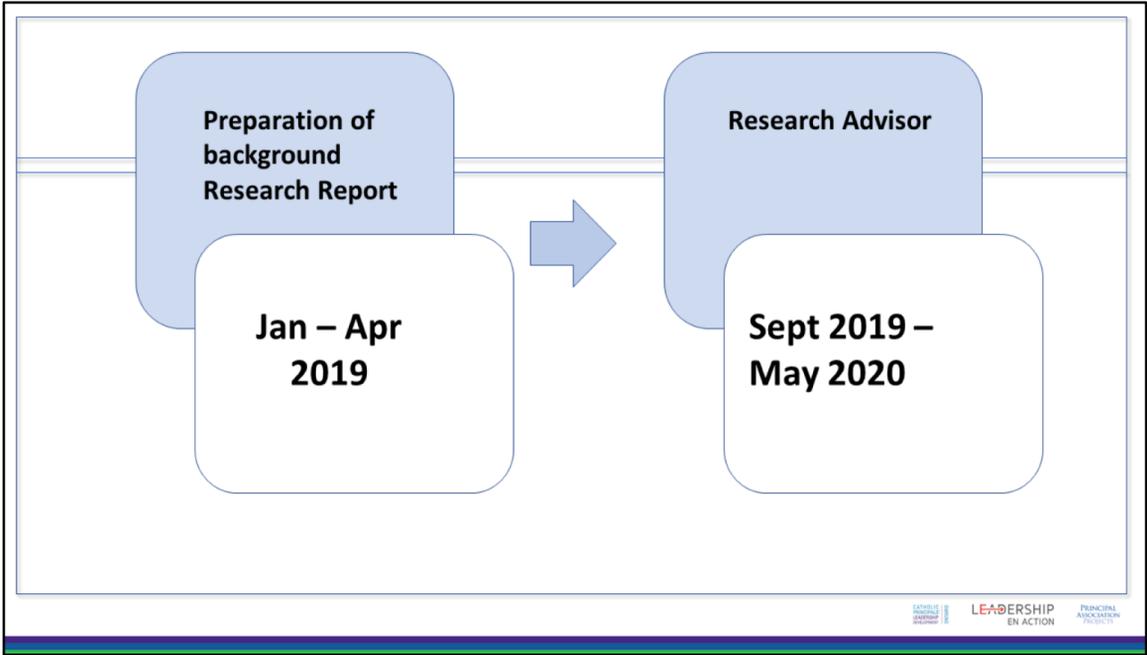
Chris Suurtamm, one of the head researchers behind the new math curriculum is here to share some of the highlights of the curriculum.

(INTRO>>>)

What do I need to know?



Chris Suurtaam's section.
Include the continuum?



Research Included

- **Analysis of curricula from Australian, BC, Québec, Singapore as well as research relevant to the curriculum of the Netherlands, Finland, UK and others related to relevant topics**
- **Current research literature from top international and Canadian mathematics education research journals (over 100 pages of annotated bibliography)**
- **Consultation with Ontario mathematics education researchers**
- **Focus groups with Ontario mathematics educators (Francophone & Anglophone)**

Let's not forget Ontario's current performance

- In international assessments, Canada is seen as a high performing country in mathematics – with scores well above average and with high equity as the differences in between-school performance and between high achievers is quite small.
- Within Canada, Ontario is seen as a high performing province. On the Pan Canadian Assessment Program (PCAP) Ontario has outperformed most other provinces in mathematics. Ontario scored 2nd highest (behind Québec). When comparing English-language school scores, Ontario ranked highest of all provinces.
- It is important to be sure we maintain what we do well.

Recommendations - Content

- **Include new research (e.g. learning trajectories, how concepts are developed, new areas, cross-strand and cross-curricular connections) in curriculum expectations**
- **Consider topics such as modelling, financial literacy and computational thinking within the context of students' own experiences**
- **Consider expanding understandings of spatial reasoning in the research**
- **Teachers will need support with new knowledge – learning continua; videos of what learning looks like; samples of student tasks & work; clickable glossary**

(e.g. Bruce & Flynn, 2019; Carpenter, Franke, Jacobs, Fennema, & Empson, 1998; Fuson, 2003; Geary & Van Marle, 2018; Voutsina, 2016; Suurtamm & Koch, 2014)

Thinking about sharing the context of students' own experiences- looking at the framework of Culturally Responsive and Relevant Pedagogy and capacity building required to take an asset-based approach to the lived realities of our students and families. Powerful TED Talk by Dr. Nicole West-Burns and thinking about the experiences of our students and challenge the participants with the question she asks- 'what is your metaphorical balloon'?

<https://www.youtube.com/watch?v=evndCfQ92s4&feature=youtu.be>

Algebraic Reasoning

- **Algebra as generalized arithmetic – symbols, equality, etc**
- **Patterns and relations**
- **Computational thinking**
- **Mathematical modelling**

Ontario has moved beyond the first view of algebra to include a great deal of work on patterning and algebra

Coding integrates symbols, relations, and logical thinking

Mathematical modelling goes a step further to help students understand uses of mathematics in our society

(e.g. Chimoni et al., 2018; Kaput, 2007; Kieran, Pang, Schifter & Ng, 2016)

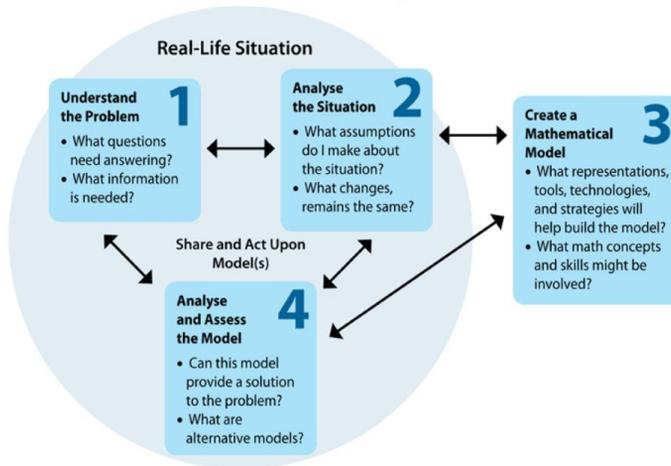
LEARNING
TECHNOLOGY
INTEGRATION

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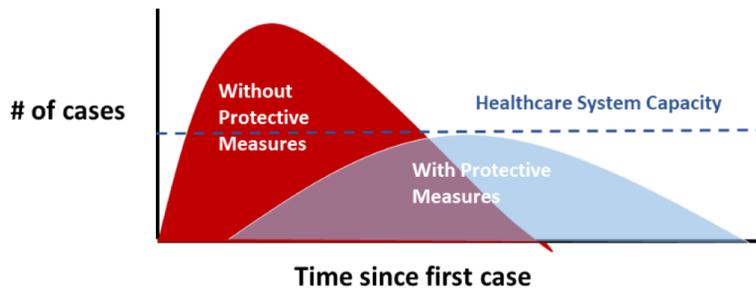
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Use as an example

The Process of Mathematical Modelling



Examples of Familiar Mathematical Models



Adapted from CDC / The Economist

C. Suurtamm

NY Times, March 19, 2020

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Examples of familiar Mathematical Models

Booking an airline ticket

A mathematical model is used to determine how many tickets should be sold for a flight

As we know – it is based on many assumptions
– and can only make predictions
(that may not work out)

(C. Suurtamm)



What might this look like?

Primary grades

Setting up a lemonade stand

This would involve gathering data and considering all of the variables related to setting up a lemonade stand and then determining the best price and time for selling the lemonade, the amount of ingredient required, and the location.

This would include topics in financial literacy, spatial sense, and working with the data.

(C. Suurtamm)

Primary example

What might this look like?

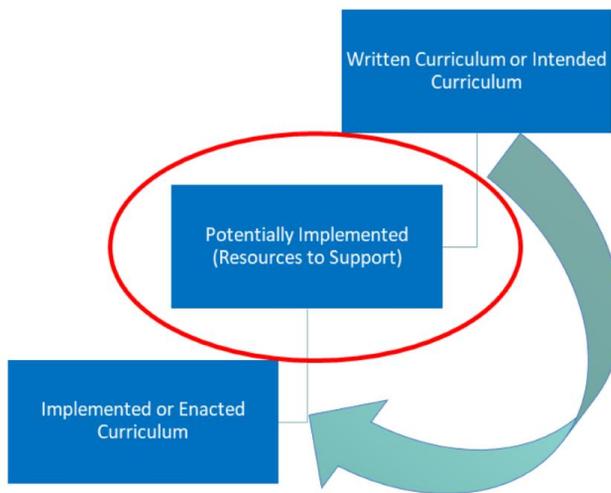
Junior or intermediate grades

Setting up a school newsletter as a fundraiser

There are many things to consider: selling subscriptions to the newspaper or making it free, selling advertising, timelines, etc. They might determine the cost of each ad by analyzing the ratios of cost to the area of the advertising space, and also consider what they think advertisers are willing to spend.

This would include topics such as number sense, work with ratios and proportion, and determining areas.

Primary example



(e.g. Cal & Thompson, 2014; Stein, Remillard, & Smith, 2007; Thompson, Huntley & Suurtamm, 2018)

Recommendations - Implementation

- **Implementation is a critical component of the curriculum and needs to be carefully planned.**
- **The curriculum should encourage a variety of pedagogical approaches.**
- **Developing math teacher knowledge in new content areas and areas that are based on new research is critical.**
- **Teachers need a variety of professional learning opportunities to address the range of new knowledge and support required for implementation.**
- **Teacher collaboration is key!**

(e.g. Campbell et al; 2016; Maher & Sullivan, 2016; Reilland & Heck, 2014)

Opportunity for participants to engage in the discussion of Anti-Black racism and Math through the research behind Culturally Responsive and Relevant Pedagogy and this framework as a reflective tool in the questions educators are asking about their own pedagogical approaches-

<https://cus.oise.utoronto.ca/UserFiles/File/CUS%20Framework.pdf>

In Summary

We need to support all (students, teachers and administrators) to be confident math learners.

Part of developing mathematical (and pedagogical) knowledge is the willingness to take risks, to try out new ideas, and to make adjustments.

Learning takes time and requires educators to listen to learners' thinking to recognize where they are and to help them continue their journey.

Where do we start? Social Emotional Learning

Notice the chart. Does it remind you of anything?

1. ~~~~	1. ~~~~	1. ~~~~
2. ~~~~	2. ~~~~	2. ~~~~
3. ~~~~	3. ~~~~	3. ~~~~



Whew!
This is familiar!
I can do this!

Engaging the strategies for confidence and Competence.

Reflecting anchor charts in the classroom, modelling and highlighting during math



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Where do we start? As administrators, we want to support our teachers to develop mathematical well-being, so they can in turn support their students develop mathematical well-being. Let's spend some time exploring how administrators might use this Social Emotional Learning area as an opportunity to leverage the new curriculum in these first early days of implementation.

Where do I start?

Social Emotional Learning

Throughout this grade, in order to promote a positive identity as a math learner, to foster well-being and the ability to learn, build resilience, and thrive, students will:

OVERALL EXPECTATION A1. apply, to the best of their ability, a variety of social-emotional learning skills to support their use of the mathematical processes and their learning in connection with the expectations in the other five strands of the mathematics curriculum		
To the best of their ability, students will learn to:	... as they apply the mathematical processes:	... so they can:
1. identify and manage emotions	<ul style="list-style-type: none"> problem solving: develop, select, and apply problem-solving strategies reasoning and proving: develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to justify thinking, make and investigate conjectures, and construct and defend arguments 	1. express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities
2. recognize sources of stress and cope with challenges	<ul style="list-style-type: none"> reflecting: demonstrate that as they solve problems, they are pausing, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal) 	2. work through challenging math problems, understanding that their resourcefulness in using various strategies to respond to stress is helping them build personal resilience
3. maintain positive motivation and perseverance	<ul style="list-style-type: none"> connecting: make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports) 	3. recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope
4. build relationships and communicate effectively	<ul style="list-style-type: none"> communicating: express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources as necessary, appropriate mathematical terminology, a variety of representations, and mathematical conventions 	4. work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practicing inclusivity – and in that way fostering healthy relationships
5. develop self-awareness and sense of identity	<ul style="list-style-type: none"> representing: select from and create a variety of representations of mathematical ideas (e.g., representations involving physical models, pictures, numbers, variables, graphs), and apply them to solve problems 	5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging
6. think critically and creatively	<ul style="list-style-type: none"> selecting tools and strategies: select and use a variety of concrete, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and to solve problems 	6. make connections between math and everyday contexts to help them make informed judgements and decisions



The Social Emotional Learning overview (refer to Strand overview – strand A chart), presents a chart that administrators can use as a framework for moving the learning forward with staff. It presents an easy to understand outline for making connections to what we already know and do, and embeds it in the context of mathematics.

All of these topics relate to areas we can already connect to, that may make for good starting points because they connect to the familiar. When we facilitate opportunities for our staff to make connections to the work they are already doing, it can help people find a starting point and feel a sense of calm when change can at times feel very difficult and overwhelming. An important item to note is that this work is carried out during our mathematics lessons. The Social Emotional Learning and math work in tandem with each other.

To the best of their ability, students will learn to:

1. identify and manage emotions
2. recognize sources of stress and cope with challenges
3. maintain positive motivation and perseverance
4. build relationships and communicate effectively
5. develop self-awareness and sense of identity
6. think critically and creatively

OVERALL EXPECTATION A1. apply to the best of their ability a variety of social-emotional learning skills to support their use of the mathematical processes and their learning in connection with the expectations in the other five strands of the mathematics curriculum

To the best of their ability, students will learn to:	as they apply the mathematical processes:	so they can:
1. identify and manage emotions	<ul style="list-style-type: none"> → selecting, developing, selecting, and applying problem-solving strategies → identifying and proving (justifying) and early reasoning skills (e.g., classification, definition of relationships, use of counter examples to justify thinking, make conjectures, compare, and contrast 2D and 3D geometry) 	1. express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities
2. recognize sources of stress and cope with challenges	<ul style="list-style-type: none"> → they demonstrate that as they solve problems, they are pausing, going back, and reworking their thinking to help clarify their understanding → comparing and adjusting strategies used, by explaining why they think that math are reasonable, by recording their thinking in a math journal 	2. work through challenging math problems, understanding that their perseverance in using various strategies to respond to stress is helping them build personal resilience
3. maintain positive motivation and perseverance	<ul style="list-style-type: none"> → they make connections among mathematical concepts, procedures, and representations, and make mathematical ideas to other contexts 	3. recognize that trying out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope
4. build relationships and communicate effectively	<ul style="list-style-type: none"> → they challenge, express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources in math, and appropriate mathematical terminology, a variety of representations, and mathematical conventions 	4. work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practicing inclusivity – and in that way building healthy relationships
5. develop self-awareness and sense of identity	<ul style="list-style-type: none"> → they select from and create a variety of representations of mathematical (e.g., representations involving physical models, pictures, numbers, variables, text, and apply them to solve problems 	5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging
6. think critically and creatively	<ul style="list-style-type: none"> → they look and strategize select and use a variety of concrete, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and solve problems. 	6. make connections between math and everyday contexts to help them make informed judgments and decisions

When you look at the first column, what does it remind you of? Did anyone else see the first column as Learning Goals? These goals should be taught throughout the year using a variety of lessons and in the context of tasks that highlight the mathematical processes. From these goals, we will co-construct success criteria. Our schools are already anchored in the work of learning goals and success criteria - ***this is a connect to what we already know and do***

... so they can:		
1. express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities		
2. work through challenging math problems, understanding that their resourcefulness in using various strategies to respond to stress is helping them build personal resilience		
3. recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope		
4. work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practising inclusivity – and in that way fostering healthy relationships		
5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging		
6. make connections between math and everyday contexts to help them make informed judgements and decisions		

To the best of their ability students will learn to:	... as they apply the mathematical processes:	... so they can:
1. identify and manage emotions	<ul style="list-style-type: none"> problem-solving, decision, stress, and apply problem-solving strategies reasoning and proving, develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples to justify thinking, make and highlight conjectures, and logical and algebraic arguments) reflecting, demonstrate that as they solve problems, they are paying, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their work is reasonable, by recording their thinking in a math journal) 	<ul style="list-style-type: none"> express and manage their feelings, and show understanding of the feelings of others, as they engage positively in mathematics activities work through challenging math problems, understanding that their resourcefulness in using various strategies to respond to stress is helping them build personal resilience
2. recognize sources of stress and cope with challenges	<ul style="list-style-type: none"> maintain positive motivation and perseverance connecting, make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports) 	<ul style="list-style-type: none"> recognize that testing out different approaches to problems and learning from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope
3. build relationships and communicate effectively	<ul style="list-style-type: none"> communicating, express and understand mathematical thinking, and engage mathematical arguments using everyday language, language resources of necessary appropriate mathematical terminology, a variety of representations, and mathematical connections 	<ul style="list-style-type: none"> work collaboratively on math problems – expressing their thinking, listening to the thinking of others, and practising inclusivity – and in that way fostering healthy relationships
4. develop self-awareness and sense of identity	<ul style="list-style-type: none"> representing, when faced and create a variety of representations of mathematics (e.g., representations involving physical models, pictures, numbers, words, graphs), and apply them to solve problems 	<ul style="list-style-type: none"> see themselves as capable math learners, and strengthen their sense of ownership of their learning, as part of their emerging sense of identity and belonging
5. think critically and creatively	<ul style="list-style-type: none"> selecting tools and strategies, select and use a variety of concepts, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and to solve problems 	<ul style="list-style-type: none"> make connections between math and everyday contexts to help them make informed judgements and decisions

When you look at this third column, what does this remind you of? Does anyone else see it as success criteria?

These items are not in any particular order and do not directly match the learning goals order either.

These 6 items/success criteria are already connected to much of the work we have already been looking at in our math professional learning communities.

Eg of the connections we can make here include many areas we are already working on provincially, including:

- #1 - self-regulation
- #2- resilience,
- #3-growth mindset,
- #4 – collaborative math talk, co-learning stance, caring relationships
- #5- self-efficacy in math, math is not a

gene, there is no such thing as a math person (everyone can do math), asset oriented (developing confidence)

→ #6 – connections to mathematical inquiry, cultural diversity connections

Our schools are already anchored in the work of learning goals and success criteria -
this is a connect to what we already know and do

... as they apply the mathematical processes:

- **problem solving:** develop, select, and apply problem-solving strategies
- **reasoning and proving:** develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to justify thinking, make and investigate conjectures, and construct and defend arguments
- **reflecting:** demonstrate that as they solve problems, they are pausing, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal)
- **connecting:** make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports)
- **communicating:** express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources as necessary, appropriate mathematical terminology, a variety of representations, and mathematical conventions
- **representing:** select from and create a variety of representations of mathematical ideas (e.g., representations involving physical models, pictures, numbers, variables, graphs), and apply them to solve problems
- **selecting tools and strategies:** select and use a variety of concrete, visual, and electronic learning tools and appropriate strategies to investigate mathematical ideas and to solve problems

To the best of their ability, students will learn to:	As they apply the mathematical processes:	... so they can:
1. identify and manage emotions	• problem solving: identify, select, and apply problem-solving strategies	1. express and manage their feelings, and show understanding of the feelings of others, as they engage in mathematics activities
2. recognize sources of stress and cope with challenges	• reasoning and proving: develop and apply reasoning skills (e.g., classification, recognition of relationships, use of counter-examples) to justify thinking, make and investigate conjectures, and construct and defend arguments	2. work through challenging math problems, understanding of their reasonableness in using various strategies to solve the stress of finding their best personal evidence
3. maintain positive motivation and perseverance	• reflecting: demonstrate that as they solve problems, they are pausing, looking back, and monitoring their thinking to help clarify their understanding (e.g., by comparing and adjusting strategies used, by explaining why they think their results are reasonable, by recording their thinking in a math journal)	3. recognize that trying out different approaches to problem-solving from mistakes is an important part of the learning process, and is aided by a sense of optimism and hope
4. build relationships and communicate effectively	• connecting: make connections among mathematical concepts, procedures, and representations, and relate mathematical ideas to other contexts (e.g., other curriculum areas, daily life, sports)	4. collaborate on math problems – expressing their thinking, listening to the thinking of others, and practicing ability – and in that way forming healthy relationships
5. develop self-awareness and sense of identity	• communicating: express and understand mathematical thinking, and engage in mathematical arguments using everyday language, language resources as necessary, appropriate mathematical terminology, a variety of representations, and mathematical conventions	5. see themselves as capable math learners, and strengthen their sense of ownership of their learning, in part of their growing sense of identity and belonging
6. think critically and creatively	• representing: select from and create a variety of representations of mathematical ideas (e.g., representations involving physical models, pictures, numbers, variables, graphs), and apply them to solve problems	6. make connections between math and everyday contexts, and help them make informed judgments and decisions



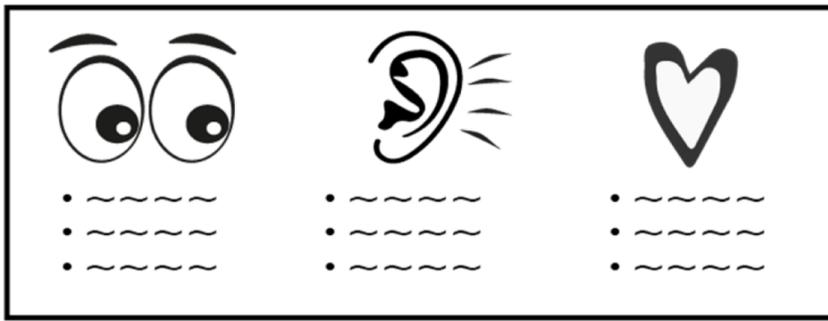
These mathematical processes remain the same and continue to be an integral part of a mathematics learning classroom.

Teachers can continue to look at these as the processes that drive the mathematics knowledge and the context for the social emotional learning goals.

Did it help to connect each of the columns to learning goals, success criteria and previous knowledge?

When we facilitate opportunities for our staff to make connections to the work they are already doing, it can help people find a starting point and feel a sense of calm when change can feel very difficult and overwhelming. How might you leverage this new learning with your staff and colleagues? Take a moment to note some ideas.

Highlighting Mathematical Well-Being for All



Questions to consider when thinking about mathematical well-being

1) When you look at the SEL framework/chart, think about how you might position mathematical wellbeing with your staff. Ask questions such as, “Where do we see ourselves in this learning environment?, What strategies can we use that are helpful to our own well-being and that can also serve as good role modelling for our students?”, “What are we doing that seems to be working?” “Where do we need further support?”. These are really big questions. How might you answer these together with your staff.

A strategy to consider:

Consider co-constructing success criteria anchor charts using headings such as “What does this look like? What does this sound like? What does this feel like?”. When we model this with our teachers, we can ask them, “how might you use this in your classroom?” “how might you authentically engage with the anchor charts?” “how

might you share these reflections across divisions and staff?”

As co-learners, educators co-construct these alongside students. This is an excellent and critical focus for the first 90 days of school as classroom conditions for learning are first being built. The anchor charts can remain up for the duration of the year and built upon as new learning and look-fors emerge

Thinking about Well-Being through a social justice framework and a great framework:<http://www.usingtheirwords.org/6elements/>

How do I lead?



So far, we've looked at creating a mindset that allows us to focus on our circle of influence and be proactive. We've also looked at some highlights of the new curriculum and what we need to know. We've looked at a possible starting point with the Social Emotional Learning strand. Now let's look at how we lead and what we ask.

How do I lead?

Developing a Co-Learning Stance

Co-Learning Stance involves a **willingness** to:

- Exchange learning and insight **within and between** roles;
- Engaged in focused conversations and co-construction of thinking about **Student learning**;
- Ask **thoughtful** questions and reflect;
- Consider what we might be willing to **give up** to move forward;
- Come to **common understandings** about instructional and collaborative practices.



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LEARNING
TECHNOLOGY
INTEGRATION

LEADERSHIP
IN ACTION

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How do I lead?

As we know, the curriculum is new for all of us. For this reason consider exploring a co-learning stance as an essential component for developing a professional learning community in mathematics. Ask questions such as, “What does it mean to be a co-learner?”,

“How do we intentionally create the conditions necessary to engage in new learning together?”,

“What components of well-being might have the greatest impact on our ability to feel a sense of belonging and take risks?”.

“What are classroom practices that support equity based mathematical teaching?”

Conversation between Lise & Frederick or Ana & Jennifer. Highlight “leaving your title at the door” and remembering that your title may be carried in by someone else, so speak last, ask open-ended questions to probe, be aware that your body language also speaks volumes.

What Are Classroom Practices That Support Equity-Based Mathematics Teaching?

How do I lead?



LEADERSHIP IN ACTION

Transport yourself to a primary classroom in your school. Kids are closely working together, sharing manipulatives and their ideas, one child doesn't want to do the activity and they are hiding under their desk. The noise is a steady hum (interruption of co-presenter) Wait! This is Covid era. The children are 1 meter apart and using their own manipulatives and one child is still under their desk not wanting to do the activity. Or better yet, the students are outside measuring the circumference of a tree and chasing butterflies. Imagine your own school's scenario. Modelling a co-learning stance, what are some thoughtful and reflective questions you can ask your primary teachers? (chat pod/jamboard/other)

Here are some examples to get you started:

What have you introduced as manipulatives?

How do you help students and identify their emotions during math?

How can we help students cope with challenges?

How might you leverage the SEL to address the student under the desk during math?

How might drawing upon...help these students in branching out?

Might there be a space to explore how we can learn math from the land?

How do I lead?



LEADERSHIP IN ACTION

Transport yourself to a junior classroom in your school.

The students are working in small groups spread around the room, some groups have a visible leader taking over while the other students in the group are disengaged, other groups are frustrated with the manipulatives available, some of the other students are working on articulating their thinking about how to represent large numbers.

(interruption of co-presenter) Wait! This is Covid era. The children are 1 meter apart and using their own manipulatives. Or better yet, they are outside estimating the distance between trees and being distracted by insects. Imagine your own school's scenario.

Modelling a co-learning stance, what are some thoughtful and reflective questions you can ask your junior teachers? (chat pod/jamboard/other)

Here are some examples to get you started:

What representations have your students used to represent large numbers?

What strategies do your students use when they are feeling challenged?

How might you leverage the SEL to address the discomfort?

How do I lead?



LEADERSHIP EN ACTION

Picture an Intermediate classroom

The students are working with elbow partners spread around the room, some students are wandering the classroom in search of manipulatives while the other person is working away at the problem, another set of partners are sharing the same manipulative they always use, some students are creating distractions to hide their discomfort.

(interruption of co-presenter) Wait! This is Covid era. The students no longer can work with elbow partners...they now have arm length partners! They are trying to manage their own manipulatives and even during covid they are creating distractions to hide their discomforts. Or better yet, they are outside trying to figure out how to measure the height of a tree and being distracted by insects. Imagine an intermediate classroom in your own school now.

Modelling a co-learning stance, what are some thoughtful and reflective questions you can ask your intermediate teachers? (chat pod/jamboard/other)

Here are some examples to get you started:

Why might some students be using the same manipulatives over and over again?

What strategies do they use when they are feeling challenged?

How might you leverage the SEL to address the discomfort?

Reflecting

What approaches might you consider moving forward in implementing the new math curriculum after this webinar?



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Just take a minute to quietly reflect on what approaches you might consider moving forward with teachers to facilitate the implementation in your own school. If you would like, share it with your texting buddy that you invited at the beginning of this webinar.

Cheers, Fears, Unclears about the new curriculum



Jamboard



Your participation will inform our next webinars, professional learning networks and resources! Please add your ideas to the jamboard. Blue is for cheers, yellow for fears and pink for unclears.

Nadine....advertise what is next to come! - including SMHO webinars (connection to SEL)

Resources to help start the discussion and support teachers with the new math curriculum

Resources



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Next steps



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