

Leading Together

The SMTS, SELU and SPDU presents ...

#SUM2017

October 23-24, 2017
TCU Place, Saskatoon



Saskatchewan
Mathematics
Teachers'
Society



SASKATCHEWAN EDUCATIONAL LEADERSHIP UNIT



AFFILIATE
NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS

Platinum Exhibitors



NELSON

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This event is organized by the

SMTS – Saskatchewan Mathematics Teachers' Society
SPDU – Saskatchewan Professional Development Unit
SELU – Saskatchewan Educational Leadership Unit

in partnership with the Saskatchewan Ministry of Education

SUM Conference Advisory Committee

Jennifer Brokofsky

Saskatoon Public School Division

Sheila Cunningham

Saskatchewan Rivers School Division

Ed Doolittle

First Nations University of Canada

Michelle Naidu

Saskatchewan Professional Development Unit

Patricia Prowse

Saskatchewan Educational Leadership Unit

Don Rempel

North East School Division

Gale Russell

University of Regina

Cindy Smith

Good Spirit School Division

Wendy Watrin

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Saskatchewan

Representative

Egan Chernoff

University of Regina

Representative

Gale Russell

Agenda

October 23

8:00 - 8:45 a.m.	Registration
8:45 - 9:45 a.m.	Keynote Speaker: Steve Leinwand – Practical Suggestions for Building a Powerful and Professional 2017-18 To-Do List
9:45 - 10:00 a.m.	Break
10:00 a.m. – 12:00 p.m.	Featured Speakers
12:00 - 1:15 p.m.	Lunch
1:15 - 2:15 p.m.	Concurrent Sessions
2:15 - 2:30 p.m.	Break
2:30 - 3:30 p.m.	Concurrent Sessions

October 24

8:15 - 9:00 a.m.	Registration
9:00 - 10:00 a.m.	Keynote Speaker: Lisa Lunney Borden – The Role of Mathematics Education in Reconciliation
10:00 - 10:15 a.m.	Break
10:15 a.m. - 12:15 p.m.	Featured Speakers
12:15 - 1:00 p.m.	Lunch
1:00 - 2:00 p.m.	Concurrent Sessions
2:10 - 3:10 p.m.	Concurrent Sessions
3:20 - 3:40 p.m.	Closing Remarks

Session Schedule and Room Assignments

Session/Room	Salon A	Salon B	Salon C
Monday, October 23			
8:00 - 8:45			
8:45 - 9:45	Practical Suggestions for Building a Powerful and Professional 2017-18 To-Do List Steve Leinwand		
9:45 - 10:00			
10:00 - 12:00	Proving the Leadership Necessary for Making Mathematics Work for All Students (Part 1) Steve Leinwand L	Our Ways of Knowing: Teaching Math With Verbs and Space Lisa Lunney Borden G	Mathematics: Philosophically (and Otherwise) Speaking Gale Russell G
12:00 - 1:15			
1:15 - 2:15	Five Practical Strategies for Making Math Far More Accessible for our Students Steve Leinwand L	Examining the Levels of Discourse to Enhance Number Talks Denise Smith E, L	Sketchnoting in the Math Classroom Heidi Soares S
2:15 - 2:30			
2:30 - 3:30	Memory Through Meaning Jamie Fraser E	Let's Verbify and Spatialize Multiplication and Division! Lisa Lunney Borden E	Triangulation of Math Data Sandra Moen M
3:30 - 4:00	SMTS AGM		

L – Leadership
 E – Elementary
 M – Middle Level
 S – Secondary
 G – General

Salon D

Gallery A

Gallery B

Gallery C

Gallery D

Check in and registration

Salon D	Gallery A	Gallery B	Gallery C	Gallery D
Check in and registration				
Break				
A Crash Course in ECUR 312 (Methods in Elementary Mathematics) Egan Chernoff G, E, L	Getting to the Math in a Professional Learning Community Kristin Gray E, M, L	Exploring and Using the Desmos Activity Builder Glenn Waddell G		
Lunch				
Planning to Teach in Collaborative Classrooms Nat Banting, Ilona Vashchyshyn M, S	Getting on the Same Page About Math Instruction Cindy Smith L	Hands on First Nations, Métis and Inuit Math Sharon Meyer E	The Mathematics of Indigenous Games of Chance Edward Doolittle M, S	Meeting Students Where They Are at on the Math Pathway Cathy Hill, Nelson E, M
Break				
Saskatoon Public Schools: Visions of Ambitious Teaching David Earl M, S	Structures for Differentiating in Middle Years Mathematics Kirsten Dyck, Megan Weisbrod M	Desmos and the Curriculum Tristyne Kohle S, L	Non-Routine Cognitive Tasks Bryan Penfound M, S	Grade 9 First Nations Statistics and Probability Claire McTavish S

Session/Room	Salon A	Salon B	Salon C
Tuesday, October 24			
8:15 - 9:00			
9:00 - 10:00	The Role of Mathematics Education in Reconciliation Lisa Lunney Borden		
10:00 - 10:15			
10:15 - 12:15	Proving the Leadership Necessary for Making Mathematics Work for All Students (Part 2) Steve Leinwand L	My Elders Were Mathematicians Too: The Value of Culturally-Based Inquiry Lisa Lunney Borden G	If Order Matters, the Question Will Say So Gale Russell S
12:15 - 1:00			
1:00 - 2:00	Planning for Inclusive Math Instruction Reanna Daniels E	Let's Verbify and Spatialize Early Number and Operation! Lisa Lunney Borden E	The Truth and Reconciliation Commission of Canada's 10th Call to Action: Develop Culturally Appropriate Curricula Glen Aikenhead G
2:10 - 3:10	Star-Blanket Math Edward Doolittle M, S	What's Going On With the Provincial Math Outcome? Katie White E, M, S, L	Formative Assessment Techniques in Math (FACTs) Sharon Harvey, Kristen Windrim M, S
3:20 - 3:40			

L – Leadership
E – Elementary
M – Middle Level
S – Secondary
G – General

Salon D

Gallery A

Gallery B

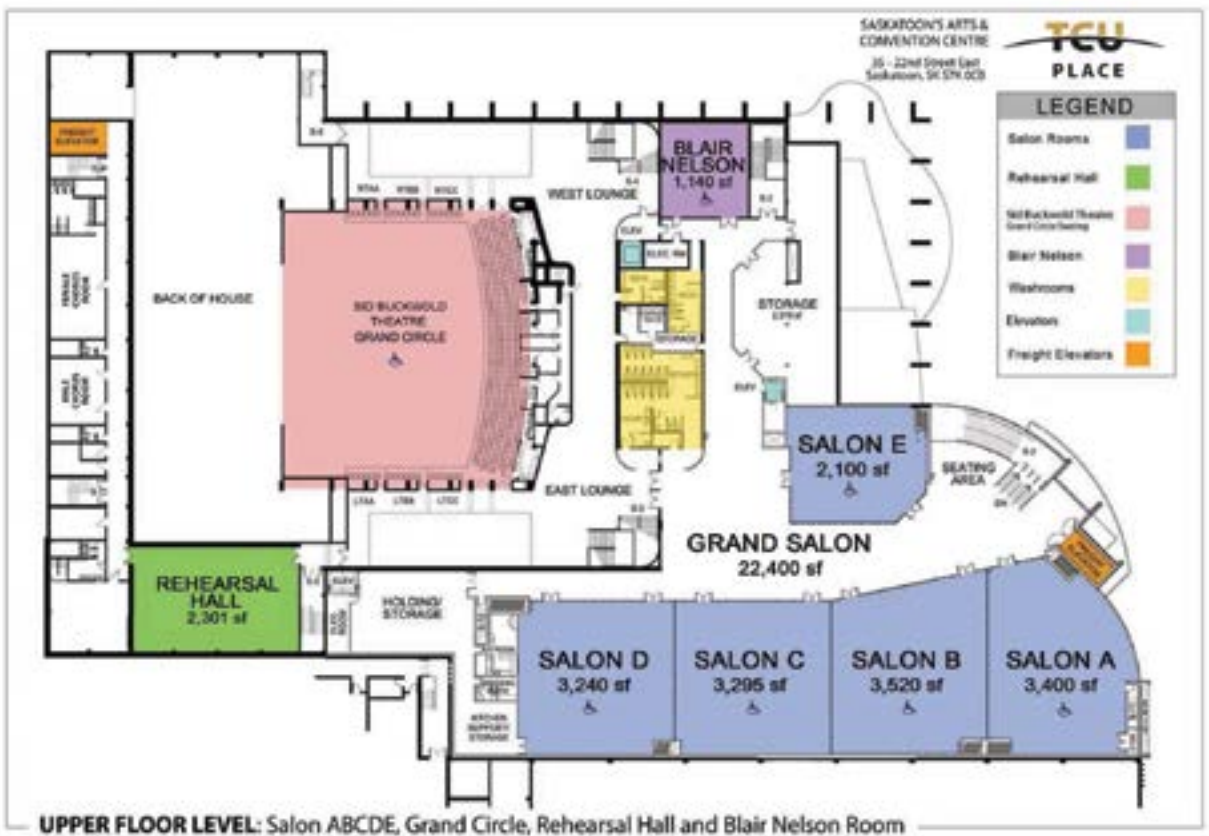
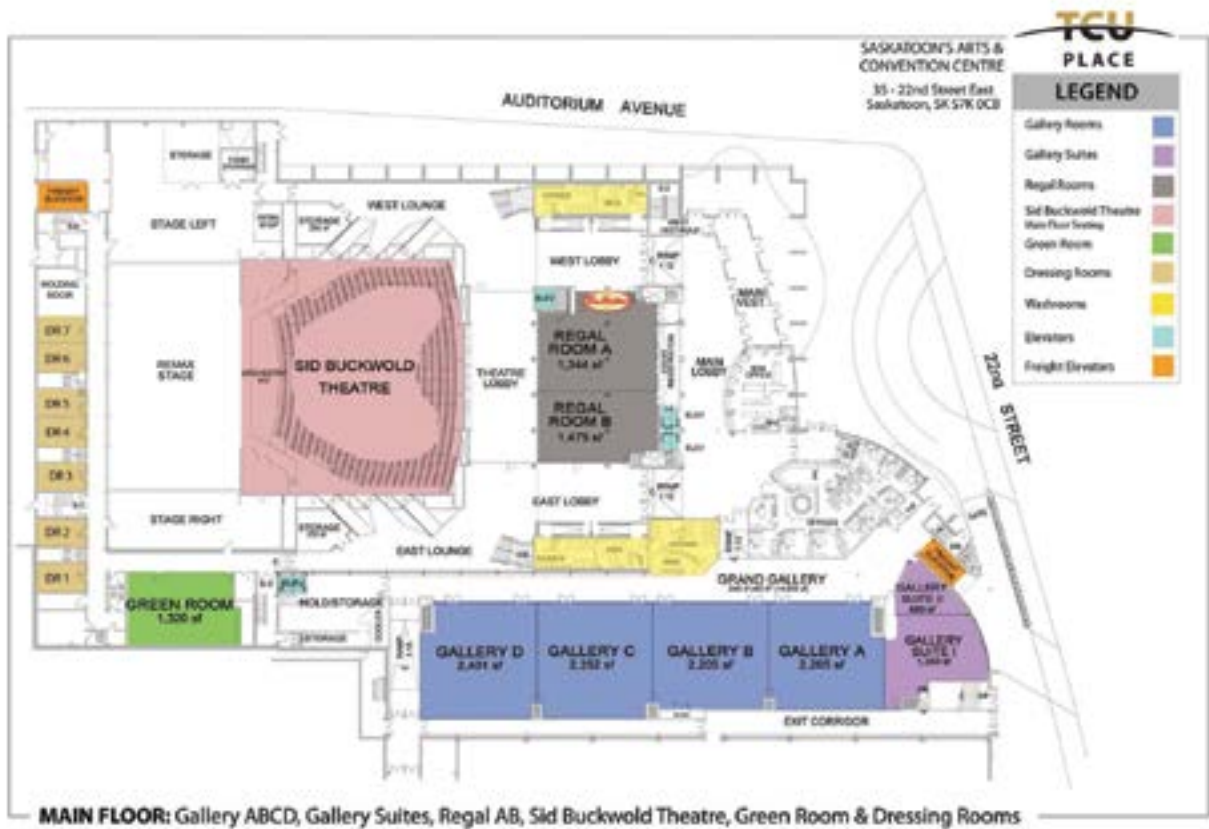
Gallery C

Gallery D

Registration

Registration				
Break				
The Sky Was Falling! The Sky Was Falling! Egan Chernoff G	Student Thinking at the Center Kristin Gray E, M, L	Creating With Desmos Activity Builder Glenn Waddell G		
Lunch				
Wiring Brain Research With Mathematical Games Jennifer Brokofsky E	Sure They're Solving, But are They Thinking? Alayne Armstrong M, S	The Highs and Lows of Technology in the Mathematics Classroom Sandra Baldwin, Lindsay Shaw S		
La strategies des 3P en mathématiques Stacey Zbeetnoff E, M	Using Games to Support Mathematical Fluency in Middle Years Kirsten Dyck, Megan Weisbrod M	Popsicle Stick Math Lana Steiner E, M		
Closing Remarks				

TCU Place Floor Plans



Keynote Speaker

Monday, October 23

8:45 - 9:45 a.m.

Salon ABC

Practical Suggestions for Building a Powerful and Professional 2017-18 To-Do List

Steve Leinwand

This fast-paced and example-laden pep-talk will discuss and model a set of instructional shifts that NCTM's mathematical teaching practices and the quest for more effective instruction require us to consider in order to enhance our teaching and our students' learning.

Featured Speakers

Monday, October 23

10:00 a.m. - 12:00 p.m.

Salon A Ballroom

Proving the Leadership Necessary for Making Mathematics Work for All Students (Part 1)

Steve Leinwand

We know that effective programs of K-12 mathematics require informed and effective leadership. This part one of a two-part series of workshops will focus on specific understandings that every mathematics leader needs to have about effective mathematics programs, with a focus on high-quality instruction, to be in a position to advocate for and support such programs.

Salon B Ballroom

Our Ways of Knowing: Teaching Math With Verbs and Space

Lisa Lunney Borden

In this presentation Lisa will share a model for considering ways in which Indigenous languages, community values, ways of knowing and cultural connections can impact mathematics learning for Indigenous learners. Lisa will go more deeply into the pedagogical implications of this model that are linked to the ways of knowing that emerge from an understanding of the structure of Indigenous languages. We will engage in tasks that highlight the value of verbifying and spatializing mathematics teaching and learning. Examples will be drawn from K-12 to show how these approaches span all levels.

Mathematics: Philosophically (and Otherwise) Speaking

Gale Russell

What is mathematics? Where is mathematics? What is “doing” mathematics? This session will ponder these and many other questions, examining our beliefs about mathematics and their origins, as well as considering what else mathematics might or could be. The many different philosophies of mathematics will be discussed as we work towards positioning mathematics within society today and within our classrooms.

A Crash Course in ECUR 312 (Methods in Elementary Mathematics)

Egan Chernoff

Have you ever overheard a relatively new elementary school math teacher talking about Gordon Ramsay's Kitchen Nightmares, The Matrix, or perhaps mumbling something about having been part of a detox centre for answer junkies? Well, I'm the one to blame! Having taught nearly 1500 future elementary (and high) school math teachers over the last decade here in Saskatchewan, the purpose of this session is to share with attendees the central tenets of my Methods in Elementary Mathematics course. In the interest of full disclosure, you may have to write a math test if you attend this session; and, if this bothers you, even in the slightest, please attend.

Getting to the Math in a Professional Learning Community

Kristin Gray

How can professional learning communities do the deep and vulnerable work of learning math together? If we want our classrooms to be spaces filled with risk taking, vibrant discourse and authentic learning, we need to engage in these practices ourselves. This session will focus on the use of a Learning Lab PLC structure and tasks from Illustrative Mathematics free curriculum to anchor collaborative teacher groups in learning and communicating deep math understanding.

Exploring and Using the Desmos Activity Builder

Glenn Waddell

We will explore and use Desmos lessons that are challenging, thought-provoking and require learners to engage deeply with mathematics at all levels (elementary, middle and high school). We will work with best practices of content creation and uncover what takes an activity from blah to thought-provoking. At the end of this session, you will have the knowledge and skills to use the Activity Builder and Teacher.Desmos.com to create mathematical conversations in class.

Concurrent Sessions

Monday, October 23

1:15 - 2:15 p.m

Salon A Ballroom

Five Practical Strategies for Making Math Far More Accessible for Our Students

Steve Leinwand

This session will model a set of highly accessible and research-affirmed instructional strategies to make math far more accessible to our students. Our focus will be on the why and how of cumulative review, alternative approaches, multiple representations and embedding math in context.

Salon B Ballroom

Examining the Levels of Discourse to Enhance Number Talks

Denise Smith

Teachers will learn how to build upon their number talk routines by examining the levels of discourse to create number talk lessons that allow their students to investigate and build a deeper understanding of the mathematics behind the strategies.

Salon C Ballroom

Sketchnoting in the Math Classroom

Heidi Soares

This session is an introduction to sketchnoting and its application in the mathematics classroom. If you have a hard time explaining mathematical concepts using words alone, you should consider sketchnoting! Sketchnotes are visual notes that combine words, drawings, doodles, symbols, icons, frames, bullets and other visual elements to create and express meaning. Sketchnotes of Saskatchewan math foundations curricula will be provided as an example.

Salon D Ballroom

Planning to Teach in Collaborative Classrooms

Nat Banting, Ilona Vashchysyn

In this session, participants will experience practical ways in which teachers can anticipate and improvise with the collaborative activity of students. Through this experience, we will share a process of lesson design that we have found to be particularly useful in preparing to teach mathematics lessons in collaborative settings.

Getting on the Same Page About Math Instruction

Cindy Smith

In collaboration with educators from across the province, Good Spirit School Division has developed a supporting document for mathematics designed to mirror the SASKREADS resource. The document aims to provide a common framework for understanding what good math instruction looks like. The document is based on current research from John Hattie, Jo Boaler, the National Math Panel, NCTM, NCII and others.

Join in the discussion about how this document is currently being used in Good Spirit School Division and in other locations around the province. This is a true collaborative effort and open source document, so bring your editing pen. The long-term goal is to create consistency around what administrators and supervisors should be supporting and looking for in terms of math instruction as well as focusing on specific high-impact practices and providing support and resources for those practices for teachers. Additional goals are to make the criteria transparent for teachers and to develop a shared understanding of the most promising practices for math instruction.

This work will help support the Provincial Math Rubric, which is part of the Education Sector Plan that will be initiated in the fall of 2018.

Hands-On First Nations, Métis and Inuit Math

Sharon Meyer

Come and learn some traditional teachings that is math! Moss bags, parfleche, birch bark biting, clothes making, loom beading ... it's all about the math! Join in reflecting how some traditional items can be used in your classroom to further understand math from an Indigenous perspective.

The Mathematics of Indigenous Games of Chance

Edward Doolittle

Games of chance in Indigenous cultures can serve as a source of mathematical concepts in probability and statistics. However it is easy to overlook some of the more subtle aspects of the games. In this talk, Edward will give several examples of Indigenous games of chance and will show how they can be used to model both easy and difficult questions in probability and statistics such as symmetry in probability, binomial distributions, stability, random walks and Markov chains. The Peach Stone Bowl Game will be analyzed in depth, showing surprising connections between culture and the mathematical consequences of the rules of the game.

Meeting Students Where They Are at on the Math Pathway

Cathy Hill

Research has shown that one of the greatest impacts teachers can have on students is to teach them starting with what they already know. This session will provide teachers the tools needed to understand where students are in their math journey and the impact of meeting and teaching them from where they are. Based on research on how students learn developmentally, teachers will be able to pinpoint where students are on the trajectory, identify gaps and “high fliers” and explore strategies to meet and teach all students from where they are.

2:30 – 3:30

Salon A Ballroom

Memory Through Meaning

Jamie Fraser

This session will explore foundational big ideas in early number (subitizing, cardinality, hierarchical inclusion, unitizing, compensation and equivalence) that when understood deeply lead to fluency in decomposition of number and flexible procedural proficiency. We will watch videos of children grappling with these ideas; play games, explore investigations with concrete materials (including rekenrek) and read stories that create context for construction. Participants will leave with a host of handouts that they can use in their primary classrooms the next day.

Salon B Ballroom

Let's Verbify and Spatialize Multiplication and Division!

Lisa Lunney Borden

Come and explore some ways to verbify and spatialize the development of multiplication and division concepts. I will invite participants to develop multiplication facts with ten frames, square colour tiles, Cuisenaire rods and more. We will investigate factors through an active and spatial approach and show how this can extend to new concepts. We will discuss why a hands-on and active approach is essential for some students and beneficial for all.

Salon C Ballroom

Triangulation of Math Data

Sandra Moen

The process of using three data points to inform teacher next steps, student next steps and for achievement of goals in math class is sound assessment practice. We will discuss some ideas of how to collect and organize the data.

Salon D Ballroom

Saskatoon Public Schools: Visions of Ambitious Teaching

David Earl

This session, designed for both school leaders and teachers, is led by a team of Saskatoon Public School educators who will focus on answering the questions: What does ambitious teaching look and sound like? Where do I find hands-on tasks? How do I effectively lead mathematics teaching in my school? How do I incorporate these tasks into my instruction?

A lesson plan template will be modelled and attendees will experience a task in which participants are intrinsically motivated to reason mathematically and communicate their reasoning with one another.

Participants will be provided with a resource package of games that develop computational fluency, a list of web links to find “low floor, high ceiling” tasks and a lesson plan template.

Structures for Differentiating in Middle Years Mathematics

Kirsten Dyck and Megan Weisbrod

We will examine opportunities for differentiation within a middle years math classroom. Participants will receive an overview of one possible structure that incorporates pre-skills, responsive instruction and purposeful feedback to address student need. This structure is outcome-based and is focused on targeted student learning without creating individualized programs.

Desmos and the Curriculum

Tristyne Kohle

As a first year teacher, one of my favorite tools in university has quickly become an indispensable tool in my classroom. Desmos is so much more than a graphing calculator! Using Desmos has enabled me to engage my students while increasing their conceptual understanding. Join me in exploring where and how I use Desmos to achieve outcomes across all three strands and for Grade 10 through Calculus.

Non-Routine Cognitive Tasks

Bryan Penfound

Often in mathematics class, we expect students to perform routine cognitive tasks (simplify, solve, evaluate or calculate). In this session we will explore two non-routine cognitive tasks and see how we might be able to expand our vocabulary to include more student actions such as predict, estimate, debate or generalize. Attendees are asked to bring a laptop or tablet as Desmos may be used for modelling purposes.

Grade 9 First Nations Statistics and Probability

Claire McTavish

In the last few years, resources have been created and put together by a team of people from Greater Saskatoon Catholic Schools that can be used to teach and assess outcome SP9.4 in the Grade 9 math curriculum. In this outcome students are asked to “research and present how First Nations and Métis peoples, past and present, envision, represent and make use of probability and statistics”. Come and see our interpretation of this outcome and get resources that are ready to use in your classroom!

Keynote Speaker

Tuesday, October 24

9:00 – 10:00 a.m.

Salon ABC

The Role of Mathematics Education in Reconciliation

Lisa Lunney Borden

The 2015 Truth and Reconciliation Commission of Canada's final report includes Calls to Action in response to the horrors of residential schools for Aboriginal Canadians that are focused on establishing renewed relationships between non-Aboriginal and Aboriginal Canadians to "restore what must be restored, repair what must be repaired, and return what must be returned" (2015, p. 6). The Truth and Reconciliation Commission of Canada names the education system as having an essential role in repairing the damages caused by residential schools. In this keynote, Lisa will reflect on her 22-year career as a teacher and researcher working in Indigenous communities, primarily Mi'kmaw communities, to explore the role of mathematics education in reconciliation. Lisa will share stories of hope and healing that have emerged through the Show Me Your Math program, inquiry projects, outreach programs and teacher professional learning that give insights into how mathematics can aid in reconciliation.

Featured Speakers

Tuesday, October 24

10:15 a.m. - 12:15 p.m.

Salon A Ballroom

Proving the Leadership Necessary for Making Mathematics Work for All Students (Part 2)

Steve Leinwand

We know that effective programs of K-12 mathematics require informed and effective leadership. This part two of a two-part series of workshops will focus on specific strategies and initiatives that every mathematics leader needs to establish, nurture and monitor to ensure that the effective mathematics programs discussed during Part 1 are available to all students in every school. We'll take a particular look at a range of collaborative structures that reduce professional isolation and support professional growth.

Salon B Ballroom

My Elders Were Mathematicians Too: The Value of Culturally-Based Inquiry

Lisa Lunney Borden

In this presentation Lisa will share the story of Show Me Your Math, a program that invites Indigenous students in Atlantic Canada to explore the mathematics that are inherent in community ways of knowing, being and doing. Lisa will share the history of this program, how it has changed overtime to focus more on

inquiry and how it might be developed in other regions. We will explore examples of projects that have been completed, examine the benefits of these projects and discuss how such projects help to restore, reclaim and return community knowledge that has been eroded by colonialism.

Salon C Ballroom

If Order Matters, the Question Will Say So

Gale Russell

This session will take participants through a series of tasks that explore various topics found in high school mathematics related to combinatorics. Starting from building two-coloured towers, this session will explore notions of permutations, combinations, and ultimately, whether “Does order matter?” is the question we really should be asking.

Salon D Ballroom

The Sky Was Falling! The Sky Was Falling!

Egan Chernoff

Since 2011, the teaching and learning of mathematics has been a staple of local, provincial and national media coverage (newspapers, radio, television and social media). This story has legs because, well, the sky was falling! Looking back (and to new PISA results) was the sky really falling? The purpose of this session is to provide an extremely thorough, historical overview of the most recent debate over the teaching and learning of mathematics, the Canadian Math Wars. Not familiar with this story? Come get caught up on what’s been going on for five plus years in just a few hours! Time for (a lively) discussion at the end of the presentation will be strictly preserved.

Gallery A Room

Student Thinking at the Center

Kristin Gray

The use of student thinking is critical in the implementation of effective and purposeful mathematics instruction. Creating a positive classroom culture, encouraging student discourse and utilizing coherent and meaningful formative assessment are essential to eliciting and learning from student thinking. In this session participants will engage in mathematical routines that promote productive mathematical discourse, learn strategies for identifying emerging mathematical ideas in student work and focus on specific follow-up activities that could be used to develop these ideas.

Gallery B Room

Creating With Desmos Activity Builder

Glenn Waddell

We will use Desmos tools to construct lessons that are challenging, thought-provoking and require learners to engage deeply with mathematics. We will work with best practices of content creation with Desmos Activity Builder and create lessons that take an activity from blah to thought provoking. At the end of this session, you will have the knowledge and skills to use and create unlimited lessons for yourself.

Concurrent Sessions

Tuesday, October 24

1:00 – 2:00 p.m.

Salon A Ballroom

Planning for Inclusive Math Instruction

Reanna Daniels

How do you incorporate teaching strategies in a meaningful way? Included in this session are ways to include thoughtful routines to aid classroom management and student productivity as well as purposeful body breaks while embedding formative assessment throughout the lesson with a sprinkle of technology. Improving student productivity in math includes analysis of the skill and pre-skills needed to perform the task and match to their level of performance.

Salon B Ballroom

Let's Verbify and Spatialize Early Number and Operation!

Lisa Lunney Borden

Come and explore some ways to verbify and spatialize the development of early number concepts such as partitioning, equivalence, joining, separating and comparing, and more. We will explore the development of quantity through storyboards, ten frames, Cuisenaire rods and more. We will discuss why a hands-on and active approach is essential for some students and beneficial for all.

Salon C Ballroom

The Truth and Reconciliation Commission of Canada's 10th Call to Action: Develop Culturally Appropriate Curricula

Glen Aikenhead

High school graduation is critical to a successful adulthood. A major hurdle for many, but not all, Indigenous students is mathematics. In their own ways, both conventional high school mathematics curricula and residential schools have lowered Indigenous students' high school graduation rates. To respond to the Truth and Reconciliation Commission of Canada's Calls to Action, answers to the following questions are needed:

1. What more do we need to know about the mathematics we teach?
2. What do we need to know about the history of school mathematics?
3. What decision in the 19th century made school mathematics what it is today?
4. What has sustained the high status of conventional mathematics all these years?
5. What relevant understanding about learning has been discovered in the meantime?
6. What is a rational 21st century school mathematics?
7. What effect has this alternative had on students?
8. Can culture clashes be reduced even further?
9. What are some implications?

These questions introduce a discussion on culture-based school mathematics.

Wiring Brain Research with Mathematical Games

Jennifer Brokofsky

Aligning how the brain learns to our mathematics instruction can maximize student learning in the classroom. This understanding can then guide our use of thoughtful, focused hands-on activities and games with our students. In this research-based session we will play, explore and learn about ways to bridge neuroscience with the curriculum using games to empower our young mathematicians.

Gallery A Room

Sure They're Solving, But Are They Thinking?

Alayne Armstrong

In this workshop we will be exploring various problem-solving tasks to determine which ones are more likely to engage students in higher-level mathematical thinking and why. Take away new activities for your class and ideas for tweaking ones that you currently use.

Gallery B Room

The Highs and Lows of Technology in the Mathematics Classroom

Sandra Baldwin, Lindsay Shaw

The availability and quality of technology has changed the landscape of learning in mathematics enormously. The key questions this session will focus on are: Why should we use technology in the mathematics classroom? What kind of technology could we be using in the mathematics classroom? When is a good time to be using technology for learning in the mathematics classroom? This session will concentrate on the advantages of and the opportunities that exist for teaching mathematics in the senior grades using both high and low technology activities. Participants will have a chance to explore classroom-ready, teacher-friendly ways to integrate high and low technology challenges into the senior math classroom and contribute to the conversation connected to technology and preparation for the post-secondary math environment.

2:10 – 3:10 p.m.

Salon A Ballroom

Star-Blanket Math

Edward Doolittle

The star-blanket design is a highly structured and formal pattern used by the Indigenous people of the Plains. In my talk I will show some of the mathematics that can be taken from the star-blanket design and how mathematics can be connected to the school curriculum. Math topics include geometry of quadrilaterals, geometric transformations, symmetry, perimeter and linear progressions, area and quadratic progressions and arithmetic series. Concepts will be illustrated using additional forms of Indigenous design and art work such as Canadian Aboriginal syllabics, totem poles, porcupine quill baskets, pottery, birch bark biting and beadwork.

What's Going on With the Provincial Math Outcome?

Katie White

This session will give participants the opportunity to learn about the provincial reading, writing and math outcome focusing on the work being done by the team leading the development of the math rubric and supports. The intent of the outcome will be explored and supports will be discussed. The session will be conversational and exploratory in nature.

Formative Assessment Techniques in Math (FACTs)

Sharon Harvey, Kristen Windrim

We will be looking at what a FACT is, how to begin using FACTs and how they can be used to make your classroom a formative assessment focused classroom. We will look at the purposes of FACTs and give you some strategies to get started with in your own classroom. We will be sharing the philosophy and strategies outlined in *75 Practical Strategies for Linking Assessment, Instruction, and Learning* by Keeley and Tobey as well as sharing our experiences and samples of FACTs that we have used.

La stratégie des 3P en mathématiques

Stacey Zbeetnoff

Oui! Les élèves peuvent découvrir du succès en mathématiques. Venez explorer comment j'applique les stratégies penser, parler, partager et autres stratégies collaboratives dans ma classe pour supporter les apprentissages mathématiques et langagières.

Using Games to Support Mathematical Fluency in Middle Year

Kirsten Dyck and Megan Weisbrod

You will learn how to incorporate math games within your classroom to support and engage students. Participants will have the opportunity to experience whole class, small group and partner games that will support curricular outcomes and math instruction, and build capacity in students.

Popsicle Stick Math

Lana Steiner

Developing conceptual understanding through the use of manipulatives is key to student success in mathematics. Through the use of popsicle sticks, learn how to teach place value, addition, subtraction, multiplication and division. Popsicle sticks are not only inexpensive as a math manipulative, they are extremely effective in "gap-filling" as well as Tier 1 instruction. This will be a hands-on session with demonstration and exploration. Teachers will leave with the knowledge and materials for immediate classroom implementation.

Speaker Biographies

Keynote Speakers



Leinwand, Steve

Steve Leinwand is a Principal Research Analyst at the American Institutes for Research (AIR) and has over 35 years of leadership positions in mathematics education. He currently serves as mathematics expert on a wide range of AIR projects that focus on high quality mathematics instruction, turning around underperforming schools, evaluating programs, developing assessments and providing technical assistance. Leinwand has spoken and written about effectively implementing the Common Core State Standards in Mathematics, differentiated learning, and “What Every School Leader Needs to Know about Making Math Work for All Students.” In addition, Leinwand has overseen the development and quality review of multiple-choice and constructed response items for AIR’s contracts with diverse states.

Before joining AIR in 2002, Leinwand spent 22 years as Mathematics Consultant with the Connecticut Department of Education, has served on the National Council of Teachers of Mathematics’ Board of Directors, and has been President of the National Council of Supervisors of Mathematics. Steve is also an author of several mathematics textbooks and has written numerous articles. His books, *Sensible Mathematics: A Guide for School Leaders in the Era of Common Core State Standards* and *Accessible Mathematics: 10 Instructional Shifts That Raise Student Achievement*, were published by Heinemann in 2012 and 2009, respectively. In addition, Leinwand was the awardee of the 2015 National Council of Supervisors of Mathematics Glenn Gilbert/Ross Taylor National Leadership Award for outstanding contributions to mathematics education.



Lunney Borden, Lisa

Lisa is an associate professor of mathematics education at St. Francis Xavier University in Canada with a particular focus on equity in mathematics. Having taught grades 7-12 mathematics in a Mi’kmaw community, she credits her students and the community for helping her to think differently about mathematics teaching and learning. She is committed to research that focuses on decolonizing mathematics education through culturally based practices and experiences that are rooted in Aboriginal languages and knowledge systems. Lisa is equally committed to mathematics outreach through programs such as Show Me Your Math that was developed with David Wagner, Newell Johnson and a team of teachers from Mi’kmaw Kina’matnewey schools. This program invites Indigenous youth to find the mathematical reasoning inherent in their own community context. Lisa is a sought-after speaker on Indigenous mathematics education, working with mathematics educators across Canada as well as internationally.

Featured Speakers



Chernoff, Egan

Egan is an associate professor in the College of Education at the University of Saskatchewan. Currently Egan is the mathematics editor of the *Canadian Journal of Science, Mathematics and Technology Education*, an associate editor of the *Statistics Education Research Journal*, sits on the board of directors for the learning of mathematics, serves on the International Advisory Board for The Mathematics Enthusiast and is an editorial board member for *Vector: Journal of the British Columbia Association of Mathematics Teachers*. From 2009 to 2015, he was the editor of *vinculum: Journal of the Saskatchewan Mathematics Teachers' Society*. Follow him on Twitter @MatthewMaddux.



Gray, Kristin

Kristin is a kindergarten-grade 5 math specialist at Richard A. Shields Elementary School in the Cape Henlopen School District in Lewes, Delaware. During her 21 years in education, she has taught grades 5-8 math as well as spent two years as a kindergarten-grade 5 math specialist. She feels fortunate to be a curriculum writer and professional development facilitator for *Illustrative Mathematics and Teaching Channel Laureate*. As a teacher, colleague, presenter and learner, Kristin continuously shares the value of curiosity around student thinking in her planning and instruction. She is a national board certified teacher and 2014 Presidential Awardee for Excellence in Mathematics and Science Teaching. She is always excited to share her love of teaching at conferences such as NCTM, NCSM and ISTE as well as on her blog. Connect with Kristin on Twitter: @MathMinds.



Russell, Gale

Gale Russell is well known in Saskatchewan for the many mathematics education hats that she has worn over the years: grades 7-12 teacher, tutor, curriculum pilot teacher, implementation leader, Ministry of Education consultant for mathematics education and now assistant professor of secondary mathematics education in the Faculty of Education at the University of Regina. Along with teaching pre-service teachers in the elementary, middle level and secondary programs, Gale also carries out research in a variety of areas but with particular focus on how worldview informs and limits how we think about mathematics and how it is taught and learned. Gale's proposed theory of the Transreform Approach seeks to ground the teaching and learning of mathematics within an Indigenous worldview where the kinds of knowledge and ways of knowing that are valued inside and outside the classroom are broader than, but not excluding of, what is valued within the traditional western worldview. It is a theory that has the potential to eliminate the math wars, close learning gaps and transform social attitudes and opinions about mathematics. Gale's first book, *Transreform Radical Humanism: A Mathematics and Teaching Philosophy*, will be published in the spring of 2017. Most recently Gale has been working with teachers, administrators, consultants and superintendents in Manitoba as they are seeking to engage more deeply in addressing the learning needs of their Indigenous (and non-Indigenous) students in mathematics learning. Gale also sits on the newly formed Reclaiming, Revisioning, and Reconciling School Mathematics committee.



Waddell, Glenn

Glenn Waddell, Jr., M.A., MEd is currently a master teacher in the NevadaTeach STEM teacher education program at the University of Nevada, a PhD student in mathematics education and a Desmos teaching fellow. His teaching experience includes teaching high school mathematics at a comprehensive high school in Reno, Nevada for nine years, and many PD sessions on technology in mathematics education, engaging learners in mathematics and equity in mathematics education. He is active in the #MTBoS, tweets @gwaddellnvhs, and occasionally blogs at <http://blog.mrwaddell.net>.

Concurrent Sessions

Aikenhead, Glen

Glen worked at the University of Saskatchewan between 1971 and 2006. Even before earning his doctorate in science education at Harvard University in 1972, Glen has always embraced a humanistic perspective on science and mathematics even as a young research chemist. His educational research studies over the past 25 years in cross-cultural Indigenous science education have emphasized the recognition of Indigenous knowledge in school science for all students. This has led to community-based collaborative projects in: renewing the provincial curriculum, developing teaching materials, editing textbooks enhanced with Indigenous knowledge, producing teacher professional development programs and consulting/mentoring/supporting Indigenous scholars and their allies locally and internationally. Lately his research program has shifted to the same issues in mathematics education.

Armstrong, Alayne

Alayne is an assistant professor of mathematics education at the University of Regina. Her research interests include problem solving, problem posing, group work and collective understanding.

Baldwin, Sandra

Sandra holds a bachelor's degree in education as well as in agriculture and is currently working on her master's degree in educational administration. She began her teaching career at Davidson School in 2001 as a middle years' teacher and has been teaching senior mathematics and sciences for the past 14 years including piloting a number of the renewed senior mathematics and science courses. Sandra has worked with the Saskatchewan Ministry of Education as an item developer for the 30 level mathematics courses and also with the Special Education Review Committee. Sandra worked as a catalyst teacher for 21st Century educators, initiated a school-wide project that introduced computational understanding as a literacy for schools and is currently part of a blended learning/personalized learning mathematics project. She has been a presenter at numerous educational conferences and is very excited to share her experiences using both high and low technology practices in the mathematics classroom.

Banting, Nat

Nat is a mathematics teacher exploring ways in which collaboration can enhance the learning of mathematics and the classroom experience. Nat is also an executive member of the Saskatchewan Mathematics Teachers' Society and a co-editor of its monthly periodical *The Variable*.

Brokofsky, Jennifer

Jennifer is the coordinator for mathematics with Saskatoon Public Schools. She has a passion for creating opportunities for learners to collaborate, play, explore and engage with mathematics. Jennifer is also inspired by the use of technology in education to connect and enhance learning. Through her blog at <https://jenniferbrokofsky.wordpress.com/> she strives to share ideas, support teachers and foster conversations.

Daniels, Reanna

Reanna is a student services teacher and has taught for 13 years. She is trained as a high school English teacher but has worked primarily in middle years. In the past two years, Reanna has demonstrated how to incorporate special education techniques into the regular classroom in her role as math catalyst. Currently Reanna holds a masters degree in special education and is working on her PhD.

Doolittle, Edward

Edward is Mohawk from Six Nations in Southern Ontario. He earned his PhD in pure mathematics at the University of Toronto in 1997. He is currently working as associate professor of mathematics at First Nations University of Canada in Regina.

Dyck, Kirsten

Kirsten teaches in the Prairie Spirit School Division. She has a variety of experience in multiple subject areas and grades in a rural grade 7-12 setting. Kirsten believes in meeting students where they are and using authentic and hands-on learning to engage students in math. Kirsten is a member of the Saskatchewan Professional Development Unit's Facilitator Community, and is continually amazed at the network of amazing teachers in Saskatchewan. She is honoured to get to work and learn alongside them.

Earl, David

All presenters and table leaders are teachers with Saskatoon Public Schools. This ambitious group comes from multiple different high schools with years of experience ranging from single digits to the high twenties! The vast range of experience of the group provides a perspective that is unique and has a tremendous amount of depth. The group is thrilled to have the opportunity to be a part of SUM 2017!

Fraser, Jamie

Since leaving the elementary classroom, Jamie has been repeatedly reminded that great teachers create great classrooms. His ambition for the past 20 years has been to support these teachers with appropriate instructional materials both print and digital.

Jamie works closely with districts, from strategic planning to modelled lessons, to ensure that teachers are maximizing their ROI (return on instruction) and learners are reaching their fullest potential. Recognizing his unique combination of teaching and entrepreneurship, Algonquin College has hired Jamie to teach on a part-time basis in the School of Business and Management.

Harvey, Sharon

Sharon has been a teacher with Saskatoon Public Schools for 10 years. She has taught all levels of secondary mathematics as well as in the resource program. She strives to create a safe and inclusive learning environment for all her students.

Hill, Cathy

Throughout her career as a math educator, curriculum developer, textbook author and PD facilitator, she has worked extensively with school administrators, teachers and their students throughout Ontario, Quebec, Northwest Territories and Nunavut. Currently she is involved in helping teachers translate research into practice, specifically dealing with the implications of conceptual development and learning trajectories.

McTavish, Claire

Claire is a mathematics teacher at Bethlehem High School. She has spent many years supporting teachers in curriculum renewal and as a French teacher on assignment. Claire, along with a knowledgeable team of GSCS teachers and consultants from both Greater Saskatoon Catholic Schools and the University of Saskatchewan, created this resource to address the First Nations, Métis and Inuit outcome in Grade 9 Statistics and Probability.

Meyer, Sharon

Sharon is the First Nation and Métis education consultant for the North East School Division. She is a mother, Kohkum and an educator of 26 years. Sharon has learned much knowledge from Elders, knowledge keepers and cultural leaders. She has had much success in applying traditional teachings into curriculum outcomes. Today she is sharing her knowledge in the area of math and will share activities and hands-on activities that North East School Division teachers are using in the classrooms.

Moen, Sandra

Sandra is a teacher and vice-principal in small-town Saskatchewan. She has taught math in the middle years for 25 years and is passionate about assessment and constructive- or problem-based math classes. She is a member of the Provincial Facilitator Community and is a member of the math cohort.

Penfound, Bryan

Bryan has spent time teaching (post-secondary) and volunteering (elementary and secondary) in Ontario, Manitoba and British Columbia. In Winnipeg he taught pre-service elementary teachers mathematics while working jointly for the education faculty and the math department; he continues to do so in Penticton at Okanagan College. Last spring he organized the first Spring into Math event in Penticton that saw over 120 local elementary students attend the college for a day of playful mathematics. He was recently nominated by staff and students at the college for the Strong Start faculty award.

Shaw, Lindsay

Lindsay is the newest member of the Saskatchewan Professional Development Unit (SPDU) team as of July 2017. Prior to joining SPDU, she was a senior science and math teacher for the past 13 years. In addition to teaching, she has been involved in the writing of the renewed Biology 30 curriculum. In the midst of the math and science curriculum renewal, she completed a master's degree through the Department of Curriculum Studies with a project on assessment. In her free time her family enjoys boating and skiing as well as spending time taking her two daughters (8 and 10) to dance, skating and swimming throughout the year. Lindsay appreciates being at the SUM Conference and hopes to bring a bit of her passion for math to the workshop and the conference.

Smith, Cindy

Cindy has spent the last five years immersed in learning about teaching and learning mathematics, a joyful pursuit provided by her role as math coach at Good Spirit School Division. Cindy is also an active member of the provincial community of math leaders.

Smith, Denise

Denise works as a K-12 numeracy coach in Manitoba. She is particularly interested in the role of discourse in the mathematics classroom.

Soares, Heidi

Heidi knew at the young age of seven that she wanted to be a teacher and has followed that path her whole life. She earned both a Bachelor of Science and a Bachelor of Arts at the University of Western Ontario before completing her Bachelor of Education at St. Francis Xavier University in Nova Scotia. Heidi then moved to Saskatchewan to teach and continue her love of learning. Heidi is continuing to expand her teaching practice with the Northern Lights School Division in La Ronge where she teaches French immersion science and math at Churchill Community High School.

Steiner, Lana

Lana is currently working as a middle years math interventionist and a middle years classroom math teacher in Springside, Saskatchewan. This fall she began working on a Master of Professional Education (in the field of mathematics) through the University of Western Ontario. Lana is also a member of the Provincial Facilitator Community.

Straub, Tristyne

Tristyne is finishing her first year of teaching high school math at Langenburg Central School. After three different careers, she finally settled into one she loves! Tristyne completed all of her schooling at the University of Saskatchewan - engineering, math and education. She lives in Esterhazy with her husband, where she also coaches volleyball.

Vashchyshyn, Ilona

Ilona is a mathematics teacher exploring ways in which collaboration can enhance the learning of mathematics and the classroom experience. Ilona is also an executive member of the Saskatchewan Mathematics Teachers' Society and a co-editor of its monthly periodical *The Variable*.

Weisbrod, Megan

Megan is a middle years teacher in Regina Public Schools, where she teaches in a community school. She believes in the power of making connections with students, families and within the community. Megan loves incorporating meaningful authentic tasks into her classroom. As well, she is a lover of all things math. It is her passion to support students, enable them to engage in grade level math and improve their "math-esteem."

Megan thinks of herself as a true lifelong learner and is currently working towards her Masters in Curriculum and Instruction at the University of Regina. She is always looking for ways to challenge herself. In addition, Megan is a member of the Saskatchewan Professional Development Unit's Facilitator Community. Megan believes in the importance of working with and sharing her knowledge with others, as well as gaining knowledge and experience from other teachers and colleagues.

White, Katie

Katie is a coordinator of learning for the North East School Division and a facilitator for the provincial writing and math outcome groups. She has witnessed the deep thinking and strong commitment of Saskatchewan teachers to make decisions on behalf of colleagues and the students of this province.

Windrim, Kristen

Kristen is a teacher with Saskatoon Public Schools and has been teaching math for three years. She enjoys working collaboratively with other teachers and is passionate about helping students succeed with formative assessment and feedback.

Zbeetnoff, Stacey

Stacey is currently teaching Grade 8 French immersion at Forest Grove School and is a new member of the Provincial Facilitator Community. Formerly Stacey was a French immersion consultant with Saskatoon Public Schools. She has taught for over 23 years in classrooms varying from kindergarten to Grade 11. Her passion for math shines through in all her lessons.

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Spectrum Educational Supplies

Stewart Resources Centre, Saskatchewan Teachers' Federation

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