

VCTM Fall Conference

October 14, 2016

Making Math Meaningful

Vermont Technical College, Randolph, VT



**Vermont Council of
Teachers of Mathematics**

*Welcome, and
thank you for joining us!*

VCTM Co-Presidents:

Christine Latulippe

Norwich University, Northfield, VT

Kate McCann

U-32 High School, E. Montpelier, VT

Conference Program Chair: Patty Kelly

Springfield School District, Springfield, VT

VCTM Mission: Building a math educators community, by facilitating conversation and sharing resources around Best Practices to engage student learning throughout the state of Vermont while strengthening connections with state and national organizations.

8:00-8:30 Registration, Exhibits, Continental Breakfast - in Judd Hall

8:30-10:00 Concurrent Sessions – In Green Hall (90 min. Workshops)

8:30 Fostering Struggling Learners' Conceptual Understanding: integrating direct and inquiry approaches

Regina Quinn, Lyndon Town School

Grades Pre-K-2, 3-5, Administrators/Math Leaders

Room 116

Description: The research literature on how to address the learning needs of students with mathematics learning difficulties or disabilities consistently points to direct instruction approaches. How can we put this research into practice while involving students in deep conceptual learning?

During this hands-on workshop, we will view video clips of students participating in Tier 2 intervention, examine student work, and explore lessons that supported first through third grade students' ability to solve challenging addition and subtraction "word problems" and enabled fifth graders to correct some fundamental misconceptions they had held about fractions.

8:30 Data Stories to Boost Your Instruction

Patricia Conway & Melissa Senecal, Southwest Vermont Supervisory Union

Grades 3-5, 6-8, Administrators/Math Leaders

Room: 124

Description: Join us to discover the mathematical story hidden in your data. You will be given the tools to read the story. We provide you with a Data2Action Tool that culminates in an item analysis, with a stunning visual. Finding a way to make meaning of the data is one of the best strategies to shape your standards based instruction. Please bring your laptop or Chromebook, with a Google account, as you will begin your own storybook.

8:30 Making Middle School Math Come Alive with Games and Activities

Barbara West, VCTM

Grades 6-8

Room: 128

Description: Participants will be actively engaged in working through games and activities around Middle School math topics. Manipulatives and Games will be used to introduce and practice integer operations. We will work on order of operations not using PEMDAS. Participants will also do some activities around graphing and tables. They will also do a Scavenger Hunt to look at justifying their answers to mathematical situations.

8:30	Figurate Numbers and Finite Differences
	<i>Jean McKenny, VCTM</i>
	<u>Grades 6-8, 9-12</u>
	Room: 216
	Description: Figurate numbers and finite differences can provide students with powerful ways to find patterns and make generalizations. Working with figurate numbers can allow multiple entry points for students with differing readiness to engage. Finite differences provide a way to incorporate "conceptual underpinnings of calculus" into earlier grades. This session will share materials that can be used with students.
8:30	<hr/> Assessing Graduation Standards
	<i>Michael Ruppel, Springfield High School</i>
	<u>Grades 6-8, 9-12, Administrators/Math Leaders</u>
	Room: 224
	Description: As educators across content areas work to build graduation proficiency scales, one of the most difficult steps in the process is creating high-quality assessments aligned to the scales. In this session, participants will discuss the process for developing proficiency scales and then work in collaborative teams to create an assessment designed to measure performance on a sample proficiency scale or one that participants have already developed.
8:30	<hr/> Creating Performance Tasks the SBAC Way
	<i>Betty Young, WCSU District Math Coach</i>
	<u>Administrators/Math Leaders, General Interest (All Levels)</u>
	Room: 228
	Description: I have worked with Smarter Balanced Assessment Consortium and Callahan Associates, LLC to create performance tasks for future tests. Their methods and products are quite different than our past work here in Vermont. I can share the work we did and the reasoning behind the process.

10:15-11:15 Concurrent Sessions - in Green Hall (60 min. Sessions)

10:15 Improve Student Learning with a Green Check, a Red X, and a Report

Andrew Burnett, ASSISTments at WPI

Grades 3-5, 6-8, 9-12, Administrators/Math Leaders

Room: 116

Description: Improving your students' learning is easy!! When students use ASSISTments to get immediate feedback on their homework, classwork, and skill practice and teachers use data in the reports to drive instruction and review, student learning increases (Want proof? Watch this short video: tiny.cc/homeworkstudy). Come and see how easy it is to include ASSISTments as a tool in your classroom to make homework, classwork, skill practice, exit cards, and tests more effective. ASSISTments is a free, online platform and app from Worcester Polytechnic Institute used by thousands of elementary, middle, and high school students around the country.

10:15 Algebra in the Elementary Classroom

Patty Pomerleau, Windsor Southeast Supervisory Union, Weathersfield School

Grades PreK-2, 3-5

Room: 124

Description: Student difficulties with high school algebra have inspired educators to consider introducing algebra ideas earlier in the K-12 curriculum. This talk presents ways of incorporating basic algebra concepts in grades K to 6. The presentation is based on national and state standards and covers what it means to 'algebrify' your lessons, the importance of algebra, and examples of algebra, such as working with patterns. The presentation will give tools that can be taken into the classroom and be integrated into a variety of lessons.

10:15 Bringing Statistics to Life to Improve Statistical Literacy

Jennifer Ericson, University of Massachusetts Amherst

Grades 6-8, 9-12

Room: 128

Description: Looking to make measures of center and variation meaningful to students? Wondering how to create concrete experiences for p-values? This workshop will show you how to modify established curricular activities to align with the GAISE frameworks so that students at all grade levels can formulate questions, collect and analyze data, and interpret the results, all the while increasing student understanding of distribution, variability, and statistical significance. Dynamic statistical software will be employed to scaffold learning and to deepen conceptual understanding.

- 10:15 What is the Mandlebrot Set?**
- Stephen Badgley, St. Johnsbury Academy*
- Grades 9-12, Post Secondary, Administrators/Math Leaders, General Interest (All Levels)** Room: 216
- Description:** This presentation will discuss how to teach the complex numbers using the Mandelbrot set and the free computer program Geogebra. Operations on the complex numbers, graphing in the complex plane, and switching from Cartesian to polar will all be highlighted. The Mandelbrot set is determined by sequences of complex numbers. We will graph these sequences and explain why the movement is happening the way it is. Finally, we will explain images of the Mandelbrot set and Mandelbrot zooms. Common core standards that are covered include CN.A.2, CN.A.3, CN.B.4, and CN.B.5.
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- 10:15 Meaningful Approaches to New Teacher Coaching and Induction**
- Christine Pereira, Springfield School District*
- General Interest (All Levels), Administrators/Math Leaders** Room: 224
- Description:** Math teachers who thrive are far more likely to "Make Math Meaningful" with our students. Critical to math teaching are the ways in which new teachers are supported as they enter into the profession. In this session, we will discuss meaningful coaching and induction practices for new math teachers at both the school and district levels. We will also analyze how these approaches to coaching and induction align with the values, visions and cultures of our systems of education.
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- 10:15 Exploring Measurement with Roslyn Rutabaga**
- Betty Young, WCSU District Math Coach*
- Grades PreK-2, General Interest (All Levels)** Room: 228
- Description:** Launching an exploration of measurement with the book "Roslyn Rutabaga and the Biggest Hole on Earth" by Marie-Louise Gay, is perfect for the early grades. Roslyn's determined spirit, and grand adventure provide many opportunities to learn how much your students know about measuring, and perseverance. This book and a few others will give participants another way to present math in the real world.
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- 1:30-12:15 Welcome, General Meeting, Awards & Ignite - in Judd Hall**
- 12:15 Lunch – in Morey Dining Hall and Exhibitors in Judd Hall**
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1:15-2:45 Sessions – in Green Hall

**** Please note varied session lengths!**

1:15 Family Math Night

(30 min. Burst)

Laurie Birmingham, K-6 Math Interventionist

Grades PreK-5, Admin./Math Leaders, General Interest (All Levels)

Room: 116

Description: Come learn how to host a successful Family Math Night. Family Math Night is a fun shared experience that promotes family involvement with math. It builds strong family-school partnerships, creates a sense of community and connects family engagement to student learning.

1:15 Encourage Math Learning Through Statewide Math Fair

(30 min. Burst)

Kate McCann, VCTM

General Interest (All Levels)

Room: 124

Description: Learn more about how and why to encourage your students to participate in the first annual VCTM Math Fair. Project ideas and specifications will be presented. I promise, this is NOT more work for teachers.

1:15 Empowering Students to Make Math Connections

(90 min. Workshop)

Barbara West, VCTM

Grades 6-8, 9-12

Room: 128

Description: Participate in activities that make the connections between a pattern, table, graph and its rule. Learn ways to help students move from each representation to the others while developing a deep understanding of multiple ways to solve problems and to communicate that understanding both verbally and visually. Teachers will receive ideas and materials that they can use in their own algebra classrooms.

- 1:15** **Understanding Variables Using Tak Tiles**
(90 min. Workshop)
- Meagan Boucher, SNHU*
- Grades 6-8, 9-12** **Room: 216**
- Description:** Students will begin to recognize variables in a way that is applicable and accessible. In this workshop, we will be introduced to: using shapes to represent variables, creating unique shapes, combining like terms, and gaining a deeper understanding of variables and their representation of values. The use of Tangrams and Tak-Tiles makes discovering solutions fun and interesting for students. Activities presented for connecting algebraic and geometric concepts and introducing Common Core skills.
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- 1:15** **A Model for Proficiency Based Graduation at Montpelier High School**
(90 min. Workshop)
- Sue Abrams, Montpelier HS & Michael McRaith, Principal of Montpelier HS*
- Grades 9-12, Administrators/Math Leaders** **Room: 224**
- Description:** Montpelier High School has implemented a school-wide proficiency based grading system that integrates assessment of the transferable skills into courses and clearly distinguishes between formative and summative assessments on the report card. Learn how Montpelier has chosen to take on the proficiency based graduation requirement, and come prepared to share how you are doing this at your school. Let's learn from each other and create models that work throughout Vermont.
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- 1:15** **An Introduction to Dynamic Technology Through Pattern Sniffing**
(30 min. Burst)
- Alicia Gonzales, University of Massachusetts - Amherst*
- Grades 9-12, General Interest (All Levels)** **Room: 228**
- Description** This session is meant to give an example of how teachers can introduce students to the use of dynamic technological tools through searching for patterns. We will begin the session by looking for a pattern in lines through points, which becomes the basis for explorations of other geometric ideas, and also connects to the Handshake Problem. We will then see how this can become a nice introduction to working with technology such as Geogebra and Desmos. Teachers will explore how students can make this introductory problem connect to quadratic functions, sequences, graphs, tables, etc.

1:45	Integrating Art in Math for Project-Based Learning	
	(60 min. Session)	
	<i>Leslie Fry, Union Street School</i>	
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Grades 3-5, 6-8	Room: 116	
Description: This presentation will highlight several design projects integrating math with the work of specific artists & artisans. Each project engages students in the "real life" application of mathematical ideas. Lesson plans and activities from the following units will be shared: "Area, Perimeter & The Light Screens of Frank Lloyd Wright", "Piet Mondrian Fractions: Cake Boss" and "Fixer Upper: Historical Home Makeovers."		
2:00	Tried and True Open Source Lessons	
	(30 min. Burst)	
	<i>Kate McCann, U-32 High School</i>	
<hr/>		Room: 228
	Description: With the overwhelming amount of materials available to teachers at their fingertips, it's hard to determine what's worth using. Come see what's been successful in my Algebra and Geometry classes. Leave with lessons, activities, ideas, and rubrics to use now in your classroom.	
2:00	Vermont State Talent Search	
	(30 min. Burst)	
	<i>Jean Ohlson, SBHS</i>	
<hr/>		Room: 124
	Description: Encourage students to gain mathematical ability through problem solving and perseverance. Hear in a student's own words how the Vermont State Talent Search has enlivened their mathematical interest and confidence. Learn about the talent search and the associated trip to the nationwide American Regional Mathematics League competition and resources available to students.	

3:00-4:00 Concurrent Sessions – in Green Hall

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| 3:00 | <h2>Literature in Mathematics</h2> <p><i>Rebecca Merrow, Springfield School District</i></p> <p><u>Grades PreK-2, 3-5</u></p> <p>Description: Come find out about ways you can combine mathematics with literature. Learn about a variety of activities that you can use in the classroom that are engaging and have students thinking deeply about mathematics through picture books.</p> <hr/> |
| 3:00 | <h2>Optimizing Google Classroom with Free Math Content</h2> <p><i>Andrew Burnett, ASSISTments at WPI</i></p> <p><u>Grades 3-5, 6-8, 9-12, Administrators/Math Leaders</u></p> <p>Description: Are you looking for a vast resource of free math content that you can assign directly to your students through Google Classroom? ASSISTments is a free, online tool from Worcester Polytechnic Institute that offers you problem solving and skill practice problems, a problem builder to create your own content, and detailed student reports on everything that you assign. Come and learn more about ASSISTments and how to assign free math content directly to the Google Classroom stream. Not a Google Classroom user? No problem!! ASSISTments can be used with or without Google Classroom.</p> <hr/> |
| 3:00 | <h2>Developing a Continuum of Instruction for Mathematics within a Multi-Tiered System of Supports</h2> <p><i>Jennifer Patenaude & Jeanne Bonin, NCSU Instructional Coaches</i></p> <p><u>Grades PreK-2, 3-5, 6-8, Administrators/Math Leaders</u></p> <p>Description: This workshop will articulate the distinctions between differing levels of instructional intensity within a Continuum of Instruction as part of an MTSS model. Specific descriptions and concrete examples will be provided for both assessment and instruction at the universal, targeted, and intensive levels of math learning. Participants will reflect and engage in a discussion of 'how' and 'why' such a continuum should be used.</p> |

3:00

Documenting and Implementing Interviews and Think-a-louds as Formative Diagnostic Assessments

Katie Westby, Brattleboro Union High School & Betsy McEneany, University of Massachusetts – Amherst

Grades 9-12

Room: 216

Description: Qualitative data is an integral part of a comprehensive and balanced assessment system. We will demonstrate effective and efficient strategies for documenting the qualitative data collected from interviews and think-a-louds, which can be used as diagnostic and formative progress monitoring assessments. We will discuss communicating the data and data-based decisions in a manner comprehensible to students, parents, colleagues, administrators, and evaluators. We have used these tools successfully in classes that include tier 2 (targeted) and tier 3 (intensive) interventions: examples of both scenarios will be shared.

3:00

Why Develop a Math Vertical Team?

Sharon Fadden, St Johnsbury Academy

Grades 3-5, 6-8, 9-12, Admin./Math Leaders

Room: 224

Description: The workshop will outline the process of establishing a math vertical team and developing shared goals, documents, and activities. Methods of supporting students in their transition from eighth grade to high school math will also be discussed. Additionally, the workshop will include an interactive component using manipulatives, which will focus on introducing and reintroducing the same activity in grades seven through ten with increased levels of abstractness.

3:00

Instruments of Math Construction: How a Compass and Straightedge Provide a Concrete Foundation in Geometry

David Rome, VCTM

Grades 9-12

Room: 228

Description: One of the oldest and simplest of tools is still one of the most effective ways to teach students the concepts of equidistance, proving triangles congruent, triangle inequality and bisection because it gives the power of thought and reasoning to the learner in a tactile way. We will explore the basic techniques of construction and show how you can develop problems for all levels of learners.

4:00-4:30

**VCTM Raffles – in Judd Hall
Fabulous Door Prizes! Not to be missed!**

Support for today's conference was
provided, in part, by:

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Vermont Technical College Office of Conferences and Events

**A big *Thank You* to everyone who has helped make
this conference a success!**

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