

Mathematics in Vermont

The newsletter for Vermont's Mathematics Educators and supporters

March
2021

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Springtime is Coming!

Congratulations! I know there is still a lot of schooling left to take place, but you all deserve to be congratulated on the work that you have done so far this year. We are probably in the most trying times, as far as teaching goes, that we have ever encountered. And yet, you are all still here, doing work that is crucial for our students and making a positive difference in their lives. A recent study by the [National Education Association](#) found that the majority of the nation's students reported "doing okay". The vast majority of those students still want more interaction with their teachers. Teachers help to build community through consistent routines that help students develop a sense of safety and provide the supports needed to maintain wellness and self-care. Your interactions with your students may go without thanks, but they do not go unnoticed. For that, I want to thank you.

In this newsletter you will find information on using Evidence-Based Practices in mathematics teaching, recognition of our two state finalists for the Presidential Awards in Engineering, Mathematics, Science & Technology, and a number of upcoming events that may be of interest to you.

Evidence-Based Practices: What are They and Why are They Important?

In today's world, more and more jobs are requiring higher levels of technological skills, including those in the fields of science, mathematics, and engineering. However, sheer computational skills can often be automated which is why students need to gain interpersonal skills along with their acquisition of mathematical skills in order to be a desirable employee. In an article for the [World Economic Forum](#), David Dering, Associate Professor of Education and Economics at Harvard University, says that employers will need workers with social skills such as empathy and cooperation, and that mathematical ability will be enormously

The ways you can access this newsletter:

- Request subscription by emailing [Ryan Parkman](#); your name will be added to a listserv;
- The AOE *Weekly Field Memo* when issues are published; and
- AOE Website: [The Mathematics Content page](#).

According to the Nation's Report Card's [2019 NAEP Mathematics Assessment](#) for 12th grade students, only 24% of students are at or above the proficient level. With more than 75% of graduating seniors performing below proficiency levels, it is clear that current mathematics instruction needs to be reevaluated to ensure it is meeting the needs of all students. In the effort to support and improve mathematics performance for all students, many schools have implemented high-quality mathematics instruction. According to the [Iris Center of Vanderbilt University](#), high-quality instruction consists of a standards-based curriculum and evidence-based practices:

- *A standards-based curriculum* — The concepts and skills believed to be important for students to learn; and
- *Evidence-based practices (EBP)* — Strategies or practices proven through research to be effective for teaching mathematical concepts and procedures.

The Vermont [Education Quality Standards](#) state that all curriculum must be aligned to adopted state standards and classroom instruction shall include research-based educational practices. [The IRIS Center website](#) contends that many of the practices that educators employ to shape their instruction are those that they are accustomed to and while it may serve them well, many of these are either not as effective or have no data to support their effectiveness at improving math proficiency levels for their students. The [Every Student Succeeds Act](#) (ESSA) mandates that teachers use EBP to the greatest extent possible as use of EBP has shown, through scientific research, to significantly increase the prospects of student achievement and learning.

There are four practices that have been highlighted as being the essential elements of evidence-based mathematics instruction: explicit instruction, visual representations, schema-based instruction, and metacognitive strategies (such as peer interaction).

Explicit Instruction

In using this practice, you model skills clearly so that students do not have to guess what they have to do and make sense of instructions so that students have less processing to do with multi-step problems.

Visual Representations

When students are shown visual representations, it helps their understanding of abstract math concepts and problem solving by removing language barriers. Having students create their own visual representations allows them to show their understanding in ways that may benefit students who learn or think differently.

Schema Instruction

Students who struggle with math can have difficulty recognizing patterns and relationships in new contexts. Schema instruction teaches students how to identify patterns and make connections to the proper strategy to use to solve a problem.

Metacognitive Strategies (Peer Interaction)

Peer discussions can develop students' math language and vocabulary and help them explain their reasoning. Students also benefit from seeing a problem solved multiple ways.

To read more about the EBP listed above and see examples for each, visit [Evidence-Based Math Instruction: What You Need to Know](#).

There are many other EBP that can be employed to improve instruction and student performance in mathematics. Consider some quick research to help find the practices that fit the individual needs of students and are appropriate to their developmental levels. The Iris Center website contains a wealth of information on [evidence-based mathematics practices](#), including their identification, selection, and implementation. The [Institute of Education Sciences](#) (IES) has produced a series of [practice guides](#) to provide educators with specific recommendations using the best research available to address challenges in their classroom. See the links below to view practice guides for young children, students in grades 4-8, and for high school students:

- [Teaching Strategies for Improving Algebra Knowledge in Middle and High School Students](#);
- [Improving Mathematical Problem Solving in Grades 4 Through 8](#);
- [Teaching Math to Young Children](#); and
- [Assisting Students Struggling with Mathematics: Intervention in the Elementary Grades](#).

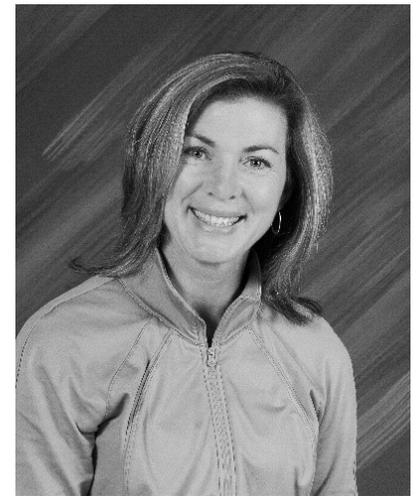
Presidential Awards in Engineering, Mathematics, Science, and Technology

Congratulations are in order for both Glenda Allen and Mindi Wimett for being named state finalists for the [2020 Presidential Awards for Excellence in Mathematics and Science Teaching](#) (PAEMST). The PAEMST are the highest honors bestowed by the United States government specifically for K-12 science, technology, engineering, mathematics, and/or computer science teaching. The Awards were established by Congress in 1983. The President may recognize up to 108 exemplary teachers each year. The award recognizes these teachers for having both deep content knowledge of the subjects they teach and the ability to motivate and enable students to be successful.

Later this year the national awardees will be announced, and we wish both of these exemplary educators the best of luck. In the meantime, please read a little about these educators in their following bios.

Glenda Allen Bio

As a second grader in Middlesex, New Jersey, I knew I wanted to grow up and be just like Mrs. Somma, my teacher at the time. From then on, my path was set and I landed my first teaching position as a 4th Grade teacher two miles away from where I lived. Two years later, I got married and moved to Vermont where I was fortunate enough to continue teaching as a 4th Grade teacher at Barre Town Middle and Elementary School and have raised two daughters in the Barre school system.



After about 15 years of teaching all content areas in 4th, 5th and 6th grade, our specialization model put me as the sole 6th Grade Math Teacher. I began investing my time in all avenues of professional development so that I could simultaneously strengthen my content knowledge as well as my approach. The most transformative opportunity was a course facilitated by Karen Reinhardt, called Differentiation through Math Menu, which revolutionized the way in which students engage with math in my classroom. While I am in my 22nd year here in VT, I am proud to say that I am still learning and adjusting as a professional and am able to take pride in the growth that I see in myself and my students as a result.

Mindi Wimett Bio

Mindi Wimett teaches sixth, seventh, and eighth graders at the White River Valley Middle School in Bethel, Vermont. She grew up in the Green Mountain State, earned her Bachelor of Science in Education at UVM, and received her Master of Education degree through the Vermont Mathematics Initiative at UVM. She has been teaching for 18 years.

She lives in South Royalton, Vermont with her husband, son (12), daughter (9), and kitty. She enjoys hiking with her family and just started snowboarding (never too old to learn something new)! She also reads a lot! Middle grades and YA literature are her favorites because she loves talking to students about books.

Mindi's main goal is for her students to believe that they can learn. Her students learn how the brain works, the power of making mistakes, that it's okay to struggle, and how awesome it feels when you find a solution to a really challenging problem.

**Events, Announcements, and Resources****An Introduction to the Quantile Framework for Mathematics**

The Agency of Education and MetaMetrics are pleased to offer this professional learning opportunity to build the understanding of Quantile measures among educators across Vermont. This introductory session helps lay the foundation for use of Quantile measures at the classroom level, including addressing the following questions: What is the [Quantile Framework](#) for Mathematics? What are Quantile measures for students as well as state learning standards? Where do you find the measures? What are the benefits of using the Quantile Framework for Mathematics? Where are Quantile tools and resources available and how do you use them to guide instruction?

[Register online](#) to attend this live session on **Wednesday, March 17, 2021, from 3-4 p.m.**

The Kenneth I. Gross and Tony Trono Governor’s Institute of Mathematical Sciences

Math lovers unite! There is a whole state full of math-lovers just like you and the [Governor’s Institute of Vermont](#) (GIV) is getting ready to bring them together this summer in the Math Immersion. This program will challenge your minds with puzzles and mentored problem-solving activities and contests; you’ll learn about real-world and theoretical applications of mathematics; you’ll solve problems alongside professional mathematicians from the academic and business world; and you’ll learn about career pathways open to people who love math. GIV is committed to breaking down barriers, technological and financial ones included. That’s why this summer, **tuition is “pay-what-you-can.”** GIV is also prepared to provide support for any and all students that don’t have access to devices or reliable internet connections, or are struggling with any other tech-related problems.

[Apply online](#) to attend the Math Immersion on **Sunday, June 20th – Friday, June 25th**

All Learners Network: Free Workshops for Math Educators

There is still time to register! The [All Learners Network](#) firmly believes that all students can learn math and have partnered with the Vermont Agency of Education to offer free workshops to help achieve that end. These workshops are being offered on multiple dates to better accommodate individual schedules. Topics for these workshops cover the following:

- Math for All Learners
- Lunch/Number Routines
- Middle School Summit
- Pre-Kindergarten
- Specialized Instruction

Visit the [All Learners Network’s Events page](#) for complete descriptions of the workshops being offered, specific dates, and registration information.

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