



# Wahpe Woyaka pi

( Talking Leaf )

South Dakota Council Teachers of Mathematics Newsletter

## Presidential Ponderings

Happy New Year! I hope that Christmas break was one of time with friends and family, an opportunity to take care of yourself, and a chance to do something you enjoy. I was able to spend a part of the break with my parents and my sisters and their families in Wyoming! We finished our first semester in December. I have heard, and appreciate, many concerns in regards to finishing 1st semester in December. But, the one pro that I really appreciate is being able to give the kids a true break from class.

Be sure to feed your professional self as well. Stephanie Higdon's (SD DOE) vision of teachers supporting teachers has become a reality this year. One of the guiding principles: "Students and teachers in South Dakota will engage in rich tasks that explore and demonstrate the beauty, creativity, and joy of mathematics" truly encompasses what I want my students to experience. If you have not yet checked out the Math Circles, consider joining us for a circle sometime this spring. Travel expenses, lunch, and sub pay are covered by SD DOE! The opportunity to network with teachers from the same grade level and to experience related tasks at different levels is invaluable.



One other opportunity to grow professionally is the SD STEM Ed Conference. Our theme this year is *Together Again!* SDCTM and SDSTA are excited to host the conference. We have a banquet speaker from New York, Jim Matthews. Jim has been recognized with a NYNEX award for Excellence in Education and was an inaugural inductee into the New York State Mathematics Educators Hall of Fame. He is excited to have the opportunity to meet and share some ideas with teachers in South Dakota. We have a full schedule of sessions for you to choose from. Register today at [www.sdctm.org](http://www.sdctm.org). The first 150 **paid** registrations will receive a complimentary copy of *Engagement by Design* by Douglas Fisher. Fisher provides a framework for making daily improvements in engaging your students and highlights how to reap the greatest benefits in the least amount of time. Focusing on relationships, clarity, and challenge can make all the difference. The books are provided through a generous grant awarded by the SD Department of Education. Special thanks to Kelly Royer and Jennifer Fowler at DOE.

Yet another way to grow professionally and develop some life long friendships is to attend the SDCTM's Summer Symposium. Each summer SDCTM holds a one day symposium with a different focus. The topic and date for this summer have not yet been determined, but watch for the announcement before the end of the school year.

Thank you for all you do for the youth of South Dakota! They are blessed to have you in their corner.

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SDCTM President  
SDCTM/SDSTA JPDC Treasurer & Registrar

Winter 2021-2022

## Wahpe Woyaka pi

<i>Higher Ed Viewpoint</i>	2
<i>Musings From Dan</i>	3
<i>PAEMST</i>	4-5
<i>Mark's Thoughts</i>	5
<i>Conference Registration Incentive</i>	6
<i>9-12 Spotlight</i>	7-8
<i>Elementary Highlights</i>	9
<i>A Word from Stephanie</i>	10
<i>SD STEM Ed Conference</i>	11
<i>PAEMST Application</i>	12
<i>SDCTM Board</i>	13

## Calendar Notes:

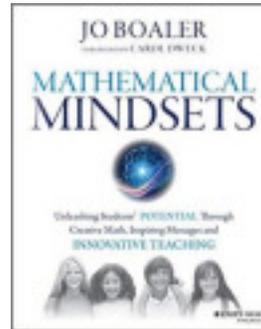
- *SD STEM Ed Conference Advanced Registration Closes January 24th*
- *SD STEM Ed Conference February 3-5, 2022*
- *Next Best Practices in Teaching Mathematics Regional Math Circles April 8th or 9th*
- *Summer Symposium July 2022*



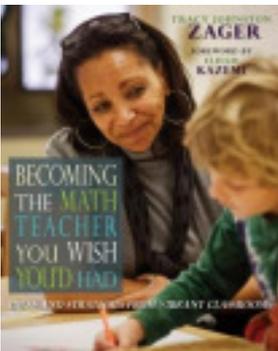
## Higher Ed Viewpoint

What is your New Year's resolution? I admit that I don't adopt any resolutions formally, but I often resolve to do things differently with the beginning of the new year. One of my resolutions usually pertains to either reading or teaching. This year, I decided to combine them. I have found many books to share with my students and SDCTM members. I will share just three of my top teaching mathematics books with you.

The first book is *Mathematical Mindsets* by Jo Boaler. Boaler has been advocating for changing how we teach mathematics for many years and provides many techniques and activities in *Mathematical Mindsets* that demonstrate how to facilitate that change. First, she explains how the brain works based on multiple studies that describe what happens when someone is learning. Next, she uses these studies to talk about "The Power of Mistakes and Struggle" and then provides information about facilitating a growth mindset in your students. She also offers examples and tasks for teaching various mathematical concepts and, finally, information about grouping, assessment, and equity. This book has been required for my pre-service teachers for many years. At the end of the semester, I ask my students if I should continue requiring this book, and the answer is always an overwhelming yes.

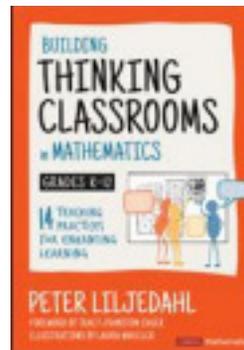


*"...the beauty of these books is that I can read one chapter, one piece of advice, and use it the next day."*



The second book I recommend is *Becoming the Math Teacher You Wish You'd Had* by Tracy Johnston Zager. In this book, Zager addresses the difference between "math class" and "mathematics." First, she describes many people's experiences in math classes, which lead them to believe they are not "math people." Then she explains what an actual mathematician does and how it differs from what is happening in a math classroom. Mathematicians make mistakes, ask questions, connect ideas, use intuition, reason, prove. Each of these is a chapter, as she uses examples to describe how to apply these in math class.

I have just recently begun to read my third recommendation, but I'm already trying to decide when I will get my students to read it as well. *Building Thinking Classrooms in Mathematics* by Peter Liljedahl describes his years of work researching how to get students to think in a mathematics classroom. In his observation of over 40 classrooms, he found that students were not thinking. And so, he began experimenting with what needed to change to get students to think. Each chapter in his book describes fourteen different practices to help you create a "thinking classroom." Each chapter can be read and used alone to make changes that will facilitate students doing mathematics differently. I just finished the chapter on "How We Form Collaborative Groups in a Thinking Classroom," and I will be implementing his suggestions this semester.



As teachers, I know we have enough on our plates, and the thought of trying to read a book for fun while planning lessons, grading homework, and just getting through the week is not practical. But, the beauty of these books is that I can read one chapter, one piece of advice, and use it the next day. So have a great second half of the year and happy reading!

Christine Larson  
Post-Secondary Liaison  
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## Musings from Dan

I trust you all had a productive first half of the school year and enjoyed a relaxing time over the break with family and loved ones. As I pen this letter, you are all starting the second half of the school year and the universities fire up again in three days. You have all done an incredible job educating our students through the global pandemic and with the new variant now knocking at our door, I am sure many questions arise as to what things might look like this semester. However, I know we will handle it in stride and make the best out of not so good circumstances. After all, we are South Dakotans!

I have for your consideration, two items that I hope you will give serious thought. First, I do hope you all consider attending the joint conference in Huron the first weekend in February. This is an excellent opportunity to refresh your enthusiasm for the discipline, get acquainted with other teachers across the state, and gather new ideas to try in the classroom. Secondly, I am asking each of you to brainstorm how the universities and k-12 can work better together to help students making the transition to college be more successful. If you have ideas, I would really love to hear them. There is currently funding opportunities for such ideas and if those of us in higher education can help your students be more successful in the transition, we would really like to do so.

It was a pleasure seeing so many people at the first Math Circle Workshops in Sioux Falls. I am looking forward to our next meeting. I hope many of you also took advantage of this opportunity at the other locations across the state. I look forward to seeing many of you in Huron next month. Until then, I hope you all stay healthy and can have a productive semester.

Sincerely,

A handwritten signature in cursive that reads "Dan VanPeurse".

President Elect-SDCTM  
Dan.VanPeurse@usd.edu  
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*“...if those of us in higher education can help your students be more successful in the transition, we would really like to do so.”*



## Presidential Award for Excellence in Mathematics and Science Teaching

At this time, we are awaiting the announcement for both the 2020 and 2021 Awardees. The application deadline for the current cycle, which will recognize outstanding K-6 teachers, is February 6, 2022.

### Presidential Award for Excellence in Mathematics and Science Teaching Overview

The Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) is the highest recognition that a kindergarten through 12th grade mathematics or science teacher may receive for outstanding teaching in the United States. Since 1983, more than 4,000 teachers have been recognized for their contributions to mathematics and science education. Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education.

State-Level Finalists automatically become candidates for the National Presidential Award. Two teachers from each state may be selected as the state's Presidential Awardees and will be notified officially by the White House. This will take place after a national committee reporting to the National Science Foundation makes its selection from the state-level finalists submitted by each state.

Presidential awardees receive a citation signed by the President of the United States, a trip to Washington DC to attend a series of recognition events and professional development opportunities, and a \$10,000 award from the National Science Foundation.

State-Level Finalists are nominated because someone thought of them as teachers who exhibit a passion for the subject they teach; who approach their work with creativity and imagination; and who strive daily to improve individual teaching practices.

Anyone--principals, teachers, parents, students, or members of the general public--may nominate a teacher by completing the nomination form available on the PAEMST website. For more information, please visit [www.paemst.org](http://www.paemst.org).

### Why else would a nominee want to complete the application process?

45 continuing education contact hours from the South Dakota Department of Education can also be earned toward certificate renewal by completing the application process. To be eligible, a PAEMST candidate must complete all components of the application process and submit a scorable application that can be sent on to the state selection committee. All applicants submitting a scorable application will earn credit, not just the state finalists whose materials will be sent on to a national selection panel.

### Now that you know more, Do YOU:

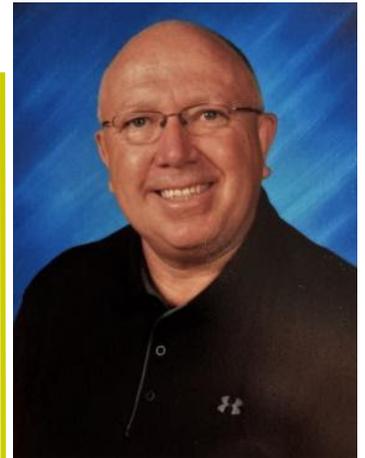
Teach mathematics in grades K-6?

Have a Bachelor's degree from an accredited institution?

Have at least 5 years of full-time employment prior to the 2021-2022 school year?

Teach students full-time at least 50% of a school's allotted instructional time?

Have a passion for the subject you teach, approach your work with creativity and imagination, and work to improve your individual teaching practice daily?



*“Anyone-- principals, teachers, parents, students, or members of the general public--may nominate a teacher...”*



## PAEMST *continued*

If you have answered YES to the previous questions and are a mathematics or science teacher in grades 7-12, consider applying for the 2022-2023 PAEMST award this FALL! The nomination window will open in late August or early September. For more program information, visit [www.PAEMST.org](http://www.PAEMST.org)



If you have any questions, please contact:

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## Mark's Thoughts

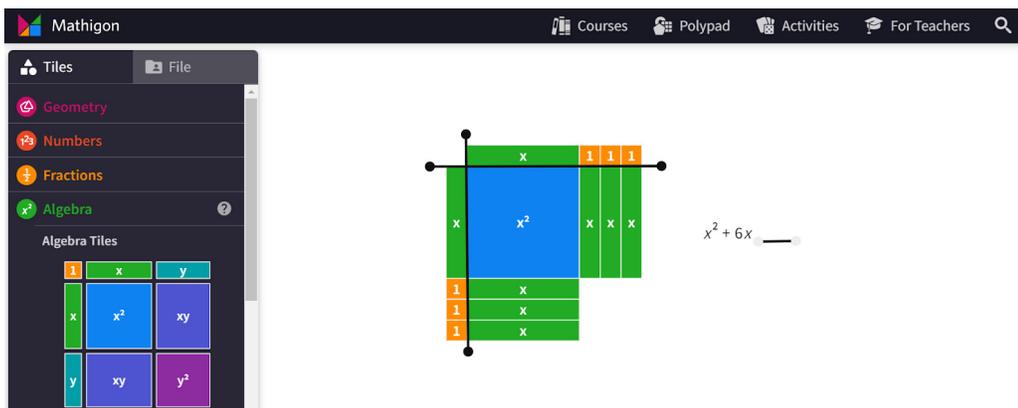
Happy New Year!

Have you heard of Mathigon? If you haven't, I invite you to check it out.

Mathigon (<https://mathigon.org/>) is a website that calls itself "the textbook of the future". I'll admit that I haven't spent enough time exploring this new resource and all of its bells and whistles, but I do know that the polypad (<https://mathigon.org/polypad>) has a lot to offer.

In addition to some neat geometry tools as well as digital tools for probability and statistics, the polypad has the best digital algebra tiles I have ever seen.

Best of all, Mathigon is free!



*"...the polypad has the best digital algebra tiles I have ever seen."*

Mark Kreie  
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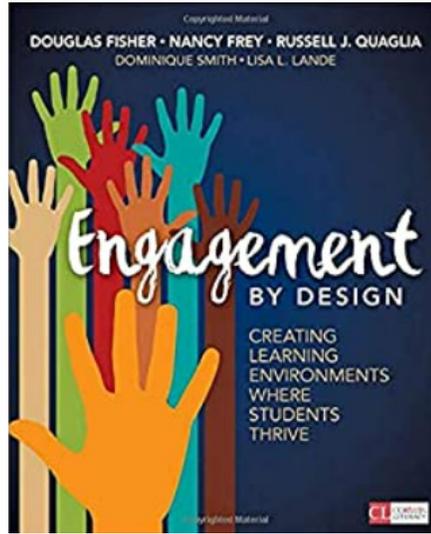


## Extra Incentive for Early SD STEM Ed Conference Registration!

Registration is now open for the 2022 SD STEM Ed Conference. This year's theme is "Together Again." Don't forget that registration costs increase as the conference date approaches.

One more reason to register early: **The first 150 people who register will receive a complimentary copy of *Engagement by Design* by Douglas Fisher.** Fisher provides a framework for making daily improvements in engaging your students and highlights how to reap the greatest benefits in the least amount of time. Focusing on relationships, clarity, and challenge can make all the difference.

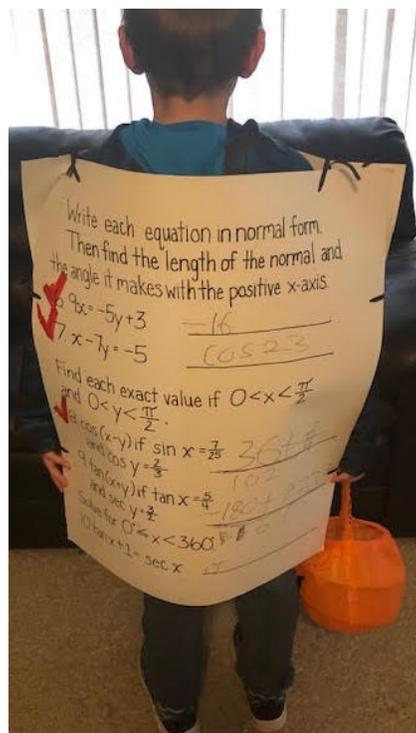
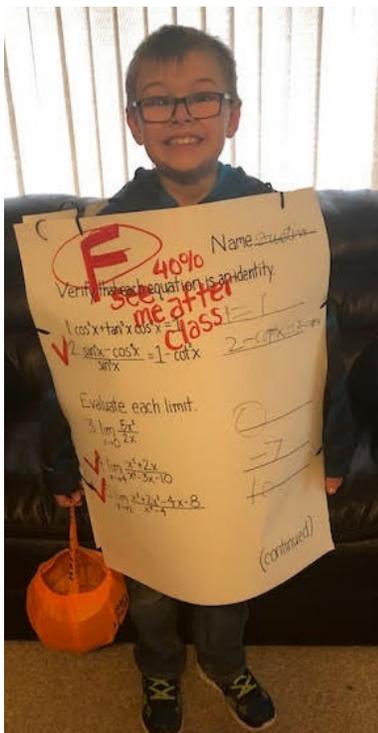
This book is provided through a generous grant awarded by the SD Department of Education. Special thanks to Kelly Royer and Jennifer Fowler at DOE.



*"The first 150 people who register will receive a complimentary copy of Engagement by Design by Douglas Fisher."*

## Most Terrifying Halloween Costume

I think we can all agree this kindergartner from Montrose School District put some thought into this scary costume! What could be more terrifying than a FAILED math test?!?





## 9-12 Spotlight

### Modeling the Future

We all strive for our math instruction to be engaging and to provide real-world experience and skills for our students. This can certainly be challenging. This year I have tried to reach new heights in my classroom through participation in the Modeling the Future challenge. This is an opportunity available to any class or group, so I wanted to share what we have learned with you.

#### What is it?

Sponsored by the Actuarial Foundation, the Modeling the Future challenge is a project-based learning opportunity for high school math students.

<https://www.mtfchallenge.org/>

#### What will students learn?

The competition challenges students to apply statistics and probability tools to identify and solve real-world problems. The competition also requires students to integrate computer, research, writing, and teamwork skills to be successful.

#### How is the competition structured?

Phase 1 – During the first semester of the school year, student teams are provided a problem scenario and a data set. The problem scenario provides a set of questions that walk students through an actuarial-type analysis of a real-world problem. In this year's competition, students were provided a 1000-point data set to explore mortgage default causes. This investigation was set into the very real-world situation of the 2008 mortgage crisis. Students were encouraged to explore the impact of factors such as mortgage length, credit score, and loan % of purchase price on the likelihood of mortgage default. At the end of the scenario, students used their mathematical calculations to make recommendations on future lending practices.

Phase 2 – Students successful in the first phase are selected to move on to Phase 2. In Phase 2, student teams work to identify a real-world project of interest to them. Students find data to analyze to allow them to ultimately make recommendations on possible problem solutions. During Phase 2, student teams are provided a practicing actuary as a project mentor. The final result of students' Phase 2 work is a report documenting their problem, their proposed solution, and the math used to support their conclusions.

Phase 3 – If selected to move forward, teams in Phase 3 will travel to the Modeling the Future Symposium to present their projects for final judging. Winning teams will receive part of the \$55,000 of available scholarship prizes.

#### What does the competition provide?

The Modeling the Future Contest provides a wealth of resources to help both teachers and students. There are several prior years of Phase 1 scenarios to allow you to practice with students before they even begin phase 1. There are lesson plans designed to help teachers guide students' work in each section of an actuarial analysis. There are sample project ideas, lots of data sets, and prior years' winning projects as reference. In addition, Modeling the Future provides webinars for both teachers and students throughout the competition.



*"...This year I have tried to reach new heights in my classroom through participation in the Modeling the Future challenge."*

(continued p. 8)



## 9-12 Spotlight *continued*

### What does it cost?

There is no cost to register a team. Schools are allowed to register as many teams as they need. Teams are up to 5 people and must have an adult coach. Teachers can coach more than one team.

### Our Experience to Date

This is the first year participating in this competition, and we have learned a lot.

- ◇ This program is definitely a commitment of time and energy. We have committed our once-a-week “mini” class period to this project.
- ◇ This program challenges students’ computer skills. Just because our students spend half the day on a cell phone doesn’t mean they are whizzes with computers. We all worked hard to improve our computer skills and to learn from one another. This would be a great project to complete with a computer teacher if that were possible in your school.
- ◇ Project scheduling and team management definitely were areas of focus. We worked hard to schedule work throughout the semester and divide work evenly among team members, but we still fell short of our goals to be calm and fair at all times. These lessons – while painful – are certainly real problems that we all encounter in our professional lives.
- ◇ The Phase 2 problem is proving more challenging than the Phase 1 scenario. Although some students are very excited to be able to explore a topic of their choosing, the idea of finding appropriate data and working through the analysis with little guidance is certainly overwhelming. We are all stressed by this challenge, but we look forward to the support of the actuary mentors and to all the learning we will do along the way.

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SDCTM High School Liaison  
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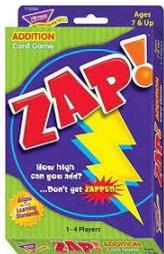


## Elementary Highlights

Winter Greetings!

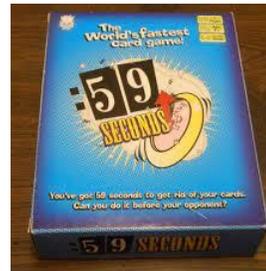
I hope you were all able to relax, even if just for a moment, over Christmas break. Today I had 7 out of 19 students absent. I didn't want to start a new concept – which I was planning to do, so we did station games. I thought I would share some of my favorite games to use for days like these.

**Toss Up** – Great for making 10 and adding on. Students have to hold the numbers they are adding on to in their head.



**Zap** – There are different operation versions of this game. We have been using the addition version. Again, great for addition facts and “holding” onto numbers to add them.

**59 Seconds (Speed)** – Great for quick thinking and one more and one less. We usually don't use a timer.



**Rush Hour** – Great for logical thinking. You can choose from beginner level to expert.

I know games cost money and many of us already spend too much of our own for our classroom, but I feel these games are a good investment as they are low floor, high ceiling games. Many I have had for over 10 years and they are still in great shape. We take time to talk about how to take care of games so we can continue to use them.

If you have a great game you use in the classroom, feel free to share!

Lindsey Tellinghuisen  
SDCTM Elementary Liaison  
Lindsey.Tellinghuisen@k12.sd.us



*“...I feel these games are a good investment as they are low floor, high ceiling games.”*



## A Word from Stephanie

Greetings,

Happy New Year! I hope 2022 brings you time to reflect over the past year as well as set goals for the year to come. As an educator, I always felt so lucky to have two fresh starts during a calendar year, one in January and one in August when school starts. In January, I reflect on the goals I set in August that are not met or fall off my radar. January is my time to start fresh with the same goals or tweak the original goals to something more attainable. One goal I focused my attention on in 2021 and will continue to focus on into 2022 is: maximize and build mathematics teacher networks. I look forward to continuing to connect mathematics educators from across the state throughout the year.

In October, the first Best Practices in Teaching Mathematics Regional Math Circles were held in Rapid City and Sioux Falls. More than 40 educators came together in these two locations, engaged in a challenging math task that pushed their thinking, and discussed several strategies to solve the task. At the end of the day, many were not sure of the solution, which is often part of the learning process. Educators then engaged in grade-level math tasks, discussed strategies students may use throughout the tasks and had discussion around the progression of student learning from Kindergarten through High School. Most importantly, throughout the day educators had the opportunity to talk, share resources, and celebrate strategies implemented. I am so excited to see how many educators are connected through SD Regional Math Circles throughout this year! Please consider joining me, the other circle facilitators, and your colleagues for a day to build your mathematics identity, participate in the math educator community and have fun.

I also look forward to seeing many of you again at this year's STEM Education Conference, "Together Again." I will be facilitating three sessions at this year's conference including the following topics: Math Circle workshops, Data Science, and the State Formative Assessment system. In addition to numerous workshops facilitated by local educators, SDCTM and SDSTA strive to host well renowned featured speakers and presenters. This conference is a wonderful opportunity, right in our very own state, to connect and learn from and with mathematics and science colleagues.

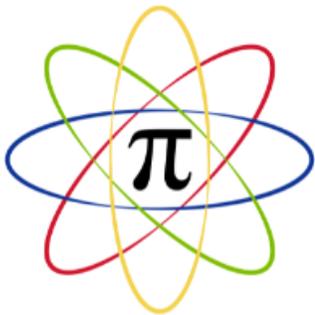
Watch for the spring newsletter with information about summer workshops. I hope you have a wonderful winter, stay warm and safe.

As always, please contact me if you have any questions or needs.

Stephanie Higdon  
Stephanie.Higdon@state.sd.us  
SD State Math Specialist



*“One goal I focused my attention on in 2021 and will continue to focus on into 2022 is: maximize and build mathematics teacher networks.”*



**SD STEM Ed**

# SD STEM Ed Conference **TOGETHER AGAIN!!**

**February 3, 4, & 5, 2022**

**JOIN EDUCATORS FROM AROUND THE STATE TO COLLABORATE AND LEARN ABOUT SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS!**

## **REGISTRATION:**

- Online advance registration is OPEN.
  - Payment can be made with PayPal, credit card, or by mailing a check with a copy of the invoice.
- Early bird registration (with payment) ends December 15th
- Pre-registration (with payment) ends January 24th.
- **Banquet Tickets:** *A limited number of banquet tickets (\$25) will be available. There is no guarantee that banquet tickets will be available with on-site registrations.*

### 2022 SD STEM Ed Conference

Together again!

\* Required

Fill out form

This form was created inside of  
GoogleForms Bishop O'Gorman Catholic  
Schools.

**Register Here:**

<http://www.sdctm.org/>



## Presidential Awards for Excellence in Mathematics and Science Teaching

Rewarding & Inspiring Great Teaching Since 1983



### Call for Nominations

The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the highest honors bestowed by the United States government specifically for K–12 science, technology, engineering, mathematics, and/or computer science teaching. Awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of STEM education. Since 1983, more than 5,100 teachers have been recognized for their contributions to STEM education. Up to 108 teachers are recognized each year.

Presidential Awardees receive:

- A citation signed by the President of the United States
- A trip to Washington, D.C. to attend a series of recognition events and professional development opportunities
- A \$10,000 award from the National Science Foundation
- Access to a network of award-winning teachers from across the country

### Who Can Nominate?

Anyone – principals, teachers, parents, students, or members of the general public – may nominate exceptional science, technology, engineering, mathematics, and/or computer science teachers.

**NOMINATION DEADLINE: January 7, 2022**

### Who Can Apply?

Elementary school science, technology, engineering, mathematics, and/or computer science teachers (K–6) can apply this year. Secondary school teachers (7–12) will be eligible to apply during a future cycle.

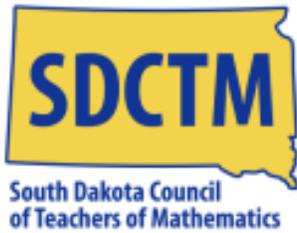
**APPLICATION DEADLINE: February 6, 2022**

**To nominate or apply, visit: [www.paemst.org](http://www.paemst.org)**

The National Science Foundation administers PAEMST on behalf of The White House Office of Science and Technology Policy.



2019-2021  
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[www.sdctm.org](http://www.sdctm.org)

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