



Wahpe Woyaka pi (Talking Leaf)

South Dakota Council Teachers of Mathematics Newsletter

Presidential Ponderings

Friends,

I hope you all had an opportunity for some rest over the Christmas break. This year has been a busy one for me - but in a good way. I have a great group of students this year, my children (all adults) all live in town so we see them often, and I am not using any new textbooks this year! I do like the opportunity to see how different texts approach various topics, but, as you all know, there is so much extra work to prepare for using a new text.



I recently read “Starting the Year Ahead with Change”, an article by Kevin Dykema, NCTM President. He gave some good insights about making change in a classroom. Each January he chooses one thing to focus on improving in his classroom to better meet the needs of his students. He has added a Puzzle of the Week for students to work on before class or at the end of class. He has also presented information about mathematicians while making a coconscious choice that they not all be white males, and he has focused more on student-to-student dialogue to name a few of the ideas he shared.

One of Kevin’s observations was that, for him, starting something new in January seemed more manageable. He thought that it may be because sticking with a new challenge was less daunting when he only had one semester “to get through” instead of a whole year. We all know that making changes can be overwhelming, whenever you choose to make them. I challenge you to be brave, take a deep breath, and forge on. You can do it!!

I want to personally invite each of you to attend the SD STEM Ed conference if you have not already registered. It is a great professional development event right here in South Dakota. If you attend the entire conference, you can earn graduate credit from Dakota Wesleyan (a small amount of additional work is required) or renewal credit from the Department of Education. And, thinking of changes, one of our featured speakers, Sharon Rendon, is presenting a session based on Peter Liljedahl’s book *Building Thinking Classrooms in Mathematics*. Our other featured speaker, Robert Stack, has sessions on connecting reading and mathematics for the elementary classroom and a session titled *Who wants to be a Mathematician* during which he plans to give prizes.

Hope to see you there!

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Winter 2022-2023

Wahpe Woyaka pi

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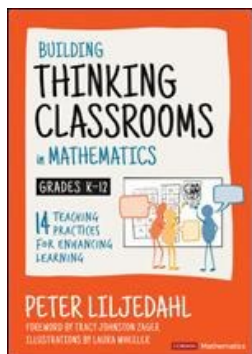
Calendar Notes:

- *STEM Ed Conference February 2 - 4*



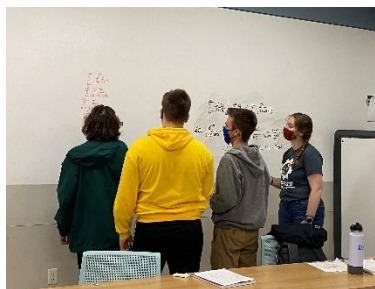
Higher Ed Viewpoint

After 30 years of teaching at South Dakota State University, I must admit that I have become somewhat set in my ways. After all, if it's not broken, don't fix it. But then I started reading Peter Liljedahl's book *Building Thinking Classrooms in Mathematics*, and I decided it was time to teach an old dog new tricks. Is that enough idioms for one article?

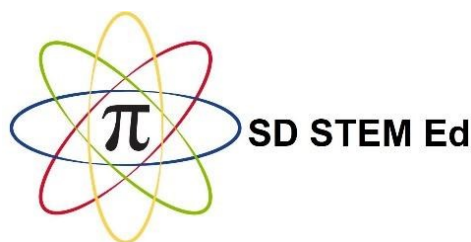


It is easy to fall back into old routines, and frankly, those routines have been successful. Not to toot my own horn, but just this past year, I was Teacher of the Year for the Jerome J. Lohr College of Engineering at SDSU. So what I have been doing has been working. But this past semester, I decided to try something new, inspired by Liljedahl's "Teaching Practices for Enhancing Learning." As I have advised my pre-service teachers, I didn't try to change everything. I just made a couple of changes.

In my calculus class, I implemented 4 of the 14 of Liljedahl's Teaching Practices, including "What Types of Tasks We Use in a Thinking Classroom," "How We Form Collaborative Groups in a Thinking Classroom," "Where Students Work in a Thinking Classroom," and "When, Where, and How Tasks are Given in a Thinking Classroom." At the end of each semester, I meet with all the students individually to ask them, "What is something we did this semester that helped you to learn the material?" In Calculus, 92% of the students said that working in groups on vertical wall spaces helped them the most to understand the concepts. Even though this was the most substantial change and the one I hoped would have the most significant impact, their responses surprised me. When I asked them why this was so impactful, some of their comments were, "it was more interactive," "I have never learned this way before," "I felt more a part of the class," and "I was more an active participant in the learning process."



"...I didn't try to change everything. I just made a couple of changes."



SD STEM Ed

Suppose you are interested in hearing more about the changes I made to my classroom and how you can implement these changes into your courses. In that case, I will be speaking at the SD STEM Conference in Huron in February. My talk "How I Changed My Teaching and How It Changed My Students" is on Saturday, February 4, from 10-10:50 in Dakota G.

You can significantly impact your classroom by implementing a few changes to get your students thinking about mathematics. And it is exciting! See you in Huron.

Christine Larson
Post-Secondary Liaison
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Teacher Spotlight

The Award I Never Applied For

One Week Before:

An email on Tuesday 3/15/22 from my assistant principal with the staff meeting agenda:

- *Tuesday Assembly
- *Spring Testing Schedule
- *Summertime Hours
- *Staffing Update
- *Questions/Concerns

Hold up! Tuesday Assembly? We NEVER have assemblies (unless of course it's homecoming week) and NONE of the math department seem to know what this assembly is about.

Start complaining now

On Wednesday morning during our staff meeting, the assistant principal tells us in regards to Tuesday's assembly, "Secretary Sanderson wants to come talk to us about South Dakota week of work and our building's program that encourages our students to work a job for a credit. We know we usually don't do whole school assemblies like this but we couldn't say no to this one and it's good, we promise."

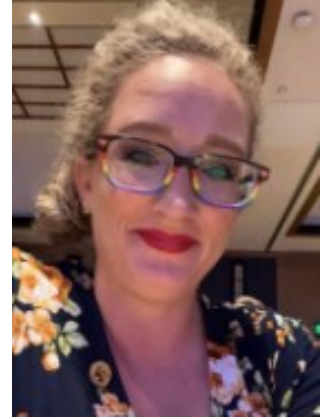
I remember rolling my eyes and thinking, "Great, I'll be missing my Pre-Algebra class, maybe we can skip the assembly and no one will know ;)."

Tuesday, March 23rd rolls around and the math department is reminding each other about this assembly and grumbling a bit about how we haven't received much information on it. We were told to wait for the all-call to bring students down. I recall telling my colleagues that if the all-call doesn't happen, I'll just stay and keep teaching and beg forgiveness (and blame forgetfulness) and won't have to miss a class.

The all-call comes at 9:50 (2 minutes before 2nd period is over). We usher our students down to the gym and my class is one of the last classes to enter. As we are finding seats, I happen to notice all the camera crews, but then also notice the Governor, which then sent my suspicion of the camera crews to the back of my head. Since my class was the last in the gym (of about 850 students/staff), we get seated at the top of the bleachers in the back for most of us. I find my way to a tall stool that sits behind the press box for our athletic events and chat a bit with some of the seniors that are sitting up there with me.

As memory recalls, our principal speaks, our superintendent speaks, then introduction for Governor Noem is made and she makes her way to the podium. She gives a speech about teachers, mostly. Speaking highly of us all and of the profession itself. She then makes mention of the Milken Educator Award and Greg Gallagher, and my ears perk up a bit. I didn't recall exactly what the award entailed, but I remember a colleague from Rapid City, Nicole Keegan, receiving the award in my first five years of teaching. I vividly remember being in awe of her and the award and thinking that awards like that don't happen to teachers like me. I'm never going to be innovative enough, good enough, creative enough, to receive an award like that.

Greg was introduced as the giver of the Milken Educator Award, and he announced that one of the teachers from T.F. Riggs HS is a recipient of this prestigious, national award. It is explained in his speech that this award is not a nominated award. No one person is allowed to apply for this award. Word gets out that a teacher is extraordinary, research is done on that teacher in a span of about 1-2 years, and once determined worthy, the potential recipient is awarded.



"I know I deserved this award, but me believing that doesn't diminish the fact that I KNOW many others do as well."

(continued p. 4)



Teacher Spotlight *continued*

Greg also explained that this recipient will receive an all expense paid trip to Los Angeles, California to meet other Milken Educators. My seniors sitting beside me started trying to guess who was going to win. They looked at me and asked what if it was me. I told them no way, and suggested another math teacher from Riggs, they agreed he was really good and that it might be him.

Greg asked the crowd for student volunteers, 5 of which were brought to the front of the group. They each held out a sign. The \$ sign, the number 2, the number 5, the number 0, and another number 0. The seniors I was sitting by looked at me and I shrugged and said to them, “add another 0 and we can talk.” They all giggled. Greg then asked Secretary of Education Tiffany Sanderson to bring up an extra sign that was missing, ANOTHER ZERO! The gym erupted in shouts and oohs and aahs.

Greg passed the mic over to Governor Noem to announce the recipient of the “Oscar of Teaching” award, Nichole Bowman (that’s me!). I was in shock. I was unbelieving. I had to walk many stairs down without falling from tears in my eyes. I had no idea this award was coming my way. My husband had no idea. I wish I had looked up, across the gym to my two older children in the pep band to see their reactions but I was so focused on not falling down the stairs. I also wished I would have washed my hair that day and not just used the dry shampoo :). Then Greg ask me to speak!! I’m sure whatever I said was complete gibberish and I’m glad for that particular lapse of memory.

After pictures were taken, speeches given, and hugs completed, the students went back to class. I stayed in the gym and gave about 5 interviews, all the while my district had supplied me with a substitute teacher for the rest of the afternoon. Two lovely Milken Educators, Carla and Amanda, traveled from the east and west side of South Dakota to be there with me to celebrate and educate me on this award and what it really means. We went out to lunch together and shared experiences and thoughts while they constantly reminded me that I was deserving of this award (It’s still hard to believe).

I was completing interviews up to a month afterward. I was asked to be the commencement speaker for NSU’s graduation (which I politely declined because I had prior obligations and was super scared about the thought. I mean, what do I have to say to a bunch of graduates that would be worth their time??)

I still am unsure of how this came to be for me. I know what I do in my classroom matters and is productive, meaningful, and successful, but how is what I do any different than what others do? I’m still in disbelief when I stop to think about this amazing opportunity that was given to me. That’s what this award is, an opportunity. An opportunity to do more, to be better, and/or to continue doing what I’ve been doing. The connections I’ve made have given me many resources and many opportunities of resources I didn’t think I’d ever have. I know I deserved this award, but me believing that doesn’t diminish the fact that I KNOW many others do as well. How I got so lucky, I’m still quite unsure.

Los Angeles was amazing and I had never been to a workshop that was filled with so many like minded educators all wanting the exact same thing out of education. However, the most asked question I’ve received is about the \$25,000 I received. Yes the money was awarded directly to me to use as I saw fit (not the school). What did I do with it after setting some aside for tax purposes? I took my family on a vacation and bought my two older children new instruments.

Mrs. Nichole Bowman
Educator: Pierre SD
Algebra 1 and Geometry—T.F.Riggs HS
Athletic Coordinator—T.F.Riggs HS
Milken Educator SD’ 21



Mark's Thoughts

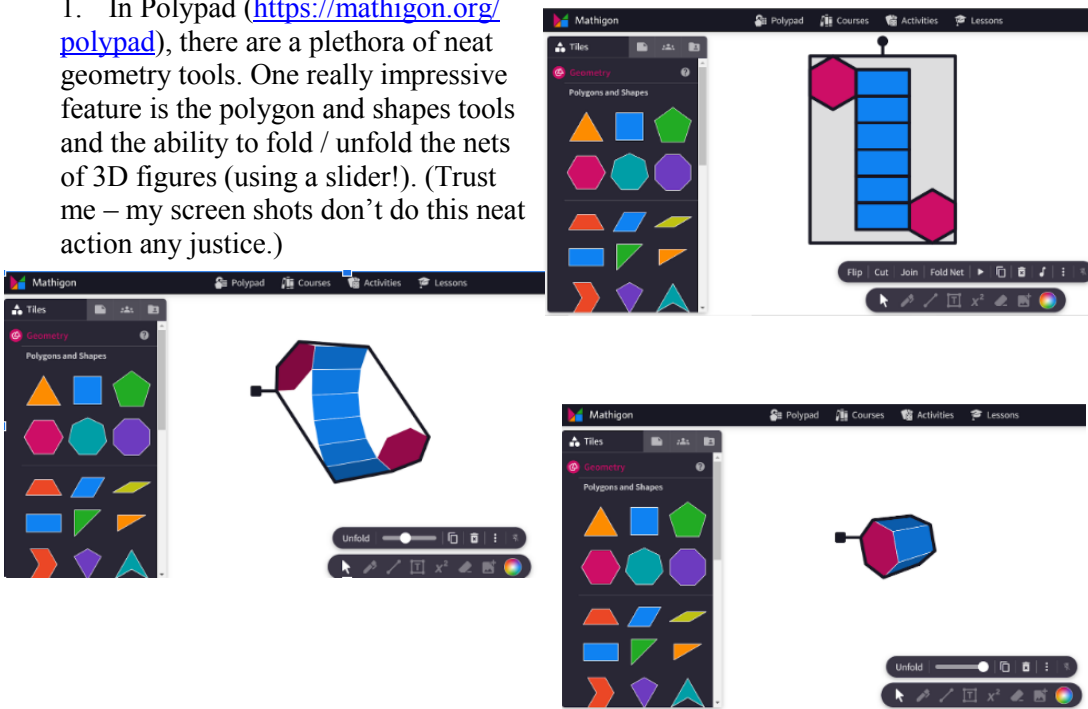
MORE MATHIGON

Happy New Year!

In last winter's newsletter, I wrote about Mathigon (<https://mathigon.org/>) and shared a screen shot of how I use Mathigon as a resource for digital algebra tiles. I also admitted that I hadn't spent a lot of time exploring all that Mathigon has to offer.

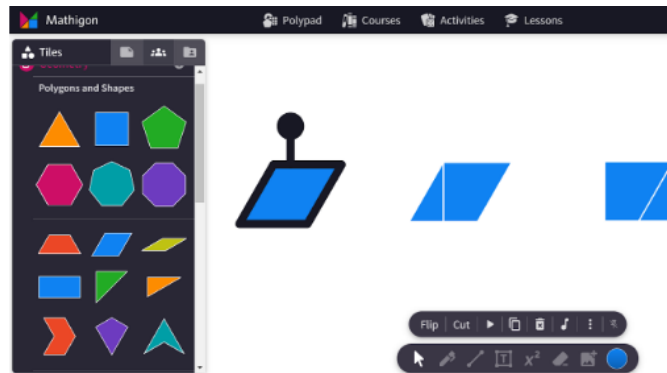
Fast forward a year, and with 4 snow days extending my holiday break I was able to find time to dig a bit deeper into Mathigon. Here are a few of my new favorite Mathigon features.

1. In Polypad (<https://mathigon.org/polypad>), there are a plethora of neat geometry tools. One really impressive feature is the polygon and shapes tools and the ability to fold / unfold the nets of 3D figures (using a slider!). (Trust me – my screen shots don't do this neat action any justice.)



“Here are a few of my new favorite Mathigon features.”

2. Again in Polypad, the “cut” feature with polygons can be really cool. Here, I quickly modeled how the area of a parallelogram can be connected to the area of a rectangle, helping students visualize “cutting” the parallelogram vertically and translating it to create a rectangle.



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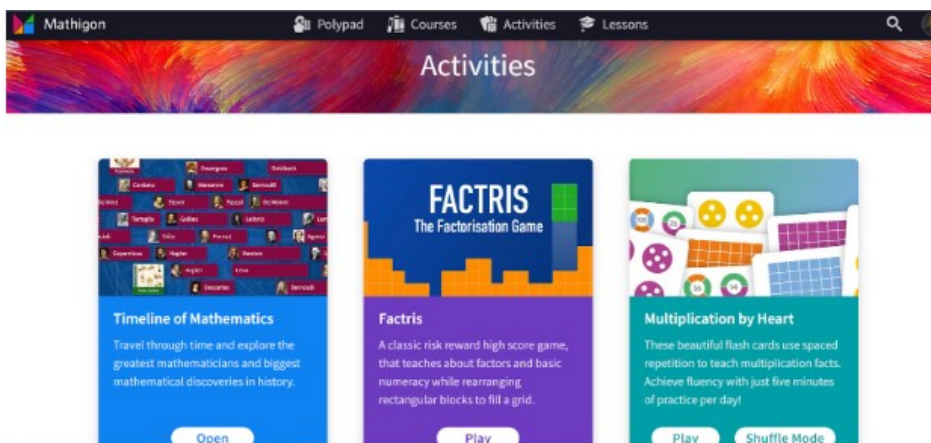


Mark's Thoughts *continued*

MORE MATHIGON

3. While most Mathigon tools are housed in Polypad, one feature found outside of Polypad is an activity called Multiplication by Heart. This flash card game is highly recommended to me by a few colleagues. The flash cards provide a visual representation for each multiplication fact. The activity tracks mastery progress for each student and is designed to be used for about 5 minutes daily.

(NOTE: In order to have your students save their progress, you will need to have a teacher account and set up a class for your students to join. For more info, visit <https://mathigon.org/learn>.)



Look for a few more of my new favorites in future newsletters. Keep in mind, Mathigon is free!

Mark Kreie
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Lesson Highlights

Geometry Haiku

Geometry curriculum is notoriously vocabulary dense. Students must master a large amount of new vocabulary to be successful. Additionally, today's Geometry classroom is often expected to help improve student writing goals as part of school-wide writing initiatives. The result of this dual expectation: Geometry Haiku!

Haiku is a form of Japanese poetry that has three lines. The first line has five syllables. The second line has seven syllables. The third line has five syllables. The subject is usually nature, emotion, or spiritual. But what if the subject was mathematical? Students used geometry terms and definitions to create a haiku poem following the traditional 5-7-5 syllable format.

Poetry was evaluated using a rubric including:

- Mathematical accuracy
- Imaginative word choices
- Correct use of haiku form
- Spelling, punctuation
- Style points (presentation and overall impression)

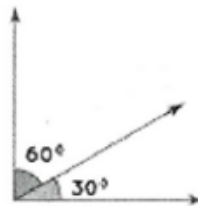
Many charming and imaginative poems were created, some with illustrations.

*Polyhedron is
Shape able to have volume
Space inside object*

LR

Complementary Angles

2 angles that are
Complementary equal
To 90 degrees



BK




*“ Students used
geometry terms
and definitions to
create a haiku po-
em ... ”*

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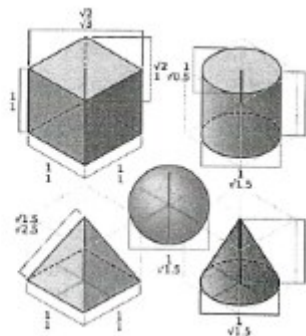
Lesson Highlights *continued*

Point is location,
 A line is points in a row,
 Lines make shapes like squares.

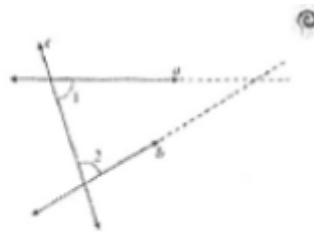


EB

Points, lines, vertices
 Edges, don't forget faces
 They all makeup shapes




Postulate is a
 Statement that is accepted
 Without needing proof



JH

Major premises
 are conditional statements
 and are logical.

"All humans are mortal." "David Foster Wallace is a human."
 "All humans are mortal."
 → Major Premise
 "David Foster Wallace is a human."
 → Minor Premise



CD



Presidential Award for Excellence in Mathematics and Science Teaching

Presidential Award for Excellence in Mathematics and Science Teaching

We are awaiting the announcement from the White House for both the 2021 and 2022 Awardees. Again, here is a list of outstanding teachers from each award year who are South Dakota's state-level finalists.

2022 South Dakota State-Level Finalists (Mathematics)

Chelsey Coverdale, Jodi Neugebauer, Rebecca Van Roekel

2021 South Dakota State-Level Finalists (Mathematics)

Brittany Green, Mark Kreie, Amy Schander

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.



“...more than 4,000 teachers have been recognized for their contributions to mathematics and science education.”

(continued p. 10)



PAEMST *continued*

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 7-12?

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?



If you have answered YES to the above questions and are a mathematics or science teacher, consider applying for PAEMST in the future! The nomination window for the 2022-2023 nomination cycle closed on January 9th, 2023. The application deadline is February 6th, 2023.

If you have any questions, please contact:

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NCTM Representative Tips

There are a few NCTM Conferences and Regional Meetings coming up.

The one closest to home is the SD STEM ED Conference. This is in Huron SD on Feb 2-4, 2023. The theme this year is “My Students Still Need Me.” The four featured speakers this year include: Dr. Stephen Pruitt, Dr. Robert Stack, Dr. Astrid Northrup, and Sharon Rendon. Don’t forget about all the local teachers who are also presenting. It will be a great time to build your network of encouragement.

2023 marks the 102nd NCTM Annual Meeting and Exposition. This year it will be held in Washington DC from October 25-28. The theme is “Superbowl event of the year.” With hundreds of educational sessions and thousands of mathematics educators from all over the world, you will be sure to find collaboration, networking, and inspiration to bring back to your classroom.

Susan Gilkerson
NCTM Representative
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“... you will be sure to find collaboration, networking, and inspiration to bring back to your classroom.”





2021-2023
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