Principal Summer Professional Development Series
SPPS Mathematics SY20-21

Saint Paul Public Schools

Schoology Course:
TVNN-8FMH-JFNCC

Link to Slide Deck:
bit.ly/SPPSadmin2020math

SPPS Math Department

K-12 Math Supervisor

Secondary Math Specialist

Elementary Math Specialist

Elementary Math Specialist

Elementary Math Specialist

Math Specialist and Languag e Specialist

Learning Targets

St Paul Administrators will be able to…

Day 1

- Understand the overall vision and goals of mathematics in SPPS
- Feel confident around EBP's outlined in their SCIP

Day 2

- Familiarize themselves with mathematics instructional strategies, routines, and priorities that support efforts with both MLL and CRI
- Explore new content written by SPPS teachers in the TQE framework
- Recognize and own their '6 Spheres of Influence' within the teaching and learning of mathematics in their buildings

Math Opener…

Use the next 5 minutes to find any objects in your home / around you to recreate this pattern… Post it here (Padlet)

Or scan this

SPPS Math Overview

2020-2021

Saint Paul
Public Schools

Math Vision:

Help SPPS students and staff make sense of mathematics using TQE (Task, Questions, and Evidence)

Mathematics Goals

Destination: SPPS will improve achievement and address students' social and emotional needs through Culturally Responsive Instruction. We will engage learners in math instruction and encourage a sense of social justice for students, their families, communities, and the world at large. Students will be prepared for and envision themselves in professions of the 21st century. They will be inspired to make the world a better place.

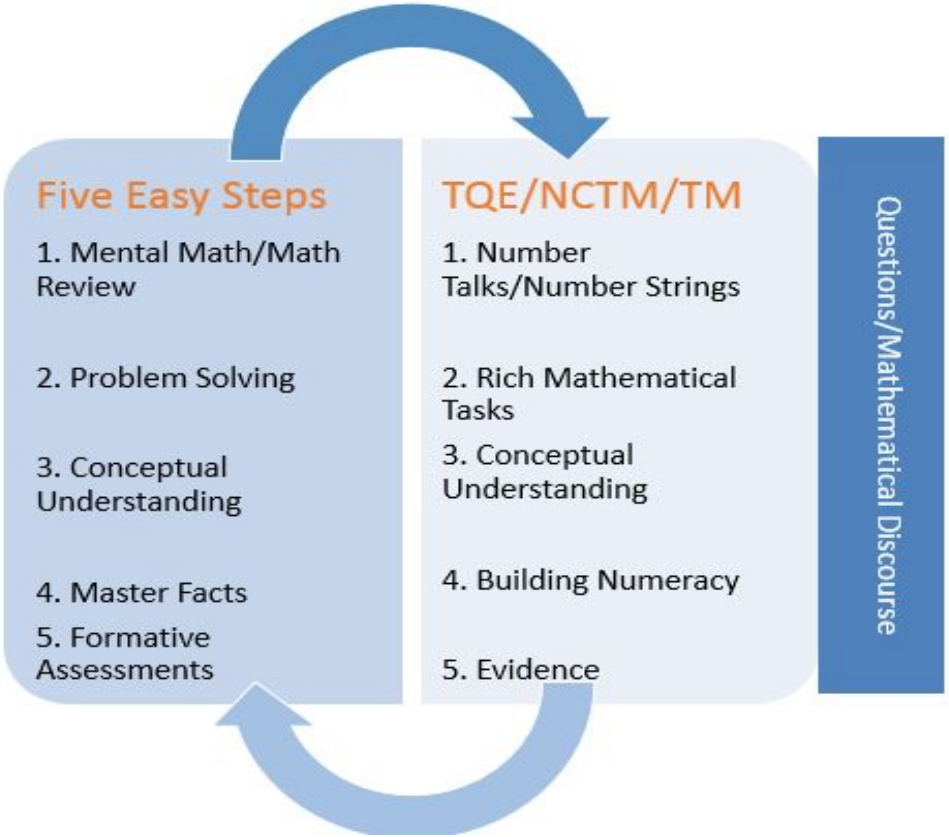
Stretch Goal:

Saint Paul Public Schools will increase student achievement in Math by 13.9% on the MCA for the 2020-21 school year.

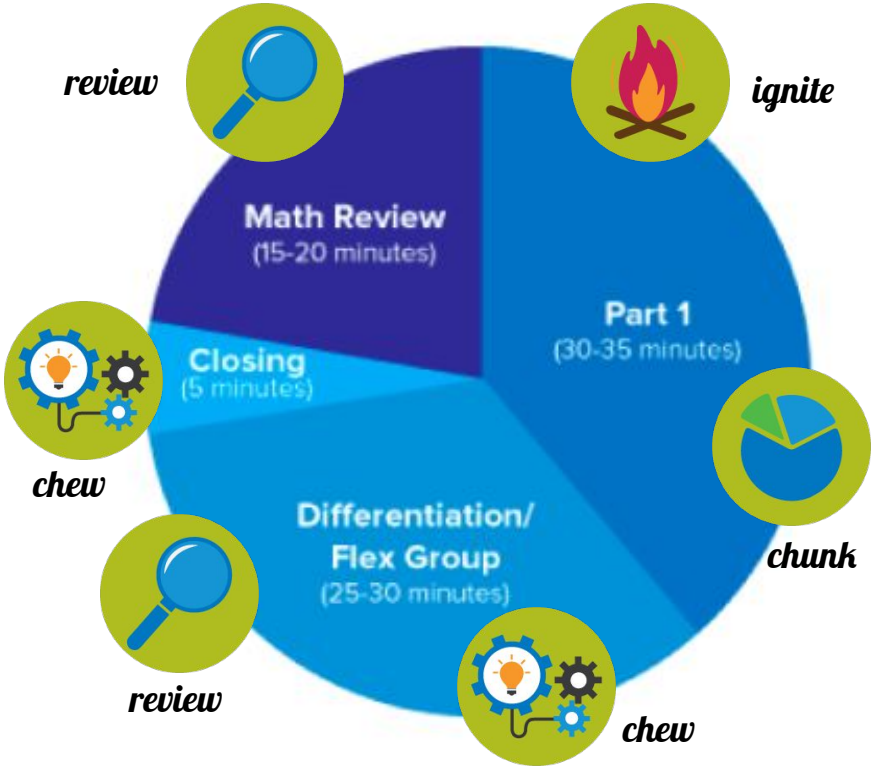
Mathematics Goals Continued….

Smart Goal:

Saint Paul Public Schools will increase student achievement in Math by 1% a year on the MCA starting the 2020-21 school year.

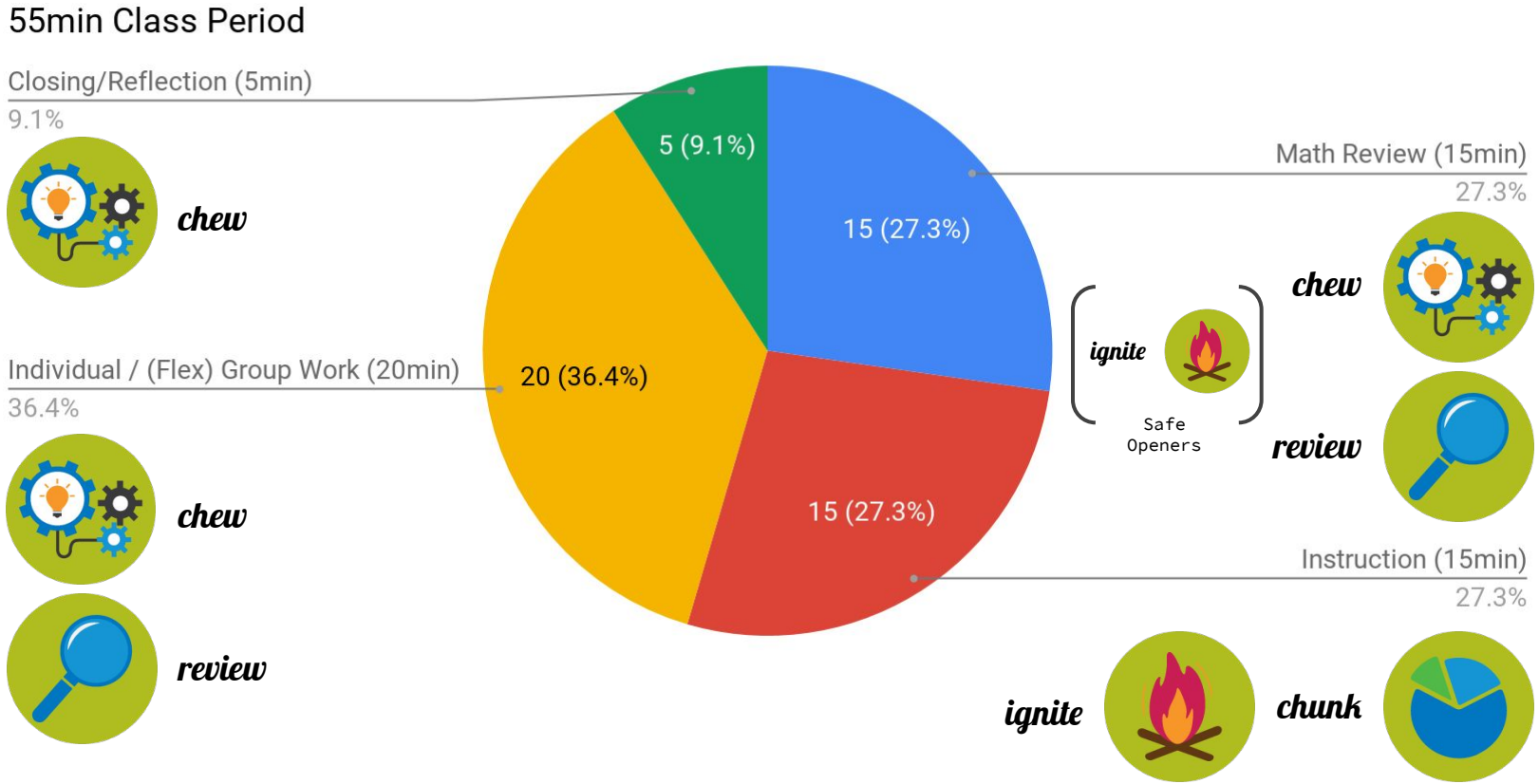


Balanced Math Program



Instructional Model

Secondary Math Class



Supporting Teachers with the Instructional Model: Action areas to improve student achievement K-5

Improvement #1

SPPS Math Review

Improvement #2

Small Group Instruction (Part II)

Improvement #3

Independent Student Work (Part II)

Improvement #4

Task, Questions and Evidence(Part I)

All encompassing improvement:

Data Driven Instruction

Supporting Teachers with the Instructional Model: Action areas to improve student achievement 6-12

Improvement #1

SPPS Math Review

Improvement #2

Independent Student Work (Part II)

Improvement #3

Small Group Instruction (Part II)

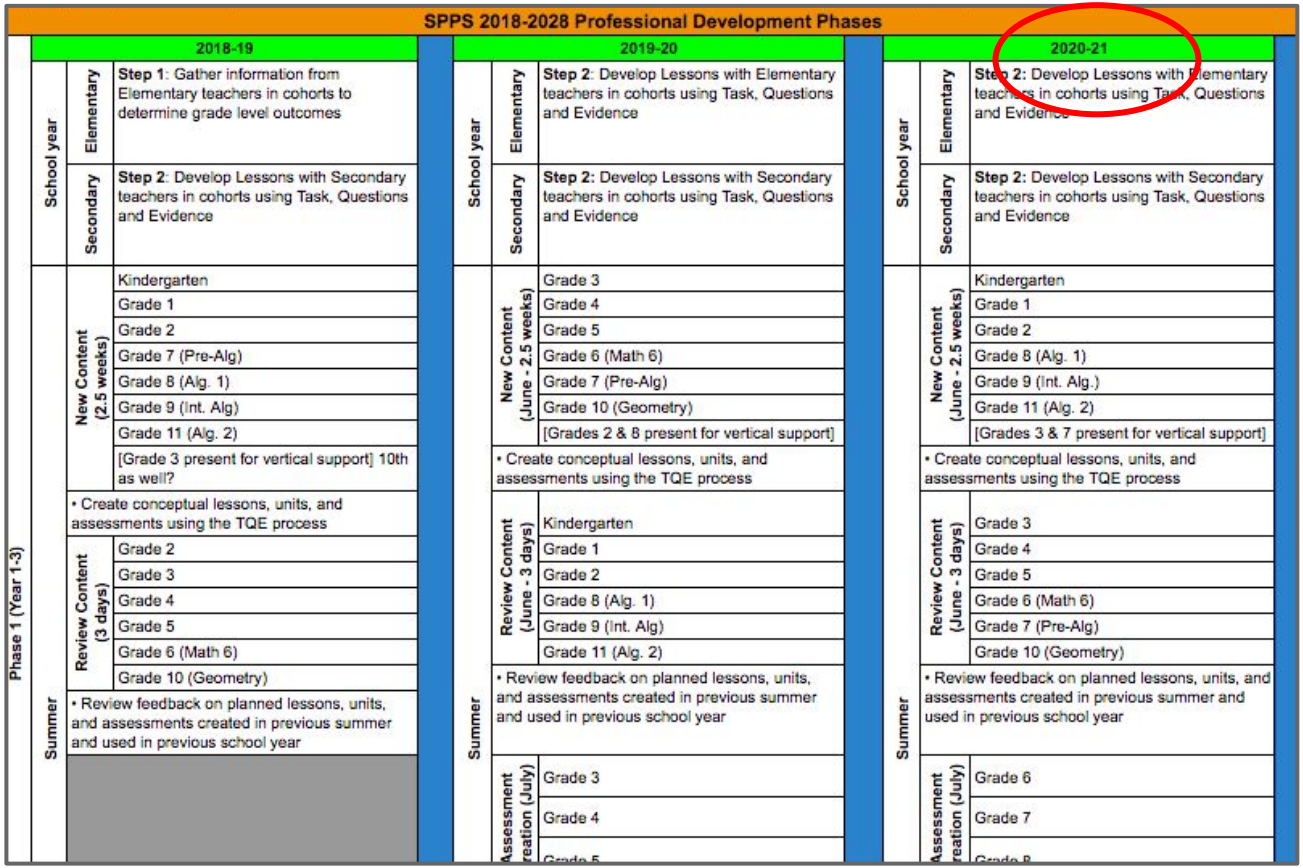
Improvement #4

Task, Questions and Evidence(Part I)

All encompassing improvement:

Data Driven Instruction

Phase I



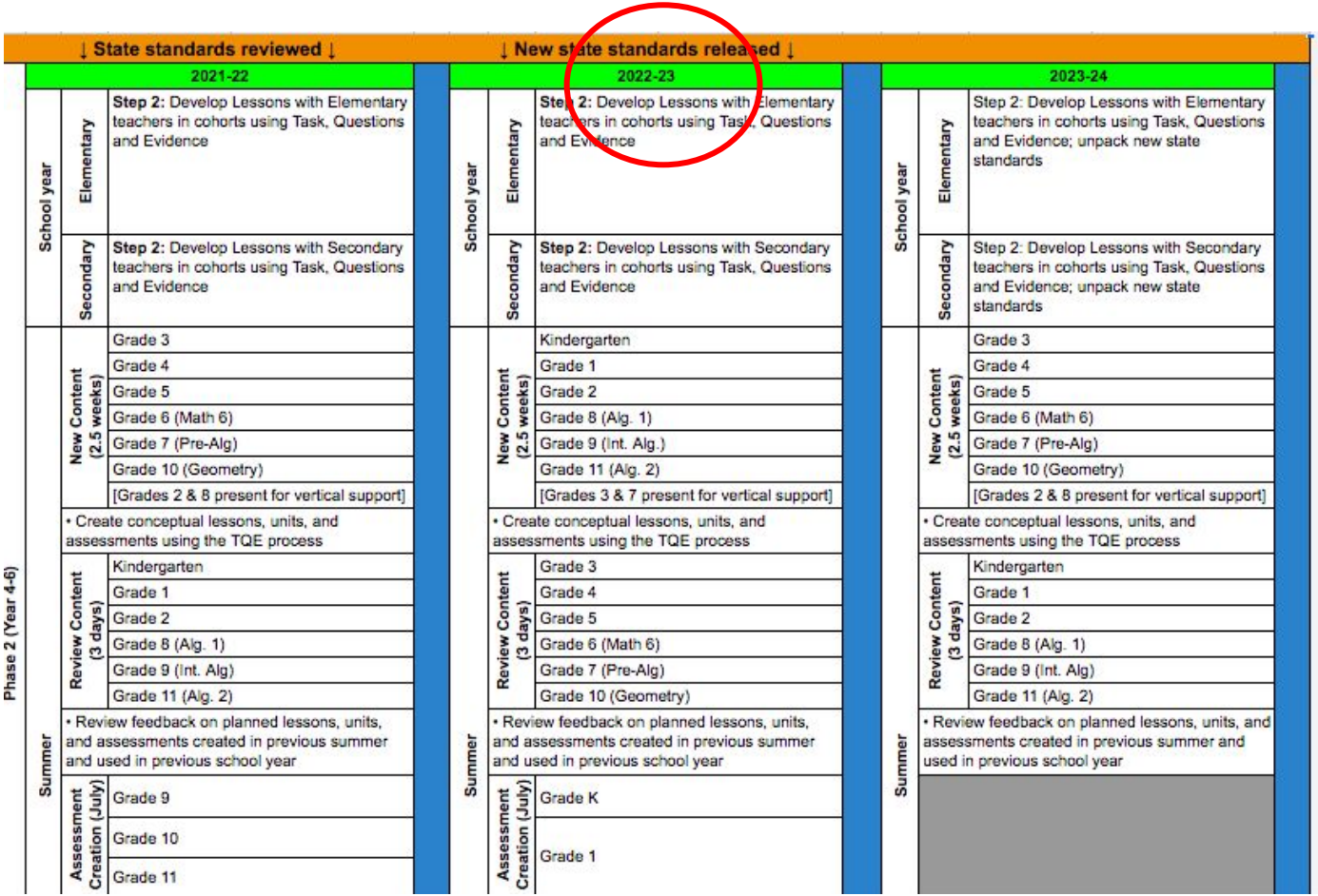
SPPS 2018-2028 Professional Development Phases

Phase 1 (Year 1-3)

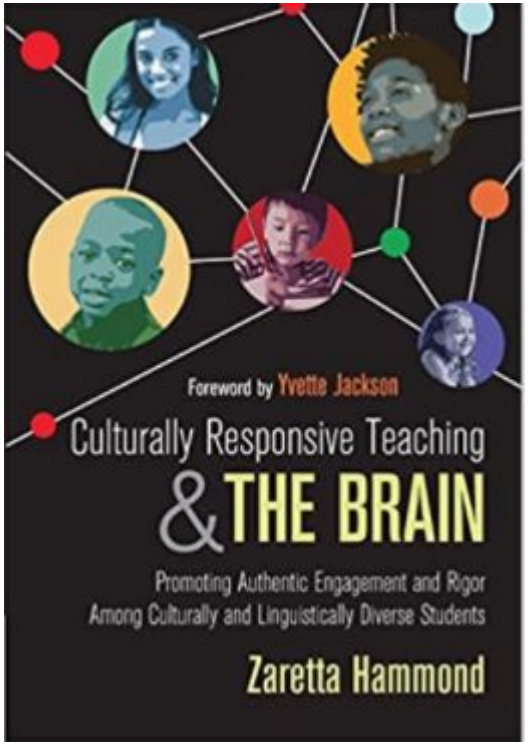
		2018-19	2019-20	2020-21
School year	Elementary	**Step 1**: Gather information from Elementary teachers in cohorts to determine grade level outcomes	**Step 2**: Develop Lessons with Elementary teachers in cohorts using Task, Questions and Evidence	**Step 2**: Develop Lessons with Elementary teachers in cohorts using Task, Questions and Evidence
	Secondary	**Step 2**: Develop Lessons with Secondary teachers in cohorts using Task, Questions and Evidence	**Step 2**: Develop Lessons with Secondary teachers in cohorts using Task, Questions and Evidence	**Step 2**: Develop Lessons with Secondary teachers in cohorts using Task, Questions and Evidence
Summer	New Content (2.5 weeks)	Kindergarten Grade 1 Grade 2 Grade 7 (Pre-Alg) Grade 8 (Alg. 1) Grade 9 (Int. Alg) Grade 11 (Alg. 2) [Grade 3 present for vertical support] 10th as well?	Grade 3 Grade 4 Grade 5 Grade 6 (Math 6) Grade 7 (Pre-Alg) Grade 10 (Geometry) [Grades 2 & 8 present for vertical support]	Kindergarten Grade 1 Grade 2 Grade 8 (Alg. 1) Grade 9 (Int. Alg.) Grade 11 (Alg. 2) [Grades 3 & 7 present for vertical support]
		• Create conceptual lessons, units, and assessments using the TQE process	• Create conceptual lessons, units, and assessments using the TQE process	• Create conceptual lessons, units, and assessments using the TQE process
	Review Content (3 days)	Grade 2 Grade 3 Grade 4 Grade 5 Grade 6 (Math 6) Grade 10 (Geometry)	Kindergarten Grade 1 Grade 2 Grade 8 (Alg. 1) Grade 9 (Int. Alg) Grade 11 (Alg. 2)	Grade 3 Grade 4 Grade 5 Grade 6 (Math 6) Grade 7 (Pre-Alg) Grade 10 (Geometry)
		• Review feedback on planned lessons, units, and assessments created in previous summer and used in previous school year	• Review feedback on planned lessons, units, and assessments created in previous summer and used in previous school year	• Review feedback on planned lessons, units, and assessments created in previous summer and used in previous school year
	Assessment creation (July)		Grade 3 Grade 4 Grade 5	Grade 6 Grade 7 Grade 8

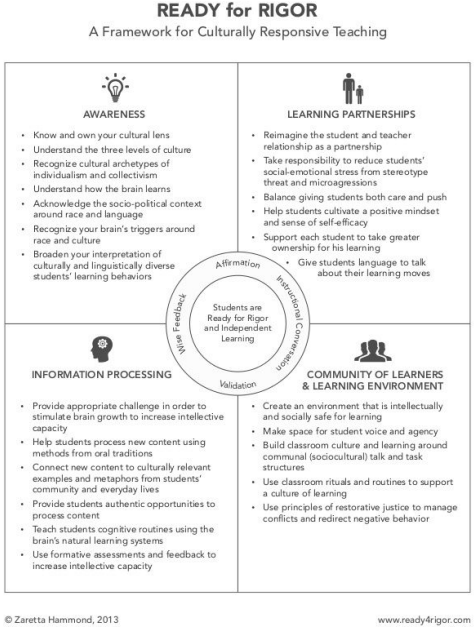
Phase II

[SPPS 2018-2027 Professional Development Phases/ Implementation Science Stages]

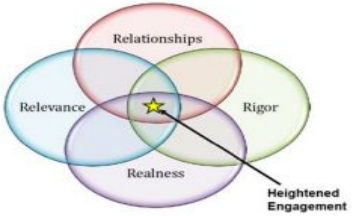


Culturally Responsive Instruction





Culturally Responsive Teaching:



Culturally relevant teaching is a term created by Gloria Ladson-Billings (1994) to describe "a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes." Participating in culturally relevant teaching essentially means that teachers create a bridge between students' home and school lives, while still meeting the expectations of the district and state curricular requirements. Culturally relevant teaching utilizes the backgrounds, knowledge, and experiences of the students to inform the teacher's lessons and methodology.

It's only culturally responsive if our students are responsive to the strategy, curriculum, or instruction. One strategy may be effective and engaging for one student or student group and not another.

Rigor

In what ways will I message to ALL students that they are expected to attain high standards?

- All students should receive the consistent message that they are expected to attain high standards in their schoolwork.
- Communicate clear expectations
- Create an environment in which there is genuine respect for students and a belief in their capacity.
- Recognize when standards are met
- All students should receive the consistent message that they are expected to attain high standards in their schoolwork.

Relevance

How will I make sure the curriculum relates to students' experiences, interests and backgrounds?

- How does the curriculum relate to students' experience, interest and background?
- Students identify issues that are important to them.
- The classroom recognizes student advocacy for what students need to be successful.

Realness

What strategies will I use to make sure students and adults are able to show up as their authentic selves?

- Are students able to show up as their authentic selves?
- Do students perceive teachers as authentic?
- Students engage in the curriculum critically. They question and inquire about what and how they are taught.

Relationships

How will I build relationships with staff members, students, and families?

- How do we build relationships that are reciprocal?
- Recognize student contributions to the classroom community and also create an environment where students build relationship with the teachers not just teachers building relationships with students.

DIMENSIONS OF EQUITY

As equity-focused educators, it is important to distinguish between three key areas in education: *multicultural education*, *social justice education*, and *culturally responsive teaching*. Too often the terms are used interchangeably when they are not. Below is a simple chart to help you understand the distinctions between them. A key point to remember, only CRT is focused on the cognitive development of under-served students. Multicultural and social justice education have more of a supporting role in culturally responsive teaching.

MULTICULTURAL EDUCATION	SOCIAL JUSTICE EDUCATION	CULTURALLY RESPONSIVE PEDAGOGY
Focuses on celebrating diversity	Focuses on exposing the social political context that students experience	Focuses on improving the learning capacity of diverse students who have been marginalized educationally
Centers around creating positive social interactions across difference	Centers around raising students' consciousness about inequity in everyday social, environmental, economic, and political aspects of life	Centers around the affective & cognitive aspects of teaching and learning
Concerns itself with exposing privileged students to diverse literature, multiple perspectives, and inclusion in the curriculum as well as help students of color see themselves reflected.	Concerns itself with creating lenses to recognize and interrupt inequitable patterns and practices in society.	Concerns itself with building resilience and academic mindset by pushing back on dominant narratives about people of color.
Social Harmony	**Critical Consciousness**	**Independent Learning**

chunk

It’s not about civil rights...

chew

Turn and Talk (in the chat)

I noticed… The video makes me feel…
Something I am wondering is...

If it's not about civil rights, what is it about?

review

As you watch the video a second time, jot down what you notice. Your list might look something like this

- Powernomics is trying to help black people become competitive in society
- Assistant Secretary of US Department of Commerce
- Florida Department of Education
- Primary problem of slavery has never been addressed

Don't worry about catching everything, do your best.

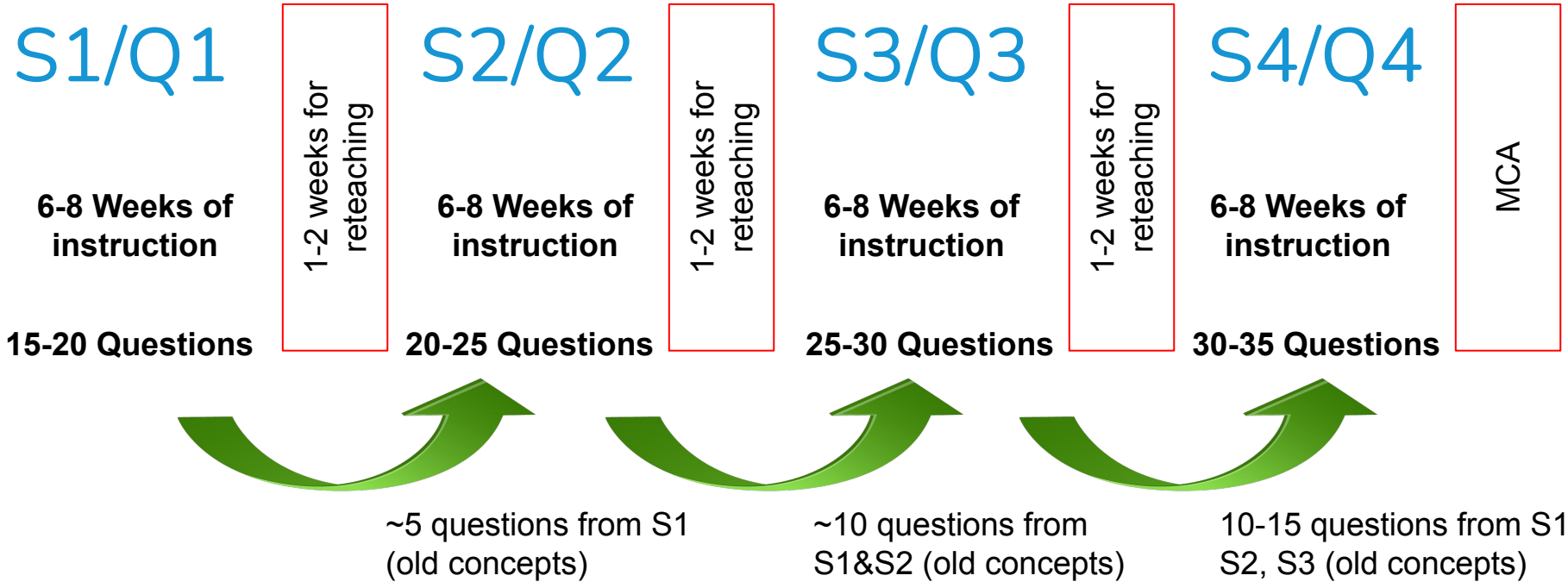
What did you notice?

What does this have to do with teaching math?

The Nation/SPPS and our children's lives are at a crossroads.

Take 5 minutes to stand and stretch

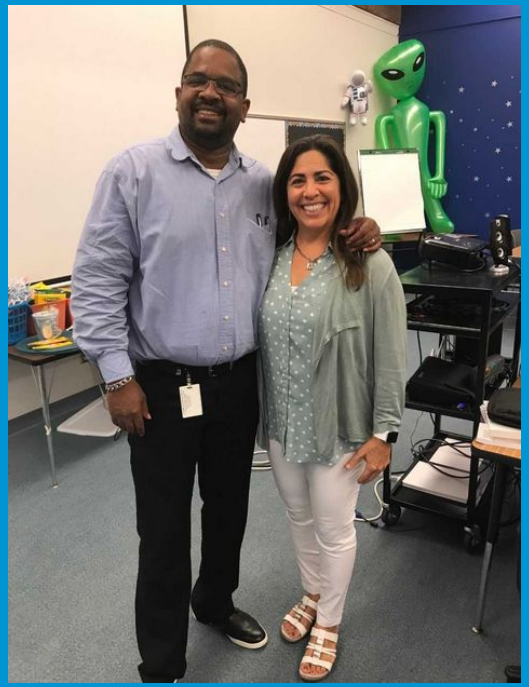
Benchmark Summative Assessments



Learning Best Practices in Teaching Mathematics

- As a department, we needed to know research best practices in mathematics at all levels
  - Due to our large size, we had to determine how to bring back what we were observing to our teachers
- Minnesota Department of Education
- Minnesota Council of Teaching Mathematics
- National Council of Teaching Mathematics

Learning from the Best!



Juli Dixon
DNA Math/TQE

Saint Paul
Public Schools

Dan Meyer
DESMOS/3-ACT Math

Jo Boaler
Mathematical Mindsets

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

NCSM
LEADERSHIP IN MATHEMATICS EDUCATION

JUNE 2020

Moving Forward: Mathematics Learning in the Era of COVID-19

THREE AREAS WITH SERIOUS IMPLICATIONS FOR
EQUITABLE ACCESS TO HIGH-QUALITY MATHEMATICS TEACHING AND LEARNING

The Most Effective Teaching Practices

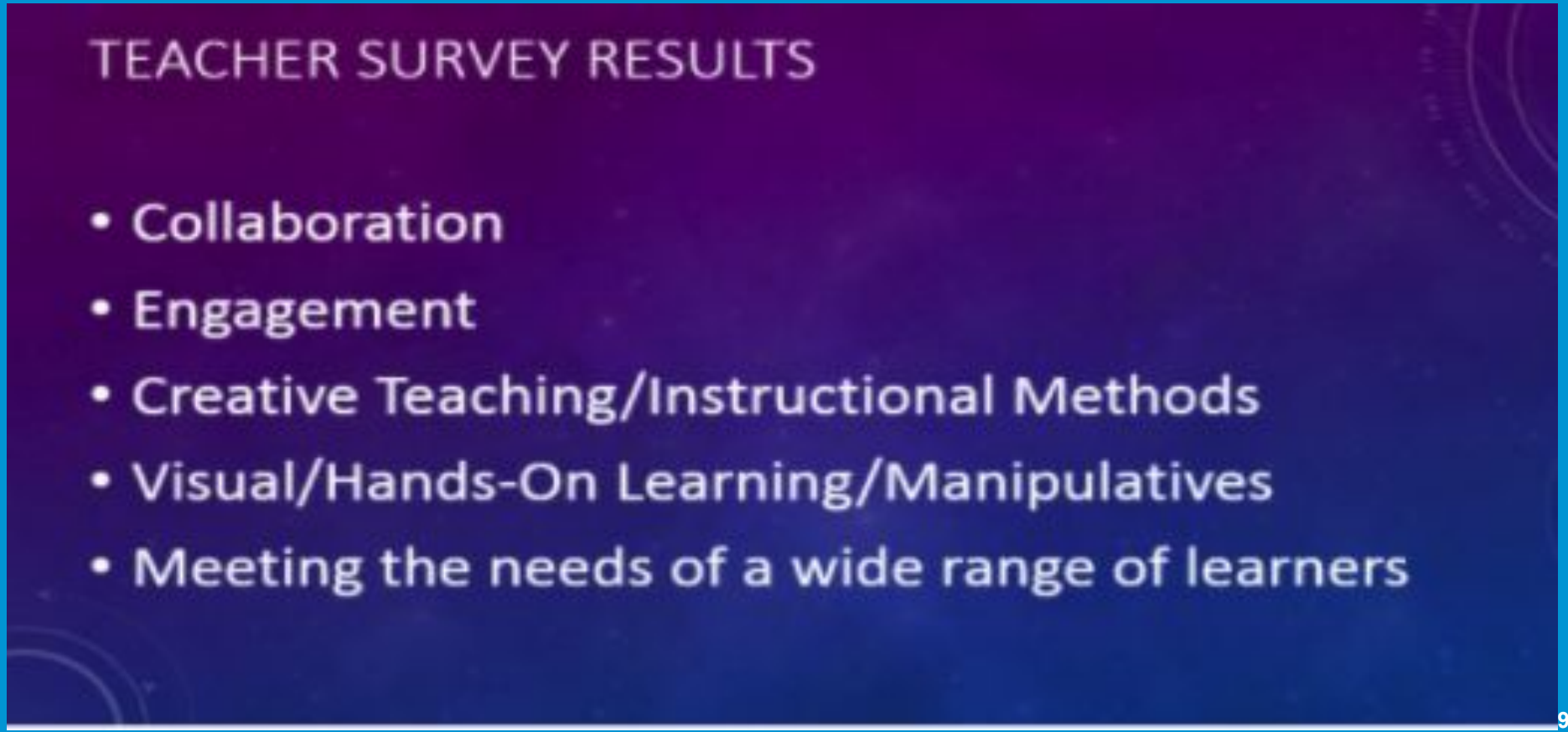
It is essential to use the eight equitable and effective mathematics teaching practices advocated by NCTM in Principles to Actions (2018) regardless of whether instruction is in-person, remote, or hybrid.

- Establish mathematical goals to focus learning.
- Implement tasks that promote reasoning and problem solving.
- Use and connect mathematical representations.
- Facilitate meaningful mathematical discourse.
- Pose purposeful questions.
- Build procedural fluency from conceptual understanding.
- Support productive struggle in learning mathematics.
- Elicit and use evidence of student thinking.

Taken together, these practices support formative assessment strategies. For example, eliciting and using evidence of student thinking requires teachers to ensure all students believe that their mathematical thinking is valued. Effective implementation of this teaching practice includes posing purposeful questions, examining students' work on tasks, and observing students engaged in doing mathematics.

It is critical that we continue to support students in productive struggle and engage them in meaningful mathematical discourse that happens in and out of the classroom. Students can formulate their thoughts and then record their thinking and connect mathematical representations in a variety of ways, including using tools and devices.

Here's what the teachers said they wanted...



So we provided this….

Cohort Days throughout the year
Curriculum development/writing
Culturally Responsive work
All District Agreements
ELL Foundations Work
ST Math Trainings
Math Review District Trainings
Desmos Trainings
Lesson Study/Learning Labs Trainings with Solution Tree
Manipulatives Trainings
On-Track Math course unpacking (6th Grade Support Math Courses)
Any purchasing of outside resources
Our Contract to continue work with Solution Tree
Funds to provide math team members with outside Professional Development

And then this happened...

In the meantime...

How we aim to still support you

Ignite your thinking…

How can your own learning help guide you when coaching, supporting or leading your staff?

In this new time of distance learning also comes with it distance learning and collaboration for staff. Some potential options to consider with our team (based on availability) are:

- Synchronous PD during staff meetings provided by the math team around the EBP you have chosen
- Collaborative planning sessions with grade level groups or grade bands
- Virtual lesson observations as coaching sessions (non-evaluative)
- Consultations between math team members and admin or leadership teams
- Coaching support for admin as you support your staff

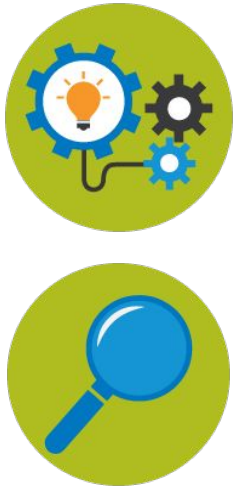
SCIP EBP Supports: Choice Boards

Asynchronous Activity

We want to provide you with your own asynchronous learning opportunity today.

SCIP support around our 4 EBPs

...a time to explore a ‘Choice Board’ of the EBP(s) you’ve chosen. To access, lick on the circle or scan the QR code for your EBP(s) below.



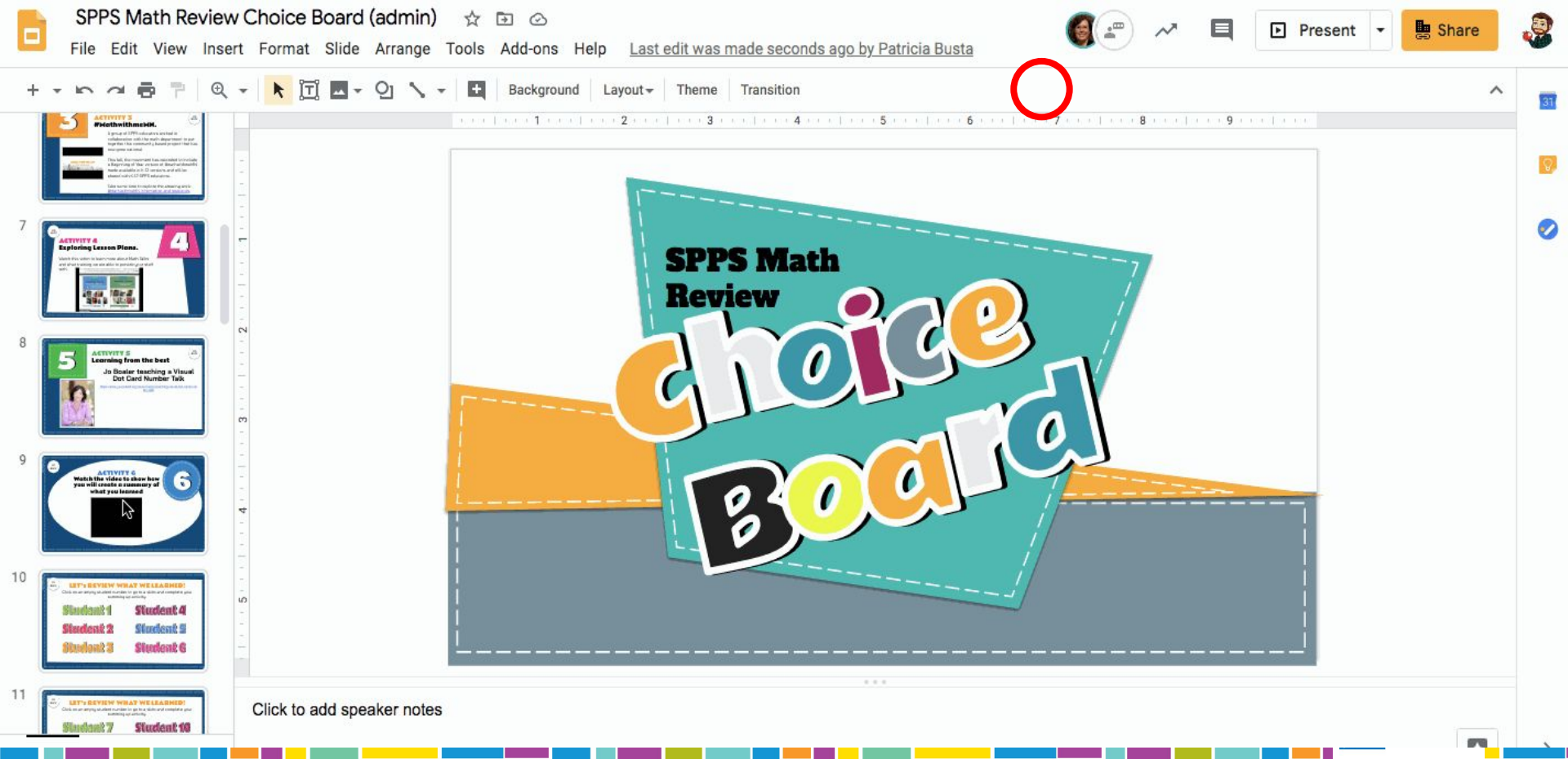
SPPS MATH REVIEW

INDEPENDENT PRACTICE

SMALL GROUP INSTRUCTION

TQE

If you have specific questions during...



DAY 2

39

We noticed your wonderings...

Requirements vs. Expectations

Statement: "Synchronous experiences are pivotal to best practice (math) instruction and learning, for both content and SEL. This is true for in-person and remote learning."

Statement: "Regardless of 'requirements', we recommend that sites and individual teachers set a precedent to *offer* regular synchronous experiences in their (math) classrooms, and set an *expectation* that students do their best to show up to said synchronous opportunities."

Synchronous vs Asynchronous Research

Keep this in mind while we engage in today's learning

District Level Math Department PD

SPPS Elementary Math '19-'20 PD Calendar

District PD (Elementary):

Wednesday, August 28 (Solution Tree presenters) [3-5]
8:00 - 11:00 or 1:00 - 4:00 [Opening Week] **MATH1902**

Tuesday, August 27 (Solution Tree presenters) [K-2]
12:30 - 3:30 (***optional***) **MATH1901**

Friday, March 6 (Solution Tree presenters) [K-2]
12:30 - 3:30 (***optional***) **MATH1933**

Leads Meetings
(Fri., Sept. 13)
Fri., Oct. 11
Fri., Nov. 8
Fri., Dec. 20
Fri., Jan. 31
Fri., Feb. 14
Fri., Mar. 13
(Fri., Apr. 17)
Fri., May 8

Pathways AoT
Year 1 Day 1 (3-5)
Tues. 11/5 12:30-3:30

Year 1 Day 2 (3-5)
Tues. 1/21 8:30-3:30

Year 2 Day 1 (K-2)
Tues. 10/23 12:30-3:30

Year 2 Day 2 (K-2)
Fri. 1/17 8:30-3:30

Misc. PD

Data Wall Information Gr. 3
MATH1905
9/16/19 (4:30 - 7:00 PM)

Data Wall Information Gr. 4
MATH1906
9/23/19 (4:30 - 7:00 PM)

Data Wall Information Gr. 5
MATH1907
9/30/19 (4:30 - 7:00 PM)

Math Review/Number Talks
MATH1908
9/9/19 (4:30 - 7:00 PM)
12/9/19 (4:30 - 7:00 PM)

Cohort Meetings: ***35 participants/day (8:30 - 3:30)***
*All Grade 3-5 teachers choose **only** one Fall and one Spring date.*

Fall

3rd Grade MATH1911	***4th Grade MATH1912***	***5th Grade MATH1913***
Oct. 1	Oct. 3	Oct. 7
Oct. 16	Oct. 22	Oct. 29
Oct. 30	Oct. 31	Nov. 7
Nov. 19	Nov. 13	Nov. 14
Nov. 26	Nov. 21	Nov. 25

Spring

3rd Grade *MATH1921*	**4th Grade *MATH1922***	**5th Grade *MATH1923***
Jan. 28	Jan. 29	Jan. 30
Feb. 3	Feb. 4	Feb. 7
Feb. 11	Feb. 13	Feb. 18
Feb. 20	Feb. 25	Feb. 27
March 3	March 5	March 10

Elementary 2020-2021

Grades 3-5 Opening Week 2 hours

- Welcome from Ishmael
- #Mathwithmemn
- TQE/DL Resources

Number String PD (Aug. & Dec.)

- K-2
- 3-5

CRI training- date/time TBD

Math Leads - (7 meetings this year)

District Level Math Department PD

SPPS Secondary Math '19-'20 PD Calendar

District PD (Secondary):
Tuesday, August 27 (Solution Tree presenters)
8:30 - 11:30 and 12:30 - 3:30 Optional continued work
[Opening Week]

Friday, March 6 (Solution Tree presenters)
8:30 - 11:30 and 12:30 - 3:30 Optional continued work
[Sec. District PD Day]

Leads Meetings
(MATH043)
(Fri., Sept. 13) LL only
Fri., Oct. 11
Fri., Nov. 8
Fri., Dec. 20
Fri., Jan. 31
Fri., Feb. 14
Fri., Mar. 13
(Fri., Apr. 17) LL only
Fri., May 8

Pathways AoT
Year 1 Day 1
Thurs. 10/31 12:30-3:30

Year 1 Day 2
Wed. 1/15 8:30-3:30

Year 2 Day 1
Tues. 10/29 12:30-3:30

Misc. PD
DESMOS Module 1 (MATH1909)
(overview and exploration)
Mon., Dec. 16; 4:00-7:00

SPPS MR Overview (MATH1908)
Mon., Sept. 9; 4:30-7:00
Mon., Dec. 9; 4:30-7:00

Manipulatives in the secondary math classroom (MATH1910)
Fri., Oct. 4; 8:30-3:00
Tues., May 19; 8:30-3:00

***Cohort Meetings*: (8:30 - 3:30)**

Math 6	*Pre-Algebra*	*Algebra I*
(MATH1914)	(MATH1915)	(MATH1916)
Thurs., Nov. 7	Wed., Oct. 23	Tues., Nov. 5
(MATH1924)	(MATH1925)	(MATH1926)
Wed., Mar. 11	Wed., Mar. 25	Wed., Apr. 15
Int. Algebra	***Geometry***	***Algebra II***
(MATH1917)	(MATH1918)	(MATH1919)
Tues., Oct. 15	Thurs., Oct. 24	Wed., Nov. 20
(MATH1927)	(MATH1928)	(MATH1929)
Wed., Mar. 18	Thurs., Mar. 26	Thurs., Apr. 16

***Cohort Extensions*: veteran attendees (invite only)**

(Middle School)	*(High School)*
(MATH1920)	(MATH1930)
Wed., Sept. 25	Wed., Oct. 2

Changes new to 2019-2020
- *About one cohort per week, spread out over 2 months*
- *Cohort extension days created to extend work for teachers who have come consistently to past cohorts, while fall cohort days will be designed to bring new attendees up to speed on cohort work of last 2 years.*

Secondary 2020-2021

Grades 6-12 Opening Week 2 hours

- Welcome from Ishmael
- #Mathwithmemn
- TQE/DL Resources

Number String PD (Aug. & Dec.)

- 6-8
- 9-12

CRI training- date/times TBD

Math Leads - (7 meetings this year)

Why is it important for us to come together?

MLL Supports

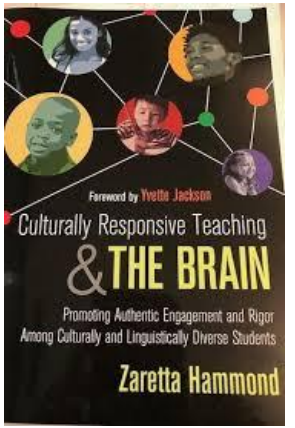
Our summer work and moving forward

Supporting our curriculum work

- Participants received PD around MLL supports in mathematics which they then applied to their work with feedback and coaching support

- Participants received the Zaretta Hammond book Culturally Responsive Teaching and the Brain to read prior to our work days

- Participants received PD utilizing the work from Zaretta Hammond's book, participated daily in book discussions with their collaborative group and applied their learning to their work with feedback and coaching support



MLL Strategies in math lessons

Listen

- To the teacher
- To each other
- To video
- To music

Speak

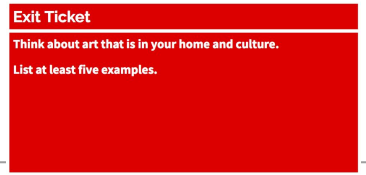
- Turn and talk
- Partner work
- Group work
- Teacher questioning

Read

- Directions
- Explanations
- Solutions
- Turn and talks
- Questions

Write

- Explanations
- Solutions
- Turn and talks
- Sentence frames
- Questions
- Exit tickets



They need to do all four of these every day!

Building Sentence Stems and Frames in a Lesson

Quarter 4: Unit #11 (3D Measurement): Conceptual Lesson		
Standard: 5.3.1.2 Recognize and draw a net for a three-dimensional figure.		
Preparing for the Mini-Lesson (within Part 1 of the Math Workshop Model)		
TQE Lesson Task: (Potential of the Task rating is _____)	**Learning Goal:** Recognize a 3D shape from a net. **Academic Language Objective:**	**What tools/materials will you use to support students to engage with the task?** • Slides • Print-out of nets
How this lesson supports MLL Learners ***(modify as needed based on your students MLL levels)*** Sentence Stems and Frames		
How this lesson supports Culturally Responsive Instruction ***(modify as needed)*** 4 R's of Instruction		
Universal Support/Differentiation: ***(modify as needed)*** • What alternative structures/modifications might be made available to students to provide linguistic and/or differentiated supports?		
Opening Task/Prompt: Math Talk: NOTICE and WONDER (Slides)		

Quarter 3 : Unit 7 (Trigonometry): CONCEPTUAL Lesson

Standard: 9.3.4.2
a.) I can determine lengths and areas in right triangles, and figures containing right triangles, using sine, cosine, and tangent.

TQE Lesson Task: Potential of the Task **rating:** 	**Learning Goal:** Students begin to notice right angles in everyday life. Students label sides of right triangles. **Academic Language Objective:** I can use mathematical skills to understand (improve, analyze, learn about) my community.	**Materials/Tools:** *What tools/materials will you use to support students to engage with the task?* Identifying opposite, adjacent and hypotenuse (video) Unit 7 Teacher Slides

How this lesson supports MLL Learners *(modify as needed based on your students MLL levels)*

- Lesson uses images, individual, partner, and group work, repeated use of unit vocabulary, sentence stems and frames, journals, note-taking, drawing, flipped classroom homework, opportunities to speak in L1 if necessary, exit ticket

Ref.: Sentence Stems and Frames

How this lesson supports Culturally Responsive Instruction *(modify as needed)*

- Unit deals with use of neighborhood space and culminates in student created neighborhood gardens.

Ref: 4 R's of Instruction

Universal Support/Differentiation: ***(modify as needed)***

- See MLL supports above

Tenth Grade Example

Language Functions by Levels

Level 1	Level 2	Level 3	Level 4	Level 5
Give Ask State Use I can *locate* points on a coordinate plane.	Retell Share Connect I can *order* points on a coordinate plane.	Develop Compare Contrast I can *compare* points on a coordinate plane.	Analyze Process Persuade I can *differentiate* points on a coordinate plane.	Evaluate Adjust Apply I can *justify* points on a coordinate plane.
More detailed list: Language Functions by Levels				

Culturally Responsive Instruction

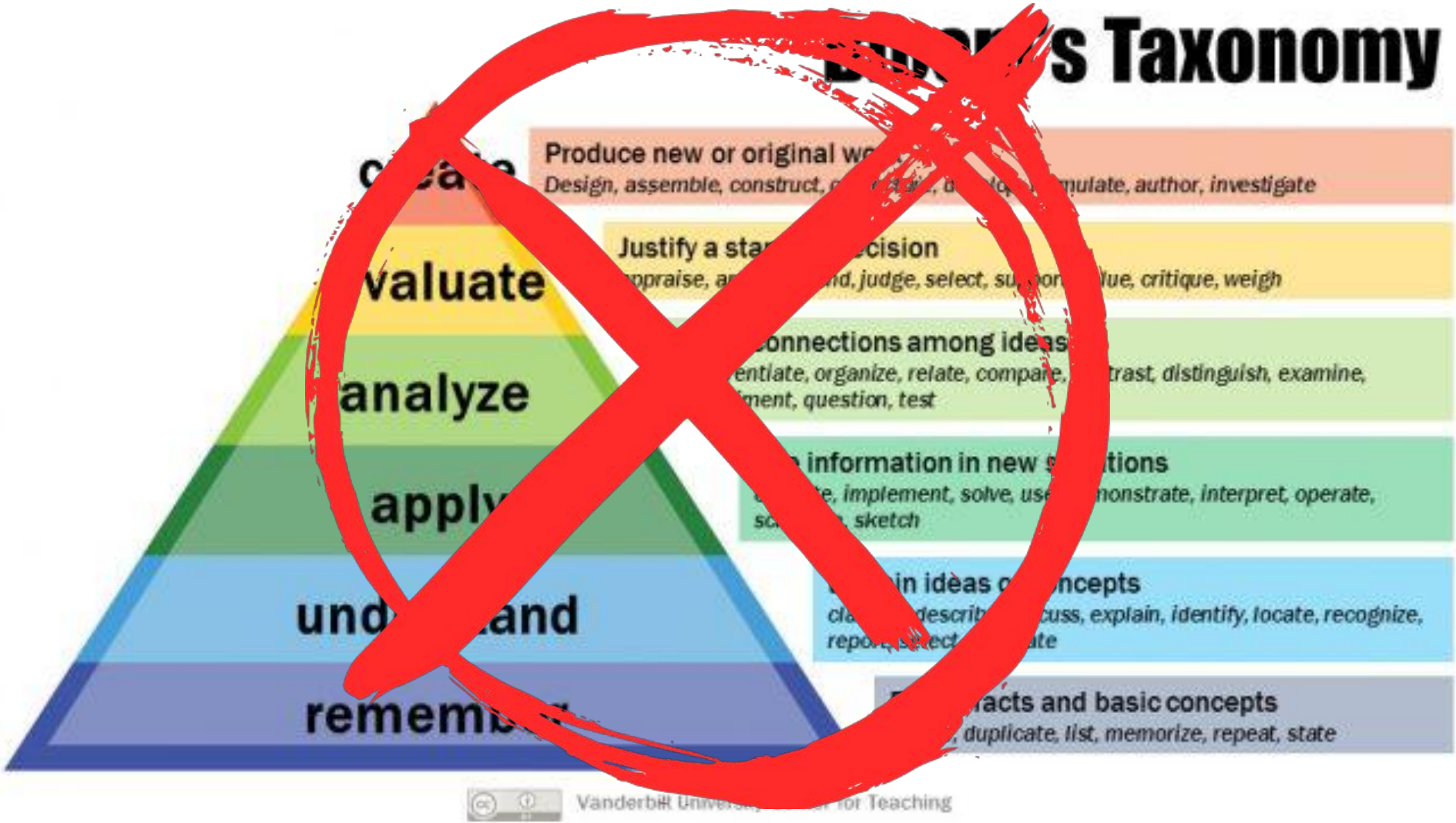
Our summer work and moving forward

Bloom's Taxonomy

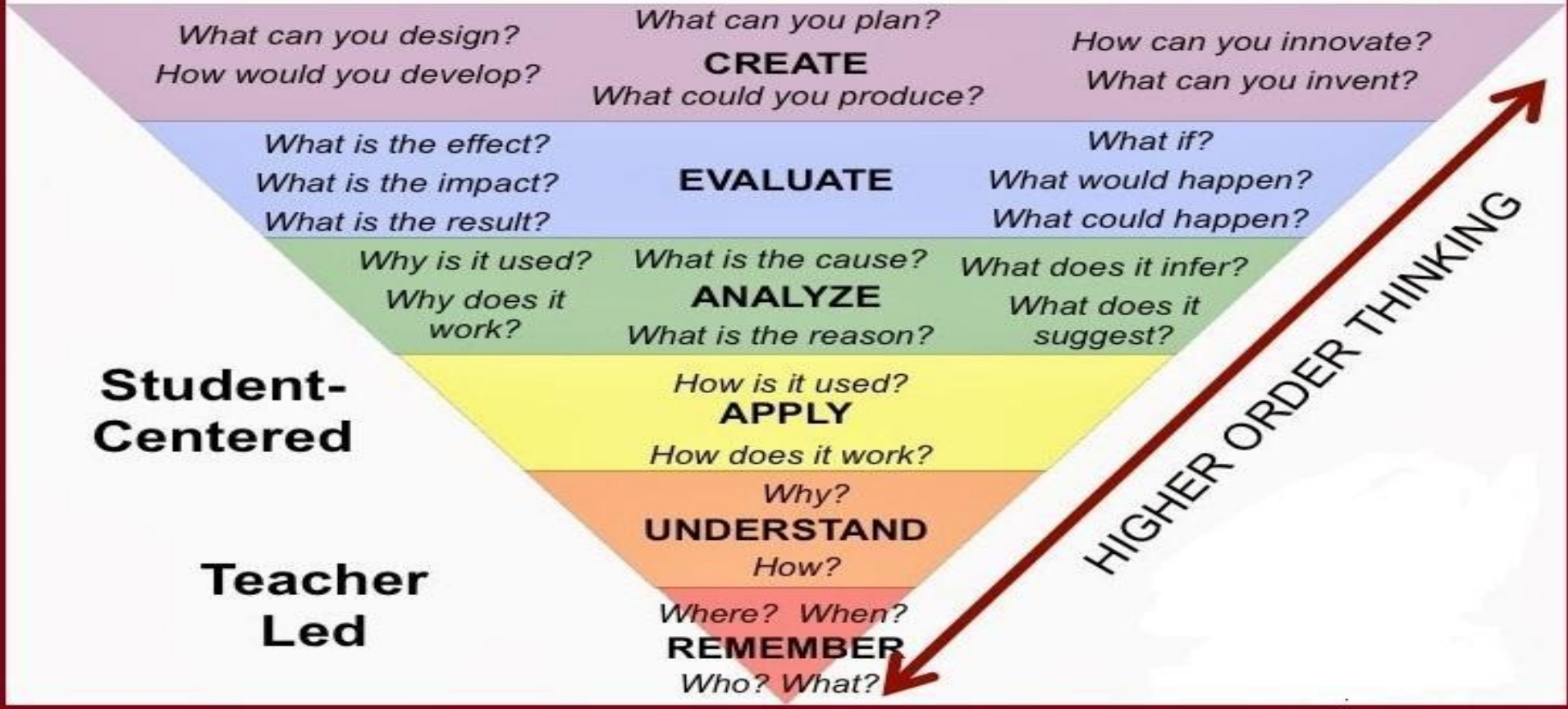
This is mathematics in America

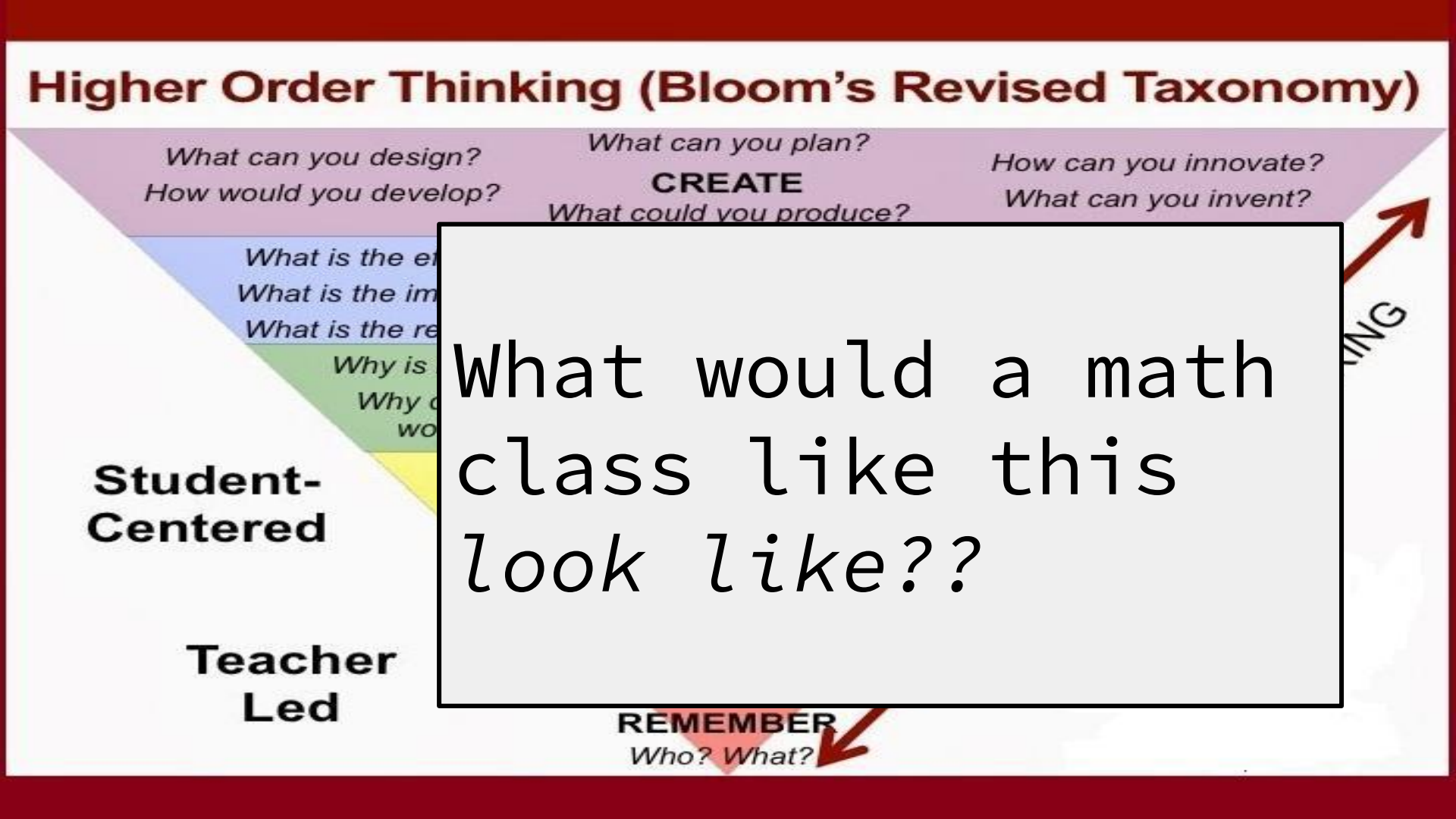
Explain ideas or concepts
classify, describe, discuss, explain, identify, locate, recognize, report, select, translate

Recall facts and basic concepts
define, duplicate, list, memorize, repeat, state


s Taxonomy
Produce new or original wo
Design, assemble, construct, mulate, author, investigate
Justify a sta ecision
ppraise, a d, judge, select, su lue, critique, weigh
onnections among ide
entiate, organize, relate, compare, trast, distinguish, examine,
ment, question, test
information in new tions
e, implement, solve, use monstrate, interpret, operate,
sketch
in ideas concepts
cuss, explain, identify, locate, recognize,
ate
acts and basic concepts
duplicate, list, memorize, repeat, state
valuate
analyze
apply
und and
remem
Vanderbilt Univers for Teaching

Higher Order Thinking (Bloom's Revised Taxonomy)




Higher Order Thinking (Bloom's Revised Taxonomy)
What can you design?
How would you develop?
What can you plan?
CREATE
What could you produce?
How can you innovate?
What can you invent?
What is the ef
What is the im
What is the re
Why is
Why
wo
Student-Centered
Teacher Led
What would a math class like this look like??
REMEMBER
Who? What?

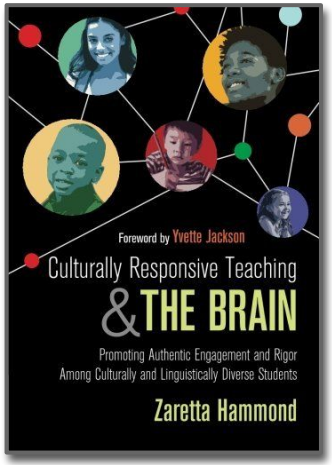
Read the following quote:

"In recent years, there's been a lot of talk about the reasons behind the low performance of many students of color, English learners, and poor students. Rather than examine school policies and teacher practices, some attribute it to a "culture of poverty" or different community values toward education. The reality is that they struggle not because of their race, language, or poverty. They struggle because we don't offer them sufficient opportunities in the classroom to develop the cognitive skills and habits of mind that would prepare them to take on more advanced academic tasks. That's the achievement gap in action."

(Jackson, 2011; Boykin and Noguera, 2011; Hammond, 2015)

Zaretta Hammond

The Dependent Learner	The Independent Learner
• Is dependent to the teacher to carry most of the cognitive load of a task always • Is unsure of how to tackle a new task • Cannot complete a task without scaffolds • Will sit passively and wait if stuck until teacher intervenes • Doesn't retain information well or "doesn't get it"	• Relies on the teacher to carry some of the cognitive load temporarily • Utilizes strategies and processes for tackling a new task • Regularly attempts new tasks without scaffolds • Has cognitive strategies for getting unstuck • Has learned how to retrieve information from long-term memory
Dependent Learner Characteristics vs. Independent Learner	



America's Reality.

"The chronic achievement gap in most American schools has created an epidemic of dependent learners unprepared to do the higher order thinking, creative problem solving and analytical reading and writing called for."


HOPE
AHEAD

Watch later:

A Solution.

“Culturally responsive **teaching** is a powerful tool to help dependent learners develop the cognitive skills for high order thinking and independent learning.”

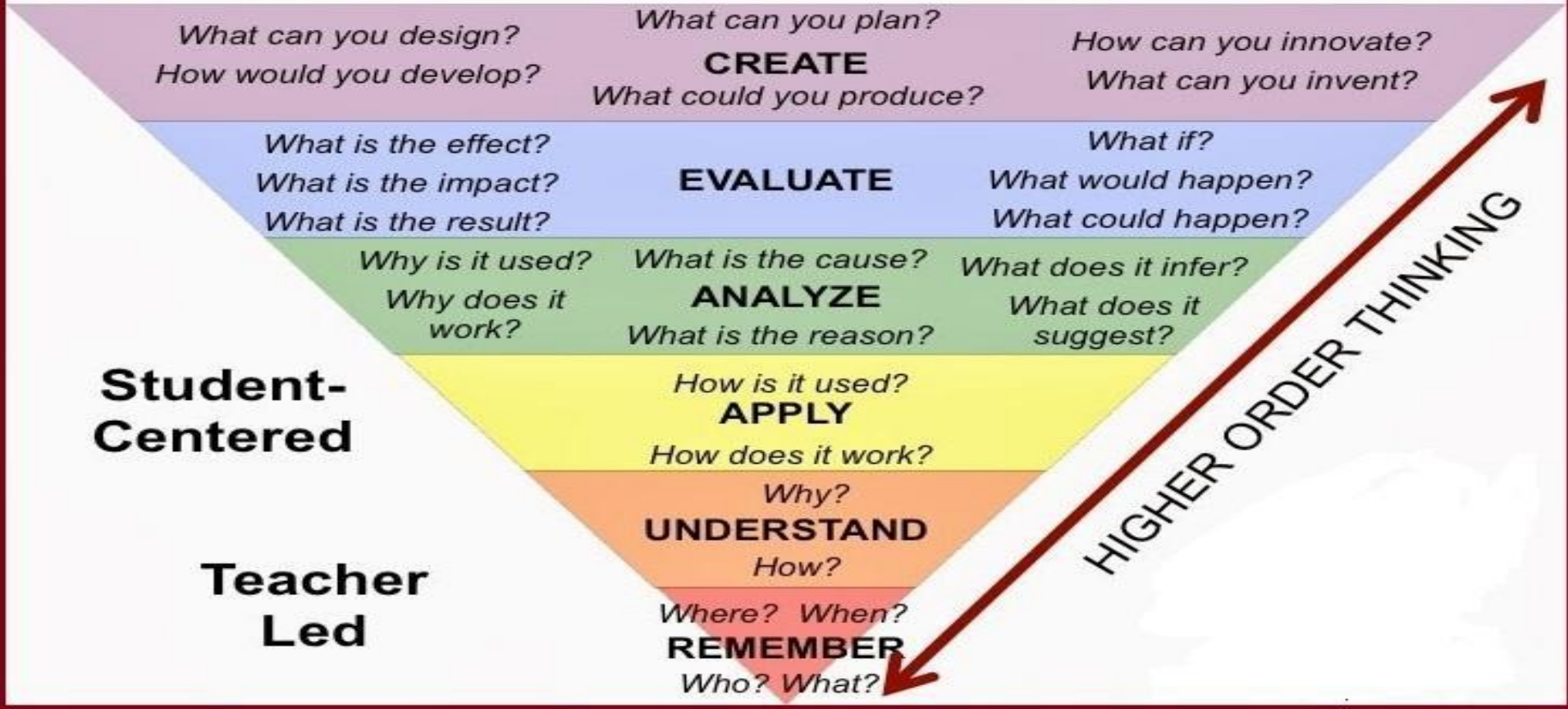
-Zaretta Hammond

Saint Paul Public Schools


HOW?

1. Blooms (student products)
2. 4 R's
3. Math Identities

Higher Order Thinking (Bloom's Revised Taxonomy)

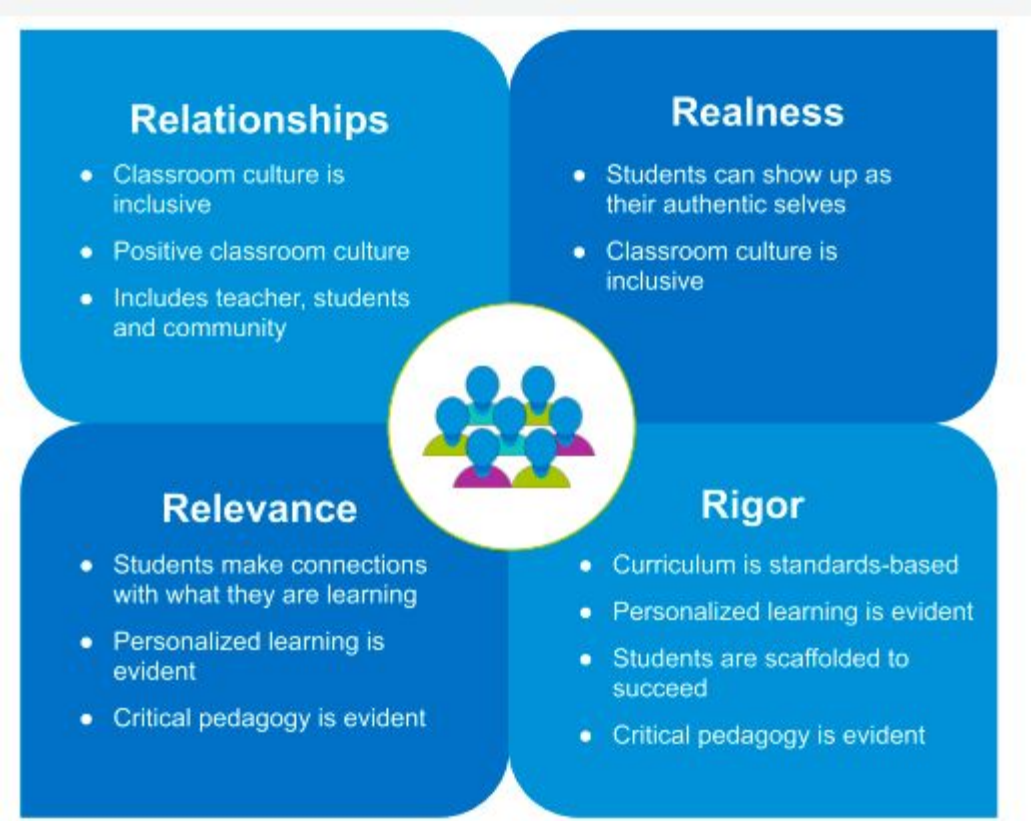


Summer work

Dependent Learners
Remember, Understand and Apply.

Independent Learners
Analyze, Evaluate and Create.

4 R's


Relationships
Classroom culture is inclusive
Positive classroom culture
Includes teacher, students and community
Realness
Students can show up as their authentic selves
Classroom culture is inclusive
Relevance
Students make connections with what they are learning
Personalized learning is evident
Critical pedagogy is evident
Rigor
Curriculum is standards-based
Personalized learning is evident
Students are scaffolded to succeed
Critical pedagogy is evident

Mathematics Identities

1. beliefs about one's self as a mathematics learner
2. one's perceptions of how others perceive him as a mathematics learner
3. beliefs about the nature of mathematics
4. engagement in mathematics
5. perception of self as a potential participant in mathematics

Sara VDW Van Der Werf

Shifting mathematical identities

- ✓ Model positive discourse.
- ✓ Get to know your students' identities.
- ✓ Create opportunities for positive math identities to be developed/fostered
- ✓ Ensure opportunities for all students to be successful.
- ✓ Engage all students.

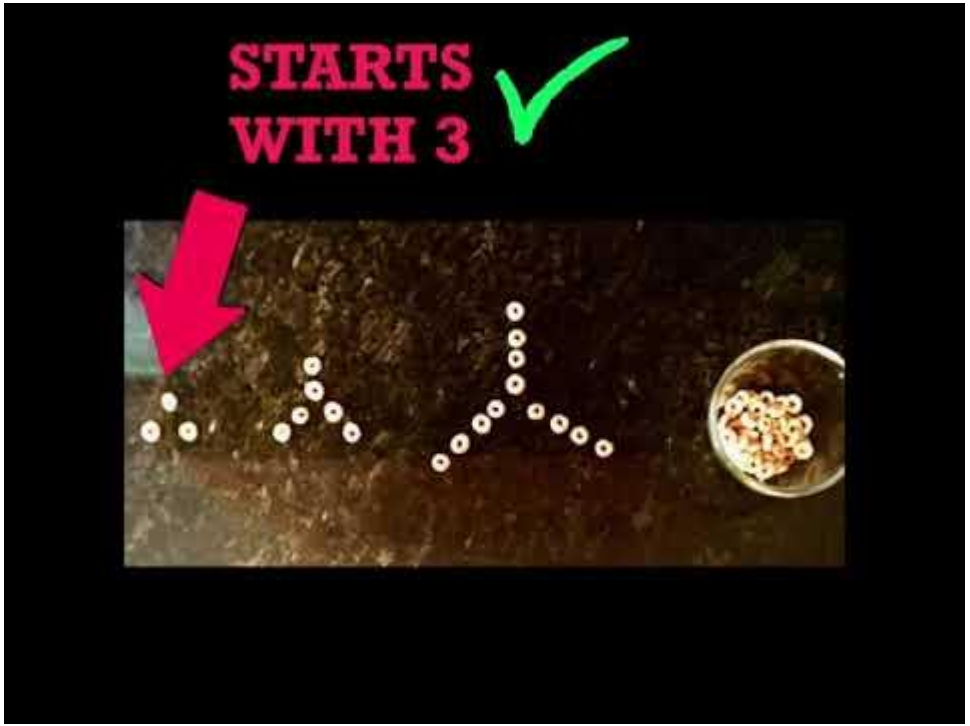
Sara VDW Van Der Werf

An Example: #MathwithmeMN

An Example: #MathwithmeMN Phase 1

Use the next 5 minutes to find any objects in your home / around you to recreate this pattern… Post it here (Padlet)

An Example: #MathwithmeMN - Phase 2



Math With Me MN Resources

An Example: #MathwithmeMN - Phase 2

We are going to use a class Jamboard. Click on the links by last name to follow directions for this task.

Last names A-E

Last names F-J

Last names K-O

Last names P-T

Last names U-Z

Jamboard

Math With Me MN Resources

Take 5 minutes to stand and stretch

Tasks, Questions and Evidence

What to look for when observing a TQE lesson

Explore the TQE Resources

Take some time to explore the materials created this summer. Look at:

- New landing page for the Scope & Sequence
- New Unit design
- Revised lesson plan template
- Examples of MLL supports and CRI
- Supporting slides for each unit
- How conceptual and linking tasks use Layer's of Facilitation- procedural tasks use Gradual Release

Making Sense of the TQE Process

- Select appropriate **T**asks to support identified learning goals.
- Facilitate productive **Q**uestioning during instruction to engage students in the Mathematical Practices and Processes
- Collect and use student **E**vidence in the formative assessment process during instruction.

Tasks

[There is] no decision teachers make that has a greater impact on students' opportunities to learn and on their perception about what mathematics is than the selection or creation of tasks with which the teacher engages students in studying mathematics.

-Glenda Lappan and Diane Briars

Being aware of both the type of thinking a task can elicit and the types of access a task can give to all students can support you to **align tasks with Learning Goals**, and to ensure that students receive opportunities for thinking and reasoning.

Finally, research has also shown that the level of the task sets the ceiling for the mathematical thinking, reasoning, and discussion that occurs throughout a lesson, and *if a task does not request a representation, explanation, or justification students typically do not produce or provide these things during a lesson*.(Boston & Wilhelm, 2015)

The potential of a task

Take a few minutes to read through the IQA Potential of a Task Rubric we put in the chat box.

Preparing for the Mini-Lesson
(Part 1 of the Math Workshop Model)

TQE Lesson Task: 1 Potential of the Task rating: Problem 1: 28 + 46 Problem 2: 47+ 39 	Learning Goal: Modeling multi-digit addition with base ten blocks Academic Language Objective:	Materials/Tools: Base-10 blocks Place value mat *Slides*

IQA Potential of a Task Rubric

Putting it into practice

- Use the rubric to determine what level each problem is

- Type your response in the chat box
  Ie. A=4, B=1, etc

Consider these problems...

A

Divide:

26 ÷ 4 → _____ R _____

17 ÷ 5 → _____ R _____

43 ÷ 6 → _____ R _____

B

Write a word problem for 26 divided by 4 that results in an answer of 7. Do not use the words *around*, *estimate*, or *about*.

C

Write word problems for 26 divided by 4 where:

- The answer would need to be 7.
- The answer would need to be 6.
- You would need the exact answer.

How are the three situations the same and how are they different? How is it possible to get a different answer to the same division problem?

D

For the following problems, underline the **divisor**, circle the **dividend**, put a square around the **quotient**, and put a triangle around the **remainder**.

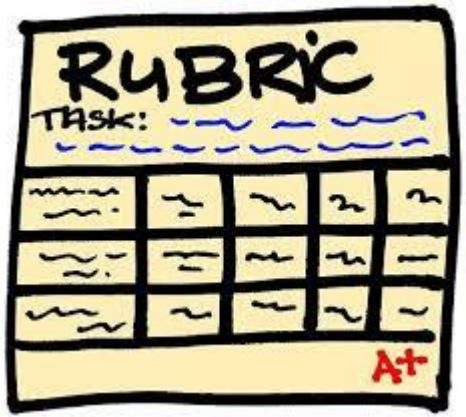
$4\overline{)26}$ 6 R 2

$5\overline{)17}$ 3 R 2

Implementation of the Task Rubric

Read through the Instructional Quality Assessment

Implementation of the Task rubric



MQI Video

Use the Implementation of the Task rubric to evaluate this lesson.
In the chat add:
This is rated a ___ because...

The Task:

Asanya had two and one-thirds candy bars. She promised her brother that she would give him half the candy bar. How much would she have left after she gives her brother the amount she promised?

Now let's consider this task...

85-29

Watch this video of a virtual class math talk. Use the Implementation of a Task rubric to rate the implementation. In the chat add:

I rated this a ____ because...

Reflection

How would you compare/contrast the way these two teachers implemented the task?

How did the teacher's implementation of the task impact the potential of the task?

6 Spheres of Influence

...that Administrators have in Mathematics Teaching and Learning

Back in

Survey Feedback

Please include what resources or additional information you will need.


thank you
danke
謝謝
рахмат
ngiyabonga
شكراً جزيلاً
teşekkür ederim
Баярлалаа
спасибо
gracias
dank je
tapadh leat
dziękuję
bedankt
hvala
mauruuru
obrigado
sukriya
kop khun krap
go raibh maith agat
arigatô
dakujem
merci
terima kasih
grazie
mochchakkeram
tack
barka
mersi
wetalin
faafetai lava
kiitos
dankie
vinaka
blagodaram
misaotra
matondo
paldies
grazzi
mahalo
хвала
asante
manana
obrigada
tenki
djiere dieuf
tau
дякую
mamnun
chokrane
murakoze
enkosi
köszönöm
akun
dankon
ačiū
bayarlalaa
gracie
nanni
nandii
dhanyavad
sobodi
dēkuji
mesi
sagolun
chnorakaloutioun
gralias ago
grācies
sulpáy
taiku
takk
trugarez
najis tuke
ありがとう
tanemirt
rahmet
dhanyavadagalu
diolch
shukriya
merce
мерси
didi madloba
kam sah hamnida
rahmat
তোমাকে ধন্যবাদ
감사합니다
xièxie
ευχαριστώ